THE PROCEEDING
OF THE 10th INTERNATIONAL NURSING CONFERENCE

INTERNATIONAL NURSING CONFERENCE

"Tropical Health and Coastal Region Development"

Mercure Hotel Surabaya
East Java, Indonesia
April 6th - 7th 2019

Faculty of Nursing
UNIVERSITAS AIRLANGGA
Excellence with Morality

In Collaboration with:

UNIVERSITY OF MALAYA

The Proceeding of 10th International Nursing Conference
Theme : Tropical Health Coastal Region Development.

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PREFACE

Praise the presence of Allah SWT, for his mercy so that Faculty of Nursing Universitas Airlangga can produced the proceedings of the 10th International Nursing Conference with the theme "Tropical Health Coastal Region Development". This conference was held on 6-7 April 2019 in Surabaya

This proceeding book contains a number of research articles and literature reviews in the fields of nursing and health. The article is the work of health workers and practitioners outside of health who have an interest in health. The article in this proceeding was presented at the 10th International Nursing Conference event at the Grand Mercure Hotel Surabaya

Hopefully this proceeding book can provide benefits for the development of science, policy, methods of intervention and technology, especially in the field of nursing. In addition, this proceeding is expected to also be a reference for the development of Indonesia's health sector. Finally, we thank all those who have played a role and participated in this international conference. We apologize for the things that are not pleasing. We will wait for constructive suggestions and criticism for the sake of the perfection of this proceeding books.

Surabaya, Desember 2019

Chairman of 10th INC

GREETING FROM THE CHAIR PERSON OF THE 10th INC 2019

Assalamu'alaikum Warahmatullahi Wabarakatuh

The honorable Rector of Universitas Airlangga
The honorable Dean of Faculty of Nursing, Universitas Airlangga
The honorable Head of Co-Host Institutions
Distinguished Speakers and all Participants

Praise the presence of Allah SWT, for his mercy so that Faculty of Nursing Universitas Airlangga can organized The The 10th International Nursing Conference 2019 "Tropical Health Coastal Region Development". Welcome to Surabaya, The City of Heroes Indonesia. On behalf of the Organizing Committee. I would like to extend our warmest welcome to you at The 10th INC 2019. This annual conference is the tenth event after the ninth has been successfully conducted in 2018.

This conference is organized by Faculty of Nursing Universitas Airlangga with cooperation of three nursing institutions throughout the nation. These institutions including, Universitas Islam Sultan Agung Semarang, STIKES Pemkab Jombang, and Universitas Muhammadiyah Surabaya. Once more aims to elaborate with the aforementioned institutions and international universities through holding an international nursing conference. The international universities include: La Trobe University (Australia), University of Malaya (Malaysia), National Cheng Kung University (Taiwan) and Edinburgh University (Scotland).

The conference aims to provide a forum for researchers, lecturers, nurses, students both from clinical and educational setting, regional and overseas area. We have accepted 333 abstracts for oral and poster presentation coming from different universities from many countries. Moreover, I would like to announce that Proceeding of this International Nursing Conference will be submitted to SCOPUS. The selected papers will be submit at Journal Ners and online ISSN proceeding.

The committee extent very kind thank to all participants for the success of the conference. Finally the success of this conference lies not only in the quality of papers but also on the dedicated team work of the organizing and scientific committee. Finally, I would like to thanks to all speakers, participants, and sponsors from Jaya Kelana Abadi CV so that this conference can be held successfully. Please enjoy the international conference, I hope we all have a wonderful time at the conference. Thank you.

Wassalamu 'alaikum Warahmatullohi Wabarokatuh

Dr. Abu Bakar, M.Kep., Ns., Sp.Kep.MB
The 10th INC 2019 Chair Person

OPENING REMARK FROM THE DEAN OF FACULTY OF NURSING

Assalamu'alaikum Warahmatullahi Wabarakatuh

The Honorable Rector of Universitas Airlangga, The Honorable Head of Co-Host Institutions, The Honorable Chief of Indonesian National Nurses Association (INNA), The Honorable Chief of Association of Indonesian Nurse Education Center (AINEC), Distinguished Speakers, and All Participants.

First of all, I would like to praises and thanks to Allah SWT for the blessing and giving us the grace to be here in a good health and can hold this conference together.

Secondly, it is a great privilege and honor for us to welcome every one and thank you for your participation and support for The 10th International Nursing Conference 2019 "Tropical Health Coastal Region Development". The INC topics presented in this conference cover Public Health and Policy, Epidemiology, Food Nutrition and Health, Medical Microbiology, Molecular Biology, Pharmacological Aspect and Treatment, Tropical Diseases, Helath Law and Policy.

The Industrial Revolution 4.0 is a new challenge not only in technology but also in the field of tropical health coastal region development. Industrial Revolution in Indonesia starting with improving the competence of human resources through the link and program match between industrial education. Faculty of Nursing Universitas Airlangga got accreditation A (Excellent) for Bachelor and Master Degree. We already got accreditation of AUN (ASEAN University Network). Today, we are preparing for next Accreditation Agency for Degree Programs in Engineering, Informatics/Computer Science, the Natural Sciences and Mathematics (ASIIN)'s international accreditation. Most of our lecturer already have Scopus ID and we have many of doctoral degree lecturers. We will launch Double Degree Joint Program with University of Malaya for Master Degree and with La Trobe University for Doctoral Degree soon. We have own jurnal that is Jurnal Ners which has been accredited as a 2nd Grade Scientific Journal by the Ministry of Science, Research, Technology and Higher Education of Indonesia since 2010. Jurnal Ners indexed in major databases, such as Directory of Open Access Journal (DOAJ), Index Copernicus International (ICI), ASEAN Citation Index (ACI), PKP Index, Science and Technology Index (SINTA), WorldCat, Indonesian Publication Index (IPI), Google Scholar, Bielefeld Academic Search Engine (BASE), and will be indexed by SCOPUS soon.

Along with Universitas Airlangga vision to become a world class university and enter top World University Ranking, Faculty of Nursing, participates actively in reaching the vision. To achieve World Class University ranking, faculty needs to meet the standards of World's top Universities such as Academic reputation, employer reputation, publication, faculty standard ratio, international students and exchange. International Nursing Conference is one of the few strategies that have been implemented by the faculty to increase publication standard.

Finally, I would like to thanks to all speakers, participants, and sponsors that helped the success of this event. I hope that this conference having good contribution in increasing the quality of research. Many thanks to the organizing and scientific committee of INC 2019 who have worked very hard to run the conference. We thank our participants to present their research papers, to share extensively and exchange of ideas thoughts and discussions so that this conference facilitates the formation of networks among participants. Please enjoy the international conference. I hope, we all have a wonderful time at the conference and your presence in Surabaya would be a memorable one. Thank you.

Wassalamualaikum Warahmatullahi Wabarakatuh
Prof. Dr. Nursalam, M.Nurs (Hons)
Dean, Faculty of Nursing Universitas Airlangga

WELCOME SPEECH FOR PROCEEDING BOOK OF THE 10 INTERNATIONAL NURSING CONFERENCE 2019 BY RECTOR OF UNIVERSITAS AIRLANGGA

Universitas Airlangga is strongly committed to significantly contribute to the development of health science globally by providing quality academic engagements. This includes improving our teaching-learning processes, academic mobility, research activities as well as community development. Aligned with this aim, it is a great honour for Universitas Airlangga to host The 10th International Nursing Conference 2019 "Tropical Health Coastal Region Development"

We are now in the Industrial Revolution 4.0 at which we must be prepared for a disruption era of technology. Referring to the medical and health problems and the disruptions, we all have to be ready to combine physical domains, digital, and biology. This combination leads to Artificial intelligence, new materials, big data, robotics, nanotech and biotech, augmented reality and genetic editing. We will face constant changes, uncertain and unpredictable future where there will be a deep shift from physical to virtual, human to automation and robotic, and intermediacy to disintermediacy. I believe at this moment we are facing these shifts in the medicine and health sciences. Thus, the conference focuses on Tropical Health Coastal Region Development.

The conference is addressed to answer global challenges on how universities, institutions, organizations in higher education can give their contributions to the global medical, health, and policy issues that have been emerging for years. This conference invites more than one hundred scholars including academics, researchers, and professionals from all over the world, to share their ideas, thoughts and current research. Thank you for the warm support given by our partners and our faculty of nursing for the purpose of strengthening academic and research collaboration through this conference. Universitas Airlangga is hoping that this collaboration will continue to be fruitful for many years ahead, and bring success to you and Universitas Airlangga.

This conference brings all scholars to work together, coming up with excellent ideas presented in plenary and parallel sessions. In addition, they can expand their networking for future collaborations that support the development of medical and health sciences. All in all, I hope that this conference will not only give insights to all of the parties, but it will also provide us more enlightenment to answer the challenges on the medical and health issues.

Thank you very much for your kind attention.

Prof. Dr. Mohammad Nasih, SE., MT., Ak., CMA.,
Rector of Universitas Airlangga

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TIME SCHEDULE
10TH INTERNATIONAL NURSING CONFERENCE
Surabaya, 6-7 April 2019

DAY 1, SATURDAY 6th April 2019

TIME	ACTIVITY	PIC
07.00 - 07.40	Open Registration	**Committee**
07.40 – 07.45	Safety Breafing	
07.45 – 08.00	**Opening Remarks** • Indonesia Raya: National Anthem	**MC: Hidayat + Lingga** **NEVO**
08.00 – 09.00	- Welcoming Show (Traditional Dance: Tari Saman): - Speech from Dean of The Faculty of Nursing, Universitas Airlangga - Speech from Rector Universitas Airlangga - Opening ceremony: Hit the Gong - Pray	**UK Tari** **MC** **Dr Ah Yusuf**
09.00 – 09.50	**Keynote Speaker** Rector UniversitasAirlangga	
09.50 – 10.00	- Certificate Conferment & Giving Souvenir	**Dean FoN Unair**
10.00 – 10.10	Coffee Break and Opening Poster Presentation	**MC**
Plenary Session I		
10.10 - 10.30 **(20 minutes)**	**Speaker 1** Prof. Graeme D.Smith (University Of Edinburgh, Scotland) (Resilience in Nursing)	**Moderator: Dr Ninuk DK** **Notulen:** **Ika Nur P** **Operator:** **M.Anwari**
10.30–10.50 **(20 minutes)**	**Speaker 2** Prof. Miaofen, PhD, RN, FAAN (National Cheng Kung University, Taiwan) (Care of Patients with Chronic Kidney Disease: a Research Trajectory)	
10.50 – 11.05 (15 minutes)	**Speaker 3** Harif Fadhillah, S.Kp.,SH, M.HKes Head of Indonesian National Nurses Association (INNA) (The role of INNA in preparing members to enter the industrial revolution era 4.0)	
11.05 -11.20 (15 minutes)	**Speaker 4** Dr. Muhammad Hadi, M.Kep Head of Association Indonesian Nurse Education Center (AINEC) (The New Paradigm of Nursing Education towards the digital era)	
11.20 – 11.35 **(15 minutes)**	Plenary Discussion	
	Conferment of certificates	**Vice Dean 1 FoN Unair**

11.35 – 12.35 (60 minutes)	Poster Presentation 1	**Committee**
	Pray Time &Lunch Break	**Committee**
Plenary Session II		
12.35 – 12.55 (20 minutes)	**Speaker 5** Prof. Lisa McKenna (La Trobe University, Australia) (Interprofessional education and collaboration for tropical and regional health)	**Moderator: Eka M** **Notulen: Yuanita W (UMS)**
12.55 – 13.15 (20 minutes)	**Speaker 6** Prof. Khatijah Lim Abdullah, PhD (University of Malaya, Malaysia (Building population health in the 21st century nurses roles)	**Operator: M.Anwari**
13.15 - 13.25 (10 minutes)	**Speaker 7** Dr. Mira Triharini, S.Kp, M.Kep (Faculty of Nursing Universitas Airlangga) (Anemia prevention behavior with self determination in pregnant women)	
13.25-13.35 (10 minutes)	**Speaker 8** Dr. Rizki Fitryasari, S.Kep.,Ns.,M.Kep (Faculty of Nursing Universitas Airlangga) **(**Family resiliency model : the way to manage stess and escalate family function while treating schizophrenia patient)	
13.35-13.50 (15 minutes)	Plenary Discussion	**Moderator**
	Conferment of certificates	**Vice Dean 2 FoN Unair**
Plenary Session III		
13.50 – 14.10 (20 minutes)	**Speaker 9** Chong Mei Chan PhD (University of Malaya, Malaysia) (The prospect of industrial Revolution 4.0 and care of older person)	**Moderator: Ferry E, PhD** **Notulen:RR Dian** **Operator: M.Anwari**
14.10 – 14.30 (20 minutes)	**Speaker 10** Dr. Sonia Reisenhofer **(**La Trobe University, Australia) (Increasing Globalisation in Nursing – are there benefits for the profession and our patients)	
14.30 – 14.40 (10 minutes)	**Speaker 11** Dr. Andri SetiyaWahyudi, S.Kep.,Ns.,M.Kep (Faculty of Nursing Universitas Airlangga) (Self care and eccentric exercise in type 2 diabetes mellitus)	

14.40 – 14.50 (10 minutes)	**Speaker 12** Dr. IkaYuni Widyawati, M.Kep,Ns,Sp.Kep.MB (Faculty of Nursing UniversitasAirlangga) (Dialysis Patients Empowerment Model Centered on Nurse-Patient Interaction-Transaction on Biologic and Biochemical Markers (A Pilot Project)	
14.50-15.05 (15 minutes)	Plenary Discussion	**Moderator**
	Conferment of certificates	**Vice Dean 3 FoN Unair**
15.05-15.35 (30 minutes)	Pray Time & Cofee Break	**Committee**
Plenary Session IV		
15.35-15.55 (20 minutes)	**Speaker 13** Assist Prof. Esther Ching Lin Lan (National Cheng Kung University, Taiwan) (Stigma Related Issues in Chronic Mental Illness)	**Moderator :** **Dr. Yuni Sufyanti**
15.55-16.05 (10 minutes)	Speaker 14 Pepin Nahariani, S.Kep, Ns., M.Kep : Stikes Pemkab Jombang rsing Student Interest to Work Overseas: mix method study)	**Notulen :** **Rista F**
16.05-16.15 (10 minutes)	**Speaker 15** Ns. Sri Wahyuni, M.Kep.,Sp.Kep.Mat : Universitas Islam Sultan Agung Semarang (Unisulla) ps Program as an Efforts to Increase Competence Test Graduation)	**Operator : M Anwari**
16.15-16.25 (10 minutes)	**Speaker 16** Yuanita Wulandari, S.Kep, Ns, MS : Universitas Muhammadiyah Surabaya (UMS) (QoL Women Living with HIV/AIDS in Surabaya)	
16.25-16.40 (15 minutes)	Plenary Discussion	
16.40-16.50 (10 minutes)	Conferment of certificates	**Moderator**
	Closing Day 1	**Vice Dean 3 FoN Unair**
		Dean of The Faculty of Nursing

DAY 2, SUNDAY 7th April 2019

TIME	ACTIVITY	PIC	VENUE
07.30–08.00	**Open Registration**	**Committee Room 8: Surabaya**	**Hotel Mercure Grand Mirama** **2nd floor** **Room 1: Paris** **Room 2: Sidney** **Room 3: Bangkok** **Room 4: Sanghai** **Room 5: Tokyo** **3rd foor** **Room 6: Hongkong** **5th floor** **Room 7: Jakarta**

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ABSTRACT

Family caregiver as informal caregiver are the most important person who cares for elderly with schizophrenia. About one in seven schizophrenia patients is older than 65 years, and the number of elderly with schizophrenia will increased. Changes associated with aging (e.g.,physical illness, cognitive impairment, social losses) may generate new care needs or modify existing ones. This cause a high burden who care of elderly with schizophrenia. The purpose was to review concept and factors related to burden on family caregivers caring for elderly with schizophrenia. A literatures were searched from databases: SCOPUS, Pubmed, CINAHL, and Science Direct. Articles were found 1016 articles and 15 articles that match the inclusion criteria. Keywords used to retrieve literature include caregiver, burden, schizophrenia, elderly. Searching was limited in English language, full text published, and the year of publication from 2013 to 2018. The result showed that the caregivers caring for elderly with schizophrenia experience burden. Burden was defined as a negative impact of caring. Generally two kinds of burden; objective and subjective burden that involves emotional, physical health, social life, and financial status. Factors related caregiver burden on family caring elderly with schizophrenia were : caregiver's factors, patient's factors and environmental factors.

Keywords: caregiver, burden, schizophrenia, elderly

1. Background

Aging is a global trend [1]. Roughly one in seven schizophrenia patients are older than 65 years. The number of elderly patients with schizophrenia will double within two decades[2]. The changes associated with aging (e.g., physical illness, cognitive impairment, social losses) may generate new care needs or modify existing ones[2]. This will cause a high burden for those who care for the elderly with schizophrenia.

Schizophrenia dramatically affects not only the patients suffering from it but also their family members [3]. The life morbidity risk for schizophrenia is approximately 1% (mean/median 11/7 per 1000), the median point prevalence per 1000 is 4.6 (10, 90 percent quantiles 1.9, 10.0), and the median yearly incidence per 100.000 is 15.2 (10, 90 percent

quantiles 7.7, 43.0)[1]. Family caregivers as informal caregivers are the most important person who cares for the elderly with schizophrenia [4].

People with schizophrenia often cannot fulfill the expected roles in their families and communities. They experience difficulties and need constant care and support from their families. This is because most schizophrenic patients live with their families who have the responsibility to provide care[5].

Asian families are the main caregivers who provide care for people with mental disorders [6]. Families experience physical, emotional and financial problems (living expenses, medication and transportation) due to the patient's abnormal behavior, the patient's inability to support himself and the patient's social dysfunction[7].The need for care to be provided and the need to overcome the client's behavioral difficulties results in changes in the family dynamics. These changes cause stress to the family members, especially the family caregivers who live with their patients. This is because it will reduce their ability to provide care and support for other families [8].

2. Method

The journal search strategy began by asking the research question, "How is problems, burden, stress and anxiety felt by the family providing care for the elderly with schizophrenia?" This review was based on articles obtained from the published literature in international journals. Online references were searched in the following databases and aggregators: ProQuest, SCOPUS, Ebsco Cinahl and ScienceDirect. The journal search strategy was conducted using the following keywords: caregiver, burden, schizophrenia and elderly. The journals were restricted to those obtained including the articles published between 2013-2018, the articles published in the English language, focused on the nursing area and where the full text was published.

This article aims to review the contained articles by systematically exploring the articles and conducting a critical assessment of the articles that discussed the caregiver burden on families providing care for the elderly with schizophrenia. This review included the articles that matched the inclusion criteria: (1) quantitative or qualitative studies, (2) the sample consisted of families as the caregivers who care for a schizophrenic client and where the patient has mental disorders according to DSM-IV, (3) articles published in English and (4) the full text is published.

The data was extracted from the full text of the studies that met the inclusion criteria. The excluded studies included there being a formal caregiver, it being a hospital-based study and no schizophrenic diagnosis.

The risk of bias was assessed using Cochrane Collaboration's tool for assessing risk of bias [9]. This assesses selection bias, which covers the method of random sequence generation and allocation concealment prior to assignment, performance bias which covers the blinding of the participants and study personnel, detection bias which covers the blinding of the outcome assessors, attrition bias which covers the level, nature and handling of the incomplete outcome data and reporting bias, which covers selective outcome reporting.

The data related to the objectives of the review in the articles has been recorded and presented. The data consisted of the demographic data, intervention data and other data relating or related to the study conducted. Although in this review we did not show the meta-analysis of the review, the data was very encouraging in terms of evaluating the results of the studies carried out by making it easier to improve the review process.

3. Results

The results of this review will explain and contain the results and study selection process, the study characteristics, the characteristics of the participants and the results of the study review. The search obtained as many as 1016 articles from the four databases. There were 256 articles from Science Direct, 362 articles from Ebsco, 246 articles from ProQuest and 152 articles from Scopus. The details of the identification and journal selection process can be seen in Figure 1. The results of the appropriate article selection were then given serial numbers to facilitate the review.

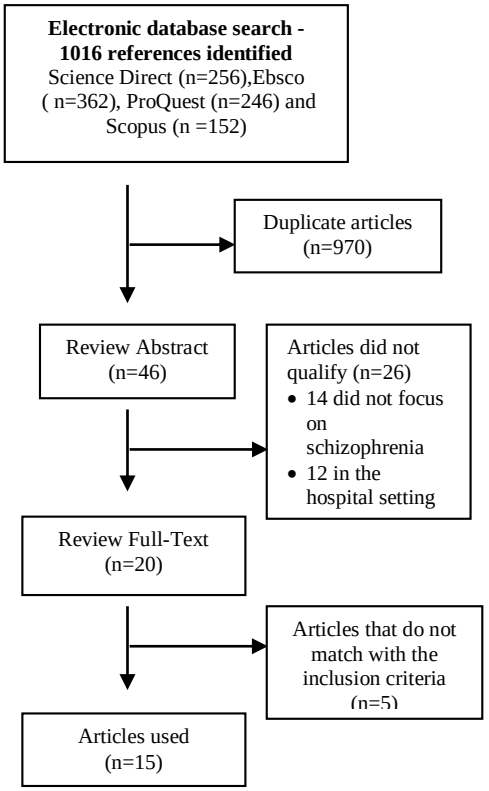

Fig 1. Flow diagram of the study selection.

This study reviewed 15 articles that matched the inclusion criteria. This articles included cross-sectional and qualitative studies: 14 articles used a cross-sectional study ([6][3][4][7][10][11][12][13][14][15][16][17][18]) and 1 article was qualitative [19]. The articles came from several countries: India had 4 articles[6][7][10][11], Spain had 1 article [3],

NewYork had 1 article[19], Turkey had 1 article[16], Brazil had 1 article[4], South Africa had 1 article[13], Arica Chile had 2 articles[15][8] and 4 articles came from China[12][14][18][17].

Most studies in this review were conducted with the parents, spouses[3] and family caregivers of schizophrenia patients in the community[14], as they were the main caregiver of the family [4]. The primary caregiver was identified as the person who provided the most support, thus devoting the largest number of hours each day to taking care of the patient[18].

Most articles defined burden as a negative result experienced when providing care for someone whose condition is disturbed[8][15][20]. These negative experiences in turn have a negative impact [13].

Caregiver burden is the extent to which the caregiver feels a negative emotional condition, impaired physical health, social life and financial status when providing care for their client [8][11].

Several studies have shown that families who care for family members with schizophrenia experience a high burden. Caregiver burden is defined as a psychological condition plus a combination of physical, emotional and social stresses, such as the economic limitations that arise as a result of caring for patients [8][11].

The term 'burden of care' is used to describe the consequences or adverse effects of caring for patients with mental disorders felt by the family caregivers [20].

The burden of care in recent years has been expanded, and it now involves the physical, psychological, social and financial problems experienced by the families caring their for relatives with chronic or mental illness [11][13].

Following the review of the articles, generally there are two kinds of burden: objective burden and subjective burden[3]. Objective burden refers to the consequences of the caregiving tasks on the caregivers' household activities, such as their economic resources, health and free time activities[3][4][11]. Subjective burden refers to the emotional burden of care, such as feelings of guilt, worries about the future[4][11], the caregivers' negative appraisal of their circumstances and feelings of loss, guilt, shame and anger[3].

Some studies have showed that there are several factors that influence the level burden of the family providing care, which includes the patient's condition, gender, the client's level of disability, family coping, a sense of coherence, level of education, level of income and marital status [3][4][7][10][13].

Based on a review of the articles, the global factors that influence the burden are the caregiver factors[3][13], client factors[10][4][13] and environmental factors, primarily social support (family and friends), satisfaction with the support provided by professionals and the accessibility of care resources[3][13].

4. Discussion

The need for care provided to older adults with schizophrenia results in changes in the family dynamics. These changes cause stress to the family members, especially the family caregivers who live with their patients. This is because it will reduce their ability to provide care and support to other families. The caregiving situation can be defined as the caregivers'

perception of the burden based on how they are impacted by evaluating and assimilating the patient care needs[3].

The results showed that most of the families of patients with schizophrenia experience a high level of burden[10][13][15][21].

Overall, the definition of burden is the same as negative effects while caring for people who are sick (schizophrenic client). The impact can be on the household (objective burden) or on the feelings involved (subjective burden). Burden is known as the physical, psychological, emotional, social and financial problems felt by the family when caring for schizophrenic clients [8][20][19][11][7][13][4][22][10][18].

Most of the articles classified there as being two kinds of burden; objective burden and subjective burden[3][8]. Objective burden explained in detail includes ignoring other family members, the disruption of the family in social relations, marriage problems, disruption and obstacles in terms of daily social activities, relaxing, social isolation and a lack of social support, the withdrawal of support or a loss of contact with their friends, family and neighbors, a loss of employment, income or decreased productivity/increased absenteeism, increased medical costs and financial problems, increased workload and taking over tasks such as shopping, repairing, washing clothes and small tasks, changing household routines, ignoring hobbies, difficulties in going on vacation, difficulties in inviting people into the home, obligations to supervise and having to accompany the patients outside the home, having a chaotic lifestyle and poor quality of life, needing ongoing care services and experiencing disease-related stigma [13].

Subjective burden describes guilt and self-blame because they do not recognize the symptoms early and / or because of the causes of the disease. There is also apathy and the rejection of disease, feelings of loss (from potential family members due to illness), worry especially about the patient's future, fear (especially violence), tension, anxiety, grieving, sadness, crying and stress, which causes depression. The problems of emotional well-being include mental health and psychological morbidity, while the physical problems include withdrawal, revenge, confusion, a loss of hopeless control and frustration, in addition to helplessness and despair, loneliness and emptiness, shame in social situations, humiliation and the feeling of not having the power to influence the disease even if they have to sacrifice themselves. They also feel unable to care for thir patients adequately, in addition to motional fatigue and the confusion of the increased energy released to overcome the behavior of the patients with psychotic symptoms, poor self-care, poor medication adherence, a lack of sleep, low self-esteem, a feeling of inferiority, feeling marginalized and lacking support[13][19].

Based on this review, there are several factors associated with the burden. These factors include the caregiver’s demographic factors, such as gender, economic status, occupation and the time spent per day caring for the client [3][13][10]. Clients with schizophrenia may experience disturbances in their thought process that affect their behavior. Their behavior is strange and sometimes dangerous for themselves, such as suicide ideation[13][23] or violence to her/himself and/or to others [13]. In addition, the disease can recur during treatment and recovery[24].

Patients with schizophrenia are often hospitalized and usually require long-term care and treatment. Although there are several factors associated with the burden of caring for people with schizophrenia, the most important is how the caregivers are able to use coping techniques and utilize social support [7]. Both of these factors acts as a buffer for stressors[6][10]. In addition, strategies to overcome and receive more practical support from their social networks have been shown to reduce the family burden over time [13].

Regarding age, several articles reported that, when looking into the families caring for family members with schizophrenia in China, the results showed that caregiver age was positively correlated with caregiver burden. When the caregivers were the oldest, they were worried about who would continue on the caring in the future[12]. Older carers are unable to provide good care for their sick family members. The age of the caregivers when they are younger have better human senses while caring for their sick family members [11][12].

Concerning gender, women have higher scores in terms of burden and depression. Women are dominant in terms of spending more time caring[10][12].

Several articles have investigated the relationship between the caregiver's demographic characteristics and the family when providing care for their family members with schizophrenia in China[16][25]. The results showed that level of education had a negative correlation with the burden of care. It is assumed that the higher the level of education, the higher the salary that will be obtained. A high salary will reduce the financial problems related to care for sick family members[12][13][25]. The education level of the caregivers also tends to indicate that have more knowledge to deal with tense events. Therefore the level of caregiver education affects the burden of care[26].

Several studies showed that a low income was associated with a higher level of burden on the caregivers[13][7]. Having a lower income is a stressor that affects the feelings of stress while providing care for sick family members. In addition to the caregivers who care for sick family members, they also have to solve their financial problems and find sources of money[27].

The best predictor of caregiver burden is health status [25][28]. Caregivers with a good health status find that the perceived level of subjective burden will be lower.

The time spent caring per day is related to the overall burden. There is a significant positive correlation between the hours of care per day and the caregiver burden. The higher the number of hours spent giving care per day, the greater the burden of care [12][13][29]. The more time that is spent caring, the more that the objective burden felt by the caregivers is higher. This is have they have less time for themselves. Finally, it has an impact on the burden of the caregivers in carrying out their daily activities [25].

The client factor that influences burden is the age of the client. There is a correlation between the age of the client and the subjective burden felt by the caregivers. Young patients with schizophrenia have not be able to care for themselves, and they may only be in the early stages of the disease[13][22][25]. One of the articles described schizophrenia in the elderly as a more complex problem concerning the aging process and about the signs and symptoms of psychosis[2]. Both younger and more elderly patients with schizophrenia are significantly associated with a higher level of burden.

Clinical symptoms and disability has an influence on caregiver burden. Some of the previous studies have found that clinical symptoms and disabilities are the predictors of caregiver burden[11][12]. Positive symptoms cause a higher burden than negative symptoms[4]. Other factors that influence burden include the severity of the patient[28].

For the availability of health services and the utilization of health services[3], a previous research study focused on 333 caregivers in Germany and 170 British caregivers with schizophrenia to compare the burden experienced by the caregivers in the different countries. The results showed that the British caregivers were more burdened with care than the German caregivers. The main cause of the differences in burden was the difference in the provision of mental health services. Germany has an average of 7.5 psychiatric beds per 10,000 inhabitants while the UK only has 5.8. Therefore, the care needs are not being met[30].

For social and family support, the results showed that perceived social support and perceived family function had a negative correlation with the burden of care. Good family functions have an impact on the better ability to adapt associated with effective preventions. The use of formal support received has a positive correlation with burden. The care burden will increase when the informal support cannot meet the needs of the caregivers[11][12][29]. Reduction burden was found in the families who received social support[6][13].

All of the articles reviewed had the same result, in that the family caregiver caring for people with schizophrenia experienced a high burden, and that there are many factors that can influence the level of burden. The findings of this review indicate that the articles have implications for nursing and research practices.

In the area of nursing practice, this will provide basic information for the nurses, specially nurses in the community who are providing appropriate care to the family as caregivers to reduce the burden while the caregiver is caring for their family member with schizophrenia. For further research, it is expected for the researcher to investigate how the caregivers can reduce the burden, such as the use of different kinds of family support, social support and the determination of the best intervention to reduce the burden on the family caring for the elderly with schizophrenia.

5. Conclusion

The results of the review of the articles showed that the family caregivers who cared for older adults with schizophrenia experienced a high burden. For most of the articles, the definition of burden was the same. Burden was the negative impact incurred while caring for a family member who is sick involving physical, psychological, social and financial factors. There are two kinds of burden, namely objective and subjective. There are many factors that influence caregiver burden, including socio-demographics, the characteristics of the caregivers, the patient factors and the environmental factors.

Some studies cannot be generalized because of the different cultures involved. The previous research was conducted in Western countries and on small research samples.

References

[1] M. Krause, M. Huhn, J. Schneider-thoma, P. Rothe, R. C. Smith, and S. Leucht, "Antipsychotic drugs for elderly patients with schizophrenia : A systematic review and meta-analysis," pp. 1–11, 2018.
[2] P. D. Meesters et al., "The Care Needs of Elderly Patients With Schizophrenia Spectrum Disorders," Am. J. Geriatr. Psychiatry, vol. 21, no. 2, pp. 129–137, 2013.
[3] J. M. Ribé, M. Salamero, C. Pérez-testor, J. Mercadal, C. Aguilera, and M. Cleris, "Quality of life in family caregivers of schizophrenia patients in Spain : caregiver characteristics , caregiving burden , family functioning , and social and professional support," Int. J. Psychiatry Clin. Pract., vol. 0, no. 0, pp. 1–9, 2017.
[4] L. M. Mantovani, R. Ferretjans, I. M. Marçal, A. M. Oliveira, and F. C. Guimarães, "Family burden in schizophrenia: the influence of age of onset and negative symptoms," vol. 38, no. 2, pp. 96–99, 2016.
[5] K. Bademli and Z. Çetinkaya, "Archives of Psychiatric Nursing Effects of a Family-to-Family Support Program on the Mental Health and Coping Strategies of Caregivers of Adults With Mental Illness : A Randomized Controlled Study," vol. 28, pp. 392–394, 2014.
[6] S. Stanley, S. Balakrishnan, S. Ilangovan, S. Stanley, S. Balakrishnan, and S. Ilangovan, "Psychological distress , perceived burden and quality of life in caregivers of persons with schizophrenia Psychological distress , perceived burden and quality of life in caregivers," vol. 8237, no. April, 2017.
[7] N. Kate, S. Grover, P. Kulhara, and R. Nehra, "Relationship of caregiver burden with coping strategies , social support , psychological morbidity , and quality of life in the caregivers of schizophrenia," vol. 6, pp. 380–382, 2013.
[8] A. Caqueo-urízar, A. Urzúa, R. Jamett, and M. Irarrazaval, "Author ' s Accepted Manuscript," Psychiatry Res., 2016.
[9] W. Cochrane, "Cochrane Handbook for Systematic Reviews of Interventions information," pp. 1–50.
[10] S. Stanley, S. Balakrishnan, and S. Ilangovan, "Social Work in Mental Health Correlates of caregiving burden in schizophrenia : A cross-sectional , comparative analysis from India," Soc. Work Ment. Health, vol. 00, no. 00, pp. 1–24, 2016.
[11] A. Jagannathan, J. Thirthalli, A. Hamza, H. R. Nagendra, and B. N. Gangadhar, "Predictors of family caregiver burden in schizophrenia : Study from an in-patient tertiary care hospital in India," Asian J. Psychiatr., vol. 8, pp. 94–98, 2014.
[12] J. Li, C. E. Lambert, and V. A. Lambert, "Predictors of family caregivers ' burden and quality of life when providing care for a family member with schizophrenia in the People ' s Republic of China," no. 2007, pp. 192–198, 2018.
[13] G. Lippi, "Schizophrenia in a member of the family : Burden , expressed emotion and addressing the needs of the whole family," pp. 1–7, 2016.
[14] Y. Yu, Z. Liu, B. Tang, M. Zhao, X. Liu, and S. Xiao, "Reported family burden of schizophrenia patients in rural China," pp. 1–18, 2017.
[15] A. Caqueo-urízar, M. Alessandrini, A. Urzúa, X. Zendjidjian, L. Boyer, and D. R. Williams, "Caregiver ' s quality of life and its positive impact on symptomatology and quality

of life of patients with schizophrenia," pp. 1–9, 2017.
[16] K. Betül and L. Küçük, "Archives of Psychiatric Nursing Care Burden Level and Mental Health Condition of the Families of Individuals With Mental Disorders," vol. 30, pp. 47–54, 2016.
[17] A. Leng, C. Xu, S. Nicholas, J. Nicholas, and J. Wang, "Archives of Psychiatric Nursing Quality of life in caregivers of a family member with serious mental illness : Evidence from China," Arch. Psychiatr. Nurs., no. August, pp. 1–7, 2018.
[18] Y. Zhou, Y. Ning, R. Rosenheck, B. Sun, J. Zhang, and Y. Ou, "Effect of living with patients on caregiver burden of individual with schizophrenia in China," Psychiatry Res., vol. 245, pp. 230–237, 2016.
[19] M. Hernandez, "Perceptions of Subjective Burden Among Latino Families Caring for a Loved One with Schizophrenia," no. 1966, 2015.
[20] S. W. Chan, "Global Perspective of Burden of Family Caregivers for Persons With Schizophrenia," Arch. Psychiatr. Nurs., vol. 25, no. 5, pp. 339–349, 2011.
[21] A. . Maldonado, J.G., Urı´zar, "Effectiveness of a psychoeducational intervention for reducing burden in latin american families of patients with schizophrenia," Qual. Life Res., 2007.
[22] P. Sagut and Z. Çetinkaya, "Archives of Psychiatric Nursing Comparison of Caregiver Burden in First Episode Versus Chronic Psychosis," Arch. Psychiatr. Nurs., 2016.
[23] M. Pompili et al., "Completed suicide in schizophrenia : Evidence from a case-control study," Psychiatry Res., vol. 167, no. 3, pp. 251–257, 2009.
[24] D. Tristiana, A. Yusuf, R. Fitryasari, S. D. Wahyuni, and H. E. Nihayati, "Perceived barriers on mental health services by the family of patients with mental illness," Int. J. Nurs. Sci., 2018.
[25] M. Liu, C. E. Lambert, and V. A. Lambert, "Caregiver burden and coping patterns of Chinese parents of a child with a mental illness," 2007.
[26] A. Sefasi, Æ. N. Crumlish, Æ. P. Samalani, Æ. A. Kinsella, Æ. E. O. Callaghan, and H. Chilale, "A little knowledge : Caregiver burden in schizophrenia in Malawi," pp. 160–164, 2008.
[27] D. Rofail, A. Regnault, S. Scouiller, J. Lambert, and S. H. Zarit, "Assessing the impact on caregivers of patients with schizophrenia : psychometric validation of the Schizophrenia Caregiver Questionnaire (SCQ)," BMC Psychiatry, 2016.
[28] S. Hou, C. K. Ke, and Y. Su, "Exploring the burden of the primary family caregivers of schizophrenia patients in Taiwan," pp. 508–514, 2008.
[29] C. Jun, H. Chang, I. P. Chen, and H. Hung, "Social support and caregiving circumstances as predictors of caregiver burden in Taiwan," vol. 48, pp. 419–424, 2009.
[30] C. Roick, D. Heider, M. Toumi, and A. Mc, "The impact of caregivers Õ characteristics , patients Õ conditions and regional differences on family burden in schizophrenia : a longitudinal analysis," pp. 363–374, 2006.

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FACTORS THAT AFFECT SURVIVAL RATE IN PATIENTS OUT HOSPITAL CARDIAC ARREST (OHCA)

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ABSTRACT

Out-of-Hospital Cardiac Arrest (OHCA) is a major problem causing death outside the hospital and also is a challenge for health workers. Various factors that influence the rate of safety of OHCA patients need to be considered so that the provision of assistance can run optimally. Thepurpose of writing this article is to find ou survival rates in OHCA patients and what factors influence them.The method used is a systematic review of factors that affect the survival rate in OHCA patients. Article searches were conducted on several databases, Scopus, Science direct, Pubmed, and Proques. From the results of a review of 17 selected articles it was found that the survival rate varied between 4.1% and 50.5% with the most influencing factors found in the selected articles, namely:- trained helper, speed of time response, prehospital defibrilation,duration of CPR, female sex, and non-trauma cases. Factors involved in determining the survival rate in OHCA patient are trained helper factors, the speed of give help,and the technique of giving heart pulmonary resuscitation.

Keywords: out of hospital cardiac arrest, survival rate, predicting factor, cardiopulmonary resuscitation

1. Introduction

Out-of-Hospital Cardiac Arrest (OHCA) is a major problem causing death outside of the hospital and it is a challenge for the health personnel system [1]. OHCA is also a major health problem that occurs in the community. The delivery of patients using ambulances quickly followed by cardiopulmonary resuscitation (CPR) and defibrillation by emergency medical service providers is the most important thing [2].

Overall, the survival of the patients admitted to hospital with ongoing CPR was very poor, because 39.2% of patients did not survive and CPR was stopped [3]. Out of hospital cardiac arrest (OHCA) is the leading cause of death within the context of hospital mortality, which is 70% [4]. OCHA which is unknown and immediately taken to hospital by lay people has a poor universal outcome [5].

The high mortality rate of OHCA patients is influenced by many factors: the first is their personal characteristics, such as age, sex, and comorbidity. Other factors like response time, transport distance, population density, and rural-urban differences are present. [6]'s study found out some of the positive linkages that affected OHCA survival including sex, events that occurred in the public area, exposure to an automated external defibrillator (AED), the use of the laryngeal mask airway (LMA), non-traumatic patients and ambulances passing by the house [6].

Actual CPR can actually increase the chances of the patients staying alive, but it is also necessary to know the factors that influence the outcome of help when performing CPR in OHCA

patients. Efforts need to be made to increase the awareness and empowerment of lay people in providing early CPR assistance before the arrival of ambulances or medical teams [7]. This study aims to determine the survival rate in OHCA patients and the factors that affect all OHCA patients, incluided events due to tobacco use, overweight, elevated blood pressure, blood cholesterol and diabetes.

2. Research Methods

2.1. Data sources and search

The journal search strategy began with asking the research question, namely "What factors influence the survival rate in OHCA patients?" The databases used for the journal searches were Scopus, PubMed, Science Direct and Proquest databases. The keywords used were "out of cardiac arrest hospital" AND "survival rate" AND "predicting factor" AND "cardiopulmonary resuscitation". The journals were limited to 2014 – 2018 for the publication years with areas of nursing, medicine, and English-language journals.

2.2. Article selection criteria

The feasibility of the study was assessed using the PICOT approach. The study population consisted of OHCA patients. The intervention used was the provision of CPR. Comparison - Output: OHCA patient survival rate and the factors that influence it.

The study inclusion criteria consisted of 1) survival rate in adult OHCA patients, 2) the factors that affect survival in adult patients and 3) pulmonary cardiac resuscitation techniques that affect the survival rate of OHCA patients.

2.3. Exclusion data

Research exclusion criteria refers to articles that discuss patients with cardiac arrest that occur inside the hospital and to OHCA patients that do not get help.

The authors searched for articles published in the Scopus, Pubmed, and ScienceDirect databases and found 29 articles approprite to the topics. Then the authors chose 17 articles by excluding articles that did not meet the inclusion criteria.

2.4. Research design

Of the 17 selected articles, most of them used a cross-sectional, cohort, retrospective and experimental design.

3. Results

This systematic review reviewed 17 selected articles originating from 3 continents, namely the Americas, the European continent and the Asian continent. The PRISMA flow of article selection has been shown in Figure 1. The articles from the Americas came from the USA and Canada, the European continent articles came from Denmark, France and the UK, and the Asian continent articles came from Japan, Taiwan, South Korea and Malaysia.

Articles from the Asian continent are expected to reflect the profile and characteristics of events and the management of cases of cardiac arrest that occur outside of hospitals in Asian communities. As a comparison of the occurrence and management of cardiac arrest cases that occur in developed

countries, we refer to articles from several developed countries, namely the USA, Canada, the UK, Denmark and France.

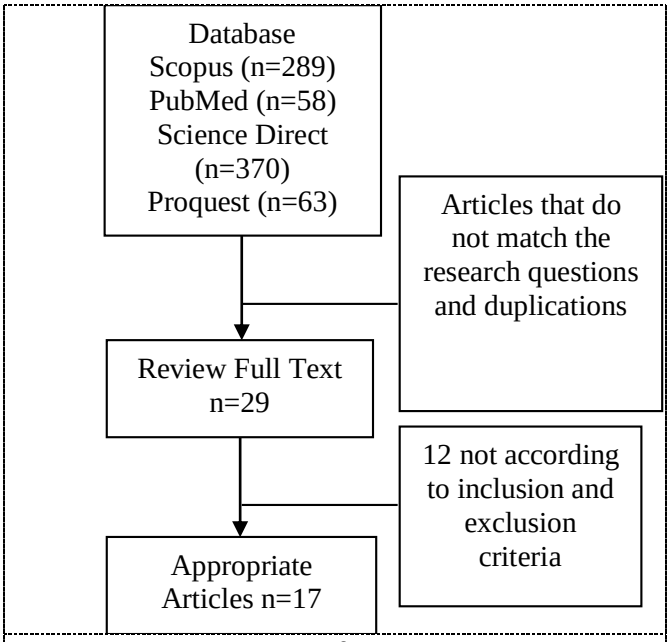

Figure 1. Study flow diagram

3.1. Respondent's Charateristics

The number of respondents in the selected articles varied between at least 21 respondents up to 85553 respondents, with variations in age between 40 to 75 years. All of the respondents were individuals who had experienced cardiac arrest outside the hospital, both in public areas and in private areas (eg houses). The number of samples and respondent characteristics have been illustrated in Table 1.

Table 1. Respondent's characteristic

Author	Number of Respondents	ROSC	Mean Age	Man	Woman
[6]	5838	961 (16,5 %)	<=65 : 2566 >65 : 3272	3727	2111
[5]	13291	1168 (8,8%)	71	8031	5260
[8]	3353	1692 (50,5%)	75	2087	1266
[1]	546	139 (25,5)	62	426	120
[9]	870	271 (31,1%)	57.59	754	116

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Author	Number of Respondents	ROSC	Mean Age	Man	Woman
[12]	404	123 (33.3%)	66.33 64.59	253	151
[13]	21	-	40-70 : 8 >70 : 13	15	6
[14]	Traumatic ohca: 3209 Medical ohca : 40878	Traumatic ohca: 14% Medical ohca : 20.4%	Traumatic ohca: 47,1 Medical ohca : 68,3	Traumatic ohca: 2407 Medical ohca: 26211	Traumatic ohca: 802 Medical ohca: 14667
[10]	6405	3155 (49,3%)	66.5	3952	2453
[15]	85553	16529 (37,3%)	67	28682	56871
[3]	uTOR: 83 non uTOR: 137	uTOR: 5 (6%) non uTOR: 46 (33,6%)	uTOR: 70 non uTOR: 70	uTOR: 51 non uTOR: 97	uTOR: 32 non uTOR: 40
[7]	98	22	48	73	25
[16]	779	217 (28,7%)	72	465	314
[4]	354	126 (35,6%)	64,9	262	92
[17]	Lucas 2: 1652 Manual: 2819	Lucas 2: 522 (32%) Manual: 885 (31%)	Lucas 2: 71,0 Manual: 71,6	Lucas 2: 1039 Manual: 1774	Lucas 2: 613 Manual: 1045
[11]	27301	7312 (26,8%)	71	17728	9573
[2]	41054	1693 (4,1%)	-	26366	14688

As can be seen in Table 2, the 24-hour survival rate is highly dependent on age; as the age increases, so too does this significantly affect survival and poor neurological results. Gender showed that there are relatively lower survival rates for female patients, as did the location of the incidence of cardiac arrest, intensive cardiac care, response time and when the event was witnessed [1]. The duration of heart massage is related to survival and favourable neurological results and it is more effective with a 45 minute CPR duration [8]. This indicates that the potential for survival depends on transportation, trained personnel and response time. They can start CPR before the ambulance arrives to maintain the ROSC with spontaneous circulation. From the results of the review, the results showed a higher rate of Return of Spontaneous Circulation (ROSC) in OHCA patients contained in

the table below, as in the OHCA patients found in the 17 selected articles.

Table 2. List of factors that indicate higher ROSC numbers

Factors that Show Higher ROSC Numbers	Author
Female Gender	Chien chou chen, Masahiro Kashiura, Jenna E Tuttle
Occurance in the Prehospital public	Chien chou chen
Prehospital defibrillation	Chien chou chen, Masahiro Kashiura, Seo Young Ko , Ki Hong Kim
Advanced airway management	Chien chou chen , Masahiro Kashiura
Non-traumatic case	Chien chou chen , Josephine Escutnaire, Ismail AK
Referred to the nearest hospital	Chien chou chen ,
High density public area	Chien Chou Chen,
Mechanical CPR	Ching-Kuo Lin
First responder	Seo Young Ko, Shang Li Tsai, Masahiro Kashiura, Shang Li Tsai, Jenna E Tuttle, Thomas C Sauter
Respon time	Shang Li Tsai, Seo Young Ko, Jenna E Tuttle
CPR >45 minutes	Masahiro Kashiura, Thomas C Sauter, Frederic Adnet
Younger age	Shang Li Tsai, Jenna E Tuttle

4. Discussion

Some studies on the success of help in OHCA patients have shown variable numbers the results. The success of CPR is influenced by various factors, namely the help factors, victim factors, and technical assistance. Ko et al [9] stated that assistants who have been trained to do CPR will increase the life expectancy and neurological improvement in OHCA patients as trained helpers do CPR more effectively, increase the frequency of CPR and defibrillators, and respond quickly and precisely to OHCA patients compared to a helper who is a layman.

Tuttle & Hubble [10] explained that paramedics who are trained and who had handled ≥15

OHCA patients increased spontaneous circulation by 21% compared to paramedics who had little experience of providing help. Sex also has an influence on the return of spontaneous circulation in OHCA patients. The study of Ak et al [7] found that female patients had a higher percentage of return of spontaneous circulation after experiencing cardiac arrest. This can be caused by the condition of past disease history, hypertension, diabetes mellitus and ischemic disease.

The technique of giving a heart massage can also have an affect where the depth of the chest compresses is less than optimal, which it can cause an increase in the safety rate of OHCA patients, . The duration of CPR implementation must also be considered by the helper. [8] states that a duration of 45 minutes for CPR administration can provide benefits towards neurological improvement and the survival of all OHCA patients.

The research by [11] also provides an overview of the No Flow intervals (NF; starting when cardiac arrest occurs at the beginning of CPR administration) and Low Flow intervals (LF; when giving CPR).

Low Flow is when giving CPR until the cessation of resuscitation. The NF interval greatly affects the LF interval. An NF duration of more than 18 minutes and an LF of more than 33 minutes results in a 1% chance of life in OHCA patients. The duration of CPR giving for more than 40 minutes can increase life chances by more than 1%.

In addition to the duration of CPR administration, the determination to stop CPR also affects the level of safety of the OHCA patients. The decision to stop help causes irreversible complications and various neurological responses [5] [3].

5. Conclusion

The success of CPR for out of hospital cardiac arrest patients is influenced by various factors, namely the helping factor, victim factor and helper factor. The provision of CPR for out of hospital cardiac arrest patients performed by trained helpers will increase life expectancy and neurological improvement in OCHA patients compared to laypeople. Sample limitations, CPR administration techniques and time constraints played a part, as did the duration that the patients were on location before the ambulance arrived.

References

[1] Tsai S, Chaou C, Huang C, Tzeng I and Kuo C 2017 American Journal of Emergency Medicine Features of hospital and emergency medical service in out-of-hospital cardiac arrest patients with shockable rhythm *Am. J. Emerg. Med.* 6–11

[2] Kim K H, Shin S Do, Song K J, Ro Y S, Kim Y J, Hong K J and Jeong J 2017 American Journal of Emergency Medicine Scene time interval and good neurological recovery in out-of-hospital cardiac arrest ☆ *Am. J. Emerg. Med.* **35** 1682–90

[3] Yates E J, Schmidbauer S, Smyth A M, Ward M, Dorrian S, Siriwardena A N, Friberg H and Perkins G D 2018 Out-of-hospital cardiac arrest termination of resuscitation with ongoing CPR : An observational study *Resuscitation* **130** 21–7

[4] Sauter T C, Iten N, Schwab P R, Hautz W E, Ricklin M E and Exadaktylos A K 2017 Out-of-hospital cardiac arrests in Switzerland : Predictors for emergency department mortality in patients with ROSC or on-going CPR on admission to the emergency **126** 1–11

[5] Inokuchi S, Masui Y, Miura K, Tsutsumi H, Takuma K, Atsushi I, Nakano M, Tanaka H, Ikegami K, Arai T, Yaguchi A, Kitamura N, Oda S, Kobayashi K, Suda T, Ono K, Morimura N, Furuya R, Koido Y, Iwase F, Nagao K, Kanesaka S, Okada Y, Unemoto K, Sadahiro T, Iyanaga M, Muraoka A, Hayashi M, Ishimatsu S, Miyake Y, Yokokawa H, Koyama Y, Tsuchiya A, Kashiyama T, Hayashi M, Oshima K, Kiyota K, Hamabe Y, Yokota H, Hori S, Inaba S, Sakamoto T, Harada N, Kimura A, Kanai M, Otomo Y, Sugita M, Kinoshita K, Sakurai T, Kitano M, Matsuda K, Tanaka K, Yoshihara K, Yoh K, Suzuki J, Toyoda H, Mashiko K, Shimizu N, Muguruma T, Shimada T, Kobe Y, Shoko T, Nakanishi K, Shiga T, Yamamoto T, Sekine K and Izuka S 2017 A New Rule for Terminating Resuscitation of Out-of-Hospital Cardiac Arrest Patients in Japan: A Prospective Study *J. Emerg. Med.* **53** 345–52

[6] Chen C, Chen C, Ho C, Liu I and Lin B 2015 Spatial Variation and Resuscitation Process Affecting Survival after Out-of-Hospital Cardiac Arrests (OHCA)

[7] Ak I, Mi J, Ni M S and Na H 2016 Outcome of Early Cardiopulmonary Resuscitation in Out-of-Hospital Cardiac Arrest Managed in Universiti Kebangsaan Malaysia Medical Centre **11** 38–46

[8] Kashiura M, Hamabe Y, Akashi A, Sakurai A, Tahara Y and Yonemoto N 2017 Association between cardiopulmonary resuscitation duration and one-month neurological outcomes for out-of-hospital cardiac arrest : a prospective cohort study 1–9

[9] Ko S Y, Ro Y S, Shin S Do, Song K J, Hong J and Kong S Y 2018 Effect of a first responder on survival outcomes after out-of-hospital cardiac arrest occurs during a period of exercise in a public place **51** 1–12

[10] Tuttle J and Hubble M 2018 Paramedic Out-of-hospital Cardiac Arrest Case Volume Is a Predictor of Return of Spontaneous Circulation *West. J. Emerg. Med.* **19** 654–9

[11] Chevret S, Escutnaire J, Guenin A, Hoogvorst A and Reuter P G 2017 Cardiopulmonary resuscitation duration and survival in out-of-hospital cardiac arrest patients *Resuscitation* **111** 74–81

[12] Lin C K, Huang M C, Feng Y T, Jeng W H, Chung T C, Lau Y W and Cheng K I 2015 Effectiveness of mechanical chest compression for out-of-hospital cardiac arrest patients in an emergency department *J. Chinese Med. Assoc.* **78** 360–3

[13] Linderoth G, Hallas P, Lippert F K, Wibrandt I, Loumann S, Palsgaard T and Østergaard D 2015 Challenges in out-of-hospital cardiac arrest – A study combining closed-circuit television (CCTV) and medical emergency calls *Resuscitation* **96** 317–22

[14] Escutnaire J, Genin M, Babykina E, Dumont C, Javaudin F, Baert V, Mols P, Gräsner J T, Wiel E, Gueugniaud P Y, Tazarourte K and Hubert H 2018 Traumatic cardiac arrest is associated with lower survival rate vs. medical cardiac arrest – Results from the French national registry *Resuscitation* **131** 48–54

[15] Zive D M, Schmicker R, Daya M, Kudenchuk P, Nichol G, Rittenberger J C, Aufderheide T, Vilke G M, Christenson J, Buick J E, Kaila K, May S, Rea T and Morrison L J 2018 Survival and variability over time from out of hospital cardiac arrest across large geographically diverse communities participating in the Resuscitation Outcomes Consortium *Resuscitation* **131** 74–82

[16] Viereck S, Palsgaard T, Kjær A, Stokholm J, Claesson A, Hollenberg J, Folke F and Lippert F K 2017 Recognising out-of-hospital cardiac arrest during emergency calls increases bystander cardiopulmonary resuscitation and survival *Resuscitation* **115** 141–7

[17] Perkins G D, Lall R, Quinn T, Deakin C D, Cooke M W, Horton J, Lamb S E, Slowther A, Woollard M, Carson A, Smyth M, Whitfi R, Williams A, Pocock H, Black J J M, Wright J and Han

EPD-641

K Mechanical versus manual chest compression for out-of-hospital cardiac arrest (PARAMEDIC): a pragmatic , cluster randomised controlled trial 947–55

EPD-680

PERIPHERAL INTRAVENOUS CANNULA (PIVC) ASSESSMENT SKILLS: DO NURSES PERFORM AND DOCUMENT IT CORRECTLY?

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ABSTRACT

Peripheral Intravenous Cannula (PIVC) is a standard procedure carried out in the hospital to allow rapid and accurate administration at medication. However, the placement of an intravenous cannula can have undesirable effects; the most common is phlebitis. It is an irritation of tunica intima layers of the superficial vein which is caused by mechanical, chemical or bacterial sources. In Malaysia, the incidence of phlebitis had become a national nursing indicator with a standard of less than 0.9%. The standard care of the patient with intravenous includes a routine PIVC assessment. However, what the assessment should be based on remain unclear. Do nurses perform this assessment using the same method? This study uses an audit-based approach to determine nurses' existing assessment technique during PIVC routine checking. Data analysis was carried out using the Statistical Package of Social Sciences latest version. Results of the study revealed that palpation techniques often not been carried out as compared to observation technique. Palpation technique is crucial in order to detect 'warmth to touch' because it differentiates between the early stage of phlebitis or medium stage.

Keywords: peripheral intravenous cannula (PIVC), phlebitis assessment, thrombophlebitis

1. Introduction

A peripheral intravenous cannula (PIVC) is a standard procedure carried out in the hospital to allow rapid and accurate administration at medication[1]. It is a minor invasive procedure which usually performed in a hospital. Nowadays, the usage of PIVC among hospital inpatients increased significantly, where 30-80% of patients were reported to have had at least one PVC inserted during their hospital stay [2]. The epidemiology of complication is less well described among pediatric than adults[3].Because cannulation is done for different purposes and for different lengths of time, it represents a potential risk for some safety incidents, including microbial growth[4]which can cause an infection into the local tissue at the site of cannulation or direct into the bloodstream. Without proper management, it can lead to severe complications, which is phlebitis. Thus, this study aims to determine the nurses' assessment of PIVC checking to identify any occurrence of phlebitis. This research is similar to a study conducted by Coomarasamy in 2014 in one of the established teaching hospitals. However, in this study, the researcher will be more focus on how the nurses' in the pediatric setting performing PIVC assessments.

PIVC - related phlebitis is an inflammation of the tunica intima of a superficial vein caused by the presence and use of a PIVC[5]. It can be diagnosed clinically based on the appearance of at least

two of the following signs: pain, erythema, swelling, induration or a palpable venous cord near the site of the venous catheter. PIVC allows for the rapid and accurate administration at medication. However, the placement of an intravenous cannula can have undesirable effects; the most common is phlebitis.

The predisposing factor of PIVC-related phlebitis divided into two: patient-related and PIVC-related characteristics. A patient-related characteristic, such as age and gender, influence the occurrence of phlebitis[9]. A patient whose age is > 65 years and men were more likely to develop PIVC-related phlebitis [9]. Patient's condition, such as immunosuppression, circulatory impairments, and malnutrition, have been shown to increase the risk of phlebitis[6]. One study found that the increase of PIVC-related phlebitis caused by lack of agreement on a definition of PVC-related phlebitis and the use of different measurement tools to identify phlebitis [10]. Apart from the undesirable effects; such as discomfort and pain, few studies reported that material and cannula size, insertion site and placement technique, duration of site use[7] and type solution infused [8]influence the occurrence of phlebitis.

In one observational study conducted by a tertiary government hospital, it had been found that 35.2% of the 428 medical and surgical patients with peripheral cannula developed thrombophlebitis[9]. To add on, the rate of thrombophlebitis in a private specialist hospital in Malaysia had reported that 6.8% in 2011, and it decreased to 3.1% in 2012 and even further to 2.5% from January – June 2013. The reduction of thrombophlebitis is due to the implementation of the protocol from the above findings[10]. The acceptable phlebitis rate, according to the Intravenous Nurses Society, is 5% or less in any given population[11]. In Malaysia, the incidence of thrombophlebitis among adult clients with PIVC is a national nursing indicator with a standard of less than 0.9%[12].

Recently, the relationship between nursing care and the incidence of PVC-related phlebitis has been in much concern among the researchers. The risk of PVC-related phlebitis has been reported to be lower when patients are cared for by an experienced nurse, and when nurses follow evidence-based guidelines[13].Nevertheless, ensuring compliance with the available protocol[14]are often impossible due to high workloads in the wards such as an increase in the number of patients that a nurse is required to care for communication failures within the healthcare team, and shortages of resources at the bedside[15]. The amount of nursing care given to patients daily, the proportion of care offered by graduate nurses educated to university level, and the skills mix of the nursing staff have mainly been associated with unfavorable clinical outcomes[16].

All patients with PIVC should have the access site checked at least at every shift. There some phlebitis assessment scale has been developed to be widely used in most Malaysian hospitals. However, the most commonly used are the Visual Infusion Phlebitis (VIP) scale. The VIP scale is a valid and reliable measure for determining when an intravenous catheter should be removed [17]. The technique used to perform VIP assessment not only visual but through palpation and communication with patients. Figure 1 shows the VIP scale used by nurses to assess the cannula.

The aim of this study was to identify the incidence of phlebitis in pediatrics setting and to observe nurses' PIVC assessment skills in recognizing phlebitis.

2. Methods

This research design was descriptive and analytical using a cross-sectional approach analysis

that was conducted over six months in a pediatric ward setting. The study was conducted in one of the biggest maternal and pediatric hospitals and involved six multidisciplinary medical-surgical wards and four intensive care unit ward. The respondents were identified from the hospital staff starting from Jan 2017 to the end of Jun 2018. The sample size calculation was determined using the Raosoft Software. Considering the 5% margin of error and 95% confidence level, with a 110 population size and 10% dropouts, the total sample was 86. The potential respondents were selected from the pediatric ward. The response rate was low at only 65.1% due to a dengue outbreak causing human resource constraints. All appointed registered nurse (RN) researchers were unable to perform PIVC-AS on the selected respondents within the time frame allocated. The inclusion criteria were all registered nurses working in the medical and surgical pediatric ward involved directly in providing PIVC care. The exclusion criteria were all paramedics or those with a working experience of less than three months, where the staff worked in the clinic.

Two RN researchers were identified in each ward/unit (total of 18 researchers) to perform PIVC assessment skills among respondents. The selection of the RN researchers was appointed by the nurse manager of the hospital based on their experience and if they had attended PIVC care training. The RN researchers evaluated the respondents within the time frame of this research. The selection of the ward was based on the total incidence rate from the ward obtained from the infection control unit. One RN researcher specializing in infection control was appointed to evaluate the presence of phlebitis daily through the direct observation of the PIVC sites using the VIP scale (Figure 1). The incidence rate of phlebitis was calculated based on the following formula; the number of new cases divided by the number of assessed PIVC x 100. The grades of phlebitis will be identified based on phlebitis scale reported using Visual Infusion Phlebitis (VIP) scale. Upon the highest incidence of phlebitis being found among the wards, the researcher identified the PIVC-assessment skills, and the data collection was carried out after. Next, the participants were selected by the team leader in each ward to perform the PIVC assessment among the nurses. PIVC-AS was performed twice, based on the incidence of phlebitis being every two months. Figure 2 shows the recruitment and data collection process. The data analysis was performed using the Statistical Package of Social Sciences version 23.0 software. The incidence of phlebitis was assessed based on the number of cannulas inserted in the past six months. The audit criteria's performance and monthly incidence rate pattern have been displayed in the form of a chart and percentage.

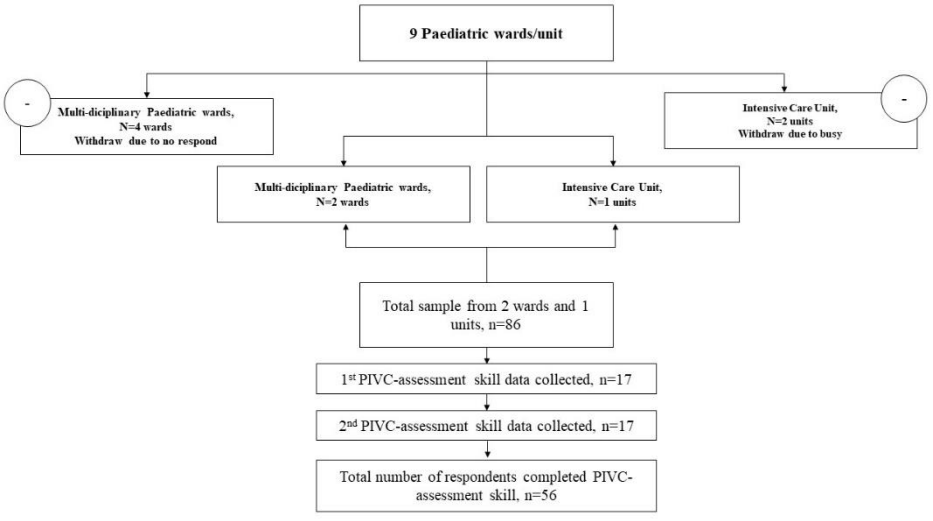

Figure 2 – Recruitment of the participants and the data collection process

The research instruments were two appointed RN researchers. Each ward is responsible for assessing the nurses' PIVC assessment skills (PIVC-AS). The PIVC-AS checklist was adapted from Coomaraswamy [1] to measure the nurses' assessment skills. Nine steps need evaluation and they were rated as "entirely met," "partially met," and "not met." Marks will be awarded for each step. The full marks possible for the new rubric are 27. The following points below indicate the nine audit criteria.

1. Criteria 1: Introduce self and explain the purpose of PIVC to the client.
2. Criteria 2: Check the location and total number of PIVCs of the patient.
3. Criteria 3: Check the cannula size and the reason for the application.
4. Criteria 4: Is the PIVC checked every shift?
5. Criteria 5: Observe the PIVC area for evidence of erythema and swelling.
6. Criteria 6: Ask the client for any evidence of pain at the IVC site and along the cannula path.
7. Criteria 7: Palpate the PIVC area for any evidence of venous cord and warmth related to PIVC.
8. Criteria 8: Document the phlebitis score accurately.
9. Criteria 9: Perform the appropriate PIVC care based on the phlebitis score.

The study was approved by the National Institutional Health and Medical Research Ethics Committee (NMRR-17-2400-34037-IIR).

3. Results

3.1 Demographic data of the respondents

A total of 28 respondents were recruited from four different pediatric wards/unit. The majority, 60.3% (17), of the respondents were from intensive care units and 39.7% (11) were from pediatric multi-disciplinary wards. The mean age of the respondents 38.7; SD= 8.5, and 65.4% of respondents were women.

3.2 The incidence rate of phlebitis in maternal and child hospital in Sabah

A total number of 42,733 PIVCs were assessing from January through to June in this setting. The incidence rate of phlebitis in this study ranged between 0.03 – 0.07% for Jan – Jun 2018. This rate is congruent with the standard set by the Infusion Nurse Society in 2006. The most common grades of phlebitis were between grades 1 and 2 (88.2% and 11.8% respectively). The lowest incidence rate from Jan to Jun 2018 was in June, which was 0.03% (only 2 cases reported out of 7132). The highest number of incidences was in Jan and March, which were 0.07% (6 cases out of 8483 PIVCs for January and 4 cases out of 6807 PIVCs).

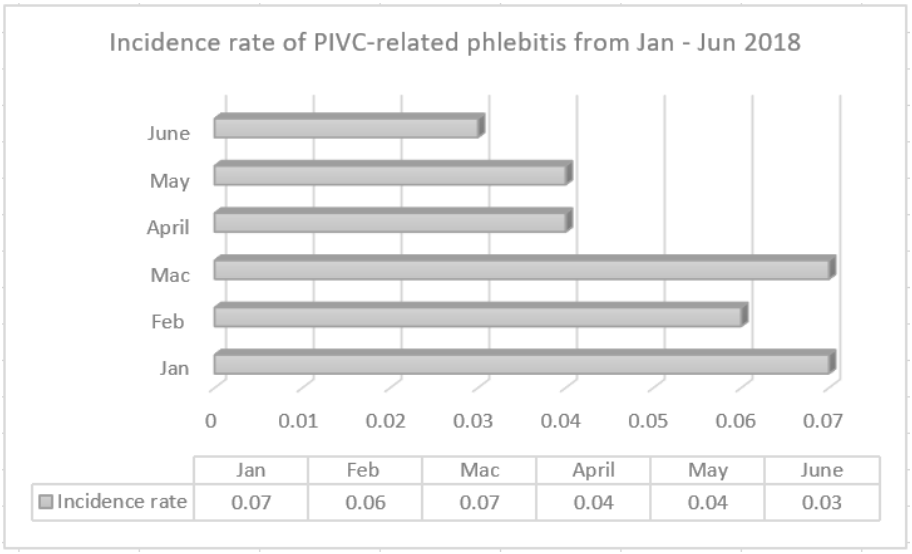

Figure 3 – The incidence rate of PIVC-related phlebitis from Jan - Jun 2018

3.3 PIVC assessment skill: Criteria Score

The audit criteria were based on the standard set by the nursing board. There are nine steps that need to be evaluated and these were divided into three categories; "entirely met," "partially met," and "not met." Marks will be awarded for each step and there needs to be time taken regarding the coefficient. The full marks available for this rubric are 27.

The compliance with the audit criteria was determined as follows (refer Figure 4). The first and second assessment was combined and summarized in the following bar chart. Based on the PIVC-AS checklist, step number 8 is "Document the phlebitis scored accurately" and step number 9 is "Perform the appropriate PIVC care based on the phlebitis score". These have the lowest compliance rate of 71.4% and 73.2% respectively. Step number 1 had the third lowest compliance rate (76.8% compliance). This low compliance rate can be explained by this study having been done in the pediatric setting. Most of the respondents lack communication skils due to handling a pediatric patient. The second lowest was step number 7: Palpate PIVC area for any evidence of venous cord and warmth PIVC (67% compliance).

Most of the respondents only depending on their visual judgment when performing PIVC assessment. Without palpation, the respondent will not be able to distinguish between phlebitis grade 2 and grade 3.

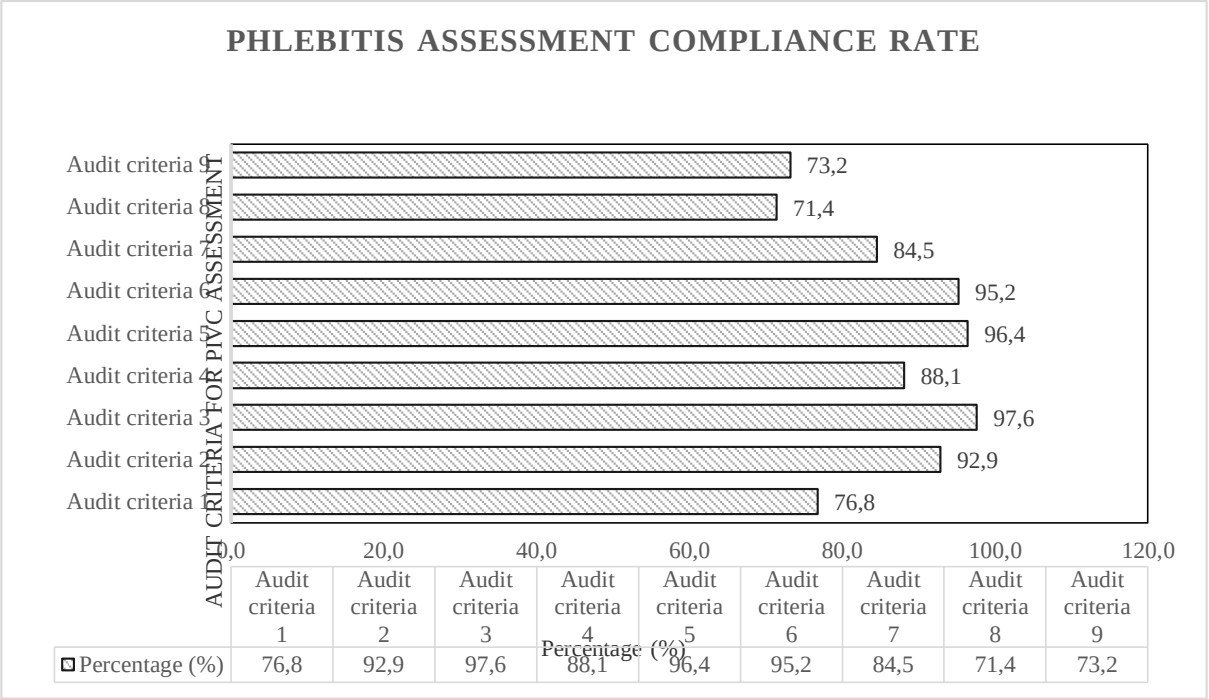

Figure 4 – PIVC assessment compliance rate

4. Discussion

This study investigated 42,733 PIVCs and the results showed that the total incidence for the past six months (January to Jun) 2018 ranged between 0.02 – 0.07%. This rate is still within the Intravenous Nurse Society's <5%. This study showed there to be similarities in terms of the incidence rate in two studies conducted by Urbanetto *et al.*[4] and Salgueiro *et al.*[18]. However, these two studies took place in an adult setting. In a study done by Cho *et al.* (2015), the incidence rate of phlebitis was 5.07% [19]. Compared to Nagpal *et al.* (2015), they reported that the incidence rate of phlebitis was 71.25% and that this was found to be higher for grade 2 phlebitis. This considerable difference needs to be explored further and it is suggested for future researchers to do a comparative study.

There is also the compliance rate of PIVC assessment among the nurses in a pediatric setting. Audit criteria 2, 3, 5 and 6 indicate that nurses able to perform PIVC assessment as per the nursing standard. Audit criteria 8 shows that the documentation of the phlebitis score accurately recommends that the nurses must use a valid document. Accurate documentation depends on the nurse's competency in performing the PIVC assessment. The knowledge of PIVC care must be given to the nurses to improve the accurate documentation. The compliance rate (below 80%) is still weak. From the researcher's opinion, the lack of this criterion is probably due to the nurses not seeing the importance of accurate documentation. It is recommended that continuous education, monitoring, reinforcement, tracking and the trending of compliance with this criterion has to be done frequently by the clinical nurse educator in each ward[1].

Audit criteria 9 indicates that performing the appropriate PIVC care based on the phlebitis score shows that the prolonged placement of PIVC has been associated with the incidence of phlebitis and catheter-related bloodstream infections. Thus, to reduce the risk of phlebitis and infection, the Centre for Disease Control and Prevention has recommended that small peripheral cannulas be re-sited

within 72 to 96 hours. This study showed that the majority of the incidence rate was in grade 1 and 2 phlebitis. These findings are consistent with the findings by Nagpal *et al.*(2015)[3]. Salgueiro (2012) also reported similar findings, in which the phlebitis grade 1 and 2 contributes 37.0% and 53.6% respectively[18].

Audit criteria 7 indicates that palpating the PIVC area for any evidence of venous cords and warmth related to PIVC shows that these criteria are crucial. The compliance rate was 84.5%. In this study, the researchers found that when performing the PIVC assessment, the majority of nurses did not perform the palpation technique. If referring to the VIP score (Figure 1), then grades 2 and 3 can be distinguished by the palpation technique. The inaccurate grading of the phlebitis score can lead to wrong nursing actions. In the pediatric setting, the patient's PIVC commonly is secured using a crepe bandage and a modifiable splint to prevent the PIVC accidentally being pulled out by the pediatric patients. Thus the palpation technique during the PIVC assessment was very seldom performed by the nurses. However, further research needs to be done to identify the reason for not performing the palpation technique.

This study has some limitations. First, the study did not involve random assignments. The researcher is aware that there was a potential for bias about the outcome because it was difficult to mask the nursing group. The outcome measures were obtained by the nurse who was not a part of the study team but one of the resident nurses in the ward. Second, the small sample size and multiple dependent variables such as ward condition and also patient condition which may increase the type I error rate, thus it limits the transferability of the results. Thus, the outcome of this research must be interpreted with caution when it comes to potential clinical application. It is suggested that further research may increase the total number of respondents and establish a detailed protocol on the selection of the participants. Lastly, despite these limitations, the knowledge offered in the present study is the first to report on the audit compliance rate among nurses in Borneo.

5. Conclusion

In conclusion, this study shows that the technique of palpation is often neglected by the nurses when performing the PIVC assessment. More research needs to be done and this should be conducted in a larger population. The outcome of this study supports the formation of a PIVC assessment checklist, especially for Infection Control Units.

References

[1] Coomarasamy J D, Wint N N and Saleh Z M 2014 Insertion and management of peripheral intravenous cannula in the adult medical wards of Universiti Kebangsaan Malaysia Medical Center: a best practice implementation project *JBI Database Syst. Rev. Implement. Reports***12** 534–51

[2] Zingg W and Pittet D 2009 Peripheral venous catheters: an under-evaluated problem *Int. J. Antimicrob. Agents***34** S38–42

[3] Nagpal P, Khera G K and Kumar Y 2015 A study Assess the Clinical Pattern of Phlebitis among children admitted in selected hospital of

[4] Urbanetto J de S, Peixoto C G and May T A 2016 Incidence of phlebitis associated with the use of peripheral IV catheter and following catheter removal. *Rev. Lat. Am. Enfermagem***24** e2746

[5] Saini R, Agnihotri M, Gupta A and Walia I 2011 Epidemiology of Infiltration and Phlebitis *Nurs. Midwifery Res. J.***7** 22–33

[6] Tan W Y J, Yeap J W and Syed Aznal S S 2012 Risk factors of peripheral venous catheterization thrombophlebitis *Int. E-Journal Sci. Med. Educ.***6** 24–30

[7] Webster J, Osborne S, Rickard C M and Marsh N 2019 Clinically-indicated replacement versus routine replacement of peripheral venous catheters *Cochrane Database Syst. Rev.***1** CD007798

[8] Washington G T and Barrett R 2012 Peripheral Phlebitis *J. Infus. Nurs.***35** 252–8

[9] Haque S 2013 *The performance analysis of private conventional banks: a case study of Bangladesh* (© 2013 IOSR Journal of Business and Management (IOSR-JBM))

[10] Abdul Aziz A R, Nishazini M B, Fazira S and Azizan N . 2013 Impact Of A Special Protocol (Integrated Intravenous Care) To Reduce Intravenous Thrombophlebitis:Sharing The Experience Of Kpj Seremban Hospital Malaysia *IOSR J. Bus. Manag.***13** 60–4

[11] Infusion Nurses Society (INS) 2016 Infusion Therapy Standards of Practice *J. Infus. Nurs.***39** S1–159

[12] Performance Indicators Hospital Accreditation Standards 2017 2017 *Performance indicators Hospital Accreditation Standards 2017* (Malaysian Society for Quality in Health)

[13] Ahlqvist M, Bogren A, Hagman S, Nazar I, Nilsson K, Nordin K, Valfridsson B S, Söderlund M and Nordström G 2006 Handling of peripheral intravenous cannulae: effects of evidence-based clinical guidelines *J. Clin. Nurs.***15** 1354–61

[14] Frigerio S, Di Giulio P, Gregori D, Gavetti D, Ballali S, Bagnato S, Guidi G, Foltran F and Renga G 2012 Managing peripheral venous catheters: an investigation on the efficacy of a strategy for the implementation of evidence-based guidelines. *J. Eval. Clin. Pract.***18** 414–9

[15] Kalisch B J and Williams R A 2009 Development and psychometric testing of a tool to measure missed nursing care. *J. Nurs. Adm.***39** 211–9

[16] Li X-F, Liu W and Qin Y 2016 Nurses' perception of risk factors for infusion phlebitis: A cross-sectional survey *Chinese Nurs. Res.***3** 37–40

[17] Higginson R 2011 Phlebitis: treatment, care and prevention *Nurs. Times***107** 18–21

[18] Salgueiro-Oliveira Msc A, Parreira P R and Veiga P *Incidence of phlebitis in patients with peripheral intravenous catheters: The influence of some risk factors AUTHORS* vol 30

[19] yen-hua C, Yen L-L, Yu K-L, Chang C-C and Chen H-L 2015 *[Reducing the Incidence of Phlebitis Related to Intravenous Injection in Pediatric Patients]* vol 62

EPD-705

GENERAL DESCRIPTION OF HEALTHCARE ASSOCIATED INFECTION (HAI) HOSPITALS DR. SOETOMO SURABAYA

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ABSTRACT

Healthcare Associated Infection (HAI) is an infection that occurs in patients who are hospitalized for more than 48 hours. HAI is the cause of increasing patient morbidity and mortality, so special care is needed. Prevention of HAI can be done optimally by performing hand hygiene and applying HAI bundles. The purpose of this paper is to describe the incidence of infection in health services at the Regional Hospital Dr. Soetomo Surabaya (RSDS). this paper uses a design description analysis. Data taken from preliminary studies, tables and analyzed, with a span of time from 2013 to 2017. Variables used included attitudes, knowledge, adherence to adherence to HAI, hand hygiene. Research shows the results of attitudes, knowledge, and age related to adherence to prevention of HAI. Prevention of HAI has not been done optimally because nurses have not done handhygiene and the application of bundles. Preventive compliance behavior HAI considers the background factor.

Keywords: healthcare associated infection, handhygiene

1. Introduction

The Regional General Hospital Dr. Soetomo is a hospital located in the city of Surabaya. It is often called the Karang Menjangan Hospital by the people of Surabaya because it stands in a village called Karangmenjangan. The Regional General Hospital Dr. Soetomo Surabaya is a state A class hospital by the government designated as having the highest references. The Regional General Hospital Dr. Soetomo Surabaya is required to provide quality health services that can meet the health needs of all patients. When the patients are being treated, they can get an infection [1]. Health care-related infections (HAI) occur in patients during their treatment in hospitals or other health care facilities that were not present at the time of admission. In addition, health workers can also be infected by working in the service area [2]. Invasive actions such as catheters, ventilators and the surgical procedures received in health care can be associated with infection [3].

Based on extensive studies in the US and Europe, the frequency of HAI events ranged from 13.0 to 20.3 episodes per thousand patient-days [4]. Based on preliminary studies conducted at the Regional General Hospital Dr. Soetomo Surabaya, it showed a number around 0.09 to 6.0 per thousand patient-days [5]. With the increase in infections, there has been an increase in the length of stay, long-term disability, increased antimicrobial resistance, increased socio-economic disorders, and increased mortality. The risk of an increase in infection is due to the less developed supervision system and non-existent control methods. In the description of this article, a brief description of the distribution of the infection in General Hospital Dr. Soetomo, the causes and the control method are considered to be short but more focused.

2. Material and methods

2.1 Design

This paper is a description of the analysis undertaken. The data used was taken from retrospective preliminary studies, where tables were then created and analyzed.

2.2 Types of HAI infections

The most common types of infections include the infection of the primary bloodstream, urinary tract infection, surgical site infection and lung infection due to the installation of a ventilator. In brief, details have been given in the following sections [6].

2.2.1 Central Line Associated BSI (CLABSI). IADP is a deadly nosocomial infection with a mortality rate of 12% -25%. Catheters are placed in the central line to provide fluids and drugs but long-term use can cause serious blood flow infections which result in increasing health care costs. The IADP data of Dr. Hospital Soetomo as in Table 1 shows that fluctuations occur and there was an increase in 2016 of 1.51%. The highest incidence was in the critical wards such as in Intensive Care Unit (ICU) [3,7].

2.2.2 Urinary tract infections (UTI). UTIs are the most common type of HAI in general. According to the Dr. Soetomo hospital referring to the care between 2013 to 2017, the incidence rate happened to go up and down. The highest point was in 2016 which was 2.99%. UTIs are caused by the endogenous original microflora of the patients. The catheter that is installed serves as a channel for the entry of bacteria while the imperfect drainage of the catheter makes the volume of urine in the bladder become a medium for bacterial growth. UTIs can develop into complications such as orchitis, epididymitis and prostatitis in men and pyelonephritis, cystitis and meningitis among all patients [8].

2.2.3 Surgical Side Infection (SSI). SSIs in Hospital Dr. Soetomo affect 1.5% of patients undergoing surgery. The highest number occurred in 2016 at 0.41%. This is the most common type of infection mainly caused by Staphylococcus aureus resulting in prolonged hospitalization and a risk of death. The pathogens causing SSI arise from the endogenous microflora of the patients [9].

2.2.4. Ventilator related pneumonia (VAP). 86% of nosocomial pneumonia is related to ventilation. This usually occurs within 48 hours after tracheal intubation. 2016 had the highest number at 6.0%. Fever, leukopenia and bronchial sounds are the common symptoms of VAP [10].

2.3. HAI Pathogens

The pathogens responsible for this infection are bacterial viruses and fungal parasites. These microorganisms vary depending on the different patient populations, the medical facilities and even differences in the environment in which the care is given [11].

2.4. Bacteria

Bacteria are the most common pathogens responsible for nosocomial infections. Some are a natural part of the flora of patients and they are causes of infection if the autoimmune patients are susceptible to infection. Acinetobacter Baumanii is a genre of pathogenic bacteria responsible for infections that occur in the ICU. These bacteria are in the soil and water and they cause 80% of reported infections. Clostridium difficile causes the inflammation of the large intestine causing antibiotic-related diarrhea

and colitis, mainly due to the elimination of the anal flora. Enterobacteriaceae (carbapenem resistance) causes infection if it travels to other parts of the body from the intestine where it is usually found. Enterobacteriaceae originates from the Klebsiella species and Escherichia coli. Their high resistance to carbapenem causes the defenses against them to be more difficult. Methicillin-resistant S. aureus (MRSA) transmits through contact, open wounds and contaminated hands. This causes sepsis. Pneumonia is very resistant to antibiotics and it is called beta-Lactam [12].

2.5. Virus

Viruses are also an important cause of nosocomial infections. Monitoring revealed that 5% of all ordinary nosocomial infections were due to viruses. They can be transmitted by hand-mouth, breathing and fecal-oral. Hepatitis is a chronic disease caused by a virus. Health workers can transmit the hepatitis virus to both patients and workers. Hepatitis B and 100 are usually transmitted through unsafe injection practices. Other viruses include influenza, HIV, rotavirus, and the herpes simplex virus [13].

2.6. Fungi parasite

The opportunistic fungal pathogen that causes HAI acts as a parasite, meaning that the individual's immunity decreases. Aspergillus Niger spp. can cause infection through environmental pollution. Candida albicans and Cryptococcus neoformans are also responsible for infection during hospital stay. Candida infections arise from the endogenous microflora of the patients while Aspergillus infection is caused by the inhalation of fungal spores from contaminated air during the construction or renovation of the health care facilities [14].

3. Result

HAI affects a large number of patients in general, where morbidity increases and the financial losses are significant. According to the PPI report, around 5 – 6% of the patients treated in the critical ward in the hospital had pneumonia infections. HAI of 1 – 2% from urinary tract infections occurred in the surgical and critical wards, the highest incidence of IADP in the critical treatment area was 33%.

Table 1. The results of the incident rate of HAI in General Regional Hospital Dr. Soetomo Surabaya from 2013 to 2017.

	Year				
	2013	2014	2015	2016	2017
Surgical Side Infection	0.01 %	0.09 %	0.23 %	0.41 %	0.08%
Central Line Associated BSI (CLABSI)	0.09 ‰	0.09 ‰	0.74 ‰	1.51 ‰	0.6 ‰
Urinary tract infection	0,25 ‰	0.05 ‰	1.23 ‰	2.99 ‰	1.0 ‰
Ventilator Associated Pneumonia	0.6 ‰	0.41 ‰	2.40 ‰	5.31 ‰	6.0 ‰

Table 2 The results of the Incident Report of HAI in the General Regional Hospital Dr. Soetomo Surabaya in 2017 according to ward

No	HAIs Parameter
1	Ventilator Associated Pneumonia (VAP) IGD 5,99‰, & IRIR 6,06‰
2	Catheter Associated UTI (CAUTI) IRIR 2,13‰, IRNA Medic 0,47‰ Graha Amerta 0,91‰, IRNA Bedah 1,21‰, IGD 0,91‰, IRNA Obsgyn 0,63‰
3	Central Line Associated BSI (CLABSI) IRIR 3‰, GRIU 0,88‰, IRNA Anak 0,82‰, IRNA Bedah 0,64‰, IGD 0,44‰
4	Surgical Site Infection (SSI) IRIR 0,31%, IRNA Bedah 0,07%

4. Risk factors

The risk factors that determine nosocomial infections depend on the environment in which the care is given, the vulnerability and condition of the patient and the lack of awareness of the infections that occur between staff and the health care providers [13].

4.1. Living environment

Poor hygiene conditions and inadequate waste disposal from the health care arrangements [15].

4.2. Vulnerability

Immunosuppression in patients, long stays in intensive care units and the prolonged use of antibiotics [16].

4.3. Unconsciousness

The use of improper injection techniques, the knowledge of basic infection control measures and the use of invasive devices (catheters) that are inappropriate and a lack of control policies [17].

4.4 Reservoir and transmission

4.4.1. Patient microflora. The bacteria that are included in the patient's endogenous flora can cause infection if they are transferred to tissue wounds or surgery sites. Gram negative bacteria in the digestive tract can cause SSIs after stomach surgery [18].

4.4.2. Patient and staff. The transmission of pathogens during treatment through direct contact with the patients (hands, medical equipment, etc.) by staff through direct contact or other environmental sources [19].

4.4.3. Living environment. Pathogens that live in the health care environments, namely in the water, food, and equipment, can be a source of transmission. Transmission to other patients creates one more reservoir for non-infected patients [13].

4.4.4 Prevention of nosocomial infections. Being the main cause of illness and death, nosocomial infections need to be prevented from the start so then the spread can be controlled [14].

4.4.5. Transmission from the environment. An unhygienic environment serves as the best source for pathogenic organisms to breed. Air, water and food can be contaminated and transmitted to patients through health care delivery. Policies must be in place to ensure cleaning and the use of cleaning materials on the walls, floors, windows, beds, bathrooms, toilets and other medical devices. Good ventilation and filtered fresh air can eliminate bacterial contamination in the air. The regular screening of filters and general ward ventilation systems, operating rooms and ICUs must be maintained and documented. Water-borne infections are caused by the failure of the health institutions to meet standard criteria. Microbiological monitoring must be used for the water and air analysis. Infected patients must be kept separate. Handling inappropriate food can cause foodborne infections. Areas must be clean and the food quality must meet the standard criteria [16].

4.4.6 Transmission from staff. Infection can be transferred from the health staff. The task of the PPI is to take a role in infection control. Personal hygiene is needed for everyone. Hand hygiene with disinfectant is a method of prevention. Safe injection practices and sterilized equipment must be used. The use of masks, gloves, headgear and the right uniform is very important for the provision of health services [4].

4.4.7 Management of hospital waste. Waste from hospitals can act as a potential reservoir for pathogens that need proper handling; 15% -25% of the waste produced by health facilities is referred to as dangerous. Infectious health service waste must be managed properly through an incinerator. Waste contains a lot of heavy metals and waste from operations from people who are infected, and thus it is contaminated with blood and phlegm. Diagnostic laboratory waste must be disposed of separately. Staff and health workers must be informed of the dangers of waste and their proper management [7].

4.4.8 Infection control program. Although significant efforts have been made to prevent HAIs, there is more work needed to control this form of infection. Within a day, one in 25 hospital patients can get at least one type of HAI. Health Institutions must design a control program for this infection. Administrations, workers and individuals treated in or visiting the hospital must consider these programs to play their part in preventing infection. An efficient infection control program is shown in;

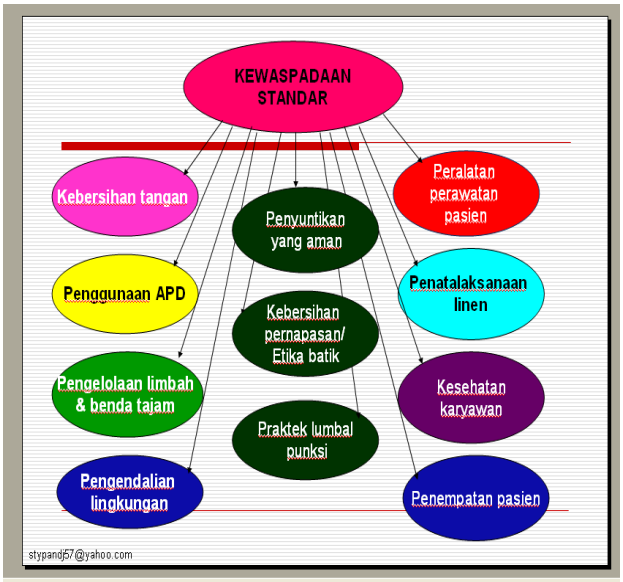

Figure 1 Standard Precautions

Standard Precautions

- Hand hygiene
- Personal Precaution Equipment
- Waste management
- Cleaning and dessinfection
- Devices surfaces
- Nutrition management
- Loundry management
- Environmental
- Respiratory hygiene
- Immunization / vaccination
- Injection safety

Transmission-based precautions

- Contact precautions
- Droplet precautions
- Airborne precautions.

4.4.9 Use and microbial resistance. Microbes are organisms are too small for the eye to see but they are found everywhere on earth. Antimicrobial drugs are used against microbes that are pathogenic to living organisms. Antimicrobial resistance occurs when microbes develop the ability to fight the effects of the drugs; they are not killed and their growth does not stop [15].

4.4.10. Appropriate use of antimicrobials. Antibiotics are widely used to cure diseases. The use of antimicrobials must justify the correct clinical diagnosis or infection that causes microorganisms. The Center for Disease Control and Prevention estimates that every year, around 100 million antibiotic programs are prescribed by doctors in the office while around 50% of them are not needed. The selection of antimicrobials must be based on patient tolerance in addition to the nature of the disease and the pathogen. The aim of antimicrobial therapy is to use drugs that are selectively active against the most likely pathogens and that will be the least potential cause of resistance and side

effects. Antimicrobial prophylaxis should be used if necessary before surgery to reduce the incidence of postoperative infections at the operating site. In the case of immunocompromised patients, prolonged prophylaxis is used until the marker of immunity is restored [15].

4.4.11 Antibiotic resistance. Antibiotic resistance is responsible for the death of a child every five minutes in the Southeast Asia region. Drugs used to treat deadly diseases have now lost their impact [17]

Figure 2 Transmission based precautions posters

because drug-resistant microorganisms have appeared. Self-medication with antibiotics, inappropriate dosages, long-term use, a lack of standards for health workers and abuse in livestock are the main factors responsible for increasing resistance. This resistance threatens the effective control against the bacteria that cause urinary tract infections, pneumonia and reduced blood flow. Highly resistant bacteria such as MRSA or resistant multidrug negative bacteria are the cause of the high number of nosocomial infections throughout the world. The Southeast Asian report revealed that there was a high level of resistance to E. coli and K. pneumoniae against third generation cephalosporins and more than a quarter of S. aureus infections were resistant to methicillin. "Immediate action is needed to stop the world from heading into a pre-antibiotic era where all achievements made in the prevention and control of infectious diseases will be reversed," said Dr. Poonam Khetrapal Singh, WHO Regional Director for the Southeast Asia Region [20].

4.4.12 Antibiotic control policy. The pandemic of antibiotic resistance around the world shows that it is driven by the overuse and abuse of antibiotics which is a threat to preventing and curing diseases. The WHO's global report on antibiotic resistance indicates that one can prevent infections from occurring with better hygiene, clean water and vaccinations to reduce the need for antibiotics. New diagnostic developments and other tools are needed in health care institutions to stay ahead of the evolution of resistance. Pharmacists must play their role in prescribing antibiotics that are appropriate when needed and policy makers must foster cooperation and information among all stakeholders [21].

4.4.13 Nosocomial infection control. Although the aim of the infection prevention and control program is to eradicate nosocomial infections, the epidemiological supervision for demonstrations of performance improvement is still required to achieve its objectives. Efficient supervision methods include collecting data from various information sources by trained data collectors. The information must include administrative data, demographic risk factors, patient history, diagnostic tests and data

validation. Following the extraction of the data, an analysis of the collected information must be carried out that includes a description of the determinants, the distribution of infection and a comparison of the incidence rates. The feedback and reports after analysis must be disseminated by infection control committees, the management and laboratories while maintaining individual confidentiality. The evaluation of the credibility of the supervisory system is needed for the implementation of effective interventions and continuity. Finally, the periodic implementation of data to maintain the efficiency of the monitoring system, carried out compulsorily. An efficient methodology for the appropriate supervision approach is given in [6].

5. Conclusion

With the increasing burden of nosocomial infections and antimicrobial resistance, the administration of health services and infection control committees has found it difficult to achieve the goal of eliminating intervals. However, by practicing healthy ways of administering care as designed by the infection control committee, controlling the transmission of infection using appropriate methods for antimicrobial use, the resistance to pathogens that appear against antimicrobials can be reduced easily. Efficient monitoring methods guided by the WHO can help health institutions to design infection control programs. Appropriate staff hospital training for biosafety, appropriate waste management and health service reforms and making ordinary people endemic to this in Indonesia all help.

Pandemic antibiotic resistance around the world shows that it is driven by the overuse and abuse of antibiotics, which is a threat to preventing and curing diseases. The WHO global report on antibiotic resistance prevents infections from occurring with better hygiene, clean water and vaccination to reduce the need for antibiotics. New diagnostic developments and other tools are needed in health care institutions to stay ahead of the evolution of resistance. Pharmacists must play their role in prescribing antibiotics that are appropriate when needed and policy makers must foster cooperation and information among all stakeholders.

Although the aim of the infection prevention and control program is to eradicate nosocomial infections, the epidemiological supervision for demonstrations of performance improvement is still required to achieve its objectives. Efficient supervision methods include collecting data from various information sources by trained data collectors. The information must include administrative data, demographic risk factors, patient history, diagnostic tests and data validation. Following the extraction of the data, an analysis of the collected information must be carried out that includes a description of the determinants, the distribution of infection and the comparison of incidence rates. Feedback and reports after the analysis must be disseminated by infection control committees, the management and laboratories while maintaining individual confidentiality. The evaluation of the credibility of the supervisory system is needed for the implementation of effective interventions and continuity. Finally, the periodic implementation of data to maintain the efficiency of the monitoring system must be carried out compulsorily.

With the increasing burden of nosocomial infections and antimicrobial resistance, the administration of health services and infection control committees has become difficult to achieve the goal of eliminating intervals. However, by practicing healthy ways of administering care designed by the infection control committee, controlling the transmission of infection using appropriate methods for antimicrobial use means that the resistance to pathogens can be reduced easily. Efficient

monitoring methods guided by the WHO can help health institutions to design infection control programs. Appropriate staff hospital training for biosafety, appropriate waste management and health service reforms is also a fitting suggestion.

References

[1] Anon Report on the Burden of Endemic Health Care-Associated Infection Worldwide Clean Care is Safer Care

[2] Anon WHO Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Health Care Facility Level Web Appendix I Core elements of effective infection prevention and control programmes in acute health care facilities : a systematic review (update of the SIGHT review)

[3] Padilha K G, Inoue E N, Vasconcelos T N, Cunha S, Figueiredo B and Levin A S 2012 Nursing Workload as a Risk Factor for Healthcare Associated Infections in ICU : A Prospective Study **7** 3–8

[4] Xu W, He L, Liu C, Rong J, Shi Y, Song W and Zhang T 2015 The Effect of Infection Control Nurses on the Occurrence of Pseudomonas aeruginosa Healthcare-Acquired Infection and Multidrug- Resistant Strains in Critically-Ill Children 1–15

[5] Jacob S T, Moore C C, Banura P, Pinkerton R, Meya D, Reynolds S J, Kenya-mugisha N, Mayanja-kizza H and Scheld W M 2009 Severe Sepsis in Two Ugandan Hospitals : a Prospective Observational Study of Management and Outcomes in a Predominantly HIV-1 Infected Population **4**

[6] Gupta A and Singh D K 2015 International Journal of Medical Research & Health Sciences **4** 317–21

[7] Esposito M R, Guillari A and Angelillo I F 2017 Knowledge , attitudes , and practice on the prevention of central line-associated bloodstream infections among nurses in oncological care : A cross-sectional study in an area of southern Italy 1–11

[8] Weston D *Infection Prevention and Control Theory and Clinical Practice for*

[9] Sudhakar C *INFECTION CONTROL – Edited by Christopher Sudhakar*

[10] Ross S and Furrows S *Infection Control Nursing*

[11] Edition F *Infection Control in the Hospital*

[12] Practices I C 2013 Infection Control Assessment Tool :

[13] Tsang T K, Fang V J, Chan K, Ip D K M, Leung G M, Peiris S M, Cowling B J and Cauchemez S 2016 Individual Correlates of Infectivity of Influenza A Virus Infections in Households 1–11

[14] Johnstone J, Parsons R, Botelho F, Millar J, Mcneil S, Fulop T, Mcelhaney J, Andrew M K, Walter S D, Devereaux P J and Malekesmaeili M 2014 Immune Biomarkers Predictive of Respiratory Viral Infection in Elderly Nursing Home Residents **9** 1–10

[15] Letter T M *Antimicrobial*

[16] Dellinger P, Garland J, Heard S O, Lipsett A, Masur H, Mermel L A, Sc M, Michele L, Raad I I, Randolph A, Sc M, Rupp M E, Saint S and Control I 2011 Guidelines for the Prevention of Intravascular Catheter-Related Infections , 2011 Oklahoma Foundation for Medical Quality

[17] Anon Global guidelines for the prevention of surgical site infection

[18] Farley J E, Kelly A M, Reiser K, Brown M, Kub J, Davis J G, Walshe L and Walt M Van Der 2014 Development and Evaluation of a Pilot Nurse Case Management Model to Address Multidrug-Resistant Tuberculosis (MDR-TB) and HIV in South Africa **9** 1–7

[19] Salmon S, Wang X B, Seetoh T, Lee S Y and Fisher D A 2013 A novel approach to improve hand hygiene compliance of student nurses 1–5

[20] Kallen A and Patel P Central Line-Associated Bloodstream Infections (CLABSI) in Non-Intensive Care Unit (non-ICU) Settings Toolkit

[21] Mph M R, Mpp H S and Mpp B K Eff ect of the Sphere Standards on the incidence of communicable and infectious diseases in a returnee camp in *Lancet Glob. Heal.* **2** S24

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PREVALENCE AND ASSOCIATED RISK FACTORS OF LIPOHYPERTROPHY IN INSULIN-TREATED DIABETES MELLITUS AT HOSPITAL KOTA KINABALU, SABAH

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ABSTRACT

Lipohypertrophy is one of the most common complications of insulin injection. Early detection of lipohypertrophy is very important to prevent the risk of hyperglycemia or hypoglycemia, arisen due to inconsistently in absorption of insulin. Therefore, there is a need to identify factors that may have an association with lipohypertrophy. The purpose of this study is to determine the prevalence and associated risk factors of lipohypertrophy, and to determine the relationship between the presence of lipohypertrophy and associated risk factors. The methods used in this study is a quantitative descriptive study that includes two parts. The first part of the study was a questionnaire survey and second part of the study was the examination of lipohypertrophy based on inspection and palpation techniques. Study participants were patients with diabetes who attended outpatient diabetic clinic in a tertiary hospital, and was on insulin therapy. Results of the study revealed that, the high prevalence of lipohypertrophy shown in this study highlights the need for prevention strategies, which include regular assessment for the presence of lipohypertrophy and health education on insulin injection. Health education should emphasize on self-assessment of lipohypertrophy, and the importance of changing needle and rotation of injection site.

Keywords: lipohyperthrophy, insulin, risk factor, diabetes mellitus

1. Introduction

Diabetes mellitus is a type of metabolic disorder related to the carbohydrate metabolism in which glucose is both underutilized and overproduced, causing hyperglycemia [1]. The number of Malaysians suffering from diabetes is increasing from the 11.6% reported in 2006 to the 22.6% recorded in 2013 [2]. It is critical for the patients to get a rigid sense of blood glucose control in the early stage of diabetes to delay complications. Insulin therapy is one of the prominent treatment methods used to regulate blood glucose level. However, the present challenge with insulin therapy is insufficient knowledge and the attitude of insulin self-administration[3].

Lipohypertrophy is one of the most common complications of insulin injection among diabetic patients. The early detection of lipohypertrophy by using the inspection method at the injection site each time before injection is crucial because it will otherwise contribute to poor glucose control. Pain sensations diminish in the areas where lipohypertrophy is formed and for that reason, diabetic patients prefer to administer their injections to the same site, leading to increasing lipohypertrophic tissue. If insulin is injected into the area of lipohypertrophy, then the absorption of insulin will not be consistent because the insulin absorption is restricted in the

area where lipohypertrophy is developed. As a consequence, the risk of hyperglycemia or hypoglycemia arises due to the inconsistent absorption of insulin. Therefore, there is a need to identify the factors that may have an association with the occurrence of lipohypertrophy. To determine the prevalence of lipohypertrophy, the associated risk factors need to be observed to determine the relationship between the presence of lipohypertrophy and the associated risk factors.

2. Research Methods

2.1. Study design and setting

This was a descriptive correlation study design that included two parts. The first part of the study was a questionnaire survey on the socio-demographic and clinical characteristics of the study participants. The second part of the study was an examination of lipohypertrophy based on the inspection and palpation techniques. The three main sites of insulin injection, the abdomen, thigh and arm, were inspected and palpated by the researcher herself who is a certified diabetic educator to identify the "presence" or "not presence" of lipohypertrophy surrounding of the insulin injecting sites. The presence of a noticeable or palpable lump at the injection site indicated that lipohypertrophy was present. The study participants were diabetic patients treated with insulin therapy recruited from a diabetic clinic in the tertiary public hospital in Sabah, Malaysia.

2.2. Sample size and recruitment

The recruitment period ran from early June 2017 through to August 2017. The sample size calculation was based on the formula used in Jan's study[4], where the sample size calculator for the prevalence study (SSCPS) was version 1.0.01. The level of confidence was set at 95% with a suggested precision (d) of 0.05. The expected prevalence was 50% based on Cunningham[5] with an estimated population size of 200. Thus, the estimation of the respondents for this study was 130. The participants were recruited using purposive convenience sampling.

2.3. Inclusion criteria

The inclusion criteria for the study participants were the patients with diabetes who attended the outpatient diabetic clinic from 8:00 am to 5:00 pm and who were on insulin therapy. The patients who agreed to participate were screened for the inclusion criteria using their appointment cards and case notes. Those who were eligible were recruited into the study.

2.4. Exclusion criteria

The exclusion criteria for this research were the patients who were about to start insulin therapy, who were on continuous infusion insulin therapy or who were on other regular medication that needed to be administered via the subcutaneous route.

2.5. Research instrument

The questionnaires divided into two parts; (part A) which was a structured questionnaire and (part B) consisted of the assessment checklist to identify the presence of lipohypertrophy. The checklist was prepared according to the literature reviews from Hajheydari[6], Blanco[7],

Cunningham[5], Al[8] and Gentile[9]. Cronbach's Alpha test was carried out to check the reliability of the checklist. Cronbach's Alpha for the four items was r =0.82, which means that the internal reliability of the checklist was good. The validity of the questionnaire was also checked to ensure that the tools that were used in this research were measuring what was intended to be measured.

2.6. Ethical consideration

The study was approved by the National Institutional Health and Medical Research Ethics Committee

- NMRR-16-2534-3323(IIR). Informed consent was obtained from all of the participants after they received written information about the study purpose and procedures. The information was given in either English or in the national language of Malaysia depending on the participants' preference. In order to ensure confidentiality, the research questionnaires remained anonymous for each respondent. No name or identification number was taken.

2.7. Data collection procedure

The data collection was conducted by the distribution of a survey form using a purposive convenience technique. A total of 130 respondents completed the survey form and their insulin injection sites were examined. The insulin injection site examination was performed by an experienced nurse specializing in diabetic management and clinical teaching as well. The survey form was distributed and collected manually on the same day.

2.8. Statistical analysis

The data analysis was performed using the Statistical Package for the Social Science (SPSS) version 23.0 software. Descriptive statistics, frequency and percentage were used to analyze the participants' demographic and clinical characteristics. The association between lipohypertrophy and the selected factors was assessed using the Chi-square test. Statistical significance was set for p-value < 0.05.

3. Results

3.1. Sociodemographic data and characteristic of study participants

The table below represents the descriptive findings of the sociodemographic data. The majority of the participants were aged between 50 – 59 years old, were male, married, Chinese, had a secondary school level of education and a BMI of 25-29 (overweight).

Variables	Frequency (%)	
Age group		
18-28 years	5	(3.8)
29-39 years	12	(9.2)
40-49 years	20	(15.4)
50-59 years	67	(51.5)
60 years and above	26	(20.0)
Gender		
Male	70	(53.8)
Female	60	(46.2)
Race		
Malay	35	(26.9)
Chinese	54	(41.5)
Kadazan/Dusun	18	(13.8)
Others	23	(17.7)
Marital status		
Single	23	(17.7)
Married	100	(76.9)
Divorcee	7	(5.4)
Level of education		
No formal education	5	(3.8)
Primary school	3	(2.3)
Secondary school	118	(90.8)
Tertiary school	4	(3.1)
BMI		
19-24 (Normal)	26	(20.0)
25-29 (Overweight)	68	(52.3)
30-39 (Obese)	32	(24.6)
40-54 (Extreme obesity)	4	(3.1)

Table 1. Sociodemographic data

The descriptive findings of the clinical characteristics, namely the risk factor data, have been shown in Table 2. More than one-third of respondents (38.5%, n=50) were on insulin injections for between 0-5 years. Almost half of the respondents were injecting three times a day (48.5%, n=63) and more than half of the respondents (53.1%, n=69) had an insulin dosage of between 30-60 units per day.

The majority of respondents (62.3%, n=81) change needles for each injection. While 91.5% (n=119) of respondents preferred their insulin injection site to be the abdomen, only 8.5% (n=11) rotated he insulin injection site between the abdomen, arm and thigh. The majority of the respondents (95.4%, n=124) rotated the injection site to a different area at each time of injection and 4.6% (n=6) occasionally rotated the injection site.

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Clinical Characteristic	**Frequency (%)**	
Duration of injection		
0-5 years	50	(38.5)
6-10 years	44	(33.5)
10-19 years	21	(16.2)
20 years and above	15	(11.5)
Total injection in a day		
Once daily	7	(5.4)
Twice daily	33	(25.4)
Three times daily	63	(48.5)
Four times a day or more	27	(20.8)
Total insulin unit per day		
Less than 30 unit	26	(20.0)
Between 30-60 unit	69	(53.1)
Between 61-100 unit	33	(25.4)
Greater than 100 unit	2	(1.5)
Often changed needles		
At every injection	4	(3.1)
Every 2-3 injection	40	(30.8)
Every 4-5 injection	81	(62.3)
When cartridge/pen is finished	5	(3.8)
Insulin injection site		
Abdomen	119	(91.5)
Arm	0	(0)
Thigh	0	(0)
All above by rotation	11	(8.5)
Rotate to a different area for each injection		
Yes, I move	124	(95.4)
Occasionally, when I remember	6	(4.6)

Table 2. Clinical Characteristics (potential risk factors)

3.2. Prevalence of lipohypertrophy

The prevalence of lipohypertrophy was 51.5%, calculated using the formula below:

Prevalence = (Numerator / Denominator) X 100

Numerator = Person having a particular attribute (which in this case is the presence of lipohypertrophy)

Denominator = Population attending the diabetes clinic from June to August 2017.

Prevalence = (67/130) x 100 = 0.515 x 100 = 51.5%

The injection site examination is performed using the inspection and palpation technique, and the finding of the examination is recorded as "presence" and "not presence" based on the features of lipohypertrophy. The features of lipohypertrophy include a palpable lump, the swelling of the fatty tissue around the subcutaneous insulin injection site, a thickened 'rubbery' swelling of the tissue that is soft and firm and a lessened pain sensation. The respondents who had one or more of these features were considered to have the presence of lipohypertrophy.

3.3. The relationship between potential risk factors and lipohypertrophy

The relationship between the potential risk factors and lipohypertrophy has been shown in Table 3. Out of a total of 67 (51.5%) respondents with lipohypertrophy, 70.5% (n=31) of the respondents were on insulin injections for between 6 to 10 years. The Pearson Chi-Square test indicated that there is a statistical relationship between the years of insulin injection and the presence of lipohypertrophy ($\chi 2$=14.99, df =3, p = .002). The frequency of changing needles was related to the presence of lipohypertrophy ($\chi 2$=9.30, df =3, p = .026), indicating that the patients who did not change the needle frequently were likely to have lipohypertrophy. The rotation of the injection site was also related to the presence of lipohypertrophy, as indicated by the Fisher Exact Test (p = .017). The frequency of daily injection, the daily insulin dosage and the injection site were not related to the presence of lipohypertrophy (p = .068, p = 0.76 and p = 085).

Variables	Presence of lipohypertrophy			
	Yes (n=67)	Yes (n=67)	No (n=63)	
			χ^2 (df)	*p*
Duration of insulin injection				
0-5 years	16 (32%)	34 (68.0%)		
6-10 years	31 (70.5%)	13 (29.5%)	14.99 (3)	.002 [a]
10-19 years	13 (61.9%)	8 (38.1%)		
20 years and above	7 (46.7%	8 (53.3%)		
Frequency of injection per day				
Once daily	2 (28.6%)	5 (71.4%)		
Twice daily	18 (54.5%)	15 (45.5%)	7.13 (3)	.068 [a]
Three times daily	38 (60.3%)	25 (39.7%)		
Four times daily	9 (33.3%)	18 (66.7%)		
Insulin dosage (units per day)				
Less than 30 units	18 (69.2%)	8 (30.8%)		
			5.14 (2)	.076 [a]
31-60 units	35 (50.7%)	34 (49.3%)		
More than 60 units	14 (36.4%)	21 (63.6%)		
The frequency of changing the needle				
At every injection	4 (100%)	0		
Every 2-3 injection	18 (45.0%)	22 (55.0%)		
			9.30 (3)	.026 [a]
Every 4-5 injection	40 (49.4%)	41 (50.6%)		
When cartridge/pen in finished	5 (100%)	0		
Insulin injection site				
Abdomen	64 (53.8%)	55 (46.2%)		
Abdomen, arm, and thigh by rotation	3 (27.3%)	8 (72.7%)		.085 [b]
Rotate to a different area at each injection				
Yes, I move	61 (49.2%)	63 (50.8%)		.017 [b]
Occasionally, when I remember	6 (100%)	0		

Table 3. The relationship between the potential risk factors and lipohyperthropy

[a]Pearson Chi-Square test.

[b]Fisher Exact test

4. Discussion

4.1. Prevalence of lipohypertrophy

The prevalence rate of lipohypertrophy in insulin-treated patients with diabetes mellitus is 51.5 %. These findings are similar to a previous study conducted in Saudi indicating that almost 50% of patients with type I diabetes had lipohypertrophy [8]. In this study, the researcher determined the prevalence of lipohypertrophy based on the injection site examination by both inspection and palpation. The gold standard for confirming lipohypertrophy is using ultrasound. However, the reason why the researcher used the inspection and palpation technique is that it

is inexpensive and not time-consuming. Performing biopsies for histopathological examination to detect lipohypertrophy is the most reliable method. However, it is neither practical nor economical. The findings from this study show that half of the insulin-treated diabetes patients (51.5%) had developed lipohypertrophy. This is an alarming figure because lipohypertrophy in patients with insulin injection increases the possibility of hyperglycemia and hypoglycemic attack due to the interruption of insulin absorption, which leads to an uncontrolled glycemic level.

The high prevalence of lipohyperthrophy may be related to the lack of routine examination of the injection site by insulin-treated diabetic patients. The prevalence rate of lipohypertrophy should not be ignored and well-trained diabetic nurses should take the initiative to examine every person who uses insulin [5]. Providing specialized training in diabetes management for nurses will enhance their assessment skills when it comes to identifying lipohyperthropy. Kadiyala[10] suggested that the injection sites should be examined at least annually by a health care professional for the early detection of lipohypertrophy and that the patients should also be taught to examine their injection sites and how to detect lipohypertrophy.

4.2. Potential risk factors of lipohypertrophy

This study has revealed that the potential risk factors for the occurrence lipohypertrophy are the duration of insulin use. The occurrence of lipohypertrophy is shown to be higher in patients who had a longer duration for needing insulin injections. This finding is consistent with a previous study indicating that a longer duration of insulin injection increases the chances of developing lipodystrophy [6]. The reason behind this may be explained by the fact that the growth-inducing character of insulin has a multiplying effect on fat tissue [11].

In this study, the total number of insulin units per day is also one of the potential risk factors for the occurrence of lipohypertrophy. A higher insulin dose given in a day contributes to a higher risk of developing lipohypertrophy. The prevalence of lipohypertrophy was higher in those who changed the needle after every 4 - 5 injections, followed by those who changed needles after every 2 - 3 injections. Similarly, in the previous studies, multiple reuses of a single needle were found to be associated with the occurrence of lipohypertrophy[8-7]. Failure to change the needle frequently and the reuse of needles causes the sustainability of the needle to be insecure. This may cause tissue damage. As mentioned by Vardar & Kizilci[11], the use of the same needle causes damage to the tip of the needle and this leads to the loss of the silicone coating, thus preparing a foundation for tissue damage and the subsequent development of lipohypertrophy. Reusing an insulin needle can dull its tip [12] and this may cause more tissue damage at the injection site. This study finding suggests that a lower frequency of changing needles is considered to be a risk factor that should be emphasized when giving health education on insulin injections.

The current study showed that the majority, 61% (n=67), of the respondents claimed that they rotated their injection site each time they had an injection. However, the researcher observed the examination of the injection site and found that the patients tended to inject the insulin in the same place based on their preferred site as results in less of a pain sensation. This becomes a potential risk factor for the occurrence of lipohypertrophy. According to Wallymahmed[13], many patients with lipohypertrophy are aware of the importance of rotating insulin injections sites but they continued to inject into the same area regardless. As indicated in the previous studies, there was a relationship between lipohypertrophy and the rotation of

injection sites. Namely either not rotating the sites or rotating them incorrectly[8-6]. Therefore, this study suggests that the failure of the rotation of the injection site each time is considered to be a risk factor for the development of lipohypertrophy. This should be emphasized during the health education given on insulin injections.

5. Conclusion

The high prevalence of lipohypertrophy shown in this study highlights the need for prevention strategies, which includes the regular assessment to assess for the presence of lipohypertrophy and to provide health education related to insulin injections. Health education should emphasize the self-assessment of lipohypertrophy, the importance of changing needles and the rotation of the injection site. Further research within a large-scale multi-centered study is required to represent the whole population of diabetes patients treated with insulin injections in the Malaysian context.

The limitation of the study was found during participant recruitment and follow up. The patients were likely to be more knowledgeable. Thus, these results may not be an accurate reflection of the patient's practice of insulin injection. The study results may not be generalizable to the whole population of patients with diabetes mellitus in Sabah state. This is since this study was only conducted in one general hospital in Kota Kinabalu city.

The findings can only be generalizable to diabetes mellitus in an urban area. Since this was the first study conducted in Kota Kinabalu, Sabah, the information and literature available to indicate the prevalence of lipohyperthrophy among Sabahan was none. Therefore, most of the information and literature was from other countries. Another limitation was that the questionnaire included only categorical variables and there were limited options for analysis. Recommendations for future research include to increase the sample size by including more patients from other hospitals and diabetic clinics in the district and also to conduct further studies on the trends of the injection techniques among the patients undergoing insulin therapy.

This study found that half of the patients treated with insulin therapy developed lipohyperthrophy. Thus, patients and the health care providers, especially diabetes educators, need to recognize the importance of the early identification of lipohyperthropy. Therefore, the researchers suggest that an injection site examination should be performed regularly in order to detect the early signs and symptoms of lipohyperthrophy.

Patients should be aware of the risk factors of lipohypertrophy and how to prevent it. Patients should be taught of the proper insulin injection technique and the prevention of lipohyperthrophy. There is a need to develop policies and examination checklists to reassure nurses and doctors to perform injection site examinations as part of their routine examination procedures in hospitals and clinics. The findings from this study provide baseline data, thus contributing to identifying a solution for a clinically relevant problem regarding the development of lipohypertrophy and the associated risk factors.

References

[1] Madhu S V and Srivastava S 2015 Diabetes mellitus: Diagnosis and management guidelines J. Int. Med. Sci. Acad. 28 47–50

[2] Nazaimoon W M W, Isa S H, Mohamad W B W, Khir A S, Kamaruddin N A, Kamarul I M, Mustafa N, Ismail I S, Ali O and Khalid B A K 2013 Research : Epidemiology Prevalence of diabetes in Malaysia and usefulness of HbA 1c as a diagnostic criterion

1–4

[3] Gerensea H, Moges A, Shumiyee B, Abrha F, Yesuf M, Birihan T, Birhanu T and Getahun Z 2015 Knowledge and Attitude on Insulin Self Administration Among Type One Diabetic Patients in Mekele 3 32–6

[4] Jan H, Mohamed B J, Wai R, Yap K, Loy S L, Norris S A, Biesma R and Aagaard-hansen J 2015 Prevalence and Determinants of Overweight , Obesity , and Type 2 Diabetes Mellitus in Adults in Malaysia

[5] Cunningham M T and McKenna M 2013 Lipohypertrophy in insulin-treated diabetes: Prevalence and associated risk factors. J. Diabetes Nurs. 17 340–3

[6] Hajheydari Z, Kashi Z, Akha O and Akbarzadeh S 2011 Frequency of lipodystrophy induced by recombinant human insulin 1196–201

[7] Blanco M, Hern??ndez M T, Strauss K W and Amaya M 2013 Prevalence and risk factors of lipohypertrophy in insulin-injecting patients with diabetes Diabetes Metab. 39 445–53

[8] Al A A, Asirvatham H, Rim A R, Mohamed B B and Dawish A Al 2016 Frequency of Lipohypertrophy and Associated Risk Factors in Young Patients with Type 1 Diabetes : A Cross-Sectional Study Diabetes Ther. 7 259–67

[9] Gentile S, Guarino G, Giancaterini A, Guida P and Strollo F 2016 A suitable palpation technique allows to identify skin lipohypertrophic lesions in insulin - treated people with diabetes Springerplus

[10] Kadiyala P, Walton S and Sathyapalan T 2014 Insulin induced lipodystrophy 14 131–3

[11] Vardar B and Kizilci S 2007 Incidence of lipohypertrophy in diabetic patients and a study of influencing factors. Diabetes Res. Clin. Pract. 77 231–6

[12] Misnikova I, Dreval A, Gubkina V and Rusanova E 2011 The Risks of Repeated Use of Insulin Pen Needles in Patients with Diabetes Mellitus J. Diabetol. 1 1–5

[13] Wallymahmed M E, Littler P, Clegg C, Haqqani M T and Macfarlane I a 2004 Nodules of fibrocollagenous scar tissue induced by subcutaneous insulin injections: a cause of poor diabetic control. Postgrad. Med. J. 80 732–3

EPD-732

THE EMOTION REGULATION BASED ON USING ONLINE GAME AND THE IMPACT ON YOUTH GAMER: A SYSTEMATIC REVIEW

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ABSTRACT

Technological advancements and the promotion of online games led to an increase in the use of online games in adolescents. Internet Gaming Disorder is mental health disorder caused by online games uncontrolled. The purpose of this systematic review was reviewed the differences of emotional regulation among regular and irregular young gamers who used of online games and the impact on Internet Gaming Disorder. The method of this reviewed ware: 1) Using Scopus, Sage Journals, PubMed, Springer Link, and Science Direct database 2) search from 3 January-23 February 2019, and 2013-2019 publications 3) English language 4) Used Internet Gaming Disorder, Game Online, Young Gamers, Regular and Irregular Game Online keywords 5) PICOS approach. Total the journal ware found 1.544 journals and 18 appropriates and assessed. Low emotion regulation was the main factor cause of Internet Gaming Disorder. Alexithymia, reactive, comfortable with the virtual environment, impaired dorsolateral prefrontal activity, low knowledge, depression, anxiety, and low reassessment abilities ware a symptoms found in adolescents with regular using game online. The conclusion this reviewed was that regular online game have a lower emotional regulation than irregular gamer so that it can deeper addiction.
Keywords: internet gaming disorder, game online, young gamers, regular and irregular game online

1. Introduction

Adolescents are a group that is prone to mental health problems caused by uncontrolled internet use. Technology developments have a negative and positive impact. Prevention has been carried out, but increasing sophisticated technological developments and attractive promotions, have caused the young generation easy to get a mental health disorder.

Internet users have increased by 0.2% in 2017 and they reached 3.8 billion in 2018, making up 51% of the total global population. The increase in internet usage also has an impact on increasing the number of online game users, especially in the young generations. The results of the study indicate that the majority of the population of the United States aged 12-17 years is an active online game user [1].

The use of online games that is not controlled can lead to pathological conditions such as impulsive behavior and aggression, Internet Gaming Disorder (IGD), mood instability, decreased achievements and health problems [2]; [3]; [4]. As much as 1.2% of IGD occurred in children aged 13-18 years in 2013, then this went up to 2.5% in 2016 and up to 5.9% in 2017

[5]. The adolescent's real life, daily activities and social life are conditions that must be watched due to IGD [6].

IGD is a type of internet addiction where the condition is caused by excessive and prolonged internet use. This condition leads to cognitive impairment, progressive behavior, a loss of self-control in the game, a lack of tolerance and withdrawal symptoms. The study said that impaired self-control in adolescents with IGD was defined as the inability to control their impulses, emotions and the temptation to play online games [2].

The psychopathological symptoms caused by IGD are mood disorders including depression and irritability [7]. IGD can affect a person's emotions, where emotional regulation contributes to the symptoms of IGD [8]; [7]. Emotion dysregulation is a predictor of the IGD factor [9]; [10].

Adolescents experience the "over-arousal" of their body and emotions, so it is very possible for adolescents to be unable to understand and control themselves [11]. Adolescents tend not to be able to control their emotions, especially when it comes to impulsive behavior. Adolescents tend to act to get satisfaction as an effort to divert themselves from their problems. This is due to the adolescents not having yet been able to manage themselves in the face of a difficult situation [12]. Emotional regulation is therefore needed by the adolescent. Emotion regulation is able to prevent IGD [7]. The study believes that emotion regulation is able to prevent negative behavior and that it is able to influence psychology due to the strong intensity of their emotions, to increase the focus of their attention and to organize the adolescents to allow them to better regulate their behavior in order to achieve a goal [13].

The study said that about 90% of adolescent gamers are more intensive and regular when it comes to playing online game than older gamers [11]. Regular gamers make use of online games continuously. This can be impact on the adolescents such as the inability for emotional regulation, being unable to express their emotions, having difficulty identifying their emotions and describing their emotions poorly [11]. The emotions of regular gamers are important to know in order to provide an accurate description of the regulation of emotions so then if they really need therapy, then the therapy is accordance with the condition of the adolescents.

The output of this review analyzed the emotional regulation of regular and irregular young gamers who use online games and the impact on IGD. This review can be used as an increase in the knowledge of emotional regulation in adolescents who use online games to prevent the occurrence of IGD. This research was also expected to provide further information for nurses, school teachers, parents and the adolescents themselves to allow them to improve their emotional regulation independently. Finally, this research is expected to prevent IGD in adolescents.

2. Method

2.1. Search Strategy

The journal search strategy started with asking the following research question: "What is the difference between emotional regulation in regular and irregular adolescents who use online games and what is the impact on IGD?" The journal reviewed all indexed journals related to emotional regulation that had an impact on IGD.

The databases used for journal searches were Scopus, Sage Journals, PubMed, Springer Link and the Science Direct database. The keywords used are TITLE-ABS-KEY (emotion AND regulation AND adolescents AND internet AND gaming AND disorder) AND DOCTYPE (ar) AND PUBYEAR > 2012; TITLE-ABS-KEY (emotion AND regulation AND irregular AND irregular AND gaming AND adolescent) AND DOCTYPE (ar) AND PUBYEAR > 2012. The journal search begins on 3rd January and ran until 23rd February 2019. The studies were selected from 2013 to 2019. The language that was chosen was English.

The data extraction was done by first searching for journals related to the variables to be studied. The researcher then chose the area and titles that corresponded to the variable of mental health, of adolescents using online games, of emotional regulations and then the IGD. In the first step, the researcher identified and searched through the following databases: Scopus, Sage Journals, PubMed, Springer Link and Science Direct. The total number of journals found and matched were 1.544. The researcher than reviewed the journal titles and found 370 journals to be appropriate. Then the researcher assessed the abstract and found 187 journals. Then the journals were assessed the full text and found 102 journals to be appropriate. Finally the researcher found 18 journals.

2.2. Selection Procedures and Data Extraction

2.2.1. Population. The selected population in this review was adolescents who used online games both regularly and irregularly.

2.2.2. Intervention. This study did not use an intervention but instead it assessed the emotional regulation and IGD based on the DSM V criteria,

2.2.3. Comparison. The review compared the emotional regulation of regular and irregular adolescents who used online games and also the impact on IGD.

2.2.4. Output. The review reported that there are differences between the emotion regulations in regular and irregular adolescents who use online games. Regular gamers have a lower emotional regulation ability than irregular gamers, so they have a deeper addiction.

2.2.5. Study Design

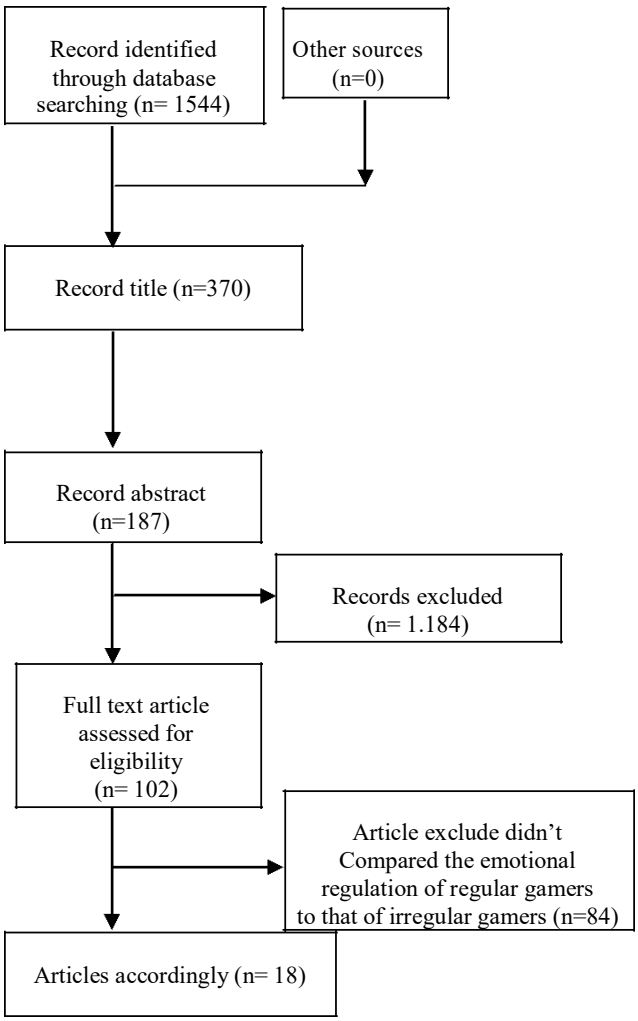

Fig. 1. PRISMA Flow Diagram of the Emotional Regulations Based on Using Online Games and the Impact on Young Gamers: A Systematic Review

3. Results

3.1. Study Result and Selection

The results of the review found that the majority of respondents who used online games regularly were 10 - 21 year olds with an average age of 13 years. Based on the gender of the online game users, they were 81% male and 19% female. The use of online games averaged > 4 hours/day on weekdays and >8 hours on weekends or around >40 hours/week. The respondents had used online games >2 years. The respondents who used online games irregularly were adolescents with an average age of 14 years. As many as 33% of the boys and 67% of the girls were irregular gamers. The used of online games averaged <4 hours/day. The respondents used online games < 2 years. The average respondent in this review was a student. The adolescents were spread throughout Asia and Europe, namely China, Taiwan, Korea, Turkey, Iran, Italy, Spain and France.

Table 1. Characteristics of the Population Studies

Descriptions	Regular gamers	Irregular Gamers
Age	10-21 years (M= 13 years)	10-21 years (M= 14 years)
Gender	81% boys 19% girls	33% boys 67% girls
Time gaming	>4 h/d in weekday >4 h/d in weekend >40 h/weak	< 4 h/d
Period time of gaming	>2 yeas	< 2 years

Emotion regulation is self-regulation as a cognitive process that effects the emotions. Initiation, inhibition or the modulation of aspects of the emotional functioning is a complex process that occurs in the context of emotion regulation. There are two strategies of emotion regulation; reappraisal and suppression. Reappraisal is a positive emotion that includes greater positive emotions, better interpersonal functions and improved well-being [7]. Suppression is closely related to negative emotions and poor interpersonal functioning [7]. Adolescents with emotion levels that are difficult to control will lead to negative emotions that tend to control themselves. Emotional regulation has been shown to mediate emotions, which can reduce negative symptoms such as mood disorders including stress and depression. Emotional dysregulation can also cause self-injury behavior, risky sexual behavior, suicidal movements, eating disorders, drug use, aggressive behavior and low self-esteem [14]; [15].

Emotion regulation is a treatment that is quite popular in adolescents with addiction. Emotion regulation is used as a treatment and this refers to the ability of the individuals related to emotions that are quite extensive, including (a) their awareness, acceptance and understanding of emotions; (b) the ability to control impulsive behavior when experiencing strong emotions and (c) the use of situational appropriate emotion regulation strategies to flexibly manage their emotions [14]. The results of the study show that regular gamers tend to enjoy virtual environments more compared to the real environment. They also find it easier to regulate their emotions in a virtual environment compared to the real environment.

In adolescents with regular online gaming use, it was found that based on sex, boys experienced more emotional regulation and suppression compared to girls. Boys tend to have higher reactive emotions than girls. Girls express their emotions more easily than boys. Thus it can be seen that boy adolescents have alexithymia higher than girls. Regular gamers feel their emotions more intensely and more often than irregular gamers. Whereas in adolescents with an irregular use of online games, it was found that their cognitive reappraisal was higher than that of regular gamers. Irregular gamers tend to be better at conveying their emotions, so the gamer's alexithymia levels are lower. Irregular gamers also have lower emotion intensity compared to regular gamers. Irregular gamers tend to be better at conveying their emotions, so the level of alexithymia is lower. Irregular gamers also have less intense emotion than ordinary gamers. Irregular gamers are able to manage the real environment well compared to regular gamers. Based on gender, some tend to use a reappraisal strategy that is higher than their suppression, and thus they have lower emotional reactivity than regular gamers.

Table 2. Emotional Regulation in Regular and Irregular Gamers

Descriptions	Regular gamers	Irregular Gamers
Virtual environment	More comfortable in virtual environments than real environments	Able to manage the real environment
Gender	Boys: Suppression strategy Girls: Reappraisal strategy	Boys and girls both tend to use reappraisal strategy
Reactive emotions	Boys > girls	Boys = girls
Alexithymia	Boys < girls	Boys = girls
Intense emotions	Boys > girls	Boys = girls

Internet Gaming Disorder (IGD) is an addiction due to the uncontrolled use of online games. IGD is an excessive pattern of online gameplay that results in cognitive and behavioral symptoms, included a progressive loss of control of the game, lowered tolerance and withdrawal of symptoms (Lee, Chun, Cho, & Al, 2015). This is due to the existence of impulsive behavior and aggression in children, especially in this case, adolescents. The results of the study said that in adolescents with IGD, it was found that impulsive behavior (cognitive and motoric), aggression (physical and verbal), feelings of hostility and anger were greater than those who did not experience IGD [2]. In adolescents with IGD, there was also a disturbance in the dorsal anterior cingulate cortex (dACC). This is the main area of person's cognitive and emotion control when performing tasks. The results of the study by Lee et all (2015) found that dACC in adolescents with IGD was low, so it can be concluded that the presence of low dACC activity correlates with high cognitive impulsivity in adolescents with IGD.

The problem that often occurs in adolescent gamers is the difficulty of controlling their emotions. Emotional regulation is an ability needed by adolescents to regulate the emotions within themselves. The study showed that adolescents tended to have low emotional awareness and understanding, so adolescents need the emotion regulation skill to tolerate and modify their emotions, and to have good emotional awareness and understanding [14]. Emotional regulation has an impact on emotional behavior, so this needs to be instilled in the students to prevent IGD [15]; [16]; [17].

Adolescent gamers who regularly use online games tend to have low emotional regulation. This can increase the risk of IGD. Poor emotional regulation is an important factor in the occurrence of addictive behavior [9]; [18]. Adolescents with an irregular use of online games have the ability to convey their emotions well, so they will be better able to control their emotions. Boys tend to be more at risk of IGD. The study said that as many as 81% of men experience IGD compared to 19% of women [7].

For as many as 19%, low emotion regulation in adolescents with IGD can cause depression [7]. Low reappraisal can predict depressive symptoms in adolescents [19]. For as many as 18%, low emotion regulations in adolescents with IGD can also cause anxiety. This is supported by the existence of poor cognitive reappraisal. For as many as 12%, adolescents with IGD predict hostility. Cognitive reappraisal predicts hostility. Thus, it can be concluded that low cognitive reappraisal and the high suppression of emotion regulation can cause depression and anxiety in adolescents.

4. Discussion

Adolescents are an age group that is vulnerable to mental health problems due to the use of online games. Emotional regulation is needed by adolescents to control their emotions. Emotion regulation strategies are divided into reappraisal and suppression. Reappraisal is a condition where people are able to interpret the emotions that are felt so then they can reduce the negative impact of their emotions. People can have greater positive emotions, better interpersonal functions and increased well-being overall when reappraisal is successfully carried out [7]. The results of the study found that adolescents with online game addiction have lower emotion ratings and higher suppression strategies, so it can be concluded that emotion regulation in adolescents using online games was lacking [7]. Some of the factors that cause this are gender, age, time of gaming, virtual environment, alexithymia, emotion reactivity, emotion intensity and the weakness of dACC.

The review results found that on average, regular gamers tend to be young boys. Online games are considered to be suitable games for men, more so than girls. In addition, boys also have a higher level of competitiveness than girls and thus online game content is better understood by boys. Gender influences the adolescent's emotional regulation strategy [7]. Adolescent boys tend to be less able to regulate their emotions and they use more emphasis regulation strategies compared to adolescent girls [11]. Thus it is natural that regular gamers are dominated by boys compared to girls. The difference is that irregular gamers are more likely to be dominated by adolescent girls. In addition, irregular girl gamers are more able to regulate their emotions and to reassess better compared to boys who are irregular gamers.

The age of the online gamers influences the regulation of adolescent emotions [7]. Adolescents tend to have difficulties in terms of identifying, describing and expressing emotions that are appropriate when experiencing an event [11]. There is no difference between regular and irregular gamers based on age. The average online game user is 13 - 14 years old. At that age, adolescents tend to act only to get personal satisfaction as an effort to divert themselves from the problem at hand.

The duration of time spent gaming by regular gamers is more when compared to irregular gamers. The results of the study said that there was not much difference between the number of regular users and those who were irregular at online gaming [11]. The review results revealed that regular gamers spend around > 40 hours a week playing online games. The study said that activities

that take up more than 30 hours of free time per week can affect the development of their education, health and social aspects in adolescents [20]. Thus the long time spent playing online games can risk influencing the adolescents in their development, especially for regular gamers. The duration of the time spent gaming also results in the adolescent being more exposed to and comfortable with the virtual environment. The convenience of living in a virtual environment causes the adolescents who play online games regularly to be able to regulate their emotions virtually compared to regulating their emotions in real life. This must be done immediately, because these conditions will try to take over the individual's environment in a real way and it can control the regular life of gamers through a virtual environment. Thus, regular gamers tend to risk having a condition of unreality.

The results of the review found that regular gamers tend to be less able to express their emotions compared to irregular gamers. This is due to the lack of reactive emotions in regular gamers. In addition to being unable to express their emotions, a flat emotional response to the environment also triggers regular gamers, who tend to have alexithymia at a higher level than irregular gamers. The results of another review stated that regular gamers have a higher emotional intensity compared to irregular gamers. Alexithymia is a factor that causes the adolescents who are regular gamers to have a higher emotional intensity. Intense emotions in adolescents who are unable to convey their emotions appropriately will result in emotional build up. This will eventually become an iceberg phenomenon which will eventually cause the adolescents to become very emotional in response to something. The impulsive and aggressive nature of adolescents who are regular gamers is also caused by intense emotions.

Dorsal Anterior Cingulate Cortex (dACC) is the main area where a person's cognitive and emotion control is centered when they are faced with a problem. The results of the study by Lee et al (2015) found that there was a weak dACC condition in adolescents who were regular gamers. The weakness of dACC was related to the regulation of bad emotions. Internet Gaming Disorder (IGD) is one of the addictive conditions caused by the use of online games that are not controlled. The study said that poor emotional regulation was a predictor of IGD [9]; [10]. Adolescents with poor emotional regulation when using online games are at risk of developing IGD. Aggression and impulsivity were the main factors that caused the adolescents with poor emotional regulation to experience of IGD. This tends to be more experienced by regular compared to irregular gamers. IGD can cause depression, anxiety, cognitive impairment, hostility, anger and the symptoms of social isolation in adolescents related to the use of online games.

Depression in adolescents can be caused by a lower reappraisal strategy compared to suppression strategies in terms of emotional regulation. The study said that as much as 19% of low reappraisal can cause depression in adolescents with IGD [7]. Depression in adolescents with ED can also be caused by their prohibitions when playing online games by those closest to them. Thus, reappraisal was the most important ability in adolescents with IGD to prevent depression.

Anxiety in adolescents with IGD tends to be caused by suppression. The study said that 18% of IGD in adolescents can cause anxiety [7]. Excessive focus on threats will increase the cognitive and emotion responses of adolescents which contributes to the improvement of anxiety symptoms. Unlike depression, the strategy for regulating emotions that are a cause of anxiety is high suppression. Another effect of suppression is that it can increase cardiovascular activity in adolescents [7]. Adolescents with IGD were also at risk of developing cognitive impairments. Cognitive disorders in adolescents with IGD are similar to addictive disorders in people, such as gambling and cocaine.

Thus, suppression as a negative emotional strategy has a very bad impact on adolescents, especially on regular gamers. Anger can also be caused by IGD in adolescents. As much as 12% of IGD can cause hostility. This is caused by bad reappraisals. Thus it can be concluded that a low reassessment can cause anger or hostility related to IGD.

5. Conclusion

The conclusion of this review is that emotion regulation is an important strategy for adolescents who use online games to prevent the occurrence of IGD. The emotional regulation of regular gamers was lower than that of irregular gamers. This is due to differences in sex, age, the duration of use of online games, the virtual environment, alexithymia, emotional reactions, emotional intensity, and weak dACC. Reappraisal strategies are needed to promote good emotion regulation in adolescents. IGD is one of the effects of online gaming addiction in adolescents. IGD can be caused by a lack of emotional regulation. IGD can cause depression, anxiety, cognitive impairment, hostility, anger and the symptoms of social isolation in adolescents with the use of online games. Thus, an increase in the emotion regulation strategy used is needed especially for regular gamers to prevent IGD and other effects.

References

[1] H. Kong, C. Wang, C. L. W. Chan, K. Mak, and S. Ho, "Prevalence and Correlates of Video and Internet Gaming Addiction among Prevalence and Correlates of Video and Internet Gaming Addiction among Hong Kong Adolescents: A Pilot Study," no. June, 2014.

[2] S. Lee, J. W. Chun, H. Cho, and L. E. E. E. T. Al, "Compromised Prefrontal Cognitive Control Over Emotional Interference in Adolescents," vol. X, no. X, pp. 1–8, 2015.

[3] C. C. Frangos, K. C. Fragkos, and A. Kiohos, "Internet Addiction among Greek University Students: Demographic Associations with the Phenomenon, Using the Greek Version of Young's Internet Addiction Test," *Int. J. Econ. Sci. Appl. Res.*, vol. 3, 2010.

[4] B. X. Tran *et al.*, "A study on the influence of internet addiction and online interpersonalinfluences on health-related quality of life in young Vietnamese," *BMC Public Health*, vol. 17, no. 1, pp. 1–8, 2017.

[5] L. Wartberg, L. Kriston, and R. Thomasius, "Prävalenz und psychosoziale Korrelate von Internet Gaming Disorder," *Dtsch. Arztebl. Int.*, vol. 114, no. 25, pp. 419–424, 2017.

[6] F. K. Anggarani, "Internet Gaming Disorder: PsikopatologiBudaya Modern," vol. 23, no. 1, pp. 1–12, 2015.

[7] J. Yen, Y. Yeh, P. Wang, T. Liu, and Y. Chen, "Emotional Regulation in Young Adults with Internet Gaming Disorder," pp. 1–11, 2017.

[8] J. Taipale, “Controlling the uncontrollable. Self-regulation and the dynamics of addiction,” *Scand. Psychoanal. Rev.*, vol. 0, no. 0, pp. 1–14, 2017.

[9] P. K. H. Mo, V. W. Y. Chan, S. W. Chan, and J. T. F. Lau, “Addictive Behaviors The role of social support on emotion dysregulation and Internet addiction among Chinese adolescents: A structural equation model,” *Addict. Behav.*, vol. 82, no. January, pp. 86–93, 2018.

[10] S. Ghasem, S. Hashemi, B. Shalchi, and H. Yaghoubi, “Difficulties in Emotion Regulation, Psychological Well-Being, and Hypersexuality in Patients With Substance Use Disorder in Iran,” vol. 12, no. 1, pp. 1–8, 2018.

[11] S. Gaetan and V. Br, “Computers in Human Behavior Video games in adolescence and emotional functioning: Emotion regulation, emotion intensity , emotion expression , and alexithymia,” vol. 61, pp. 344–349, 2016.

[12] Y. Jahja, *Psikologi Perkembangan*, 4th ed. Jakarta: Prenadamedia Group, 2015.

[13] J. M. Gottman, L. F. Katz, and C. Hooven, “Parental Meta-Emotion Philosophy and the Emotional Life of Families: Theoretical Models and Preliminary Data,” no. September 1996, 1996.

[14] E. Sloan *et al.*, “An Emotion Regulation Treatment for Young People with Complex Substance Use and Mental Health Issues: A Case-Series Analysis,” *Cogn. Behav. Pract.*, vol. 25, no. 3, pp. 427–441, 2018.

[15] S. Cimino and L. Cerniglia, “A Longitudinal Study for the Empirical Validation of an Etiopathogenetic Model of Internet Addiction in Adolescence Based on Early Emotion Regulation,” vol. 2018, 2018.

[16] S. E. Decker, Ã. K. Morie, Ã. K. Hunkele, T. Babuscio, and K. M. Carroll, “Brief Report: Emotion Regulation Strategies in Individuals with Cocaine Use Disorder Maintained on Methadone,” vol. 72, no. 101, pp. 529–532, 2016.

[17] S. Liu, C. Yu, B. T. Conner, S. Wang, and W. Lai, “Research in Developmental Disabilities Autistic traits and internet gaming addiction in Chinese children: The mediating e ff ect of emotion regulation and school connectedness,” *Res. Dev. Disabil.*, vol. 68, no. July, pp. 122– 130, 2017.

[18] B. Evren, C. Evren, E. Dalbudak, M. Topcu, and N. Kutlu, “Relationship of internet addiction severity with probable ADHD and di ffi culties in emotion regulation among young adults,” *Psychiatry Res.*, vol. 269, no. August, pp. 494–500, 2018.

[19] P. Rasal *et al.*, “Computers in Human Behavior A game for emotional regulation in adolescents: The (body) interface device matters,” vol. 57, 2016.

[20] M. Griffiths, “Does Internet and Computer ‘Addiction’ Exist? Some Case Study Evidence,” *CyberPsychology Behav.*, vol. 3, no. 2, pp. 211–218, 2000.

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PEER BASED SUPPORT FOR SELF MANAGEMENT OF PATIENT WITH SCHIZOPHRENIA: A SYSTEMATIC REVIEW

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ABSTRACT

Several self-management programs have been developed to empower patients with severe mental illness in achieving recovery. Peer support is one of the interventions used to help patients improve self-management through the support of other schizophrenic patients. While there was strong evidence of the influence of peer based support, this systematic review aims to identify and appraised peer based support research with a sample of adults with schizophrenia. The literature review was employed the PRISMA guidelines, we systematically reviewed articles from the Scopus, Proquest, CINAHL Ebsco, and Science Direct databases for RCT research with 2013-2019 limitations and using English. Twenty articles were identified, and fifteen articles were analyzed based on interventions that peer based in schizophrenia patients with reported results of self-management, psychological result and quality of life. Thus, systematic reviews showed participants valued support to connect with community-based resources, emotional supports offered and practical supports provided. This increases the patient's level of activation (knowledge, skills and confidence) to manage their health and health care. More highly activated are more likely to engage in positive health behaviours to manage their health conditions more effectively and improve quality of life.

Keyword: schizophrenia, self-management, peer-led, support, QoL

1. Introduction

Schizophrenia causes serious damage to the social, cognitive, affective and daily functioning aspects of an individual's life. Pharmacotherapy is effective at controlling the active symptoms of this disorder and reducing the vulnerability to relapse but it does not overcome the problem of a lack of various abilities that occurs due to schizophrenia. In general, they lack social functioning after hospital treatment. The management of clients with schizophrenia needs to be managed in an integrated and comprehensive manner for optimal repair and to prevent recurrence. This handling requires the integration of medical, psychological and psychosocial inputs.

Some of the previous studies suggested that self management is an effective technique used to help manage disease and it can also facilitate the carrying out of regular medical checks on people with a variety of serious mental disorders, increase the regularity of their drug consumption as a prevention of relapse in the patient's schizophrenia, the control of the symptoms of various disorders, self-care, social skills and it can also improve the social functioning of individuals with schizophrenia

who live in the community. Self management is a part of the technique known as behavior modification that focuses on producing behavioral changes based on the principles and procedures that include self-monitoring, self-reward, contracts or agreements. Self-contracting and stimulus control is used to improve the skills of the patients in the expected learning process. Self management is the ability of the individuals to manage the symptoms of diseases such as the physical and psychological changes that are a consequence of the self-changing patterns of life during treatment that are inherent in chronic conditions. In the last few years, self-management has been realized as important in terms of empowering patients with chronic diseases to facilitate treatment, including in chronic recurrent schizophrenia which is listed as a severe mental disorder [1]. Schizophrenia is one of the most common medical diagnoses and it is a severe or chronic mental disorder. The most common cause is low economic status. Schizophrenia is ranked the fourth most common disease in the world, where an average of 1-2% of the global population is experiencing mental health problems.

In Indonesia, the prevalence of schizophrenia is 1.7%, with the prevalence in the East Java province at 2.2% within the population. Included in the category of chronic diseases, schizophrenia causes serious damage to the social, cognitive, affective and daily functioning aspects of one's life [2]. The pharmacotherapy given cannot overcome the persistent psychotic symptoms, impaired social functioning, dissatisfaction with poor quality of life and their work status. This fact makes schizophrenia the eighth most common cause of disability in individuals aged 15 - 44 years [3]. To prevent disability in these patients, good self-management from the patients is needed. The cognitive, skills and psychosocial abilities due to the poor self-management of the schizophrenic patients triggers a relapse [2].

Some studies have found that the symptoms of schizophrenia relapse in about 50% of individuals in the span of one year after the remission of the previous episode; 85% of individuals experience a relapse within 5 years after the previous episode[4]. Based on the medical record data at Menur Mental Hospital Surabaya in 2018 in the third quarter, it was found that the number of patients with old cases totaled 335 patients, which is more compared to completely new cases. For this reason, self-management must be possessed by schizophrenic patients. Various approaches have been developed to improve and promote the self-management of schizophrenic patients [5]. One of the interventions developed was the provision of peer-based support. Peer specialists are experienced individuals who have recovered from mental illness who are trained to provide services that promote recovery, resilience and well-being. Peer specialists are a growing segment of the mental health workforce in the U.S. and in other countries. For example, in the United States, more than 30 states have some level of Medicaid reimbursement for peer specialists. This number is expected to grow with the implementation of the Affordable Care Act.

Specialist colleagues are a plus for health interventions because they bring credibility, trust, resilience and hope to people with schizophrenia. They also function as positive role models who use their experience to provide role, information and emotional support. Peer-based programs for people with schizophrenia produce as good or better results than non-peer-based programs for certain outcomes (e.g. hospitalizations, engagement in care, empowerment), particularly when peer specialists deliver evidence-based interventions. For instance, a manual peer-led self-management program was found to be superior to the usual care services at lowering the severity of mental health symptoms and producing greater hopefulness and the quality of life [6]. Despite these promising results, the impact of peer-based interventions for self management relate to the quality of life of

people with schizophrenia remains unclear. To address this important gap, we conducted a systematic literature review of the peer-based support for people with schizophrenia. The aims of this review were to rate the methodological quality of peer-based health intervention studies, to summarize the intervention strategies and study outcomes and to evaluate the inclusion of racial and ethnic minorities in the studies.

2. Research Methods

2.1. ***Search Method and Study Selection***

We used the PRISMA guidelines to inform our literature review. We searched through several databases such as Scopus, Proquest, CINAHL Ebsco and ScienceDirect. The limitations used were that the research articles had to use English and that they had to have been published in the range of 2014 - 2019. Our search strategy included the term schizophrenia and other mental disorders such as hallucinations, illiteracy, suicide risk and bipolar disorder. The interventions provided were peer-based interventions and support. The studies were quasi-experimental or randomized control trials within the community and hospital settings.

The articles were included if they met the following criteria: (1) published in English in the range of 2014 – 2019; (2) described the health interventions or support delivered by their peers or their peers facilitated by health workers; (3) included adult patients who experience schizophrenia and (4) evaluated the impact of interventions focused on physical and psychological health, patient activation, self-management ability and quality of life. To evaluate the feasibility of an article, the author reviewed the articles' title, abstract and full text. Any disagreements in eligibility were resolved by consensus. The initial search found 174 studies. After deleting the duplicates, we selected 20 articles and narrowed them down to 14 articles that were in accordance with the specified inclusion criteria.

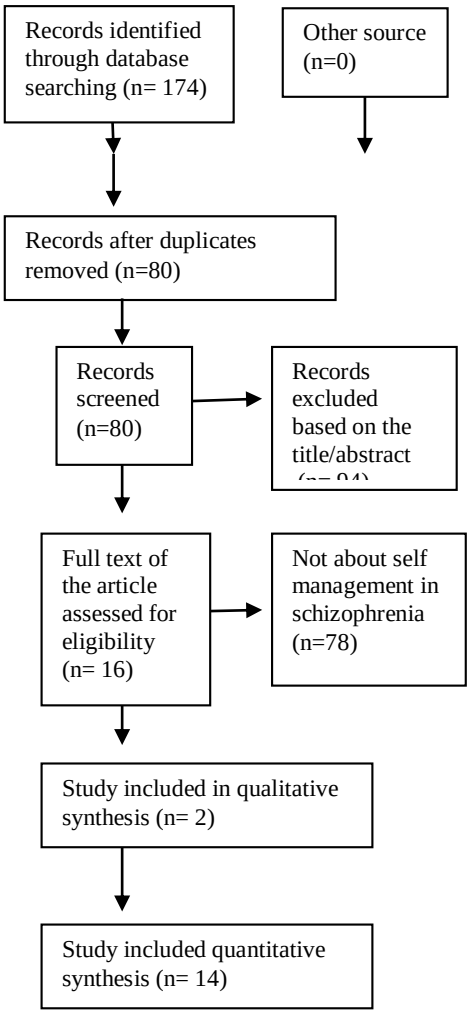

Figure 1. PRISMA flow diagram on the literature search and inclusion methods.

*2.2. **Analytical Strategy***

Standardized forms of abstraction for the data were used to systematically code the study characteristics, including the research objectives, location, design, intervention characteristics (e.g. format, duration of intervention), the type of peer involvement, peer training and supervision, the feasibility of the study criteria, the total sample size, the sample characteristics (e.g., age, gender, race and ethnic group), the outcome measures, the summary of the research findings and the limitations of the study. The extraction of the data was done using the PICOS approach. The selected population in this review was adults with schizophrenia based on the DSM V criteria. The intervention of this study was peer-based self-management support in either a group or individual format. There was no comparison between one intervention with other interventions. The output reported that there is an effective impact of peer-based support on the psychological results, self management and quality of life.

3. Results

*2.1. **Study Characteristic***

The study characteristics are as described in Table 3.1, with 14 articles consisting of randomized control trial studies and 1 article using mixed methods. The number of samples included in the study was 10 - 428 samples with a mean of 187. The majority were male (88%). The age of the respondents in the sample was adult individuals ranging from 17 - 65 years old with chronic mental illness, such as schizophrenia, schizoaffective disorder, bipolar disorder, depression and Post Traumatic Syndrome Disorder (PTSD). For the research setting, as many as 5 studies took place in the USA, 2 studies took place in the UK and Australia and the rest were in Germany and Norway. The study setting was both hospitals and communities. The duration of the intervention given was in the range of 6 - 8 weeks with 12 months of follow-up.

2.2. ***Intervention Characteristics***

The summary of the interventions from the research has been summarized in Table 3.2. The entirety of the studies used interventions that were delivered or carried out by their peers, namely schizophrenic ex-patients who had been trained to do so. All of the studies defined peer specialists as people with the experience of recovering from mental illness but their qualifications varied from having a high school diploma to completing formal instructions and some form of internship. Peer specialist training on the health intervention also differed in intensity, duration and method. One article used a smartphone as a medium [7]. The basis of the intervention program was the same, namely a chronic disease self management program (CDSMP) that was developed into various programs, namely the Health and Recovery Program (HARP), Living Well, BRIDGES and SHARE which involved a team consisting of both doctors and psychiatrists [8]. Fourteen articles used a group intervention and ended with 12 months of follow-up.

2.3. ***Study Outcomes***

In this section, we summarized the findings of each of the health outcomes examined across the 14 articles. We also categorized the effects that the interventions had on the outcomes in terms of them being beneficial, mixed or limited based on the study findings.

3.3.1. Self Management. Twelve articles reported on the results of independent management. In accordance with the core elements of self-management, this included breaking and setting goals, defining a trigger and the indicator of decline. Several studies have reported on the results of several indicators issued in the implementation of self-management that include empowering[9,10], medication adherence attitude [7,9], perceived social support [9] and community involvement [11]. Other studies have shown a change in attitude and demeanor that indicates readiness to undertake self-management and confidence [12], psychiatric self-management skills [5,7,13], self-efficacy [7,8,10,14,15] and self-management knowledge [16]. This readiness is also enhanced by an increase in Patient Activation Measures.

3.3.2. Psychiatric Symptoms. Eight articles reported changes in the psychiatric symptoms. These symptoms include the recurrent symptoms experienced by the patients including improvements in their cognitive and social functioning and psychological well-being[9,17]. The changes occurred after the 12 months follow-up. One article reported that there was no difference between the treatment

group and the control group after the intervention, but the treatment remained influential on the psychiatric symptoms [8].

3.3.3. Quality of Life. Four articles reported quality of life-related outcomes, including health and mental health-related quality of life. The effects of these interventions on the quality of life indicators were mixed. Changes in quality of life were obtained on average after 6 months of follow-up [18]

4. Discussion

Self-management is a strategy used to overcome chronic problems by using education to teach individuals to overcome active challenges and to solve problems related to their illness. Self-management also shows potential as an effective paradigm with patterns of preparation for health early on in life and it also provides strategies to reduce disease and to manage it early [19]. In schizophrenia, self-management is defined as an approach designed to involve individuals with schizophrenia as active agents in patient care by teaching the patients to monitor their clinical patient status themselves, to avoid high-risk stressors, to carry out treatment according to their regimen and to use various coping strategies and compensation when other symptoms and problems related to the patient's mental condition arise [20]. Living with chronic disease, including schizophrenia, requires self-management to facilitate well-being, to reduce the effects of the disease and to limit the development of the disease. Self-management in schizophrenic patients not only helps the patients to manage their condition but it can also improve their ability to make treatment decisions and the ability to manage their psychotic symptoms. In the concept of chronic disease, self-management is defined as an important step that allows individuals to play an active role in the disease experienced [21].

Cognitive limitations and skills due to schizophrenia are a complicating factor for patients implementing self-management, which ultimately makes the patient's health condition worse, especially in terms of their psychosocial abilities. Peer-based support is one of the interventions used to help patients to improve their self management. This form of intervention for patients with schizophrenia has the common goal of being a long-term disease management program in general while providing information, teaching skill recovery, providing emotional support and increasing empowerment and self advocacy. Most programs led by coworkers have the core component of sharing it with friends, which emphasizes that the participants play a central role in, and are responsible for, their own recovery. [10]. The participants are encouraged to make their own decisions and to set realistic recovery goals that they like. These approaches allow the participants to learn to help themselves and each other through peer support, sharing their strength and sense of personal responsibility. This empowerment process increases expectations, self-esteem and self-confidence.

The results of the literature review conducted showed that peer-based support gave positive results when referring to the self-management of schizophrenic patients. The interventions carried out increase patient activation, in which patient activation shows the patient's self confidence and self-efficacy in the context of self-management. Self-efficacy is one component in self-management where this component is affected, one of which is support. Good self-efficacy in the patients provides them with the ability to carry out the tasks and roles given to them, one of which is self-management [22]. Increased self-efficacy shows a high acceptance of challenging tasks, lasting longer on assignments and overcoming setbacks quickly. Increased self-efficacy can also predict appropriate

coping strategies, imperfect life acceptance and personal growth[15]. It is also possible for it to influence self-management behavior.

The selection of one's peers as a facilitator and as a source of support also influences changes in self-management. Peer support is a facilitator coming from ex-schizophrenia patients who have been trained to provide support to other patients. The role and peer tasks as a facilitator relate to the ability to reflect on their own experiences and coping skills, the competence and willingness to actively use their own experiences as a resource in order to make it visible for users and to argue them critically, the conscious use of their own experiences to reduce inhibitions or to challenge appreciations and prejudices and a constructive approach when dealing with public stigmatization [15]. The existence of peer support can increase the bonding between patients both emotionally and practically. Using peer facilitators with a group format provides a credible source of social support for health behaviors which is the main key to maintaining disease management [14]. In addition to providing support, peers as a facilitator also helps the patients to share their life experiences. Life experiences shared with others helps t ignite their hope for the future and it also provides valuable social contact where limited social contact is a common issue identified in schizophrenic patients [17]. The expectations obtained can also affect the patient's self confidence and self-efficacy in terms of self-management.

Peer-based support provides meaningful activity for the patients, which influences the increase in their daily activities which can improve the wellbeing domains that are intellectual, social and psychological. This can reduce the persistent symptoms that arise. Furthermore, effective peer-based support interventions given in the first month after discharge from the hospital were identified as being delivered at the right time because at that time, the services were not optimally coordinated and a number of risks were at a higher level [11]. The further effects that the patients get from peer-based support include reduced readmission and improved functioning. The quality of life of the patients is possible but the study undertaken in the literature review shows no significant changes in the short term.

Establishing peer relationships is another approach used when providing social support other than through the family. This has become effective because of the benefits obtained based on several studies. Self management with peer support connects two or more individuals who experience the same chronic condition with the same feelings and anxiety related to dealing with the disease. This can help to change the required behavior and this leads to a more positive lifestyle. The results can be maximized with the involvement of health professionals as the facilitators.

The limitations obtained from peer-based support interventions are, in all studies, showing that the effects such as self management skills and reduced symptoms only last no more than 6 months to 18 months of follow-up [13]. We need a sustainable intervention that affects the quality of life of the patients. The maximal effect is possible due to the presence of fewer patients at each session; a strong commitment from the patient and a renewal of the intervention is needed. This systematic review has limitations, namely that there is limited research related to peer-based support. Some researchers only report on the feasibility and protocols of peer-based support so further research is needed.

5. Conclusion

Our systematic review found that peer-based support had a significant effect on the self-management of schizophrenic patients. Some of the articles showed the result that the support

provided by the patients' peers provides positive results related to the self confidence and self-efficacy of patients in terms of self-management. Peers as an intervention facilitator also plays a role as a credible source of support for health behavior which is the main key to health management. The use of the group format is also recommended to increase the desired results and the timing of the intervention, which is 1 month after hospital treatment. However, the effectiveness of peer-based support showed a decline after 6 - 18 months follow-up. A follow-up plan is needed following the intervention to provide long-term effects, especially related to the quality of life of the patients. Collaboration with other health workers such as psychiatrists, psychologists and nurses is also needed to look at the effects of wider interventions. The limitations of the systematic review of the research articles was that it was only limited to protocols and the feasibility of the specific form of peer-based support used; this needs to be followed up.

References

[1] Schie D Van, Castelein S, Bijl J Van Der, Meijburg R and Stringer B 2016 Systematic review of self-management in patients with schizophrenia : psychometric assessment of tools , levels of self-management and associated factors

[2] Humairah D 2016 Self Management untuk Meningkatkan Keberfungsian Sosial pada Pasien Skizofrenia © *Psychol. Forum UMM, 19 – 20 Februari 2016 Self* 19–20

[3] Zou H, Li Z, Arthur D and Wang H 2014 Self-management in Chinese people with schizophrenia and their caregivers : A qualitative study on facilitators and barriers 355–63

[4] Yu Y, Tang B wei, Liu Z wei, Chen Y mei, Zhang X yu and Xiao S 2018 Who cares for the schizophrenia individuals in rural China — A profile of primary family caregivers *Compr. Psychiatry* **84** 47–53

[5] Druss B G, Singh M, Esenwein S A Von, Ph D and Glick G E 2018 Peer-Led Self-Management of General Medical Conditions for Patients With Serious Mental Illnesses : A Randomized Trial 529–35

[6] Health N C C for M 2014 PEER-PROVIDED AND SELF-MANAGEMENT INTERVENTIONS

[7] Bruce M L, Lohman M C, Bartels S J, DiMilia P R, Brooks J M, Zubritsky C D, Fortuna K L, Halaby M R and Walker R M 2017 Feasibility, Acceptability, and Preliminary Effectiveness of a Peer-Delivered and Technology Supported Self-Management Intervention for Older Adults with Serious Mental Illness *Psychiatr. Q.* **89** 293–305

[8] Sasaki N, Yamaguchi S, Ito J, Matsunaga A, Taneda A, Mizuno M, Hisanaga F, Bernick P, Fukui S, Sakata M and Sawada Y 2017 Efficacy of a Peer-Led, Recovery-Oriented Shared Decision-Making System: A Pilot Randomized Controlled Trial *Psychiatr. Serv.* **68** 1307–11

[9] Wai S, Chan C, Li Z, Klainin-yobas P, Ting S, Chan M F and Eu P 2013 Effectiveness of a peer-led self-management programme for people with schizophrenia : protocol for a randomized controlled trial 1425–35

[10] Steigman P, Grey D D, Burke-Miller J K, Diehl S, Pickett S, Fox A, MacFarlane R, Shipley P and Cook J A 2011 Randomized controlled trial of peer-led recovery education using Building Recovery of Individual Dreams and Goals through Education and Support (BRIDGES) *Schizophr. Res.* **136** 36–42

[11] Kidd S A, Virdee G, Mihalakakos G, McKinney C, Feingold L, Collins A, Davidson L, Weingarten R, Maples N and Velligan D 2016 The Welcome Basket Revisited: Testing the Feasibility of a Brief Peer Support Intervention to Facilitate Transition from Hospital to Community *Psychiatr. Rehabil. J.* **39** 335–42

[12] Beattie J, Battersby M W and Pols R G 2013 The acceptability and outcomes of a peer- and health-professional-led Stanford self-management program for Vietnam veterans with alcohol misuse and their partners. *Psychiatr. Rehabil. J.* **36** 306–13

[13] Morant N, Hindle D, Piotrowski J, Goater N, Hunter R, Lloyd-Evans B, Leverton M, Osborn D, Mason O, Lean M, Johnson S, Ambler G, Davidson M, Henderson C, Sullivan S, Kelly K, Pilling S, Christoforou M, Lamb D, Milton A, Forsyth R, Paterson B, Mosse L and Marston L 2018 Peer-supported self-management for people discharged from a mental health crisis team: a randomised controlled trial *Lancet* **392** 409–18

[14] E. Peer J, Brown C H, Walsh M B, Goldberg R W, Li L, M. Hack S, Muralidharan A and A. Klingaman E 2018 Living Well: An Intervention to Improve Medical Illness Self-Management Among Individuals With Serious Mental Illness *Psychiatr. Serv.* **70** 19–25

[15] Wegscheider K, Daubmann A, Bock T, Priebe S, Mahlke C I and Heumann K 2016 Effectiveness of one-to-one peer support for patients with severe mental illness – a randomised controlled trial *Eur. Psychiatry* **42** 103–10

[16] Gjerden M, Steinsbekk A, Linaker O M, Lara-Cabrera M L and Gråwe R W 2016 Short-term effects of a peer co-led educational programme delivered before mental health treatment: A randomised controlled trial *Patient Educ. Couns.* **99** 1257–61

[17] Scanlan J N, Hancock N and Honey A 2017 Evaluation of a peer-delivered, transitional and post-discharge support program following psychiatric hospitalisation *BMC Psychiatry* **17** 4–11

[18] Zhao L, Bona J R, von Esenwein S A, Fricks L, Jenkins-Tucker S, Sterling E, Lorig K, Druss B G and DiClemente R 2010 The Health and Recovery Peer (HARP) Program: A peer-led intervention to improve medical self-management for persons with serious mental illness *Schizophr. Res.* **118** 264–70

[19] Grady P A and Gough L L 2015 [Self-management: a comprehensive approach to management of chronic conditions]. *Rev. Panam. Salud Publica* **37** 187–94

[20] Almeida R S De, Couto A, Marques M A, Queiros C and Martins C 2018 Mobile Application for Self-Management in Schizophrenia : A Pilot Study Mobile Application for Self-Management in Schizophrenia : A Pilot Study *J. Technol. Hum. Serv.* **0** 1–12

[21] Blixen C E, Kanuch S, Perzynski A T, Thomas C, Dawson N V. and Sajatovic M 2016 Barriers to self-management of serious mental illness and diabetes *Am. J. Health Behav.* **40** 194–204

[22] Kawi J 2012 C 108 © 2012 **26** 108–26

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PREFERENCE END OF LIFE CARE AMONG THE ELDERLY: A SYSTEMATIC REVIEW

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ABSTRACT

End of life care contradict with the expectation of the elderly sometime. Culture and ethnicity maybe play the main role in the end of life care decision making. The aim of this study was to explore about end of life care preference among the elderly. Literature search performed in 2015-2019. Data base used in this study were Scopus, Sage, Elsevier, and Oxford. Inclusion criteria were full-texts of the selected article. Exclusion criteria were literature review, editorial, and critical synthesis. Ten articles were included in the systematic review: 2 cross sectional, 4 qualitative study, 1 cohort, and 3 mixed method. Culture played a role how individuals had an end of life care decision making. Many elderly did not chose end of life care, except for supportive or non-curative services so they would likely pursue them. Some of their preference were liked to die at home and avoided a high cost. End of life care sometimes is not suitable with the expectation of the elderly. To avoid inappropriate end of life care to the elderly, we recommend to respect to the elderly's autonomy by looking the culture.

Keywords: end of life care, decision making, elderly

1. Introduction

A global phenomenon is an aging population. That phenomenon brings in new challenges because of the increasing number of older people with chronic illness and disabilities [1]. The chronic illness and disabilities of older people involves end of life care. Cultural values and the ethnicity of a person may play an integral role in end of life care decision making. End of life care is a medical treatment that can be provided against an individual's wishes sometimes, so this increases their burden and discomfort both financial and emotionally [2]. If the wishes of the older people's approach to end of life care are better understood, then family conflict can be reduced [3].

Frailty is the most condition among the elderly in end of life situations [4]. Support could include helping the patients and family support. Health care professionals can help the patients to express their wishes [3]. In America, those who die in every year spend the last phase of their lives experiencing repeated hospitalization that is ineffective and the burden of high-intensity treatment [5]. Thus the aim of this study is to explain the preferences related to end of life care among the elderly in order to fulfill the elder's wishes, to reduce family burden and to prevent inappropriate care being given to the elderly.

2. Methods

2.1 Inclusion and Exclusion Criteria

The inclusion criteria were that the full text available of the selected article. The exclusion criteria were a literature review, editorial and critical synthesis.

2.2 *Search Strategy and Selection of the Studies*

The preparation of this systematic review began with the selection of the topics. The keywords were then determined and the literature search was performed between the years 2015 and 2019. The databases used in this study were Scopus, Sage, Elsevier and Oxford. The keywords used were "end of life care", "end of life", "elderly", "decision making" and "preference end of life".

3. Results

3.1 Summary of the Articles

No	*Author*	*Title*	*Methods*	*Results*
1	**(Ohr *et al.*, 2016)**	Cultural and religious beliefs and values, and their impact on the preferences for end-of-life care among the four ethnic groups of community-dwelling older persons	**D:** cross-sectional **S:** 453 elderly (≥65 year old) from 4 ethnic groups (Anglo Celtic, Mediterranean, Eastern European and the Asia/Pacific) in Australia **V:** - Truth telling and advanced care planning - Preferences for EOL care **I:** EOL care survey (Straw & Cummins, 2003) **A:** Cronbach's alpha	***Death and dying*** - More than 92% of the respondents believe that death is a normal part of life. More than 70% feel comfortable talking about death and dying. ***Truth telling*** - More than 74% of respondents want the doctor to tell them when they are dying and 80% of the respondents said that they would tell their family if they were dying. ***Advanced care planning*** - Almost 60% of respondents reported that they have thought about medical care when they were dying. ***Preferences for end of life care*** - More than 60% of the elderly claimed that they did not want to prolong their life, such as being supported by a breathing machine, if their brain has stopped, tube feeding and feeling severe pain. - More than 80% of the respondents strongly

				agreed that comfort and being free of pain were important to long life if they had an untreated disease. - Almost 60% of the respondents claimed that it is better to be treated at home than in the hospital if they had an unhealed disease. There are differences between *truth telling* and preferences for EOL care.
2	**(Nakanishi, Niimura and Nishida, 2016)**	Factors associated with end-of-life care by home-visit nursing-care providers in Japan	**D:** Cross-sectional **S:** 138.008 samples from 3513 data providers **V:** End of live care (dependent) and the patient, demographic details and the institutions (independent) **I:** Survey of Institutions and Establishments for Long-Term Care (SIEL), **A:** Multivariate binomial logistic regression analysis	- 138.008 samples; 2280 (1.7%) got a nursing home in the last month of their life. - 2280 patients had nursing at home: age (average 78 years old), sex (woman), high dependency, severe cognitive impairment, type of extended family and primary disease - 1651 patients received nursing at home because of cancer
3	**(Boucher, 2017)**	Faith, Family, Filiality and Fate: Dominican and the Puerto Rican Elders' Perspectives on End-of Life Decisions	**D:** Exploratory study used grounded theory **S:** 51 elderly in Dominican NYCHA, Dominician non-NYCHA, Puerto Rican NYCHA and Puerto Rican non-NYCHA **V:** The characterization of the family involvement in health decisions, filial piety, religiosity/spirituality and fatalism as they relate to attitudes/ intentions toward end-of-life (EOL) planning/decision making among elderly **I:** Using an interview guide **A:** Nvivo 10 (QSR	- There are no significant differences between attitude and the intention towards advanced care planning between Dominican and Puerto Rican or NYCHA and non-NYCHA residents. ***Fatalism and spirituality/religion*** - Everything will be as it will be, including this life. Thus there is no specific planning related to end of life decision making. - God's will ***Family involvement in health decisions and filial piety***

			International)	- Most of the respondents express their wishes to involve their family in decision making near to the end of their life. However, they are often obstructed by distance, emotions and truth. - 12 respondents have discussed their *end-of-life decisions* with their family. - Some of the respondents are uncomfortable discussing the *end of their life*. - The barriers to discussing end of life decisions are that they are too young, that they have no illness and that they don't understand about advanced care planning. - Most of them did not like to be supported by machine.
4	**(Dennis and Washington, 2016)**	"Just Let Me Go": End-of-Life Planning Among Ojibwe Elders	**D:** Qualitative descriptive **S:** 20 elderly (average age was more than 70 year old) **V:** The elderly's view about the end of life and their attitude and behavior towards advanced care planning. **I:** Semi-structured questions **A:** analisis tematik induktif	**Hasil** - **Need a little formal planning** The respondents did not show any anxiety about facing the end of their life, although some of them had a chronic illness or multiple diseases. They claimed that life will progress naturally. There is no formal planning for end of life care. - **Open mind about advanced care planning** No one had a formal note about their preference for end of life care. However, they considering starting thinking about that. - **Want a peaceful death** The respondents expressed that they

				always prayed in order to get a peaceful death. A peaceful death means that when they are dying, they are surrounded by their family and children.
5	**(Wachterman *et al.*, 2017)**	End-of-Life Experience of Older Adults Dying of End-Stage Renal Disease: a Comparison with Cancer	**D:** Cohort study **S:** Data from the *Health and Retirement Study* (HRS) **V:** ACP, treatment intensity, and the symptoms between 2 groups **I:** Questionnaire **A:** Logistic regression	Patients with chronic kidney disease who were elderly had a lower rate of ACP *(advanced care planning).*
6	**(Ardelt and Edwards, 2015)**	Wisdom at the End of Life: An Analysis of Mediating and Moderating Relations Between Wisdom and Subjective Well-Being	**D:** Qualitative quantitative **S:** 156 elderly in the community **V:** SWB (*subjective well being*) and *wisdom*) **I:** *General Well Being Schedule* (GWBS) and the *Three dimensional wisdom model* **A:** Path model	The wise elderly had good *subjective well being* relatively, even when under a stressful physical condition and when faced with death.
7	**(Zuckerman, Stearns and Sheingold, 2015)**	Hospice Use, Hospitalization, and Medicare Spending at the End of Life	**D:** Comparison **S:** Data from 2010 **V:** Differences between the nursing homes **I:** peneliti **A:** Regression	Time spent in a nursing home for two weeks is equal to a decrease in hospitalization.
8	**(Periyakoli, Neri and Kraemer, 2015)**	Patient-Reported Barriers to High-Quality, End-of-Life Care: A Multiethnic, Multilingual, Mixed-Methods Study	**D:** Mixed method **S:** Multiple ethnicicities (Fremont, Palo Alto, San Francisco, San Jose, and Walnut Creek) in California **V:** Study 1 (identification of the barriers involved in end of life care) and Study 2 (age, gender, ethnicity, education level and marital status) **I:** Questionnaire **A:** Qualitative (grounded theory methods) and quantitative (SAS version	There are six barriers to end of life care: finances, the doctor not informing them about end of life care, ineffective communication with general practitioners, the family's beliefs, health care systems, religion and culture.

			9.3)	
9	**(Ho and Sanders, 2015)**	Preferences on End-Of-Life Decisions Among Older Chinese in Macau	**D:** Qualitative **S:** 18 elderly **V:** Perspective of the end of life care decision making in the elderly in China **I:** Questionnaire	- For end of life care, they prefer not to be a burden on their family. They like to be treated by a caregiver. - They did not want to prolong their life
10	**(Espaulella *et al.*, 2015)**	Frailty, severity, progression and shared decision-making: A pragmatic framework for the challenge of clinical complexity at the end of life	**D:** Qualitative **S:** 18 elderly **V:** Frailty, severity, progress and decision making. **I:** Questionnaire	Decision making was a challenge for the professionals.

3.2 Demographic Characteristics

The age of the elderly in this research was 60 year olds and over in the Hunter Region of Australia divided into ethnicities such as Anglo-Celtic, Mediterranean, Eastern European and Asia/Pacific; Dominicians living in New York, Japan, America, California including Caucasian, Asian Americans, African Americans, African Americans and Hispanic Americans, and China.

3.3 Preference End of Life

3.3.1 Institutionalized Care at the End of Life Was Preferred. The reason for institutionalized care at the end of life stage was because they did not want to be a burden on their family or because their family could not provide good care. The second opinion was because the children were living at a distance away from them, so they had no choice but to go into an institutions, most commonly a health institution [3]. For example, the chronically ill with end stage renal disease (ESRD) will likely use the ICU or life support equipment and they are more likely to die in the hospital [4]. Most of the respondents with heart failure, stroke, lung cancer, and colorectal cancer went t a hospice or a nursing home [5].

3.3.2 Life-Prolonging Measures Were Not Preferred. When the elderly had a terminal disease, they desired not to have medical treatment to prolong their life [3]. The respondent's beliefs are that death should be avoided at all costs. The respondents also indicated that they did not want to live as long as possible if they were on life support or a breathing machine, if their brain had stopped working, if they had to be fed through a tube and if they were in severe pain. Almost all of the respondents strongly agreed that being comfortable and out of pain was more important than prolonging the duration of life [2]. Several interviewees clearly stated that that they did not want to be on life support if it meant being on a machine for weeks or being in pain [6].

3.3.3 Autonomy, Family, or a Doctor in End of Life Decision Making. The respect given to the

doctor's medical opinion at the end of their life by the elderly is because they believe that the doctors are professional and knowledgeable [3]. They would tell their family if they were dying more than they would say so to a doctor [2]. The elderly expressed a desire to involve their family in the end of life decision making but several of the elderly noted that this was not possible due to geographic distance. There is the parent's expectation of their children as well as their own experience of caring for their parents during illness to consider [6]. Many of the interviewees strongly agreed that the combined power of personal choice and strength from God allowed them to make the correct decision [6].

3.3.4 Nursing Home End of Life Care. Greater physical dependence, being older, severe cognitive impairment and being diagnosed with a malignant neoplasm meant a significantly greater likelihood of receiving end of life care. Only 1.7% the elderly receiving nursing care at home within the last month of life in Japan [1].

3.3.5 Little Formal Decision Making. The elderly were generally accepting of what comes next. Most of them utilized control including diet, exercise and following the medical providers' advisement, but how one will die was universally put into the hands of God and down to random chance. They ultimately know God to be the final arbiter [6].

4. Discussion

The older people, regardless of their cultural background, preferred to be told if they were dying with a strong belief that dying is a normal part of life. They have thought about the care that they want at the end of life and they talked to their family when they were really unwell. More than half told the doctor or their general practitioner [2]. Clinical complexity is closely linked to uncertainty in end of life care and concerning the patients, so it causes difficulties in both diagnosis and decision making [7]. On the other hand, wisdom and subjective well-being effect a greater number of the elderly for nursing home residents and hospice patients in the end of life care sample [9].

Culture has been prominent in health care. Death should be avoided at all costs [2]. However, it is contrary to the findings of the study; most of the respondents with heart failure, stroke, lung cancer and colorectal cancer had been to a hospice or nursing home in the last two month [5]. Contrary cases should be considered as there are some factors influencing end of life care, including finances, family beliefs and behaviors, culture and religion, and health care system communication between the doctor and patient [7].

In terms of culture, their ethnical background indicated that they do not want to live for as long as possible if they are on life support, if their brain had stopped working, if they had to be fed through a tube and if they were in severe pain. Contrary to this, African Americans wanted aggressive care at the end of their life. The Asia/Pacific group had strong preference for being in the hospital or emergency room for an incurable disease [2].

Other research showed that the percentage of the elderly that were pro-ANH (artificial nutrition and hydration) in Japan was very low. Many of the elderly did not have clear wishes about their end of life care [10]. The limitations of this study are that it needs more literature to support the review and that it doesn't focus on a specific ethnicity, culture or religion to make a specific conclusion related to the preference for end of life care.

5. Conclusions

The research shows that the preferences for end of life are varied, and that cultural and religious beliefs may have an impact. The different ethnicities from the different cultures involved had different viewpoints. In this review, all of the involved ethnicities – Anglo-Celtic, Mediterranean, Eastern European and Asia/Pacific, Dominicians living in New York, Japan, America, California including Caucasian, Asian Americans, African Americans, African Americans, Hispanic Americans and the Chinese - had their own opinion on end of life care.

References

[1] Nakanishi M, Niimura J, Nishida A. Factors associated with end-of-life by home-visit nursing-care providers in Japan. 2016;

[2] Ohr S, Officer ML, Service MH, Jeong S, Saul P. No Title. 2016;

[3] Ho S, Sanders GF. Preferences on End-Of-Life Decisions Among Older Chinese in Macau. 2015;

[4] Novellas JA, Espaulella J, Rexach L, Fontecha B, Inzitari M, Blay C, et al. Frailty, severity, progression and shared decision-making: A pragmatic Framework Life, for the challenge of clinical complexity at the end of. Eur Geriatr Med. 2015;6:189–94.

[5] Periyakoli VS, Neri E, Kraemer H. Patient-Reported Barriers to High-Quality, End-of-Life Care: A Multiethnic, Multilingual, Mixed-Methods Study 1,2 1. 2015;18(X).

[6] Wachterman MW, Lipsitz SR, Lorenz KA, Marcantonio ER, Li Z, Keating NL. AC. J Pain Symptom Manage. 2017;

[7] Zuckerman RB, Stearns SC, Sheingold SH. Hospice Use , Hospitalization , and Medicare Spending at the End of Life. 2015;00(00):1–12.

[8] Boucher NA. and Fate : Dominican and Puerto Rican Elders ' Perspectives on End-of- Life Decisions. 2017;

[9] Ardelt M, Edwards CA. Wisdom at the End of Life : An Analysis of Mediating and Moderating Relations Between Wisdom and Subjective Well-Being. 2015;00(00):1–12.

[10] Yamaguchi Y, Mori H, Ishii M, Okamoto S, Yamaguchi K, Iijima S, et al. Interview- and questionnaire-based surveys on elderly patients' wishes about artificial nutrition and hydration during end-of-life care. Geriatr Gerontol Int. 2016;16(11):1204–10.

EPD-801

THE PREVALENCE AND INCIDENCE OF POST-TRAUMATIC STRESS DISORDER (PTSD) AFTER NATURAL DISASTER IN INDONESIA: A SYSTEMATIC REVIEW

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ABSTRACT

Indonesia is a disaster laboratory. Many disasters have occurred in Indonesia. There is no systematic review that explains the prevalence and incidence of PTSD after natural disasters in Indonesia. Objectives of this review were to explain the prevalence of PTSD in children, the elderly and all age groups between, after natural disaster in Indonesia. A systematic review, following PRISMA guidelines, was undertaken to identify the incidence and prevalence of PTSD after natural disaster in Indonesia. The following databases were searched: Scopus, EBSCO, SienceDirect, Springerlink, and PubMed were used to search scientific contribution which is published between 2007-2017. Articles pre-identified by using relevant keywords. A total of fourteen papers were identified about 178 articles both meet inclution and exclution criteria and were reviewed. The papers were identified are natural disaster such as tsunami, earthquake, and volcanic eruption. The mean prevalence of PTSD in Aceh was 77.1%, in North Sumatra was 33%, in Central Java was 52.4%, and Bantul was 37%. Some study identified PTSD incidence in Aceh as 20.6%, 63.1%, 10.39%, 70%, 24.6%, 35.6 % and 48% between 2008-2015. The mean prevalence rates of PTSD were highest in Aceh and lowest in Bantul.

Keywords: PTSD, natural disaster, Indonesia, incidence, prevalence

1. Introduction

PTSD develops in response to a traumatic event. About 60% of men and 50% of women experience a traumatic event at least once in their lifetime. Most people who are exposed to a traumatic event will have some of the symptoms of PTSD in the days and weeks after the event. For some people, these symptoms are more severe and long lasting. The reasons why some people develop PTSD are still being studied. There are biological, psychological and social factors that affect the development of PTSD[1]. Disaster is a defined as a potentially traumatic event which may be collectively experienced and that can be attributed to natural, technological or human causes. [2]

Natural disasters such as earthquakes can threaten and disrupt the lives and livelihoods of people caused by natural and / or non-natural factors and human factors resulting in human casualties, environmental damage, property losses, and psychological impacts (Undang-Undang No.24 Tahun 2007). These psychological impacts can cause many mental health problems[3].

Trauma to individuals associated with an event can include a dangerous physical or emotional threat that can be life threatening and it can cause a loss of effects in relation to individual functions and mental, physical, social, emotional or spiritual well-being [4]. The most common reactions such

as the sadness, anxiety, anger and stress experienced by victims after a disaster are normal responses to very abnormal situations[4].

Even though everyone will be affected in some traumatic events, the reactions and feelings of each person can vary. Many people may feel very scared or anxious or they can feel numb and feel separated. Some people can have a mild reaction but a few will experience a severe reaction. Many factors determine a person's reaction such as the nature and severity of the trauma experienced, previous traumatic experiences, the support that they have from others, physical health, their personal and family history of mental health problems, cultural and traditional backgrounds and age (children from different age groups will react differently).[5]

Everyone has the strength and ability to overcome life's challenges but some people who are very vulnerable in crisis situations will need additional assistance such as special groups of children and adolescents. Children and adolescents are vulnerable to mental health problems after a disaster. Most teenage victims only display transient psychological symptoms as a normal reaction to traumatic events [6]. Children who survive earthquakes may have many psychological problems, such as stress, depression and anxiety[7]. Other psychological impacts include prolonged sadness, substance abuse disorders, distorted perceptions, pessimism and suicide attempts[6].

The re-exposure to disasters has a worse effect on the mental health of children and adolescents. Children and adolescents who have been exposed to disasters will be more sensitive to the negative impacts of subsequent disasters [3]. The psychological impact of mass catastrophes in developing countries is rarely evaluated systematically. Post-traumatic stress disorder is indiscriminate: the condition can manifest in people from different cultures, demographics and parts of the world and after a variety of disaster-types. Researchers have examined the prevalence of PTSD in children, the elderly and all of the age groups between [8]. Indonesia is often hit by disasters caused by both natural and human factors. The Asia Disaster Reduction (2019) reported that Indonesia experienced 47 earthquakes, 41 floods, 47 landsides, 14 volcanic eruptions, 7 episodes of heavy rain, 6 tsunamis, 4 incidences of volcanic activity and 14 flash floods in the 19-year period between 2000 and 2019. One of the most recent disasters in Indonesia was the tsunami in 2004. During the tsunami, more than one million people died.[9] This study is intended to determine the prevalence and incidence rate of PTSD related to natural disasters in Indonesia.

2. Research Methods

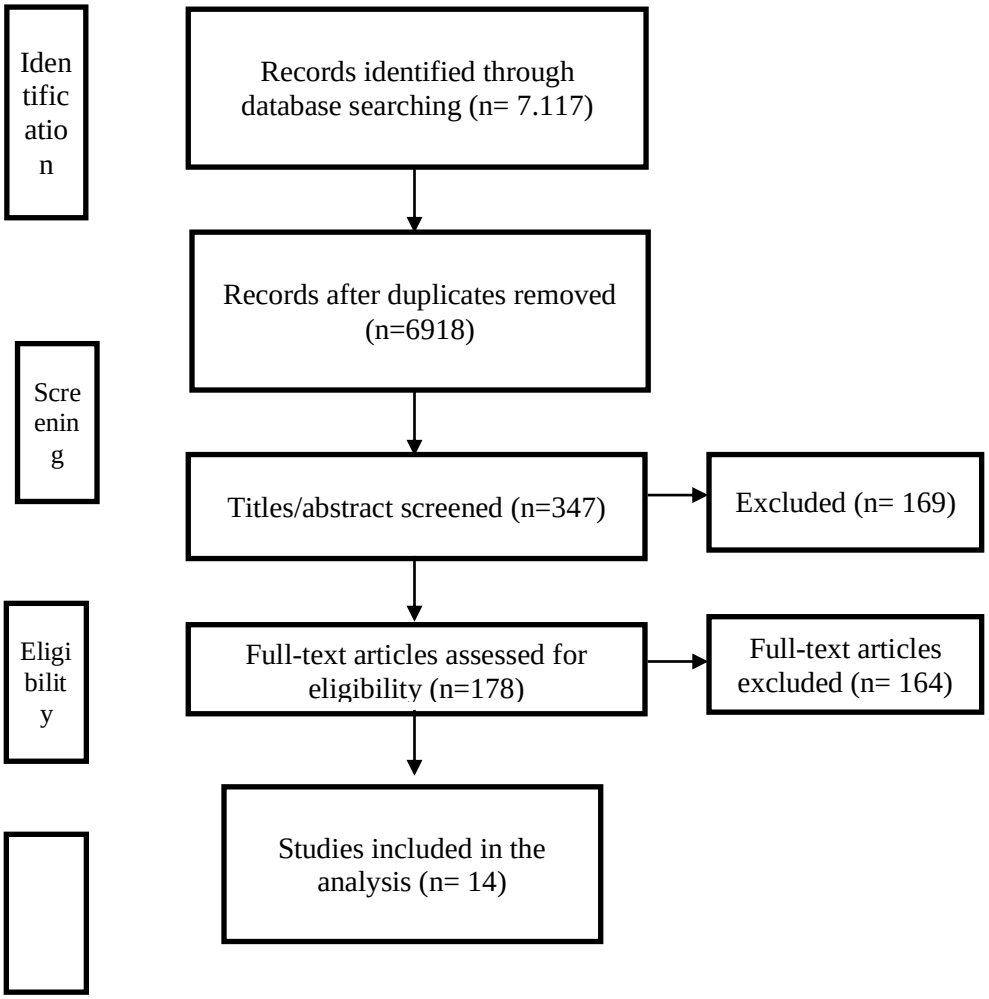
The study employed a systematic review methodology using the guidance of PRISMA, which aimed to establish, through the available literature, the incidence and prevalence of PTSD in Indonesia.

2.1. Search strategy

Systematic searches were conducted through the following electronic databases: Scopus, EBSCO, ScienceDirect, Springerlink and PubMed. This was in order to identify published studies on the prevalence of PTSD. The following search terms and strategy was used (“traumatic stress” or PTSD or posttraumatic or posttraumatic stress disorder or trauma or post traumatic or post-traumatic) AND (disaster or natural disaster) AND (prevalence) AND (incidence) AND (Indonesia). The databases were searched from January 2007 to December 2017 (date last searched).

Figure 1 shows the results of the systematic search. As can be seen, this returned a preliminary database of 7.117 papers. The titles and abstracts of these articles were reviewed in order to exclude

irrelevant studies and the remaining studies were evaluated against the inclusion criteria. Where the abstract failed to provide sufficient information, the full article was reviewed. The full-texts were examined for eligibility out of the 14 articles that met the inclusion criteria. Full copies meeting the inclusion criteria identified during the search were used for the synthesis of the data. Articles found in the reference lists were considered if their titles were relevant.



1.1.1.1.1.1 Figure 1. Study inclusion based on the preferred reporting items for systematic-reviews

2.2. Inclusion and exclusion criteria

This review considered all studies that involved human subjects of any age that currently had PTSD following a natural disaster in Indonesia. The review considered all of the published studies related to the epidemiology (incidence/prevalence) of PTSD in Indonesia. Grey literature, unpublished articles, retrospective studies and reviews were excluded but there were no limits for language.

2.3. Data extraction

Articles that seemed to meet the aims and inclusion criteria according to their titles and abstracts were read in full text to determine whether the paper should be included. Using a data extraction table, the 3 authors extracted the data from the included articles. The following data were collected: author, date of study, title, source, study geographical location, study setting, study design and the

prevalence/incidence of PTSD.

2.4. Studies included/excluded

A total of 7.117 studies were found during the initial search of the databases and 6.918 duplicates were removed. Following the removal of duplicates, the titles and abstracts where relevant were reviewed and 169 articles were excluded based on the inclusion and exclusion criteria, particularly geographical location. The full texts of the remaining 347 articles were reviewed. Another search of the included articles within the bibliographies identified 178 additional papers. Following this, 164 papers were excluded because they did not meet the inclusion criteria. Finally, 14 papers were included for data extraction and quality appraisal. The flow of papers through the search has been shown in the form of a PRISMA flow chart (Fig 1). Due to the differences in the data collection methods, study populations and study settings, the results have been presented as a narrative summary for ease of understanding and to better appreciate the data. For the prevalence and incidence measures, the denominator was the total number of people reported in the articles who participated in a particular study.

3. Result

3.1. Geographical location

The articles included in the review were from Province Nanggroe Aceh Darussalam (50%; n=7), combined Province North Sumatera and Nanggroe Aceh Darussalam (14.29%; n=2), Province Daerah Istimewa Yogyakarta (14.29%; n=2), combined Province Daerah Istimewa Yogyakarta and Central Java (7.14%; n=1), Central Java (7.14%; n=1) and one of the articles included in the review was from a general province in Indonesia.

3.2. Study setting

Most of the studies were conducted in the affected districts and sub-district impacts following a natural disaster. Furthermore, 4 studies were conducted in schools such as elementary school, junior high school and senior high school. Finally, 1 study was conducted in a rural community in Indonesia.

3.3. Study population

The population of these studies consisted of all of the people affected by natural disasters and 1 study had a population that was not directly exposed to the disaster in order to compare the prevalence of PTSD after trauma (Irwanto, Faisal, & Zulfa, 2015). The participants were of either gender and of different age ranges. The population characteristics were different in each study and these have been recorded in the data extraction table as shown in Table 1.

3.4. Sample size

The total sample size of all 14 included studies was 25.839. The smallest sample was 64 and the largest sample was 20.500. The largest sample was obtained for the study by employing a cross-sectional design focused on tsunamis in the two combined provinces of Nanggroe Aceh Darussalam and North Sumatera.

3.5. Outcomes: prevalence and incidence of PTSD

Only one of the included studies measured the incidence of PTSD - 10.39% in Nanggroe Aceh Darussalam, which was a randomized controlled trial study. The remaining 13 studies reported on

the PTSD prevalence rates. Seven studies reported on the prevalence of PTSD in Nanggroe Aceh Darussalam with tsunamis, 1 study reported on the prevalence of PTSD in twos province in Nanggroe Aceh Darussalam and North Sumatera with earthquake and tsunamis, 3 studies reported on PTSD in Daerah Istimewa Yogyakarta with earthquakes, 1 study in Daerah Istimewa Yogyakarta and Central Java was focused on earthquakes and volcanic eruptions and one study in Central Java was focused on earthquake. The mean prevalence was 47.62%, with the lowest prevalence of 5% in Daerah Istimewa Yogyakarta with earthquakes and the highest prevalence being 47.58% for earthquakes and volcanic eruptions in Daerah Istimewa Yogyakarta. The prevalence and incidence findings that have been presented by province are shown in Table 2.

4. Discussion

This systematic review provides an overview of the published literature reporting on the prevalence and incidence of PTSD following natural disasters in Indonesia. The quality of the included studies was assessed. We identified 13 studies reporting the prevalence of PTSD and 1 studies reporting the incidence of PTSD. The reported prevalence or incidence rates were diverse across different follow-up points resulting in a wide range. The prevalence and incidence of PTSD in the included studies varied widely, similar to what was found by Greene and their colleagues, who noted that the heterogenity apparent in their findings was a result of the samples involving different levels of trauma exposure [10]. All of the studies in this systematic review were carried out at least 2 months after exposure to the disaster. The disasters identified in this systematic review included earthquakes, tsunamis and volcanic eruptions. Nine studies reported a high prevalence of PTSD in tsunami events in the provinces of Nanggroe Aceh Darussalam and North Sumatra. The prevalence shown is the highest prevalence compared to other disasters because a tsunami is a severe disaster. The severity of exposure to a disaster can increase the risk of mental health disruption [2]. In our findings, several studies showed that the area overall was not affected by trauma and this allowed them to be compared to the respondents who immediately received exposure to trauma. The result is that the respondents who are directly exposed to trauma have a greater prevalence of PTSD than those who are not directly affected by the trauma. Depression in this case can cause PTSD to occur after a disaster and this affects almost 25% of victims directly who have been exposed to the disaster [6]. Several studies report that the prevalence of depression ranges from 14.5% -40.8% among the children who survived the Wenchuan earthquake in China. Previously, disaster psychology studies showed that youths had a higher risk than adults in terms of dealing with disasters related to psychiatric problems [11].

One limitation that can be attributed to the lack of studies that discuss natural disasters in Indonesia is that Indonesia is one of the countries with varying natural disasters. In research, more natural disasters were studied that cause many casualties. Other natural disasters that occur regularly such as floods, strong winds, flash flood, landslides and wild fires that cause few fatalities are rarely found. The incidence and prevalence of PTSD can occur in anyone who has been exposed to a disaster. The limitation of these studies is that there is no research that discusses PTSD that occurs in the natural disasters that more routinely occur in Indonesia.

5. Conclusion

This article provides the results of a systematic review aimed at determining the prevalence and incidence of PTSD in the provinces of Indonesia. The highest mean prevalence rate of PTSD was seen in Daerah Istimewa Yogyakarta and the lowest mean prevalence was seen in Daerah

Istimewa Yogyakarta and Central Java. Only one study reported on the incidence of PTSD and this was conducted in an elementary school of Nanggroe Aceh Darussalam with a randomized controlled trial. Areas that are directly exposed to trauma have a higher prevalence of PTSD compared to areas that are not exposed even though they are in the same province. It is clear that reported studies about the incidence and prevalence of PTSD are still limited in Indonesia. Therefore, it reveals a large gap in terms of determining and comparing the prevalence and incidence between the provinces in Indonesia. The current data from this review demonstrates that there is an urgent need for encouraging research in the Indonesia country to contribute on a wider scale to the literature on PTSD and to develop studies that are of a higher quality and quantity.

References

[1] Natonal Center for PTSD 2010 What is PTSD ? 1–5

[2] McFarlane C A and Norris H. Fran 2006 Definitions and Concepts in Disaster Research 3–19

[3] Geng F, Zhou Y, Liang Y and Fan F 2018 A Longitudinal Study of Recurrent Experience of Earthquake and Mental Health Problems Among Chinese Adolescents **9** 1–9

[4] Beinecke R, Raymond A, Cisse M, Renna K, Fuller A, Crawford K, Beinecke R, Raymond A, Cisse M and Renna K 2017 The mental health response to the Boston bombing : A three-year review ABSTRACT *Int. J. Ment. Health***46** 89–124

[5] World Health Organization W T F and W V and International 2011 *Psychological first aid: Guide for field workers* ed W and Leslie Snider (War Trauma Foundation, WTF), Mark van Ommeren (World Health Organization and W Alison Schafer (World Vision International (Switzerland: WHO: Geneva.)

[6] Tang W, Lu Y and Xu J 2018 Post-traumatic stress disorder , anxiety and depression symptoms among adolescent earthquake victims : comorbidity and associated sleep-disturbing factors *Soc. Psychiatry Psychiatr. Epidemiol.***0** 0

[7] Fu Y, Chen Y, Wang J, Tang X, He J, Jiao M and Yu C 2013 Analysis of prevalence of PTSD and its influencing factors among college students after the Wenchuan earthquake 1–6

[8] Warsini S, M M, Buettner P, D P, Mills J and D P 2015 Post-traumatic stress disorder among survivors two years after the 2010 Mount Merapi volcano eruption : A survey study * 173–80

[9] Anon 2019 Asian Disaster Reduction Center (ADRC)

[10] Greene T, Neria Y and Gross R 2016 Prevalence , Detection and Correlates of PTSD in the Primary Care Setting : A Systematic Review *J. Clin. Psychol. Med. Settings*

[11] Adams Z W, Danielson C K, Sumner J A, Jenna L, Cohen J R, Ruggiero K J, Adams Z W, Danielson C K, Sumner J A, Mccauley L, Cohen J R, Ruggiero K J, Adams Z W, Danielson C K, Sumner J A, Mccauley J L, Cohen J R and Ruggiero K J 2015 Comorbidity of PTSD , Major Depression , and Substance Use Disorder Among Adolescent Victims of the Spring 2011 Tornadoes in Alabama and Comorbidity of PTSD , Major Depression , and Substance Use Disorder Among Adolescent Victims of the Spring 2011 Tornadoes in Alabama and Joplin , Missouri **2747**

[12] Irwanto, Faisal and Zulfa H 2015 Posttraumatic Stress Disorder Among Indonesia Children 5 Years After the Tsunami **46**

[13] Agustini E N, Asniar and Matsuo H 2011 The prevalence of long-term post-traumatic stress symptoms among adolescents after the tsunami in Aceh 543–9

[14] Dawson K, Joscelyne A, Meijer C, Steel Z, Silove D and Bryant R A 2017 A controlled trial

of trauma-focused therapy versus problem-solving in Islamic children affected by civil conflict and disaster in Aceh , Indonesia **00**

[15] Du Y B, Lee C T, Christina D, Belfer M L, Betancourt T S, Rourke E J O and Palfrey J S 2012 The living environment and children ' s fears following the Indonesian tsunami **36** 495–513

[16] Frankenberg E, Friedman J, Gillespie T, Ingwersen N, Pynoos R, Rifai I U, Sikoki B, Steinberg A, Sumantri C, Suriastini W and Thomas D 2008 Mental Health in Sumatra After the Tsunami **98** 1671–7

[17] Irmansyah I, Dharmono S, Maramis A and Minas H 2010 Determinants of psychological morbidity in survivors of the earthquake and tsunami in Aceh and Nias 1–10

[18] Juth V, Silver R C, Seyle D C, Widyatmoko C S and Tan E T 2015 Post-Disaster Mental Health Among Parent – Child Dyads After a Major Earthquake in Indonesia

[19] Souza R and Bernatsky S 2007 Mental Health Status of Vulnerable Tsunami-Affected Communities : A Survey in Aceh Province , Indonesia **20** 263–9

[20] Mimh T W, Guerrero A P S, Kaligis F and Khamelia M 2010 Psychiatric morbidity among children in North Aceh district (Indonesia) exposed to the 26 December 2004 tsunami **2** 151–5

[21] Thormar S B, Sijbrandij M, Gersons B P R, Schoot R Van De, Juen B, Karlsson T and Olff M 2016 PTSD Symptom Trajectories in Disaster Volunteers : The Role of Self-Efficacy , Social Acknowledgement , and Tasks Carried Out 17–25

[22] Dawson K S, Joscelyne A, Meijer C, Tampubolon A, Steel Z and Bryant R A 2014 Predictors of Chronic Posttraumatic Response in Muslim Children Following Natural Disaster **6** 580–7

[23] Sattler D N, Claramita M and Muskavage B 2017 Natural Disasters in Indonesia : Relationships Among Posttraumatic Stress , Resource Loss , Depression , Social Support , and Posttraumatic Growth Natural disasters in Indonesia : Relationships among posttraumatic stress , resource loss , depression , social **5024**

[24] Widyatmoko C S, Tan E T and Silver R C 2011 Coping with natural disasters in Yogyakarta , Indonesia : The psychological state of elementary school children as assessed by their teachers

Appendix

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Table 1. Summary of the study characteristics

Author	Province	Type of natural disaster	Study setting	Study design	Population and sample size	Results
Irwanto, Faisal, & Zulfa (2015)	Nanggroe Aceh Darussalam	Tsunami	Least affected and most affected sub-districts concerning the impact of a tsunami disaster	Cross-sectional	262 children aged 7-13 years old	Prevalence of PTSD: 20.6%
Agustini, Asniar, & Matsuo (2011)	Nanggroe Aceh Darussalam	Tsunami	Junior High School and Senior High School in Banda Aceh and Aceh Besar	Cross-sectional	482 adolescent survivors, aged 11 to 19 years	Prevalence of PTSD: 63.1%
Dawson et al., (2017)	Nanggroe Aceh Darussalam	Tsunami and conflict	Elementary school	RCT	64 children from 7-14 years old	Incidence of PTSD: 10.39%
Du et al. (2012)	Nanggroe Aceh Darussalam	Tsunami	Barracks in Aceh Utara and Nagan Raya	Cross-sectional	155 children (5-14 years old)	Prevalence of PTSD: 70%
Frankenberg et al., (2008)	Nanggroe Aceh Darussalam and North Sumatera	Tsunami	Coastal areas of Aceh and North Sumatera	Cross-sectional	20.500 adults (15 years and older)	Prevalence of PTSD: 33%
Irmansyah, Dharmono, Maramis, & Minas (2010)	Nanggroe Aceh Darussalam and North Sumatera	Earthquake and Tsunami	Earthquake and tsunami affected areas of Aceh and Nias	Cross-sectional	783 people aged 15 years and over	Prevalence of PTSD: 26%
Juth, Silver, Seyle, Widyatmoko, & Tan (2015)	Daerah Istimewa Yogyakarta	Earthquake	District impact from an earthquake	Cross-sectional	397 parent-child dyads (10 years old and 41 years old)	Prevalence of PTSD : 84% in parent and 87% in children Mean prevalence of PTSD: 85.5%
Souza & Bernatsky (2007)	Nanggroe Aceh Darussalam	Tsunami	Barracks and camps in Aceh Utara, Lhokseumawe, and Bireuen	Cross-sectional	262 adults	Prevalence of PTSD: 77.1%
Warsini et al., (2015)	Daerah Istimewa Yogyakarta	Volcanic Eruption	District. Impact of a volcanic eruption in Yogyakarta	Cross-sectional	350 Adults between the ages of 18 and 59	Prevalence of PTSD: 52.24%
Mimh,	Nanggroe	Tsunami	North Aceh	Cross-	2135 subjects	Prevalence

Guerrero, Kaligis, & Khamelia (2010)	Aceh Darussalam		district	sectional	ranged in age from 4 to 18 years.	of PTSD children 4-10 years old: 24.6% Prevalence of PTSD adolescent 11-18 years old: 35.6% Mean prevalence of PTSD: 30.1%
Thormar et al. (2016)	Daerah Istimewa Yogyakarta and Central Java	Earthquake and volcanic eruption	Community	Cross-sectional	449 adults participants	Prevalence of PTSD (volcano eruption): 21.4% Prevalence of PTSD (earthquake): 17.4% Mean prevalence of PTSD: 19.4%
K. S. Dawson et al., (2014)	Nanggroe Aceh Darussalam	Tsunami	School in Aceh	Cross-sectional	110 children aged between 7 and 13 years of age	Prevalence of PTSD: 48%
Sattler, Claramita, & Muskavage (2017)	Central Java	Earthquake	Affected district impact in Bantul	Cross-sectional	85 adults (18-75 years old)	Prevalence of PTSD: 37%
Widyatmoko, Tan, & Silver (2011)	Daerah Istimewa Yogyakarta	Earthquake	Elementary school	Cross-sectional	147 home room teachers in the 16 schools representing a total of 3.115 children in the first through 6th grades, ages 6 to 14 years old	Prevalence of PTSD: 5%

1.1.1.1.2 Table 2. PTSD Prevalence and Incidence

Province (no. of studies)	Mean prevalence	Mean incidence
Nanggroe Aceh Darussalam (n=7)	45.61%	10.39%
Nanggroe Aceh Darussalam + North Sumatera (n=1)	26%	NA
Daerah Istimewa Yogyakarta (n=3)	47.58%	NA
Daerah Istimewa Yogyakarta + Central Java (n=1)	19.4%	NA
Central Java (n=1)	37%	NA

NA – Not Available

EPD-826

EMPOWERING CAREGIVERS TO CARE FOR PEOPLE WITH SCHIZOPHRENIA USING MOBILE TECHNOLOGY: A SYSTEMATIC REVIEW

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ABSTRACT

Building the strengths of caregivers can be a valuable approach to care for people with schizophrenia. Studies on caregiver health education have been conducted but little has been done on the caregiver education with mobile intervention. This systematic review investigated the empowering caregivers through knowledge given by mobile intervention. We searched for Randomized Controlled Trials (RCTs), published in English in Scopus, Springer Link and Science Direct databases. Fifteen RCTs use mobile technology in some health problem were included. The mobile intervention was evaluated positively augmenting knowledge for caregiver to care patient, gives psychological support to caregiver, reduced number and length of medical hospitalizations in patients with schizophrenia also decreased anxiety levels of the family. Mobile intervention can be one of the ways in improving caregiver knowledge and confidence in performing care, relapse prevention and monitoring medication adherence for people with schizophrenia.

Keywords: caregivers, schizophrenia, mobile intervention

1. Introduction

Informal caregivers are essential to providing home-based care for people with mental illness even though caregivers often have limited knowledge about caring for people with mental illness. It is important to provide caregivers with the tools to help them receive caregiving support and knowledge to care for people with mental illness at home. One of the methods that can be used and that may be of low cost is e-Health. This refers to the use of information and communication technology to provide information via the professionals can take the form of a smartphone or tablet application.

As the internet become increasingly important, information and communication technology are used in almost every sphere of daily life, including in health care facilities and private homes [4]. Technology is a tool that supports knowledge building, as it acts as an information vehicle and social medium for exploring the knowledge that enhances learning and communication [2]. The use of technology, in this case mobile phones, is believed to be able to establish the caregivers' knowledge, to engage the caregivers in a dialogue with nurses and to help the caregiver to use what they have known and learnt through the technology [2]. Advances in mobile technology are increasingly viewed as enhancing solutions to expand on the range of health care delivery options [3]. Mobile technology offers a particularly promising platform for the delivery of interventions [1]. One of the

interventions that can be effective for empowering caregivers to care for people with schizophrenia is by giving mental health information to the caregivers.

People with schizophrenia generally return home and are cared for by their family members. These people rely on caregivers for support in their daily activities and in terms of rehabilitation. Their caregivers expect both educational and home-based care for people with schizophrenia. It is important to provide caregivers with the tools to help them to receive caregiving support and to learn of better ways to care schizophrenia. Changes in the psychiatric services involving the early discharge from institutions have transferred much of the responsibility of care from the psychiatric services to the family of the people with schizophrenia, whether or not they are ready to care them at home[5].

The objective of this review was to explore the evidence on the topic of implementing e-Health interventions for caregivers. The results of this study will help caregivers to care for people with mental illness, reducing risk of mental health problems in the caregivers and improving the well-being of people with mental illness.

2. Methods

2.1. Data Source and Search Strategy

The search was aimed at finding articles that contained e-Health interventions for the caregivers of people with mental illness. We were searched for articles that contained terms related to all 3 of the following main concepts: ‘caregivers’, ‘mental illnesses and ‘caregivers’. The databases used for journal searching were Scopus, Springer Link and ScienceDirect. The journal search began on February 26th and went through until March 13th, 2019.

2.2. Study Characteristics

The selection of the studies and criteria was done using the PICO approach characteristics of the study which were related to information delivery for the caregivers of people with mental illness using e-Health. The study characteristics were from 2014 to 2019 in studies that had been Scopus indexed. The language chosen was the English language.

3. Result

3.1. Study Result and Selection

The results were obtained from the databases of Scopus, Springer Link and ScienceDirect. The search obtained the results of the journal. All of the journals that were obtained were then screened according to the area of nursing.

3.2. Study Review Results

3.2.1. Characteristics of Mobile Technology. The results of the study found that mobile technology has gained interest as a device used in treatment. In this research, mobile technology has been shown to be used based on the internet. Mobile technology being used as part of e-health approaches towards providing low cost, sustainable health care to patients with chronic illness, including psychiatric disorders through their caregivers.

3.2.2. Usability of Mobile Technology. Caregivers often have limited knowledge when it comes to caring for people with schizophrenia. As the prevalence of new methods of engagement with caregivers increases, the use of mobile health comes into play to improve their knowledge and to help the caregivers to manage the mental health condition of people with schizophrenia. Mobile technology is an innovative approach used to increase the access to clinical care and also to educate the caregivers. The therapeutic effects of mobile technology empowers the caregivers to care for people with schizophrenia such as improving medication adherence, decreasing the number and length of medical hospitalizations [6], providing psychological support for their family members [2], providing guided self-management interventions for non-professional caregivers [7], opening up access to feasible and innovative resources to address caregiver burden, such as the text message component that was found to be acceptable [8] and also detecting signs of relapse and increasing medication during a warning state [9].

4. Discussion

In modern society, mobile media platforms are rapidly replacing textbooks and print media. The rapid advancement in mobile technology, coupled with the popularization of the smartphone, has opened up new avenues for the delivery of healthcare education. Consequently, health education has been forced to adapt to this change including among the caregivers who care for people with mental illness. Several studies show that the internet and mobile phones are frequently used as a resource for health-related information among caregivers, including the caregivers of depressed patients, young informal carers of persons with mental illness, the caregivers of people with mental or somatic illness and the caregivers of people with Parkinson's disease. Healthcare professionals need to educate the primary caregiver on how to provide care at home. Smartphones have made this information accessible and feasible.

This technology has great potential for education as it allows the caregivers to access information efficiently. Mobile-based interventions facilitate health promotion and mental illness management. Mental illness often relapses. Repeated relapses lead to a worsening of the patient's prognosis. To conduct relapse prevention or to minimize its severity, caregivers need to have a better understanding of the predictors[10]. Through the knowledge from mobile technology, caregivers can investigate when the early warning signs are present in people with mental illness. Therefore the caregivers will be able to conduct the early detection of the prodromal symptoms of relapse. Therefore, preventing relapses and rehospitalization is extremely important for people with mental illness[9]. Furthermore, building up the strengths of the caregivers indicates that the incorporation of the strength approach in the practitioners through an intervention can improve the abilities of the caregivers.

The development of mobile technology is an invaluable resource for caregivers that can impact on the health care related to mental illness both in terms of being cost effective and more accessible. Caregivers can communicate with other caregivers through this resource and thus they can support each other[11]. The use of mobile technology such as in a telephone support group has also been effective at providing educational interventions and emotional support for the caregivers of people with mental illness.

Mobile phone-based interventions have also been used to improve the medication adherence for psychiatric disorders through SMS reminders and daily messages for optimizing maintenance

effects[12]. It appears plausible that mobile phone inclusion may exert sustained benefits on drug-related attitudes and adherence in people with mental illness who are on medication.

Research on the use of text messaging for clinical care was also used in the evaluation of the treatment of depression. Automated SMS systems are quick to set-up, inexpensive and well-received[13]. Besides SMS reminders, providing the caregivers with telephone support also offers some advantages in the day-care setting. Caregivers are also at risk for anxiety, depression and feeling the burden of care for someone with mental illness[14]. Telephone support as a part of mobile technology is provided by qualified counselors without any time pressure and with a high level of flexibility with respect to the time of day. Through telephone support, a brief telephone intervention was given to empower the caregivers by improving their skills and this resulted in a reduction in the burden and depressiveness noted in the caregivers[15].

4.1. Overview of the existing implementation research

The objective of this study was to explore what research has been done concerning the implementation of mobile technology. Interventions for the caregivers of people with schizophrenia were common given the abundance of effectiveness trials for these types of intervention. The fact only a few research studies could be found referring to implementation in its title suggests that implementation research on mobile technology interventions for the caregivers of people with schizophrenia is uncommon.

Healthcare providers are responsible for providing instructions as a part of nursing care. Based on the results of the research that has been done, e-Health can help psychiatric nurses to recognize the potential role of a smartphone as an additional effective medium of providing education. Mobile technology-based education could be a cost-effective and friendly way for caregivers to learn. Psychiatric health care services can benefit from this study when planning to start an intervention for caregivers. However, more knowledge is needed about how to empower the caregivers and when mobile technology can be used.

5. Conclusion

This study concludes that e-Health was positively valued and that it seems to be a feasible and acceptable method to use to increase the healthcare services available to mental health patients. This indicates a great benefit to the overall healthcare system.

References

[1] C. A. Depp *et al.*, “Augmenting psychoeducation with a mobile intervention for bipolar disorder: A randomized controlled trial,” *J. Affect. Disord.*, vol. 174, pp. 23–30, 2015.

[2] V. Chung *et al.*, “Intensive and Critical Care Nursing Fulfilling the psychological and information need of the family members of critically ill patients using interactive mobile technology : A randomised controlled trial,” *Intensive Crit. Care Nurs.*, vol. 41, pp. 77–83, 2017.

[3] N. Atallah, M. Khalifa, A. El Metwally, and M. Househ, “The prevalence and usage of mobile health applications among mental health patients in Saudi Arabia,” *Comput. Methods Programs Biomed.*, vol. 156, pp. 163–168, 2018.

[4] S. Stjernswärd and L. Hansson, “E ff ectiveness and usability of a web-based mindfulness

intervention for caregivers of people with mental or somatic illness . A randomized controlled trial," *Internet Interv.*, vol. 12, no. January, pp. 46–56, 2018.

[5] L. Ali, B. Krevers, and N. Sjo, "Patient Education and Counseling Effectiveness of web-based versus folder support interventions for young informal carers of persons with mental illness : A randomized controlled trial," vol. 94, pp. 362–371, 2014.

[6] L. R. Flaherty, K. Daniels, J. Luther, G. L. Haas, and J. Kasckow, "Reduction of medical hospitalizations in veterans with schizophrenia using home telehealth," *Psychiatry Res.*, vol. 255, no. May, pp. 153–155, 2017.

[7] L. Bijker, A. Kleiboer, H. M. Riper, P. Cuijpers, and T. Donker, "A pilot randomized controlled trial of E-care for caregivers: An internet intervention for caregivers of depressed patients," *Internet Interv.*, vol. 9, no. June, pp. 88–99, 2017.

[8] G. Sibeko *et al.*, "Improving adherence in mental health service users with severe mental illness in South Africa : a pilot randomized controlled trial of a treatment partner and text message intervention vs . treatment as usual," *BMC Res. Notes*, pp. 1–8, 2017.

[9] H. Komatsu, Y. Sekine, N. Okamura, N. Kanahara, and K. Okita, "Effectiveness of Information Technology Aided Relapse Prevention Programme in Schizophrenia excluding the effect of user adherence : A randomized controlled trial," *Schizophr. Res.*, vol. 150, no. 1, pp. 240–244, 2013.

[10] F. Spaniel *et al.*, "Neuroscience Letters Relapse in schizophrenia : Definitively not a bolt from the blue," *Neurosci. Lett.*, vol. 669, pp. 68–74, 2018.

[11] S. P. Shah *et al.*, "Caregiver tele-support group for Parkinson's disease: A pilot study," *Geriatr. Nurs. (Minneap).*, vol. 36, no. 3, pp. 207–211, 2015.

[12] V. Menon, N. Selvakumar, S. Kattimani, and C. Andrade, "Therapeutic e ff ects of mobile-based text message reminders for medication adherence in bipolar I disorder : Are they maintained after intervention cessation ?," *J. Psychiatr. Res.*, vol. 104, no. July, pp. 163–168, 2018.

[13] S. J. Richmond *et al.*, "Feasibility , acceptability and validity of SMS text messaging for measuring change in depression during a randomised controlled trial," pp. 1–13, 2015.

[14] G. Tremont *et al.*, "Psychosocial telephone intervention for dementia caregivers : A randomized , controlled trial," *Alzheimer's Dement.*, vol. 11, no. 5, pp. 541–548, 2015.

[15] E. Behrndt, M. Straubmeier, H. Seidl, C. Vetter, and K. Luttenberger, "Brief telephone counselling is effective for caregivers who do not experience any major life events – caregiver-related outcomes of the German day-care study," vol. 8, pp. 1–14, 2019.

EPD-839

FAMILY COPING CAN IMPROVE INTERPERSONAL NURSING INTERACTION IN IMPLEMENTING FAMILY NURSING WITH HYPERTENSION

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ABSTRACT

Families are an important component for hypertension clients and as supporters in providing care and related to nurses when carried out home visits. In fact, not all families have a good responses when nurses carried out family nursing care. The purpose of this study was to analyze relationship between family coping and nurse interpersonal interaction in implemented family nursing care with hypertension. This study used an observational analytic method. The sample was that some nurses in the Puskesmas in the Surabaya District Health Office work area were taken by multistage sampling, totaling 110 people. Variables included family coping and interpersonal interactions. The instrument used is a valid and reliable questionnaire. The result showed family coping can improved interpersonal nursing interaction (p value 0.027). Families as responsible for clients at home provided various facilities for client care. Families as care givers need relationships with nurses and other health teams. Effective coping supported the success of family nursing care carried out. The family is expected to maintain effective coping while maintained good communication and accepted hypertension clients in the family.

Keywords: coping, family, interpersonal, nurse

1. Introduction

Family coping is an important component in caring for sick family members. The family acceptance of family members with hypertension is focused on providing them with continuing care. Families will be able to manage a burdensome situation because their family members are sick, thus expanding their efforts to find solutions to the problems that arise from their sick family members [1]. Family coping varies when treating their chronic family members. Families who have effective coping will care for their family members well. Conversely, families that have ineffective coping are less responsive. This difference will affect the family response when providing care for their family members who suffer from hypertension, including in reference to collaborations with the health services. Interpersonal interactions between the nurses and their clients contributes to the success of the nursing services. The communication aspects built by the nurses are relevant for effective nurse-patient interactions in clinical practice [2].

The prevalence of hypertension is increasing. The Basic Health Research of Indonesia (Riskesdas) 2018 demonstrated that the prevalence of hypertension among its >18 years old population increased up to 34.1% from 25.8% [3]. The doctor's diagnosis and medication are the tools of assessment. In addition, the National Health Survey (SIKESNAS) in 2016 indicated that the prevalence of hypertension among those aged <20 was 10.7% using blood pressure as the indicator.

The total prevalence of hypertension in the city of Surabaya is 18.42%. Surabaya is ranked second for having the most non-communicable diseases in 2015 [3]. The high rate of hypertension is a concern of the government of the Republic of Indonesia and it has included it in the Indonesian Program with a Family Approach. This program has 12 indicators of healthy families, including families with compliance related to hypertension and taking medication. Therefore, the family has an important role in the care of hypertensive clients at home. The purpose of this study was to analyze the family coping relationships in relation to increasing nurse interactions when implementing family nursing care.

2. Methods

This study used an observational analytical method with a cross-sectional approach. The population was the nurses at the Puskesmas in the working area of the Surabaya City Health Office consisting of 175 D III Nursing education and civil servants. The study recruited 110 nurses using the multistage sampling technique. The first stage was to use simple random sampling to determine the sample by randomly selecting 6 (six) Puskesmas in each region of North, West, East, South and Central Surabaya. This meant that 30 (thirty) Puskesmas were decided on. The second stage used simple random sampling to determine the number of respondents from each Puskesmas = 110: 30 = 3.67 or between 3-4 respondents.. The research variables include family coping and nurse interpersonal interactions when carrying out family nursing with hypertension. Family coping is the family effort in accepting hypertensive clients and providing care support. Interpersonal Interactions are the collaboration of the nurses with other nurses, the clients and their families when implementing family nursing care for clients with hypertension. The instrument used was compiled by the researchers using a Likert scale. The questions used in the family coping questionnaire were related to the family acceptance of hypertensive clients, the family problem solving process, family role setting and a spiritual approach to solving problems. The questionnaire on the interpersonal interactions of the nurses consisted of providing information, discussing problems that have not been resolved and monitoring compliance in care. The assessment was based on closed statements using a Likert scale (Never; Rarely; Sometimes; Often; Always). They were found to both be valid and reliable research instruments. The reliability of the instruments was assessed using Cronbach's alpha, where the results were $r > 0.6$. Collecting the data was also done using interviews. For the strategy of collecting the data, the researchers went to the nurses at each Puskesmas. Before the data collection began, the researchers obtained ethical permission from the Ethics Committee of the Faculty of Public Health, Airlangga University, Surabaya. The data analysis used descriptive and inferential statistics via the Spearman rho test. The significance limit of the test was 0.05 so if $p < 0.05$, then the statistical calculation was meaningful which meant that there was a relationship between the variables.

3. Results

The results of this study include the respondent's characteristics, the distribution of interpersonal interactions and nurse performance. The results of the study are as follows:

Table 1. Distribution of the Characteristics of Nurses in the Puskesmas in Surabaya City

Characteristics		n	%
Age			
a.	**20-30 years old**	17	15,5
b.	**31-40 years old**	70	63,6
c.	**41-50 years old**	14	12,7
d.	**> 50 years old**	9	8,2
Gender			
a.	**Men**	38	34,5
b.	**Women**	72	65,5
Education			
a.	**Nursing Diploma**	90	81.8
b.	**Ners**	19	17.3
c.	**Master of Health**	1	0.9

Table 1 explains that the largest group of nurses included those of productive age ranging from 31 - 40 years old. They were mostly women. The most common nurse education was that of a Nursing Diploma.

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Table 2. Family Coping Frequency Distribution

Family Coping Categories	N	%
Effective	107	97,3
Ineffective	3	2,7
Number	110	100

Table 2 explains that the categories of family coping were mostly (97.3%) in the category of effective coping.

Table 3. Frequency Distribution of Nurse Interpersonal Interactions

Interpersonal Interaction Categories	N	%
Good	55	50
Enough	48	43,6
Lack	7	6,4
Number	110	100

Table 3 describes the frequency of the categories of the interpersonal interactions of nurses with their families as being half-categorized as good.

Table 4. Cross Tabulation of Family Coping and the Interpersonal Interactions with the Nurse

Family Coping Categories	Interpersonal Interactions			Number
	Good	Enough	Lack	
Effective	54 (53,27%)	48 (44,86%)	5 (4,67%)	107
Ineffective	1 (33,33%)	0 (0%)	2 (66,67%)	3
p=0.027				

Table 4 explains that family coping is effective, so most of the interpersonal interactions are good. Ineffective coping is largely referring to the interpersonal interaction of the nurses with the family, which is lacking. The Spearman rho test results obtained an r score = 0.382, meaning that there is a significant relationship between family coping and nurse interpersonal interactions when carrying out family nursing actions for hypertension.

4. Discussion

The family is the main supporter when treating a family member with hypertension at home. Family social support affects the health of the family members who suffer from hypertension. The family is an influential factor because it can provide reinforcement to the sick family members so then the care of the clients becomes better [4,5]. Families need effective coping methods while providing care for hypertensive clients. Family coping is a reference to the family business of managing situations due to the burden of the family members who are suffering from hypertension. Family coping is also interpreted as an internal or external demand that is considered to be a threat. Coping strategies allow the families to tolerate stressful experiences. Such efforts depend on the family actions or attitudes in the face of stressors [6]. The family mood affects the coping mechanism. Family coping affects the support given to the sick family members. Family support is seen of as a coping resource by determining the facilities provided as the predictors of coping for hypertensive clients. It was found that the direct effects of support were given to coping [7].

The results showed that most of the family coping was effective. The family response when one family member suffers from a chronic illness consisted of a psychological response being displayed. This response depends on the type of disease, the duration and severity [8]. Hypertensive clients with various complaints and long-term care require effective family coping. Evangelos C. Karademas C.E., Karamvalis N., Zarogiannos, A. (2009) explained that someone who suffers from chronic illness experiences stress. The stress experienced by them is life stress, so family coping is an important component [9].

Families are responsible for the care of their family member with hypertensive by establishing collaboration with nurses and other health teams. The family interactions with the nurses and other health teams strongly supports the successful implementation of family nursing care which will have an impact on improving the condition of hypertensive clients at home. Families who have positive coping will establish good interactions with the nurses who care for their sick family members. The coping that is commonly used by the families to treat chronic disease clients uses moderate coping approaches (e.g. planning, seeking social support, positive reinterpretation, acceptance and conversion) and rarely using 'avoidant' coping strategies (rejection / release and the use of alcohol and drugs) [10]. The nurses' interpersonal interactions with families are influenced by the communication between them. Communication that is difficult will affect their emotional state [11].

Nurses who do not visit hypertension clients at home every day need the family to help carry out the nursing actions. Therefore the family acceptance of hypertensive clients at home will affect the success of the treatment. Families who succeed in establishing interpersonal interactions with the nurses will work together to treat hypertensive clients.. The success of family nursing care can be evaluated by achieving the fulfillment of their needs and the independence of the client [12].

Interactions between the family and the nurses are effectively a type of manager-worker relationship [13]. A relationship of this type has the nurse as the manager and the family as the workers. The nurse gradually shifts this role to the family. The nurses will set limits on their respective roles. The families are trained in some of the skills needed to care for their sick family members. The nurse monitors the actions taken by the family and coordinates the actions that will and have been carried out by the nurse and the client's family. Hypertensive clients at home will therefore carry out a well-maintained program with family support.

Effective coping from the family can enhance the interpersonal interactions with the nurses who strongly support the success of the hypertension client's care program at home. Good care of the clients of hypertension such as taking regular medication, a low salt diet, exercise and good stress management can improve the health of the clients [14,15]. There are no results in the previous studies that explained the relationship between family coping and nurse interpersonal interactions. The results of this study are novel to explain the importance of family coping in increasing the interpersonal interactions with the nurses. The purpose of the relationship is to improve the health status of the hypertensive clients at home. The limitation in this study was that the measurement of the family coping variables was based on the assessment of the nurses. There is the possibility for an element of nurse subjectivity in the assessment of coping within the family. This limitation has been controlled by the researchers through the creation of closed question instruments,

5. Conclusion

Effective family coping can improve the interpersonal interactions with nurses when implementing family nursing care for the clients with hypertension. The families are encouraged to maintain effective coping while maintaining good communication and accepting hypertensive clients in the family.

References

[1] Moos R 2012 *Coping with physical illness* (Springer Science & Business Media)

[2] O'hagan S, Manias E, Elder C, Pill J, Woodward-Kron R, McNamara T, Webb G and McColl G 2014 What counts as effective communication in nursing? Evidence from nurse educators' and clinicians' feedback on nurse interactions with simulated patients *J. Adv. Nurs.* **70** 1344–55

[3] Kesehatan K 2018 Riset Kesehatan Dasar (Riskesdas) *Minist. Heal. Indones.*

[4] Kholifah S N, Nursalam M, Ahsan M, Wibrata D A and Saudah N 2016 Analysis of Cooperation and Motivation Nurse in Implentation Nursing of Family *Int. J. Public Health* **5** 335–40

[5] Frey M A 1989 Social support and health: A theoretical formulation derived from King's conceptual framework *Nurs. Sci. Q.* **2** 138–48

[6] Fabick S D 2011 Coping: Emotion and Problem-Focused *Encycl. Peace Psychol.*

[7] Schwarzer R and Knoll N 2007 Functional roles of social support within the stress and coping process: A theoretical and empirical overview *Int. J. Psychol.* **42** 243–52

[8] Agustiyowati T H R, Sitorus R, Waluyo A and Besral B 2019 The Effectiveness of Roy's Adaptation Model for Patients with Chronic Kidney Disease Undergoing Pre-Dialysis in Indonesia *J. Ners* **13** 150–5

[9] Karademas E C, Karamvakalis N and Zarogiannos A 2009 Life context and the experience of chronic illness: is the stress of life associated with illness perceptions and coping? *Stress Heal. J. Int. Soc. Investig. Stress* **25** 405–12

[10] Gerson R, Wong C, Davidson L, Malaspina D, McGlashan T and Corcoran C 2011 Self-reported coping strategies in families of patients in early stages of psychotic disorder: an exploratory study *Early Interv. Psychiatry* **5** 76–80

[11] Sheldon L K, Barrett R and Ellington L 2006 Difficult communication in nursing *J. Nurs. Scholarsh.* **38** 141–7

[12] Undang-Undang R I 2014 No. 38 Tahun 2014 *Tentang Keperawatan*

[13] Ward-Griffin C and McKeever P 2000 Relationships between nurses and family caregivers: partners in care? *Adv. Nurs. Sci.* **22** 89–103

[14] Hummel S L, Seymour E M, Brook R D, Kolias T J, Sheth S S, Rosenblum H R, Wells J M and Weder A B 2012 Low-sodium dietary approaches to stop hypertension diet reduces blood pressure, arterial stiffness, and oxidative stress in hypertensive heart failure with preserved ejection fraction *Hypertension* **60** 1200–6

[15] Ballenger J C, Davidson J R T, Lecrubier Y, Nutt D J, Foa E B, Kessler R C and McFarlane A C 2000 Consensus statement on posttraumatic stress disorder from the International Consensus Group on Depression and Anxiety. *J. Clin. Psychiatry*

EPD-852

EFFECTIVENESS OF COGNITIVE BEHAVIORAL THERAPY (CBT) FOR CHILDREN SEXUAL ABUSE PREVENTION AT AN ELEMENTARY SCHOOL: A SYSTEMATIC REVIEW

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ABSTRACT

Sexual abuse of children increases in many countries in the world every year, Children were vulnerable to being victims because they can not take care of them self. Child sexual abuse (CSA) was a social problem that often effect of psychological trauma and leads to psychopathology and behavioral problems. Children who were at risk of sexual abuse require interventions CBT to prevent sexual abuse. The purpose of this systematic review was reviewed the effectiveness of Cognitive Behavioral Therapy (CBT) to prevent children sexual abuse. The methods of this reviewed were systematic review of children risk sexual abuse with study selection criteria using Scopus, Science Direct, Spinger-link and Pub-med database search from 2 January-22 February 2019, and 2014-2018 publication by keywords of CBT, children sexual abuse, prevent children sexual abuse in the school keywords, with PICOS approach. Total the 1450 journals and 15 of them were appropriates and assessed. Children sexual abuse can cause physical, psychological, social, sexual disorders. Physical and psychological disorders will cause mental disorders and can risk suicide in children. The conclusion are CBT can prevent sexual abuse because CBT can be increase knowledge and can prevent deviant behavior for children.

Keywords:CBT, children, sexual abused

1. Introduction

Child sexual abuse increases in many countries in the world each year [1]. Children are vulnerable to becoming victims of sexual abuse because they are innocent and trustworthy in adults, and children cannot protect themselves [2]. Child sexual abuse is the child's involvement in sexual activity, but the child does not understand what is happening [3]. Sexual activity is like touching the sensual parts, showing pornographic videos, sexual intercourse (rape), and showing genitals [4].

Epidemiological data shows that the average global prevalence of sexual abuse in children is 11.8-13.8% with higher rates among girls (18-19.7%). Africa shows the highest rate of sexual abuse in children (around 34%), while the lowest appears in Asia (around 10%) and Europe. The CSA (Child Sexual Abuse) data in Southeast Asia is highly variable, with 40 cases of child abuse in 14 countries in the region, concluding that around 10% of boys and 15% of girls have experienced at least one form of sexual abuse [5]. The Indonesian National Commission for Child Protection (KPAI) in 2010-2014 states that there were 21,869,797 cases of child abuse and half of them were sexual harassment [6], there were 1,032 cases of child abuse consisting of: physical violence 290 cases

(28%), psychological violence 207 (20%), sexual violence 535 cases (52%). The results of the study were 18-20% of women and 7-8% of men under the age of 18 becoming victims each year [7].

Child sexual abuse effects can be physical, psychological, social, sexual and interpersonal disorders in both the short and long term, physical and psychological disorders will cause mental disorders, risk of suicide, sexually transmitted infections and risky sexual behavior [1]. In addition, over time, children who experience CSA will probably have an effect of cycles that will cause the victim, in time, to become a perpetrator so that they create other victims later [8]. Children who are sexually abused cannot react or oppose the authority carried out by the perpetrator, and although he does not agree, he feels he cannot prevent this incident, in the face of threats, children often keep the fact that they have been abused [9]. Children need critical attention in terms of developing effective and necessary approaches to protect them from pedophiles [8]. Children are sexually abused at the age of 10-18 years [10]. This is a serious problem [11], this condition is very worrying because it occurs in all children and this sexual abuse can occur anywhere that is related to us.

Primary schools are the most appropriate environment for implementing sexual health education programs, including prevention of sexual abuse [12]. Primary school is the most important place to provide knowledge, self-protection skills, and attitudes related to health and sexual education [13]. Children need to be taught the ability to recognize, fight, and report sexual violence [14]. Because of that, to prevent sexual abuse in children, education and therapy are needed, one of the therapies to prevent sexual abuse in children is CBT, this therapy is an effective therapy to prevent sexual abuse in children, including post-traumatic stress, anxiety, avoidance, depressive symptoms, cognitive distortions related to abuse, and sexually inappropriate behavior [2]. CBT is therapy used to prevent/treat victims of sexual abuse [15]. CBT is a psychoeducation-based therapy for the prevention and treatment of sexual abuse in children, and this therapy meets the criteria for empirically supported care. CBT contains the following components: psycho-education and relaxation strategies, affective expression and emotional regulation, overcoming cognitive problems, and processing emotions associated with abuse of experience, and enhancing personal safety [15].

2. Method

2.1. Search Strategy.

The journal search strategy begins with asking research questions, namely "does CBT increase knowledge, self-efficacy, self-protection and prevent sexual abuse?". Searching research in all published journals was conducted with the terms of research of Quasi-experiment, Cross-sectional, and Quantitative related to the mental health of children. The databases used for journal searches are the Scopus, PubMed, and Science Direct Databases. The keywords used were CBT, self-efficacy, self-protection, prevent child sexual abuse. The journal is limited to the 2013-2018 publication year, within the area of nursing and medicine, and psychology and English-language journals.

Research inclusion criteria were 1) respondents chosen were aged 10-17 years; 2) willing to participate as respondents; 3) children who are at risk of sexual harassment; 4) who understood the language in accordance with the therapist, research exclusion criteria were 1) children who were not cooperative when doing CBT; 2) children who consumed psychotic drugs; 3) children who chose not to be respondents. The journals were selected using the Prisma method.

The results obtained were obtained from the Scopus, PubMed, and Science Direct databases. The search results obtained as many as 270 journals. The Scopus database obtained 95 journals.

PubMed database returned 22 journals and the database Science Direct gained as much as 153 journals. All journals that have been obtained are then screened according to the area of Medicine, Nursing, and Psychology until there are 225 journals. They were then filtered in accordance with the mental health, youth and orphanages research, which found 125 journals accordingly. They were then filtered, regaining as much as 15 journals according to inclusion and exclusion criteria. All journals are Quasi-experimental, Cross-sectional, Quantitative focusing on knowledge, self-efficacy, self-protection, prevention of sexual abuse and CBT.

2.2 Selection Procedure and Data Extraction

- *Population.* The selected population in this review was children at risk of sexual abuse
- *Intervention.* This study use intervention cognitive behavior therapy
- Comparison. The review compared self-efficacy and self-protection in children before being given CBT therapy and after being given CBT therapy.
- *Output.* The review reported the effectiveness of cognitive behavior therapy for preventing sexual abuse in children, and the effectiveness of CBT for self-efficacy, knowledge, and self-protection for children
- *Study Design*

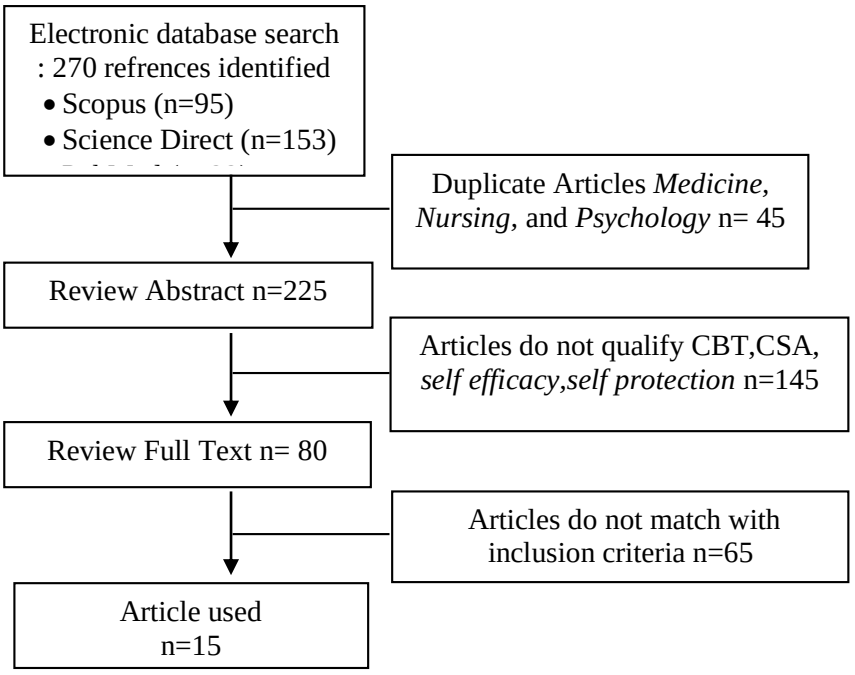

Figure 1. PRISMA Flow Diagram Effectiveness Of Cognitive Behavioral Therapy (CBT) For Child Sexual Abuse Prevention At Elementary School: A Systematic Review

3. Results

3.1 Characteristic of Population Studies

From the results of studies of children at risk of sexual harassment there are children under the age of 18 years, from the results of studies of girls who were sexually abused about 18-20% were women and 7-8% were boys in each city. Children at risk of sexual abuse are have lower family socio-

economic status, a low level of parental education, friends with naughty children, watching pornographic videos, and an absence of family or other adults as a source of psychosocial support for children. The average respondent in this review is a student. Children are spread throughout Asia and Europe, namely China, Taiwan, Korea, Turkey, Iran, Africa, and France.

3.2 Study Characteristics

The characteristics of the study are explained in table 1. All journals obtained from the results of the study have CBT therapy performed on children who are at risk of sexual abuse. All journals are obtained from the results of the study of mental health children, the problems are sexual abuse, preventing sexual abuse in schools, self-efficacy, and self-protection. All studies have a minimum age rating of 10 years to 17 years. All 15 studies were children at risk of sexual abuse and where there was a history of sexual abuse. The study characteristics are 2 articles which are cross sectional, 1 article of qualitative study, and 12 randomized control trials.

3.3. Results of the Review Study

CBT is a therapy that is related to inherently being questioned at this time in everyday life and an increase in cognitive distortion and misunderstandings that may be given to children who are at risk of correcting sexual abuse [15]. Through correction of children with their world perceptions and self in change, trauma can be eliminated and the future changed, a process known as cognitive restructuring [15]. CBT is a therapy to change and process feelings and cognitions related to abuse to change the behavior associated with abuse and integrate it (Fouché and Liana, 2018). Cognitive Behavior Therapy is a short-term therapy (8 to 16 sessions) aimed at helping children improve self-confidence so that children feel more comfortable with their current conditions [16].

CBT therapy is given via providing training modules to children. This module is based on the principles of CBT for depressive disorders such as behavioral activation, cognitive restructuring and preventive strategies and skills [16]. Module CBT has components that can influence stimulation related to trauma by helping children develop better skills and emotion regulation strategies (recognizing and expressing emotions, understanding the influence of thoughts on emotions). In addition, CBT aims to reduce the risk of victimization in the future by developing the ability to protect oneself, giving knowledge through sex education [16].

4. Discussion

Children are vulnerable to becoming victims of sexual abuse because they are innocent and trustworthy in adults, and children cannot protect themselves [2]. Children cannot react or oppose the authority committed by the offender, and although he disagrees, he feels he cannot prevent this occurrence, in the face of threats, children often keep the fact that they have been abused to themselves [9]. Children need critical attention in terms of developing effective and necessary approaches to protect children from pedophiles [8]. To prevent sexual abuse in children, education and therapy are needed, one of the therapies to prevent sexual abuse in children is CBT, this therapy is an effective therapy to prevent sexual abuse in children, including post-traumatic stress, anxiety, avoidance, depressive symptoms, cognitive distortions related to abuse, and sexually inappropriate behavior [2].

Review of some studies shows that the application of CBT can increase knowledge and change the behavior of children. In addition CBT can reduce the risk of PTSD in children. CBT is a therapy that emphasizes psychoeducation as a tool that can change cognitive distortion in children [2]. Giving CBT therapy to children who are at risk of sexual harassment can help children to understand sexual harassment, besides the benefits of CBT can improve children's self-safety skills [2]. CBT can be applied to groups, individuals, or groups [17] In this therapy children are taught to recognize the genital function of the child, the child recognizes his personal parts, and in CBT therapy the child is taught the ability to protect themselves [2].

Cognitive-behavioral therapy (CBT) is therapy designed to prevent/treat victims of sexual abuse, CBT is a psychoeducation-based therapy for the prevention and treatment of sexual abuse in children, and this therapy meets the criteria for empirically supported care. CBT contains the following components: psycho-education and relaxation strategies, affective expressions and emotional regulation, overcome cognitive problems, and processes of emotions associated with abuse of experience, and improvement of personal safety (Olafson, 2011). CBT effectively prevents sexual abuse in children, including post-traumatic stress, anxiety, avoidance, depressive symptoms, cognitive distortions related to abuse, and inappropriate sexual behavior [2].

The results of the review found that CBT can prevent sexual abuse because CBT therapy can help inform education about private parts and sexuality allows children to get knowledge so that they can avoid sexual abuse.

The results of another CBT review shows that it can prevent sexual deviations such as LGBT in children and adolescents, cognitive behavior therapy can increase adolescent knowledge about the negative impact of LGBT, directing adolescents to have the right attitude in dealing with LGBT behavior and increasing assertiveness in rejecting LGBT behaviors.

Giving CBT therapy to children can show increased knowledge, change internal and external behavior and dissociation symptoms in children and increase children's self-confidence. Besides this, therapy can show an improvement in PTSD symptoms in children who are sexually abused [18]. Some studies show that CBT support for children and adolescents can reduce PTSD. TF-CBT in this study was associated with a significant increase before post-treatment care with respect to PTSD and depressive symptoms for adolescents. The results of this study show that CBT not only reduces symptom pressure (i.e., PTSD and depression), but also reduces the psychological impact of others [18]. It can be concluded that CBT therapy can prevent sexual abuse in children and can reduce the risk of PTSD for children.

CBT therapy is a therapy with an inherently cognitive behavioral approach that focuses on the current conditions in one's life and identifies cognitive distortions and misunderstandings that might contribute to problem behavior in children who are at risk of sexual abuse[15]. Through restructuring children with their world and self-perceptions in relation to trauma, symptoms can be reduced or eliminated and future behavior changed - a process known as cognitive restructuring [15]. CBT is a therapy to change and process feelings and cognitions related to abuse to change the behavior associated with harassment and integrate it (Fouché and Liana, 2018).

CBT is a form of therapy designed to prevent/treat victims of sexual abuse [15]. CBT is a psychoeducation-based therapy for the prevention and treatment of sexual abuse in children, and this therapy meets the criteria for empirically supported care. CBT contains the following components: psycho-education and relaxation strategies, an affective expression and emotional regulation,

overcoming cognitive problems, and processing emotions associated with abuse of experience, and enhancing personal safety [15].

Based on the research that has been done in this study, it can be concluded that the results of these journals can be applied in Indonesia. Interventions can be done in terms of mental nursing departments. Such therapy is one of the skills that must be possessed by a specialist nurse. CBT therapy can be given to children who are at risk of sexual abuse and can help children to understand about sexual abuse, besides the benefits of CBT can improve children's self-protection. In its implementation in Indonesia, this intervention can be done in terms of the mental care department. This facilitates nurses in providing comprehensive nursing care.

5. Conclusion

The conclusion of this review shows how CBT therapy for children with the risk of sexual abuse can help children to change negative thoughts into positive thoughts, and that children are able to protect themselves, increase knowledge which is beneficial for them.

References

[1] Meri N 2015 Development and Testing of Intervention Model for Child Sexual Abuse Prevention on Primary School Children in Padang City , 2014 **27**

[2] Misurell J R and Springer C 2013 Developing Culturally Responsive Evidence-Based Practice : A Game-Based Group Therapy Program for Child Sexual Abuse (CSA) 137–49

[3] Tanaka M, Suzuki Y E, Aoyama I, Takaoka K and MacMillan H L 2017 Child sexual abuse in Japan: A systematic review and future directions *Child Abuse Negl.*

[4] Gokten E S and Duman N S 2016 Factors Influencing The Development of Psychiatric Disorders in Te Victims of Sexual Abuse: A Study on Turkish Children *Child. Youth Serv. Rev.* **69** 49–55

[5] Rumble L, Febrianto R F, Larasati M N, Hamilton C, Mathews B and Dunne M P 2018 Childhood Sexual Violence in Indonesia : A Systematic Review

[6] Mulya T W 2018 Contesting the Dominant Discourse of Child Sexual Abuse : Sexual Subjects , Agency , and Ethics *Sex. Cult.*

[7] Lindblom J, Werkö S and Karl R 2013 Preventing sexual abusers of children from reoffending : systematic review of medical and **4630** 1–11

[8] Kim S and Kang K 2016 Effects of the Child Sexual Abuse Prevention Education (C-SAPE) Program on South Korean Fifth-Grade Students ' Competence in Terms of Knowledge and Self-Protective Behaviors 1–10

[9] Olinda M, Carvalho D S, Nitschke R G, Rodrigues A D, Rodrigues V P, Couto T M, Maria N and Diniz F 2017 SURVIVING SEXUAL ABUSE IN EVERYDAY LIFE : FORMS OF RESISTANCE USED BY CHILDREN AND ADOLESCENTS 1 SOBREVIVENDO AO ABUSO SEXUAL NO COTIDIANO FAMILIAR : FORMAS DE RESISTÊNCIA UTILIZADAS POR CRIANÇAS E **26** 1–9

[10] Mckibbin G, Humphreys C and Hamilton B 2017 Child Abuse & Neglect " Talking about child sexual abuse would have helped me " : Young people who sexually abused re fl ect on preventing harmful sexual behavior *Child Abuse Negl.* **70** 210–21

[11] Wurtele S K and Miller-perrin C L 2017 What Works to Prevent the Sexual Exploitation of Children and Youth

[12] Berger R, Benatov J, Cuadros R, Vannattan J and Gelkopf M 2018 Enhancing resiliency and promoting prosocial behavior among Tanzanian primary-school students : A school-based intervention **0** 1–25

[13] White C, Shanley D C, Zimmer-gembeck M J and Walsh K 2018 Promoting young children â€™ s interpersonal safety knowledge , intentions , confidence , and protective behavior skills : Outcomes of a randomized controlled trial Child Abuse & Neglect Promoting young children ' s interpersonal safety knowledge , intentions , con fi dence , and protective behavior skills : Outcomes of a randomized controlled trial *Child Abuse Negl.* **82** 144–55

[14] Yu B, Chen J, Jin Y, Zhang W, Feng Y and Zhao X 2017 The knowledge and skills related to sexual abuse prevention among Chinese children with hearing loss in Beijing *Disabil. Health J.* 10–5

[15] Fouché A and Liana M P 2018 Child Abuse & Neglect Social workers ' views on pre-trial therapy in cases of child sexual abuse in South Africa *Child Abuse Negl.* **76** 23–33

[16] Hébert M and Daignault I V 2014 Challenges in treatment of sexually abused preschoolers : A pilot study of TF-CBT in Quebec ☹ , ☹☹ *Sexologies* 1–7

[17] Matulis S, Resick P A, Rosner R and Steil R 2014 Developmentally Adapted Cognitive Processing Therapy for Adolescents Suffering from Posttraumatic Stress Disorder after Childhood Sexual or Physical Abuse : A Pilot Study 173–90

[18] Deblinger E, Pollio E, Runyon M K and Steer R A 2017 Child Abuse & Neglect Improvements in personal resiliency among youth who have completed trauma-focused cognitive behavioral therapy : A preliminary examination *Child Abuse Negl.* **65** 132–9

EPD-862

PREDICTIVE RISK FACTOR FOR ANXIETY ON CLIENTS WITH DIABETIC FOOT ULCER

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ABSTRACT

Anxiety is one of the psychological responses experienced by clients with diabetic ulcers that can affect glycemic control, serious complications, foot self-care behavior and slow the wound healing process. This research used to find out the factors that influence anxiety in clients with diabetic ulcers. This study was a retrospective analysis using medical records and diagnostic results of diabetic ulcers at Haji General Hospital, Surabaya, Indonesia. The sample was 951 people suffering from diabetic ulcers between January 2014 - December 2018. Samples were diagnosed with anxiety based on nursing diagnoses and fulfilling inclusion and exclusion criteria. The multivariable model of diabetic ulcer client anxiety was generated using stepwise logistic regression. There were independent variables affecting the anxiety of diabetic ulcer clients namely wound type ($p < 0.012$; OR = 2.4), duration of illness ($p < 0.038$; OR = 1.03), health insurance ($p < 0.002$; OR = 0.82) and gender ($p < 0.048$; OR
= 0.99) with the contribution of the four independent variables at 31% and the prediction accuracy of 86.6%. Types of wounds that are infection have a risk of 1.65 times experiencing anxiety compared to non-infection, so nursing interventions can be focused on wound care.

Keyword: predictive, risk factor, diabetic foot ulcer

1. Introduction

Anxiety is one of the psychological responses experienced by diabetic foot ulcer (DFU) sufferers because of changes in health, loss of function, and non-intact conditions in the body such as injuries and amputations. Untreated anxiety will affect blood sugar control, worsen disease progression, increase serious complications and affect foot self-care behavior [1]. In addition, anxiety on DFU clients can reduce diabetes self-management (e.g. diet modification, physical activity, insulin injection). This can result in a slow healing process in DFU patients and a decrease in quality of life [2]. The World Health Organization states that the prevalence of DM worldwide is estimated at 9%. In 2030, it is estimated that DM ranks 7th in the causes of death in the world [3]. The International Diabetes Federation (IDF) predicts an increase in the number of people with DM in Indonesia from 9.1 million in 2014 to 14.1 million in 2035. DM patients in Indonesia at the age of ≥15 years of 6.9% are estimated to have an absolute number of 12 million people. Nearly 50% of diabetics experience diabetic foot ulcers with a mortality rate of 8% -35% and 15% -30% of them experience amputation [4]. DM patients in East Java amounted to 2.1% or as many as 605,974 people and 35% of them experienced diabetic ulcers [5].

In Indonesia patients with chronic diseases such as DFU tend to experience anxiety because

the stigma associated with DFU in society is bad. The stigma of DFU in Indonesia is associated with incurable diseases, possible amputation and death. One of the effects of anxiety is the length of the wound healing process. Research conducted by Razjouyan, et al., found an association between anxiety and wound healing. DFU people with anxiety experience delays in wound healing. Pedras, et al., found a significant relationship between anxiety and quality of life of people with DFU. Anxiety that occurs shows that they experience ineffective psychosocial adaptations [6]. People with chronic diseases, such as DFU, who can adapt well will be able to accept the reality of their illness, and rearrange and restructure the environment so that there is meaning and purpose in quality of life that exceeds the limitations posed by the disease [7]. Dealing with anxiety is the responsibility of the health care provider which, of course, includes nurses. Efforts that have been made in the treatment room to deal with anxiety are health education, pharmacological therapy, non-pharmacology and stress management, but have not been optimal in reducing anxiety in clients [8].

Fear, anxiety, and dread may affect a person's relationship to his or her sense of safety, whether in terms of diabetes or in relation to other chronic conditions. These emotions are causal factors that influence whether or not people with symptoms seek treatment in a timely manner. Some of the most informative responses in the research presented here involve avoidance of health care visits because of the fear of being told they have developed DFU. It is important to study related causes of anxiety in patients with diabetic ulcers. Factors that can influence this are individual patient factors or hospital service systems. Individual patient factors include demographics, age, gender, education and others. Service system factors are from insurance to the referral system. Most of the patients in Indonesia are insurance users provided by the government, namely BPJS (Badan Penyelenggara Jaminan Sosial or Social Security Administrator). All hospitals in Indonesia are required to accept patients with BPJS insurance. Failure in management anxiety is due to a mismatch between the anxiety experienced with the therapy provided, so it is very important to study issues related anxiety itself. Nurses are one of the health professions are required to be able to facilitate the basic needs of clients, one of which is psychological needs with a nursing process that views humans as a whole and uniquely puts forward a holistic approach that includes bio-psycho-socio-spiritual and cultural [9]. Previous studies have been carried out and only analyzed anxiety in DM patients not DFU. This study aims to find factors that influence anxiety that occur in clients with diabetic ulcers.

2. Methods

This research was conducted to find out the factors that influence anxiety in clients with diabetic ulcers. The study design was a cohort retrospective analysis.

2.1 *Ethical Clearance*

Ethical clearance was obtained from The Ethics Committee of the Haji General Hospital, Surabaya (ethics approval number 073/13/KOM.ETIK/2019).

2.2 *Participants*

Data was collected by medical records and diagnostic results of diabetic ulcers at Haji General Hospital, Surabaya. The sample was 951 people suffering from diabetic ulcers between January 2014 - December 2018. The inclusion criteria determined in this study were patients over 40 years old, had foot ulcers, HbA1c values above 6.5%, underwent treatment at the Surabaya Hajj general hospital and who were diagnosed with anxiety based on nursing diagnoses. The specified exclusion criteria

are having a mental disorder.

2.3 Variables

Data collected as variables in this study were gender, duration of diabetic ulcers, use of health insurance, type of injury, length of stay and complications. Data is collected using a checklist sheet consisting of these items. The collected data is then categorized based on the provisions set by the researcher. Gender consists of men and women. The duration of suffering consists of more than 7 months and less than 7 months. The wound type consists of infectious and non-infectious. Length of treatment consists of more than 3 days and less than 3 days. Health insurance is divided into BPJS and non BPJS. Complications exist and there are no complications.

2.4 Statistical Analysis

The statistical analysis was conducted using SPSS 25. The multivariable model of diabetic ulcer client anxiety was generated using stepwise logistic regression. The first step is to classify the entire data obtained by categories 1 and 2. The next step is to crosstab the data and choose the chi-square that serves to make variable selection. Variables that have a value of $p < 0.25$ will be included in the multivariate logistic regression analysis with the provisions $p < 0.05$.. The results of logistic regression are then interpreted and presented.

3. Result

Table 1. Characteristics of Participant

Variable	N = 951	N%	Mean	SD
Gender			0.78	0.41
Women	209	22		
Men	742	78		
Duration of diabetic ulcers			0.62	0.48
Less than 7 months	359	37.7		
More than 7 months	592	62.3		
Length of stay			0.78	0.42
Less than 3 days	212	22.3		
More than 3 days	739	77.7		
Health insurance			0.75	0.43
Non BPJS	242	25.4		
BPJS	709	74.6		
Wound type			0.70	0.45
Non Infectious	281	29.5		
Infectious	670	70.5		
Complication			0.63	0.48
Only 1	352	37		
More than 1	599	63		
Category of Anxiety			0.87	0.34
Anxiety	824	86.6		
Non Anxiety	127	13.4		

SD : Standard Deviation; BPJS : Social Security Administrator

Table 2. Bivariate analysis of Risk Factor For Anxiety On Clients With Diabetic Foot Ulcer

Variable	Anxiety (N=951)	Non Anxiety (N=951)	OR	CI (95%)	P value
Gender			1.55	1.02 - 2.36	**0.048**
Women	172	37	1.39	1.03 - 1.88	
Men	652	90	0.89	0.79 -1.00	
Duration of diabetic ulcers			1.51	1.04 - 2.20	**0.038**
Less than 7 months	300	59	1.27	1.03 -1.57	
More than 7 months	524	68	0.82	0.71- 0.99	
Length of stay			0.98	0.62 - 1.54	1.00
Less than 3 days	184	28	0.98	0.69 - 1.40	
More than 3 days	640	99	1.00	0.90 - 1.10	
Health insurance			1.89	1.27 - 2.81	**0.002**
Non BPJS	195	47	1.56	1.20 - 2.02	
BPJS	629	80	0.82	0.71 - 0.94	
Wound type			1.66	1.13 - 2.45	**0.012**
Non Infectious	231	50	1.40	1.10 - 1.78	
Infectious	593	77	0.84	0.72 - 0.97	
Complication			1.25	0.86 - 1.83	0.278
Only 1	299	53	1.15	0.91 - 1.44	
More than 1	525	74	0.91	0.78 - 1.06	
CI : Confidence Interval ; OR: Odds Ratio; BPJS : Social Security Administrator					

Table 3. Multivariant analysis of Risk Factor For Anxiety On Clients With Diabetic Foot Ulcer.

Variables	OR	CI 95%	p value	Nagelkelke R Square
Gender			0.040	0.31
Women	1			
Men	0.64	0.42 – 0.98		
Wound type			0.015	
Non Infectious	1			
Infectious	0.61	0.41 – 0.91		
Health insurance			0.001	
Non BPJS	1			
BPJS	0.52	0.35 – 0.77		
CI : Confidence Interval ; OR: Odds Ratio; BPJS : Social Security Administrator				

Participant characteristics can be seen in table 1. Based on the table, there are 742 men and 209 women. BPJS users are more dominant than non BPJS. This is because every hospital in Indonesia is required to accept patients with BPJS. The type of infection wound is the most type and the duration of treatment of more than 3 days is also dominant. Duration of diabetic ulcers is more than 7 months

and complication of more than 1 is also dominant. Of the 951 participants there are differences regarding anxiety status. Participants who experience anxiety are around 824 and are not anxious at 127.

Based on table 2 there are 4 independent variables that fit significant criteria. The chi-square test found a wound type ($p < 0.012$; OR = 2.4), duration of illness ($p < 0.038$; OR = 1.03), health insurance ($p < 0.002$; OR = 0.82) and gender ($p < 0.048$; OR = 0.99). The type of wound is the most dominant factor in this test. Variables that have p value <0.25 will then be made covariate variables in the next multivariate test.

Based on table 3, the multivariate test results were obtained using logistic regression and found three significant variables, namely wound type ($p < 0.015$; OR = 0.91), health insurance ($p < 0.001$; OR = 0.77) and gender ($p < 0.040$; OR = 0.98) with the contribution of the four independent variables at 31% and a prediction accuracy of 86.6%. One variable, duration of diabetic ulcers, is not significant in the second model of the logistic regression test, so it needs to be eliminated.

4. Discussion

To control confounding factors researchers used the restriction method by including all respondents who had the same confounding factors. This means that each respondent has the same characteristics as others so that other confounding factors can be minimized beyond the factors studied. In this study 3 variables were found which affected the anxiety of patients with diabetic foot ulcers. These variables are gender, type of injury, and health insurance. Wound type is the second dominant factor triggering anxiety in patients with foot ulcers. This can be seen from a high OR value that is 0.91 with a p value <0.015. Wound conditions that occur in clients with diabetes can increase the incidence of depression and anxiety [10]. Larger wounds will cause psychological stress, causing negative thoughts on the client. the client will feel that the wound cannot heal. The study found a correlation between wounds with depression and anxiety with measurements obtained by using HARDS and CES-D scale [11]. In this study it was found that infections contribute 0.61 times greater than non-infectious conditions. Wounds experienced by diabetics often result in gangrene, which is an infectious complication. This condition results in patients having difficulty doing activities and work. The study by Charalambous, Vassilopoulos, & Koulouri, found a correlation between the condition of diabetic wounds with the psychological patient. Anxiety that occurs in patients with chronic wounds is caused by bad stigma, previous injury experience, lack of support from both the family and the health care system, the presence of pain and long-term treatment that he experiences [12]. Research conducted by Razjouyan et al. found an association between anxiety and wound healing. DFU people with anxiety experience delays in wound healing [13].

Gender is the dominant factor with OR = 0.98, male and female is one of the factors that influences the occurrence of anxiety in patients with diabetic ulcers with p value < 0.040. In the results of the study differences were found in anxiety between the sexes. Men tend to experience anxiety 0.64 times greater than women. Sex difference is one of the determinants of anxiety conditions. Reisner et al., found a difference in anxiety response in men and women. Men tend to experience anxiety because of their role as the main support in the family [14]. The condition of the illness results in the inability to fulfill the duties and responsibilities in the family [15]. The research findings indicate that gender selectively modulates the influence of anxiety on ambiguous decision-making, but not risk decision-making [16]. Niles et al. found that there is a relationship between

gender and psychological responses to inflammation. In cases of inflammation, a person's tendency to experience symptoms of depression and anxiety increases. Men are more prone to symptoms of depression but respond less with anxiety [17]. The whole participant is over 40 years old and has worked so that the tendency to be unable to meet the needs in the family results in anxiety. While the high proportion of male respondents in the current study is in line with other studies of diabetic foot disease affecting the population, reasons for this asymmetrical gender distribution remain unclear as the prevalence of diabetes in the age group surveyed is almost the same for men and women.

Multivariate models found the effect of health insurance on the anxiety of patients with diabetic ulcers ($p < 0.001$; OR = 0.77). Health insurance is one of the guarantees needed to cover all patient medical expenses. In Indonesia there is health insurance provided by the government, namely BPJS. Most hospitals in Indonesia receive services with BPJS but patients using BPJS must fulfill the entire set of administrations. The complicated process makes patients easily experience stress due to feeling that they have not been taken action upon by health personnel. BPJS users have a tendency to experience anxiety 0.52 times greater than patients without health insurance. Chronic ulcers present a substantial economic burden to the health care system. Health care decision makers are encouraged to consider additional resources to preventative interventions for chronic ulcers to reduce downstream costs [18]. Low-cost DFU primary prevention efforts producing even small decreases in DFU incidence may provide the best opportunity for cost-savings, especially if focused on patients with neuropathy and/or PAD. Mobile phone-based reminders, self-identification of risk factors, and written brochures may be among such low-cost interventions that should be investigated for cost-savings potential [19].

All of these aspects make the patient feel frustrated, dissatisfied, insecure, fearful, helpless and uncontrolled. Individuals with injuries feel unable to carry out daily activities, and often consider themselves unable to play their role in society [20]. The weakness in this study is that there are still 79% of factors that contribute to increasing anxiety in patients with unknown diabetic ulcers, so further research is needed to examine all aspects of patients and other research methods in revealing the results.

5. Conclusion

The most dominant factor found in this study was the type of wound. Infection has a risk of 1.65 times of experiencing anxiety compared to non-infection, so nursing interventions can be focused on wound care.

Reference

[1] Vileikyte L, Crews R T and Reeves N D 2017 Psychological and Biomechanical Aspects of Patient Adaptation to Diabetic Neuropathy and Foot Ulceration *Curr. Diab. Rep.* **17**

[2] Vlachakis C, Dragoumani K, Raftopoulou S, Mantaiou M, Papageorgiou L, Tsaniras S C, Megalooikonomou V and Vlachakis D 2018 Human emotions on the onset of cardiovascular and small vessel related diseases *In Vivo (Brooklyn).* **32** 859–70

[3] WHO 2014 Global status report on noncommunicable diseases 2014 *World Health* 176

[4] Ministry R H 2018 Hasil Utama Riskesdas 2018

[5] Kemenkes RI 2014 Situasi dan Analisis Diabetes *Pus. Data dan Inf. Kementeri. Kesehat. RI* 2

[6] Chithambo T and Forbes A 2015 Exploring factors that contribute to delay in seeking help with diabetes related foot problems: a preliminary qualitative study using Interpretative Phenomenological Analysis *Int. Diabetes Nurs.* **12** 20–6

[7] Ahmad J 2016 The diabetic foot *Diabetes Metab. Syndr. Clin. Res. Rev.* **10** 48–60

[8] Lim J Z M, Ng N S L and Thomas C 2017 Prevention and treatment of diabetic foot ulcers *J. R. Soc. Med.* **110** 104–9

[9] Pedras S, Carvalho R and Pereira M G 2016 Predictors of quality of life in patients with diabetic foot ulcer: The role of anxiety, depression, and functionality *J. Health Psychol.* 135910531665676

[10] Nikoloudi M, Eleftheriadou I, Tentolouris A, Kosta O A and Tentolouris N 2018 Diabetic Foot Infections: Update on Management *Curr. Infect. Dis. Rep.* **20**

[11] Wound C and Management C 2017 Depression and quality of life in patients with chronic wounds : ways to measure their influence and their effect on daily life 143–51

[12] Woo K Y 2010 Wound-related pain: anxiety, stress and wound healing **6**

[13] Razjouyan J, Grewal G S, Talal T K, Armstrong D G, Mills J L and Najafi B 2017 Does Physiological Stress Slow Down Wound Healing in Patients with Diabetes? *J. Diabetes Sci. Technol.* **11** 685–92

[14] Noor S, Khan R U and Ahmad J 2017 Understanding Diabetic Foot Infection and its Management *Diabetes Metab. Syndr. Clin. Res. Rev.* **11** 149–56

[15] Reisner S L, Sc D, Katz-wise S L, Ph D, Gordon A R, Sc D, H M P, Corliss H L, Ph D, Austin S B and Sc D 2016 Social Epidemiology of Depression and Anxiety by Gender Identity *J. Adolesc. Heal.*

[16] Zhang F, Xiao L and Gu R 2017 Does Gender Matter in the Relationship between Anxiety and Decision-Making ? **8** 1–8

[17] Niles A N, Smirnova M, Lin J and Donovan A O 2018 Psychoneuroendocrinology Gender di ff erences in longitudinal relationships between depression and anxiety symptoms and in fl ammation in the health and retirement study *Psychoneuroendocrinology* **95** 149–57

[18] Chan B C F, Cadarette S M, Wodchis W P, Mittmann N and Krahn M D 2018 Lifetime cost of chronic ulcers requiring hospitalization in Ontario , Canada : A population-based study *Wound Med.* **20** 21–34

[19] Barshes N R, Saedi S, Wrobel J, Kougias P, Kundakcioglu O E and Armstrong D G 2017 Journal of Diabetes and Its Complications A model to estimate cost-savings in diabetic foot ulcer prevention efforts *J. Diabetes Complications* **31** 700–7

[20] De Almeida S A, Salomé G M, Dutra R A A and Ferreira L M 2014 Feelings of powerlessness in individuals with either venous or diabetic foot ulcers *J. Tissue Viability* **23** 109–14

FACTORS AFFECTING HYPERTENSION IN YOUTH: A SYSTEMATIC REVIEW

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ABSTRACT

Teenagers are the next generation of the nation that will determine the future of a nation. Good health conditions are very important to achieve these goals. Hypertension is a health disorder in adolescents whose prevalence continues to increase. Adolescents who have hypertension will be very at risk of developing cardiovascular disease, diabetes mellitus, stroke, heart disease as adults. The purpose of this study was to study the risk factors for hypertension in adolescents.The literature review is done by searching for sources from the SCOPUS, Sciendirect, proquest, spimgerlink database by entering the keyword Risk Factor AND youth AND hypertension. Literature selection was carried out with the inclusion criteria of adolescents aged 13-17 years who had hypertension. Of the 15 journals reviewed, it was found factors that influence adolescence hypnosis, namely gender, obesity, family history, lifestyle, age, weight, life behavior, food consumption. Body mass index is not mentioned as a factor that affects hypertension but is more likely to be obese. Gender and family history are the most dominant factors affecting the incidence of hypertension in adolescents.

Keywords: hypertension, factors, adolescents

1. Introduction

Over the past two decades, blood pressure in children and adolescents has changed significantly. In pediatrics, normal blood pressure as systolic blood pressure (SBP) and diastolic blood pressure (DBP) <90th percentile (P90) is adjusted for gender, age and height; hypertension as P95 percentile SBP and / or DBP (P95); and pre-hypertension as SBP and / or DBP ≥P90 but <P95, or BP> 120 / 80 mmHg but <P95, can be adjusted for gender, age and height. Although hypertension is considered a problem of maturity, it is now known as a very important beginning of life in its etiology. However, there is some data on TD levels in adolescents. There is also better understanding of the underlying physiological relationships, it is very important to predict its development and increase the risk of cardiovascular related complications, and to implement corrective measures [1].

Various factors have overall implications for high BP in children and adolescents, including obesity (in children themselves and their parents), higher height, lower socioeconomic status, people's lives, lack of regular exercise, and a family history of hypertension or obesity, in more recent research. Adolescents are the next generation that will determine the future of a nation. Health conditions are very important to achieve these goals. One of the health improvements in adolescents whose prevalence continues to increase is hypertension. Hypertension does not only occur in adults or the elderly, but can also occur in adolescents. About 70% of the incidence of hypertension in adolescents is primary hypertension. The national prevalence of hypertensive patients at the age of 13-17 years is 5.3% (men 6.0% and women 4.7%) [2].

Adolescents who have higher blood pressure than normal have a greater risk caused by coronary heart disease or heart failure as adults [3]. Approximately 7% of pre-hypertension occurs in adolescents who turn into hypertension [4]. Pre-hypertension, someone who has diastolic 90 to <95 or if the systolic blood pressure is more than 120/80 mmHg even though it is between the 90th percentile to <95th percentile.

Until now hypertension is a degenerative disease which is a serious problem. Hypertension is categorized as the silent disease or the silent killer because the patient does not know he has hypertension or does not know before checking his blood pressure. The incidence of hypertension increases with age. Death from hypertension is based on data from the Ministry of Health (2006) the prevalence of hypertension continues to increase every year, it is estimated that in 2025 around 29% of adults worldwide will suffer from hypertension [1]. Data from the AHA (American Heart Association) in 2011, in America 59% of patients with hypertension have only 34% where it is controlled, including 1 in 4 adults who suffer from hypertension. Meanwhile, based on NHANES (National Health and Nutrition Examination Survey) in 2010, of 66.9 million hypertensive patients in the US, 46.5% of hypertension was controlled and 53.5% of hypertension was out of control.

Some risk factors that can cause higher blood pressure are family with hypertension and weight gained by increased expenditure. This phenomenon causes changes in the lifestyles of the global community, such as the easier it is to get ready-to-eat food, the lower consumption of fiber, and then the consumption of salt, fat, sugar and calories continues to increase. Efforts to overcome the incidence of hypertension or complications that occur due to hypertension need to be modified in the lifestyle, such as: diet with salt intake, fat, alcohol, quitting smoking, and controlling body weight; physical activity; rest and sleep. Factors that cause hypertension include other factors, weight, diet, alcohol, cigarettes, drugs and other disease factors. Lifestyle also opposes emergence. Unhealthy habits such as an unbalanced diet with high cholesterol levels, salt, minimum exercise, and portion of the restoration can be relied upon for the appearance of blood pressure [5].

Until now there have been many national or international publications that examine the diagnosis and treatment of hypertension. The latest release is the 2013 Hypertension European Society hypertension management guide in the Canada Education Program. The purpose of this study is to provide a systematic overview of factors that influence hypertension in adolescents.

2. Research Methods

This Systematic review uses a guide based on the Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA) with a cross-sectional method.

2.1 Data Sources and Searches

The literature used in this Systematic Review uses tracing through 6 (six) electronic databases, namely: Scopus, Science Direct, PubMed, and Springer link which have been published in publications from January 2013 to November 2018. The keywords used are hypertension, factors, adolescents keywords.

2.2 Study Selection

The study design into the inclusion criteria in the Systematic Review is a cross sectional design published in English.

2.3 Data extraction and quality assessment

Data is extracted from each study that meets the requirements. The components taken were objectives, research design, population (number of samples, characteristics and recruitment methods), intervention and treatment for hypertension, outcome measures, data collection methods, and results analysis. The extracted data includes the characteristics of the study, characteristics of hypertension, characteristics of results and summary of results. Studies are grouped according to the factors that influence hypertension. If possible, the research is then grouped based on the time of follow-up and the type of intervention.

3. Results

3.1 Literature Search

Figure 1 below shows the literature search process on the SCOPUS, Science direct, Proquest, and springer link page.

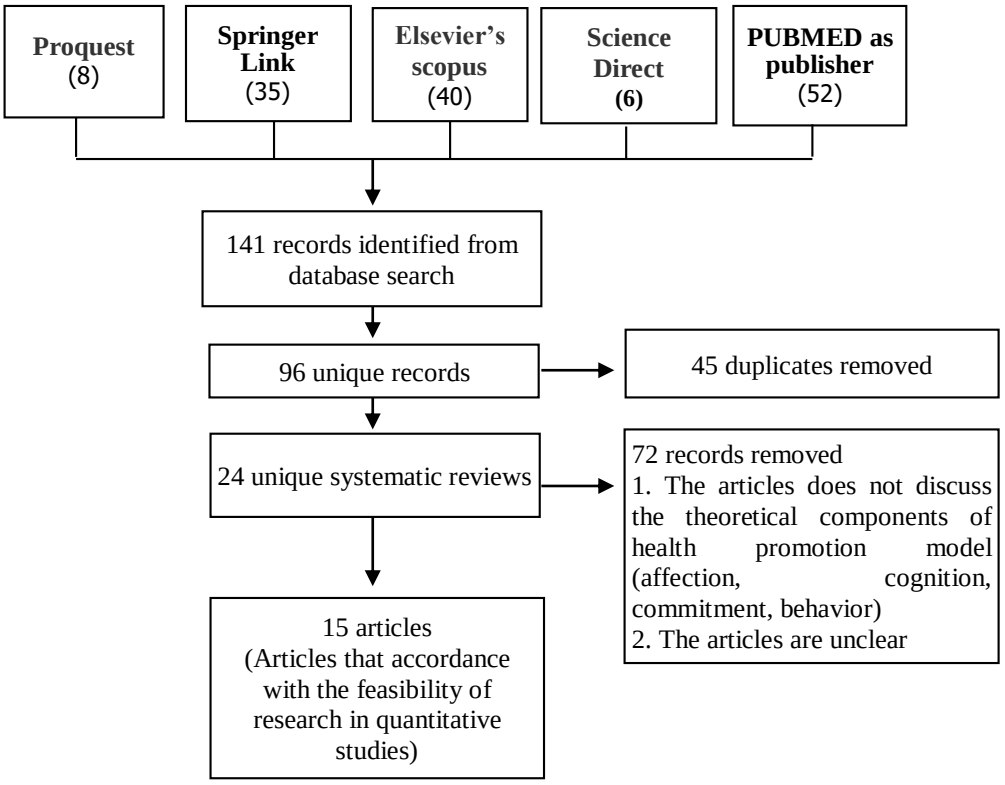

Figure 1. Flow chart of the literature search process

Table 1. Setting, study characteristics and key findings of included studies

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
Prevalence of pre-hypertension and hypertension and associated risk factors between undergraduate students at tertiary institutions, Ghana **[6]**	Ghana students 540 people from 6 colleges Samples: 100 students from each college	*Cross sectional*	Observation: Measurement of blood pressure	Blood pressure (BP) is recorded after subjects have relaxed for at least 5 minutes. Measurements were made with the subject in a sitting position using a mercury sphygmomanometer and by an automatic BP monitor (Omron HEM-5001, Kyoto, Japan) placed on the right arm of the subject. Measurements were made twice and read the recorded average. Repeated measurements were obtained at two consecutive, six hours in students with continuous blood pressure	Prevalence and hypertension were quite prevalent among students, with risk factors such as male sex, obesity detected by BMI and WHtR, while family history of hypertension and kidney failure showed possible influences in the development of prehypertension and hypertension.
Decreased adiposity reduces risk of hypertension: Results from a prospective adolescent cohort.	Teenagers in Portugal number 1377 Samples: teens aged 13 and 17 years	adolescents from the Epidemiological Adolescent Health Investigation cohort in Porto	Measuring BMI and Waist Circumference	use a questionnaire for physical examination interventions	The average blood pressure level and the incidence of hypertension were higher among men and adolescents with a family history of the disease, in

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
[7]					those who had higher rates of WC and BMI at baseline, and in adolescents in the category of increased BMI and WC (4 quartiles).
An approach for young hypertensive patients **[3]**	Youth and young adults in southern Africa between the ages of 15-24 years	rational approach	Blood pressure measurement and recorded using an electronic device, namely a mercury sphygmomanometer that has been calibrated	This increase suggests that an explosion of cerebrovascular disease, cardiovascular disease and chronic kidney disease can be expected in the forthcoming decades. A large part of the increased prevalence can be attributed to lifestyle factors such as diet and physical inactivity, which lead to overweight and obesity.	Hypertension in young people has doubled over the past 10 years and has necessitated a reevaluation of our approach to their evaluation, investigation and treatment. There is an urgent need to overcome lifestyle problems
Prevalence of hypertension and risk factors among school children in Kerala, India **[4]**	1610 children from 6 schools in Kerala, India with purposive sampling method. Samples: Between the ages of 5-10 years	purposive sampling method	anthropometric measurement	We found childhood obesity, family history of diabetes mellitus ischemic heart disease and CVA had a strong association with childhood hypertension. Awareness of hypertension was very	obesity, a family history of ischemic heart disease diabetes mellitus and CVA, which have a strong association with childhood hypertension. Awareness of hypertension is very low. The prevalence of

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
	from rural and urban areas			low. Periodic measurements should be done in schools to identify the high risk group of children and adolescents who can develop hypertension.	hypertension in children with a family history of hypertension, diabetes is high and statistically significant.
The prevalence of hypertension and associated risk factors in young adults attending a tertiary care institution from Nagpur: a cross sectional study **[8]**	370 young adult participants attending the department of the urban health training center in Nagpur Samples: ages 18 to 40 years	*cross sectional study*	Data were collected using a trial and pre-designed questionnaire and anthropometric measurements were carried out by standard guidelines. Blood pressure is measured using a sphygmomanometer in a sitting position.	The population with high body mass index, high waist to hip ratio and age group of 30 to 40 years were found to be associated with hypertension. Early surveillance and prompt treatment forms will help in decreasing the cardiovascular risk of young adults in the near future.	Populations with a high body mass index, high waist to hip ratio and 30 to 40 years age groups were found to be associated with hypertension. Early surveillance and appropriate forms of treatment will help in reducing the cardiovascular risk of young adults in the near future
Prevalence of hypertension among young adults in rural North Indian populations **[9]**	Young adults in the rural population of central India. 1061 subjects aged 18-40 years	*cross-sectional*	Observation (recording blood pressure and anthropometric measurements).	Most of the young adults with raised blood pressure were previously undiagnosed. A large number of subjects had prehypertension. Their early identification facilitates early, active management of blood	The prevalence between men is higher (18.8% compared to 15.2% in women). As many as 40.2% of the subjects were found to have pre-hypertension. A higher prevalence of hypertension is seen

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
				pressure and formulation of preventive strategies thereby decreasing morbidity and mortality due to cardiovascular diseases and hypertension.	among those who have a history of smoking.
Clinical characteristics and risk of hypertension require Young patients treated with systolic hypertension identified with ambulatory monitoring **[10]**	1,206 patients in the North East of Italy 18-45 years old,	*cross-sectional*	observation (anthropometric measurement)	These data were obtained with ambulatory BP monitoring, showing that in ISH people younger than 45 years only mean BP is a predictor of future hypertension needing treatment, whereas the ISH status per se does not necessarily imply an increase in risk.	BP outpatient monitoring shows that young people with ISH is better than people with diastolic cardiovascular risk profile or SDH. However, this condition is heterogeneous, and the main prognostic factor in the young-to-middle age range is the MBP level of outpatient care.
What are cardiovascular lifestyle risk factors for diseases associated with pre-hypertension in 15-18 years of rural Nigerian youth? A cross sectional study	Nigerian rural youth 1079 people age: 15-18 years	*cross-sectional*	survey	There were no gender differences in prevalence of pre- hypertension, and significant predictors of systolic pre-hypertension (high BMI and older age) were identified. Considering high BMI, older age was a risk for both genders, whilst fried	There were no gender differences in the prevalence of pre-hypertension, and significant predictors of systolic pre-hypertension (high BMI and older age) were identified. Given the high BMI, older age is a risk for both sexes,

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
[11]				food preference was a female-only risk, and low breakfast cereal intake was a male-only risk.	while fried food preferences are the only risk for women, and low breakfast intake of cereal is the only risk for men
Effects of a dietary approach to Stop Hypertension (DASH) diets on blood pressure, being overweight and obesity in adolescents: A systematic review **[12]**	Teenagers in Canada Age 10 to 15 years	*cross-sectional*	Survey	The DASH diet may have beneficial effects on the alterations of BP, overweight and obesity in adolescence. However, adherence to this dietary pattern is still low.	The cross-sectional study found that higher DASH scores were associated with decreased body composition measurements; the other two did not associate between the DASH score, weight, and BP. the cohort study found that the DASH diet resulted in lower levels of diastolic BP and a lower body mass index gain of more than 10 years. One RCT showed that the DASH diet proved effective in increasing systolic blood pressure and another RCT observed a decrease in the prevalence of AH.
Suppression of hypertension in	Teenagers 13-15 years old	Cluster sample	Survey	Prevalence of high hypertension. behavioral	The prevalence of increased hypertension is

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
adolescent schools will increase by 13-15 years in Assam **[13]**	In Assam 800 schools are taken in clusters and there are 16 clusters consisting of			risk factors such as tobacco, alcohol consumption, depression and sedentary lifestyles, extra salt intake, overweight and obesity are significant	influenced by behavioral risk factors of using tobacco, alcohol consumption, depression and sedentary lifestyle, extra salt intake, being overweight and obesity which are significantly associated with hypertension in adolescent school children.
Relationship of Genetic Factors with Blood Pressure in Adolescents**. [14]**	Malalayang 8th Middle School Students were from 80 students. Samples were students with good nutritional status who were enrolled in a particular school and given permission by their parents to participate in this study. There are 80 students	*Analytic observation*	Giving questionnaires and measuring blood pressure	inheritance pattern of hypertension in the family shows that hypertension genes are dominant. Even so according to Mendel's law, if only one parent suffers from hypertension, then the possibility of his child not suffering from hypertension is 50%. In this study, almost all children only had one parent who was hypertensive. So from that theory, it was	There is no relationship between genetic factors (parents of hypertension) and blood pressure in adolescents

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
				concluded that most of the children with one of their parents were hypertensive who were not hypertensive, the dominant allele of hypertension was not inherited to them.	
Prevalence and incidence of hypertension in young girls **[15]**	2368 girls (49% Caucasians, 51% African-Americans) aged 9 or 10 years	*cross-sectional*	Observation Measurement of height. Weight and blood pressure	Obese girls have a higher prevalence (around 6 times higher) and occurrence (approximately 2 to 3 times higher) compared to girls of normal weight. A similar pattern is found for prehypertension, except that prehypertension occurs more in girls older than young girls.	Obese girls have a higher prevalence (around 6-fold higher) and incidence (approximately 2 to 3 times higher) compared to girls of normal weight. A similar pattern was found for prehypertension, except that prehypertension occurred more in girls older than young girls.
prevalence and predictor of pre-hypertension and hypertension among school going adolescents	Adolescents (14-19 years old) from Tripura, India 530 Tribal Tripuri and 363	*cross-sectional*	Anthropometric measurements, adiposity status, systolic blood pressure (SBP) and diastolic blood	Overweight or obese subjects were highly susceptible to pre-hypertension and hypertension. SBP showed a significant	Overweight or obese subjects are very vulnerable to pre-hypertension and hypertension.

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
(14-19 years)of Tripura, India **[16]**	Bengali teenagers from Tripura, India		pressure (DBP) subjects were evaluated	positive correlation with body mass index (BMI), waist-hip ratio (WHR), waist circumference (WC) and waist-height ratio (WHtR). While DBP correlated significantly with BMI, WHR and body fat of subjects.	
Prevalence of hypertension in Portuguese adolescents in Lisbon, Portugal **[1]**	Portuguese teenagers in Lisbon non-random samples from 234 adolescents of both sexes, aged between 16 and 19 years	*cross-sectional*	observation and measurement of blood pressure r	From right arm BPs were measured, whereas blood pressure may be different between the two arms and this could affect the results of the study. So, it would be better if BP was measured in both arms, the measurement were repeated (with at least 10-minute intervals) in the arm that has higher BP and the average of them were noted.	The prevalence of pre-HTN and HTN in the sample studied was high. Risk factors were evaluated, only gender, obesity and family history of HTN were significantly associated with BP values.
Protective Risks And Factors For Hypertension In American Indians And Native Teenagers And	Teenagers in American Indians and Alaskans from 20 teenagers. Teenagers aged	*cross-sectional*	Observation: (Measurement of blood pressure)	In adolescent and young adults, the risk of hypertension has only been associated with increasing body mass index and metabolic	In adolescents and young adults, the risk of hypertension has only been associated with an increase in body mass index and

Title	Population / Sample	Method / Design	Intervention	Comparison	Outcome
***Adults: A Systematic Review* [17]**	14-19 years			syndrome. In adults, the risk of hypertension increases with age and dietary consumption, low physical activity; tobacco use; overweight and obesity. In adolescents, the risk of hypertension increases with bad life style.	Metabolic syndrome. In older adults, the risk of hypertension increases with age and has been associated with consumption of foods high in red meat and sodium; Low Physical Activity; tobacco use and; Excess Weight And Obesity; diabetes status; Metabolic syndrome.

3.3 Characteristics of intervention

Anthropometric assessments were then performed (weight and height), followed by BP measurements. Weight and height were measured by subjects who were barefoot and lightly clothed. Weight is assessed using a calibrated scale, with the subject standing in the center of the platform and the weight distributed evenly between the legs. The height is measured on a wall mounted stadiometer with the subject's legs side by side, the head on the Frankfort plane and with the heels, buttocks, shoulder blades, and head touching the stadiometer. The weight is measured in kg and is rounded to the unit and the height of m is rounded to cm. Body mass index (BMI) was calculated as weight in kg divided by square of height in m, and subjects were classified according to the reference chart of the National Health Statistics Center for percentile age and gender specific as obesity (BMI ≥ P95), overweight (BMI between percentiles to -85 [P85] and P95) or normal weight (BMI <P85) [1].

Hypertension and prehypertension was significantly more in overweight and obese children compared to normal children indicating obesity as an important risk factor for hypertension. The prevalence of overweight and obesity is higher in urban than rural children. Recent changes in lifestyle in urban areas, like sedentary pursuits unhealthy dietary habits are the major culprits for this increasing trend in urban areas. So, early intervention strategies for promoting health, such as eating habits, physical activities and health education should be undertaken since school age to prevent morbidities of obesity such as hypertension. Adolescents need to pay attention to regular BP measurements, and more effort should be put into programs aimed at educating young people about healthy lifestyles, particularly the importance of regular exercise and a balanced diet.

4. Discussion

We conducted a systematic review using a cross sectional design to determine the factors that increase hypertension in adolescents. We included 16 studios that discussed the factors that influence hypertension in adolescents and will be discussed in full *Summary of findings* descendants, lifestyle behaviors, smoking, and alcohol.

Several studies have investigated whether parents' lifestyle behaviors are associated with hypertension in adolescents. There was no observed relationship between parents' lifestyle behaviors and blood pressure levels in adolescents. In a study conducted by Watt et al., No association was found between older people with higher sodium excretion rates and higher blood pressure levels in children. A different finding was reported by Simonetti et al., In Germany, it was found that children of parents who smoke were more likely to experience hypertension. The difference between results may be caused by different methodologies. For example, this study used an average of two measures of blood pressure and automatic oscillometric devices, while Simonetti et al. used three measurements and aneroid devices. In addition, the prevalence of smoking among parents in the study by Simonetti et al. was higher than that observed in our study: 28.5% of fathers and 20.7% of mothers reported smokers in Germany; in our study, 17.9% of fathers and 12.4% of mothers reported this behavior. Other factors may be the age of the individual. In a study by Simonetti et al., the population consisted of pre-schoolers who generally spent more time with their parents and were therefore more likely to be exposed to cigarette smoke and then develop higher blood pressure levels.

Our study population consists of adolescents, who are generally more independent and have other social relationships consisting mainly of their peers [18].

One of the new findings of this research is that it analyses whether the relationship of parents' health risk factors will increase the likelihood of hypertension in adolescents. This is not confirmed by fathers, but adolescents from mothers with four or more associated risk factors are 2.5 times more likely to have hypertension. In addition to genetic factors, which can affect the occurrence of hypertension in adolescents, especially due to several conditions during pregnancy, mothers tend to spend more time with their children than fathers and may have more influence on their behavior such as lifestyle, inactive physical activity, smoking, and alcohol consumption.

One limitation of this study is the assessment of self-reported hypertension among parents, which might contribute to the possibility of underestimation. No assessment of diabetes in this study should be considered a limitation because elderly diabetes may be a risk factor for high blood pressure in children. In addition, although we included adolescence, gender, and BMI in the statistical model as confounding as possible, others such as physical activity, sedentary behavior, and alcohol consumption by adolescents were not included, and this behavior might play an important role in the event.. Another factor is the cross-sectional design of the study, a feature that does not allow us to conclude the causal effects of the relationship of hypertension of parents and higher blood pressure values in adolescents [5]

4.1 Implication for research

The purpose of the systematics of this review is to find out the factors that influence hypertension in adolescents. Based on the results of the analysis there are many things that are known about the factors that influence the occurrence of hypertension in adolescents, namely heredity, weight, diet, alcohol, cigarettes, drugs and other disease factors. Lifestyle also affects the appearance of attacks of high blood pressure. Unhealthy habits such as an unbalanced diet with high cholesterol levels, salt, lack of exercise and a portion of rest to stress can affect the increase in blood pressure. Based on the review of the journal, it was found that observation of small blood pressure measurements until adolescents can detect or find out from the outset a person's blood pressure condition to get immediate treatment and avoid things that do not cause an increase in blood pressure.

4.2 Limitations of findings

The limitations of this study were: (1) the article was limited to published research, which may introduce publication publications, (2) what we consider to be the main results (gender, obesity, family history, lifestyle, age, weight, lifestyle, food consumption) were not always the same as in other studios.

5. Conclusion

From the results of the systematic study analysis, it is known that the most dominant factors affecting hypertension were smoking habits, body mass index (BMI), age and lack of physical activity. Based on the characteristics of the respondents, various hypertension studies showed age and family history as dominant risk factors for hypertension. As for the lifestyle of respondents, BMI factors and smoking habits were the highest risk factors identified in various studies of hypertension in various

countries. In future studies of hypertension should involve other variables besides factors of hypertension in adolescents.

References

[1] Demirkol S, Kurt O, Balta S and Cakar M 2013 Prevalence of hypertension in Portuguese adolescents *Rev. Port. Cardiol. (English Ed.* **32** 741

[2] Ewald D R and Haldeman L A 2016 Risk Factors in Adolescent Hypertension

[3] P. M, S. S, K.E. H and B. R 2016 An approach to the young hypertensive patient *South African Med. J.* **106** 36–8

[4] Naha N, John M and Cherian V 2016 Prevalence of hypertension and risk factors among school children in Kerala, India *Int. J. Contemp. Pediatr.* **3** 931–8

[5] Christofaro D G D, Mesas A E, Ritti Dias R M, Fernandes R A, Saraiva B T C, Palma M R, Silva D A S and de Andrade S M 2018 Association between hypertension in adolescents and the health risk factors of their parents: an epidemiological family study *J. Am. Soc. Hypertens.* **12** 182–9

[6] Gyamfi D, Obirikorang C, Acheampong E, Owusu K, Adu E, Zarah F and Nsenbah E 2018 Prevalence of pre-hypertension and hypertension and its related risk factors among undergraduate students in a Tertiary institution , Ghana *Alexandria J. Med.* **54** 475–80

[7] Araújo J, Ramos E and Barros H 2019 Decreases in adiposity reduce the risk of hypertension : Results from a prospective cohort of adolescents *Prev. Med. (Baltim).* **120** 1–7

[8] Patil C R, Sahoo D P, Dhoble M, Kherde A and Inamdar A 2017 Prevalence of hypertension and its associated risk factors in young adults attending a tertiary care institute of Nagpur: a cross sectional study *Int. J. Community Med. Public Heal.* **4** 3630

[9] Zafar K S, Ram V S, Kumar M, Gupta M, Kumar S, Verma V K and Singh P K 2017 The prevalence of hypertension among young adults in a rural population of North India *Int. J. Res. Med. Sci.* **5** 4869

[10] Saladini F, Palatini P, Mos L, Mazzer A, Casiglia E and Fania C 2018 Clinical characteristics and risk of hypertension needing treatment in young patients with systolic hypertension identified with ambulatory monitoring *J. Hypertens.* **36** 1810–5

[11] Odunaiya N A, Louw Q A and Grimmer K A 2015 Are lifestyle cardiovascular disease risk factors associated with pre-hypertension in 15-18 years rural Nigerian youth? A cross sectional study *BMC Cardiovasc. Disord.* **15** 1–10

[12] Paula Bricarello L, Poltronieri F, Fernandes R, Retondario A, de Moraes Trindade E B S and de Vasconcelos F de A G 2018 Effects of the Dietary Approach to Stop Hypertension (DASH) diet on blood pressure, overweight and obesity in adolescents: A systematic review *Clin. Nutr. ESPEN* **28** 1–11

[13] Goswami T, Sebuah M, Mahanta B, Sebuah D and Baruah S 2018 Klinis Epidemiologi dan Kesehatan Dunia **6** 137–42

[14] Kalangi J A, Umboh A and Pateda V 2015 Hubungan Faktor Genetik dengan Tekana Darah pada Remaja *J. e-clinic* **3** 1–19

[15] Obarzanek E, Wu C O, Cutler J A, Kavey R E W, Pearson G D and Daniels S R 2010 Prevalence and incidence of hypertension in adolescent girls *J. Pediatr.* **157**

[16] Sutradhar B and Choudhuri D 2017 Prevalence and predictors of pre hypertension and

hypertension among school going adolescents (14–19 years) of Tripura, India *Indian J. Med. Spec.* **8** 179–86

[17] Buchwald D, Sinclair K, Zamora-Kapoor A, Schwartz S, Umans J and Walker-Harding L 2018 Risk and Protective Factors for Hypertension in American Indian and Alaska Native Adolescents and Adults: A Systematic Review *J. Adolesc. Heal.* **62** S127

[18] Goeggel Simonetti B, Mono M L, Huynh-Do U, Michel P, Odier C, Sztajzel R, Lyrer P, Engelter S T, Bonati L, Gensicke H, Traenka C, Tettenborn B, Weder B, Fischer U, Galimanis A, Jung S, Luedi R, De Marchis G M, Weck A, Cereda C W, Baumgartner R, Bassetti C L, Mattle H P, Nedeltchev K and Arnold M 2015 Risk factors, aetiology and outcome of ischaemic stroke in young adults: the Swiss Young Stroke Study (SYSS) *J. Neurol.* **262** 2025–32

EPD-902

RELATIONSHIP BETWEEN TYPE 2 DIABETES MELLITUS WITH THE LEVEL OF HYPERTENSION IN PETERONGAN PUBLIC HEALTH CENTER JOMBANG DISTRICT

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ABSTRACT

Diabetes mellitus (DM) is a chronic disease which is characterized by hyperglycemia and glucose intolerance that occurs because the pancreas is unable to produce insulin adequately because the body cannot use the insulin that is produced effectively. This research aimed to understand the correlation of type 2 diabetes mellitus with the case of hypertension for patients of diabetes mellitus at working area of Public Health Center of Peterongan Sub District In Jombang District.The design of research used an analytic correlation with cross sectional approach. The population in this research was the patients of diabetes mellitus at outpatient of Public Health Center of Peterongan Sub district , in Jombang District as many as 74 people. The total of samples that was used as many as 62 respondents. The technique of sampling used convenience sampling. The technique of data collection used secondary data with statistical test analysis of Rank Spearman with $\alpha = 0.05$. The results of research showed that the majority (61.3%) of respondents suffered long from type 2 diabetes mellitus for 5-10 years as many as 38 people. the majority (53.2%) of respondents suffered moderate hypertension as many as 33 people. The result of Spearman rank test was obtained = 0,000 < = 0,05. The research concluded that there was the correlation of type 2 diabetes mellitus with the case of hypertension for patients of diabetes mellitus at working area of Public Health Center of Peterongan Sub District in Jombang District. Being expected this research results can be developed by the discussion of hypertension case for the patients of Diabetes Mellitus and it can be used as a reference for better prerequisite to community.

Keywords: type 2 diabetes mellitus, hypertension

1. Introduction

Diabetes mellitus (DM) is a chronic disease characterized by hyperglycemia and glucose intolerance that occurs because the pancreas gland cannot produce insulin adequately which or because the body cannot use insulin produced effectively or both. In recent years diabetes mellitus has increasingly attracted attention because of its increasing prevalence. There are 2 types of Diabetes Mellitus according to the causative factors namely type 1 diabetes mellitus caused by hereditary factors and viral infection and type 2 diabetes mellitus caused by factors of being overweight and lack of physical activity (WHO, 2014). Whereas explained by (Maulana, 2015) diabetes also triggers and complicates other diseases such as the heart to hypertension. Problems that arise in this disease until now one of the causes is the accumulation of free radicals or oxidants. Free radicals can destroy the tissue system and the integrity of DNA in our body, this condition stimulates the acceleration of

the aging process, as well as the destruction of the liver and causes other diseases such as the heart and cancer (Herlambang, 2013).

The number of people with diabetes, especially Diabetes Type 2, is increasing throughout the world, especially in developing countries. International Diabetes Federation (IDF) estimates that every year 4.9 million people in the world die from diabetes and as many as 179 million (49%) people do not realize that they have diabetes. Based on IDF data acquisition in 2014 the global prevalence rate of diabetics aged 20 - 79 years amounted to 387 million cases out of 4.6 billion world population, IDF estimates that in 2035 the number of incidents of diabetes will increase to 592 million (54%) cases . Diabetes mellitus in Indonesia has increased from 1.5% in 2013 to 2.1% in 2014 (Riskesdas, 2013), this is in line with the results of data obtained by IDF in 2014, that Indonesia has around 9.1 million cases of diabetes, this is the fifth largest number in the world, before in 2011, Indonesia ranked 10th for the highest diabetes cases in the world with 7.2 million sufferers and up in 2013 to 7th with the number of sufferers is 8.5 million.

Based on the data contained in the Profile of the Jombang District Health Office in 2014 there were 21,992 (20%) diabetes cases in Jombang Regency. One of the regions in Jombang with the highest incidence of DM was in the Pusongan Health Center with 2,686 cases of diabetes (50%) (Jombang Health Office, 2014). In January and February 2016 there were 213 cases of diabetes in Peterongan Health Center (Peterongan Health Center, 2016).

From the Preliminary Study conducted at the Peterongan Health Center in Peterongan District, Jombang Regency on March 2, 2016, of the 10 people with diabetes there were 6 people who experienced hypertension and 4 people did not experience hypertension.

Diabetes is the main factor that can experience hypertension which is controlled by angiotensin II or macrovascular substances. its relationship with type 2 Diabetes Mellitus is very complex, so hypertension can make cells not sensitive to insulin (insulin resistant). The factors that influence the occurrence of diabetes are heredity (genetic), autoimmune, viral or chemical substances, diet or left style (lifestyle), high cholesterol levels, lack of exercise, obesity or obesity, one of which affects diabetes is indicated by increase in high blood sugar levels.

In general, blood pressure is 120/80 mmHg. the blood pressure limit is still considered normal if the blood pressure is less 130/85 mmHg, if more than 140/90 mmHg is stated as hypertension and among them the value is categorized as normal high (the limit is for adult individuals over 18 years) (Herlambang, 2013)

In type 2 Diabetes Mellitus patients, the most effective management is to change a balanced diet or lifestyle (left style) and reduce foods that contain lots of protein, fat, sugar, and salt. While the handling of hypertension can be prevented by regulating a good diet and sufficient physical activity by avoiding other habits such as smoking and consuming alcohol can also affect the risk of hypertension (Herlambang, 2013). And based on the description, the researcher was interested in researching about "Relationship between Type 2 Diabetes Mellitus and the incidence of Hypertension in Diabetes Mellitus patients in the Work Area of Peterongan Health Center in Jombang Regency"

2. Method

The research design in this study is correlational with the approach used Cross Sectional which emphasizes the time of measurement or observation of independent and dependent variable data only once at a time. Independent and dependent variables are assessed stimulantly at a time.

The study population was patients with type 2 diabetes mellitus in outpatient care at Peterongan District Health Center in Jombang in 74 people in April. The sample is some patients with type 2 diabetes mellitus who are outpatient at the Peterongan Health Center in Jombang Regency as many as 62 people.

The sampling technique in this study is Convinience sampling is the selection of samples or the way in which samples are determined by looking for subjects on the basis of things that please researchers. The independent variable is Diabetes Mellitus and the dependent variable is hypertension. The researcher used the Rank Spearman statistical test, $p = 0.05$

This research will be conducted on April 15 - May 16, 2016 at the Peterongan Health Center in Jombang Regency

3. RESULTS

The research results are presented in the form of general data and special data. General data contains characteristics of age, gender and occupation. Whereas the specific data is Type 2 Diabetes Mellitus, the incidence of hypertension in patients with Diabetes Mellitus and the Relationship between the Long Suffering Type 2 Diabetes Mellitus and the incidence of Hypertension in Diabetes Mellitus patients in Peterongan District of Jombang :

General data

Table 1. Distribution of General Characteristics of respondents

No	General data	Total	%
1.	**Age**		
	40-45 years	2	3,2%
	46-50 years	16	25,8%
	51-60 years	44	71%
2	**Gender**		
	Male	14	22,6%
	Female	48	77,4%
3	**Work**		
	Does not work	0	0%
	Farmers / traders	32	51,6%
	PNS	8	12,9%
	Private / entrepreneurial	22	35,5%

Table.1 shows that most (71%) of respondents aged 51-60 years were 44 respondents, almost all (77.4%) of respondents were female of 48 respondents, and most (51.6%) of respondents worked as farmers / trader for 32 respondents

Special Data

Table 2. Distribution of cross tabulations between ages and incidence of hypertension

Age	Hypertension incidence								Total	
	Weight		Is being		Light		Normal			
	∑	%	∑	%	∑	%	∑	%	∑	%
40-45 years	0	0	1	1,6	1	1,6	0	0	2	3,2
46-50 years	1	1,6	10	16,1	5	8,1	0	0	16	25,8
51-60 years	2	3,2	22	35,5	18	29	2	3,2	44	71

Total	3	4,8	33	53,2	24	38,7	2	3,2	62	100

Based on table 2. shows that almost half (35.5%) of respondents aged 51-60 with the incidence of hypertension in DM patients with a moderate category of 22 respondents

Table 3. Distribution of cross tabulations between sexes with the incidence of hypertension

Gender	**Hypertension incidence in Diabetes mellitus patients**								**Total**	
	Weight		**Is being**		**Light**		**Normal**			
	∑	%	∑	%	∑	%	∑	%	∑	%
Male	1	1,6	9	14,5	4	14,5	0	0	14	22,6
Female	2	3,2	24	38,7	20	32,3	2	3,2	48	77,4
Total	3	4,8	33	53,2	24	38,7	2	3,2	62	100

Based on table 3. shows that almost half (38.7%) of female sex with the incidence of hypertension in DM patients with a moderate category of 24 respondents

Table 4. Distribution of cross tabulation between the relationship of diabetes mellitus and the incidence of hypertension

Long suffering from type 2 diabetes	**Hypertension incidence in Diabetes mellitus patients**								**Total**	
	Weight		**Is being**		**Light**		**Normal**			
	∑	**%**	**∑**	**%**	**∑**	**%**	**∑**	**%**	**∑**	**%**
>10 year	3	4,8	4	6,5	1	1,6	0	0	8	12,9
5-10 year	0	0	27	43,5	11	17,7	0	0	38	61,8
>4 month	0	0	2	3,2	12	19,4	2	3,2	16	25,8
Total	3	4,8	33	53,2	24	38,7	2	3,2	62	100
***Spearman Rank* = 0,602 ρ = 0,000 < α = 0,05**										

Based on table 4 shows that most (43.5%) of the old respondents suffer from hypertension 5-10 years with the incidence of hypertension in DM patients with a moderate category of 27 respondents, then the results of the Spearman rank test obtained a significant number or probability value (0,000) far lower than the significant standard of 0.05 or (r <α), then the data Ho was rejected and H1 was accepted which means there is a Relationship between Type 2 Diabetes Mellitus with the incidence of Hypertension in Diabetes Mellitus sufferers in the working area of Peterongan Health Center, Jombang Regency.

4. Discussion

Relationship long p with type 2 diabetes mellitus with hypertension events

Based on Table 4. above shows that 61.3% or 38 respondents suffered from type 2 DM for 5-10 years. Then 53.2% had moderate hypertension from 62 respondents. In table 5, the results of the Spearman rank test obtained a probability value (0,000) far lower than the significant standard 0.05 or (r < α), then H1 was accepted which means there is a relationship between Type 2 Diabetes Mellitus and the incidence of Hypertension in Diabetes Mellitus patients The working area of Peterongan Health Center in Jombang Regency.

Zimmet, (2009) explained that the duration of diabetes showed how long the patient had diabetes mellitus since the diagnosis of the disease. The duration of diabetes mellitus suffered is associated with the risk of several complications that arise afterwards. The main factor triggering complications in diabetes mellitus in addition to duration or duration of suffering is the severity of diabetes.

Complications of diabetes mellitus are metabolic disorders resulting in hyperglycemia which results in an increase in blood fat levels and damage to small blood vessels which in a long time will cause diabetic neuropathy and disorders of important organs in the body namely the heart, kidneys, brain, digestive tract, senses and so on (Sutedjo, 2010).

Related to these conditions, Mutmainah (2013) explained from the results of research that diabetes is a major factor that can lead to hypertension which is controlled by angiotensin II or macrovascular substances. its relationship with type 2 Diabetes Mellitus is very complex, so hypertension can make cells not sensitive to insulin (insulin resistant). Insulin plays a role in increasing glucose uptake in many cells and in this way it also regulates carbohydrate metabolism, so that if there is insulin resistance by cells, the blood sugar levels can also be disrupted.

In addition to the old condition of type 2 diabetes mellitus, the incidence of hypertension is strongly influenced by age factors, according to table 2, indicating that the majority (71%) of respondents aged 51-60 years were 44 respondents suffering from severe hypertension 3.2%, moderate 35.5 % and mild 29%. and normal 3.2%. Increasing age, the possibility of someone suffering from hypertension is also getting bigger. Hypertension is a disease that arises due to the interaction of as a risk factor for the onset of hypertension. The loss of atherosclerosis tissue elasticity and blood vessel dilation are the causes of hypertension in old age (Sutanto, 2010). this is because the more advanced a person will experience degenerative diseases such as hypertension. Besides eating patterns also affect the elderly occur hypertension, eating patterns that are wrong such as eating foods that contain lots of salt, eating fatty foods, drinking excessive coffee can lead to elderly people affected by hypertension.

Sex factors are also very possible for hypertension. Based on Table 1. shows that almost all (77.4%) of respondents were female of 48 respondents. Based on cross tabulation data between sexes and the incidence of hypertension in DM patients it is known that from 48 respondents almost half were female, the incidence of moderate hypertension was 24 people (38.7%).

The results of the 1995 household health survey showed that the prevalence of hypertension or high blood pressure in Indonesia was quite high, at 83 per 1,000 household members. Women> men at age> 50 years old men> women at age <50 years (Muhammadun, 2010). The role of estrogen hormone is to increase HDL levels which are protective factors in preventing the occurrence of the atherosclerosis process. The effect of protecting estrogen hormones is thought to be the presence of female immunity at premenopausal age (Kumar, 2009).

Referring to the data and theory above, the incidence of hypertension is strongly influenced by the old condition of suffering from type 2 diabetes mellitus, which generally has a long suffering from 5 years to more than 10 years. Then the condition is strongly influenced by age, where age is closely related to the body's degenerative system, especially the blood vessel system and the heart, so hypertension may occur in people with diabetes mellitus

Gender factors also play an important role in the occurrence of hypertension that gender is very closely related to the occurrence of hypertension, where in middle-aged hypertension is higher in women when a woman experiences menopause. Menopause is associated with an increase in blood

pressure, this occurs because menopausal women experience a decrease in the hormone estrogen, which has been protecting blood vessels from damage (Kusumawaty, et.al. 2016) this is also in accordance with the results of research by Min-Ju Kim, et.all. (2015) explained that there is a risk in people with diabetes mellitus more than 8 years of blood pressure. The prehypertension and hypertension were significantly associated with the development of diabetes, regardless of initial glucose status, gender and BMI

5. Conclusion

Based on the description of the results and discussion above, it can be concluded that; There is a relationship between Type 2 Diabetes Mellitus (5-10 years) and the incidence of Hypertension in Diabetes Mellitus patients in the Peterongan Health Center, Jombang Regency.

Reference

1. Arikunto. 2006. Metode Penelitian Suatu Prosedur Pendekatan. Jakarta Rineka Cipta.
2. Damayanti. 2013. Sembuh Total Diabetes, Asam Urat, Hipertensi Tanpa Obat. Yogyakarta: Pinang Merah Publisher.
3. Gray, H. 2005. Lecture Notes Kardiologi. Jakarta : Erlangga.
4. Harrison. 2000. Prinsip-prinsip ilmu penyakit dalam. Jakarta : EGC.
5. Herlambang. 2013. Menaklukkan Hipertensi dan Diabetes. Yogyakarta : Tugu Publiser.
6. Hidayat, A.A. 2008. Riset Keperawatan dan Teknik Penulisan Ilmiah. Jakarta : Salemba Medika.
7. Hidayat, A.A. 2014. Metode Penelitian Keperawatan dan Teknik Analisis Data. Jakarta : Salemba Medika.
8. Keperawatan, Dosen SI. 2013. Teori Model Keperawatan. Jombang : Stikes Pemkab Jombang.
9. Kusumawaty,J et.al. (2016) Hubungan Jenis Kelamin dengan Intensitas Hipertensi pada Lansia di Wilayah Kerja Puskesmas Lakbok Kabupaten Ciamis. *Mutiara Medika, Vol. 16 No. 2: 46-51, Juli 2016. journal.umy.ac.id*
10. Ladion, Herminia G. 2009. Bertahan Hidup Sesudah Serangan Jantung. Bandung : Indonesia Publishing House.
11. Maulana Mirza. 2015. Mengenal Diabetes. Yogyakarta : Kata Hati.
12. Mutmainah. 2013. Hubungan Kadar Gula Darah Dengan Hipertensi Pada Pasien Diabetes Melitus Tipe 2 Di Rumah Sakit Umum Daerah Karanganyar. Journal. Di akses dari http://eprints.ums.ac.id/file tanggal 14 februari 2016
13. Naga S Sholeh. 2012. Buku Panduan Lengkap Ilmu Penyakit Dalam. Yogyakarta : Diva Press.
14. Nursalam. 2014. Metodologi Penelitian ilmu keperawatan. Jakarta : Salemba Medika.
15. PERKENI. 2011. Konsensus pengelolaan dan pencegahan diabetes mellitus tipe 2 di Indonesia. Jakarta: Gramedia.
16. Notoadmojo,S. 2012. Metodologi Penelitian Kesehatan. Jakarta : Rineka Cipta
17. Soyjoy. 2015. Diabetes and Me. Jakarta : PT Elex Media Komputindo.
18. Suiraoka IP. 2012. Penyakit Degeneratif. Yogyakarta : Nuha Medika.
19. Toruan, Phaidon L. dr., MM. 2012. Diabetes Sakit Tapi Sehat. Jakarta : Trans Media Pustaka.

20. Udjianti, Wajan Juni. 2010. Keperawatan Kardiovaskuler. Jakarta : Salemba Medika
21. Zimmet, P. (2009) Preventing Diabetic Complication: A Primary Care Prospective, Diabetes Res Clin Pract 84:107-116.
22. Min-Ju Kim *et.al*. (2015) Hypertension is an independent risk factor for type 2 diabetes: the Korean genome and epidemiology study**,** Hypertens Res 2015 Nov; 38(11): 783–789. Published online 2015 Jul 16. doi: 10.1038/hr.2015.72

EPD-906

PSYCHOLOGICAL THERAPIES FOR TREATMENT OF POST-TRAUMATIC STRESS DISORDER ON NATURAL DISASTER SURVIVORS: A SYSTEMATIC REVIEW

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ABSTRACT

Post-Traumatic Stress Disorder (PTSD) is highly prevalent in each person who have experienced trauma. No previous systematic review who have specifically investigated the effectiveness of psychological therapies of PTSD for survivors on natural disaster. Objectives of this review were to examine the effectiveness of psychological therapies in treating survivor on natural disaster who have been diagnosed with PTSD. A comprehensive search includes randomized controlled trials from the following bibliographic databases i.e Scopus, PubMed, Science Direct, ProQuest and Springerlink were used to search scientific contribution which is published between 2009-2019. Articles pre-identified by using relevant keywords. This systematic review in line with PRISMA guidelines. Twenty- five of about 486 articles both meet inclution and exclution criteria and were reviewed. The psychological therapies that found in these studies were Cognitive Behavioural Therapy (CBT), Narrative Exposure Therapy, Yoga, Trauma Stabilisation, Cognitive Hypnotherapy, Internet-CBT, Cognitive Processing Therapy, Supportive Counseling, Control-Focused Behavioral Treatment (C-FBT), Early Eye Movement Desensitisation and Reprocessing (EMDR) and meditation-relaxation. Most compared a psychological therapy to a control group. The psychological therapy for which there was the best evidence of effectiveness was CBT.

Keywords: phychological therapies, phychological treatment, post-traumatic stress disorder, natural disaster

1. Introduction

Natural disasters such as earthquakes, floods, and hurricanes may lead to a wide range of negative psychological consequences, including post-traumatic stress disorder (PTSD) [1]. The aftermath of a disaster is a time when survivors experience many psychosocial symptoms such as stress, grief, depression, and anxiety [2]. Furthermore, the life-threatening nature of the disaster, the loss of loved ones, and, in some cases, the irreversible physical impairment of affected individuals further contributes to the risk of developing mental health disorders, and such disorders might prevent victims from benefiting sustainably from material aid that is often provided as part of organized relief efforts [3]. A growing body of evidence demonstrates that major depressive disorder, PTSD, depression, and anxiety undesirably and forcefully [4]. PTSD as the most frequently occurring psychological disorder appearing after the experience of a natural disaster, with prevalence rates ranging from 5 to 60%, with higher rates in areas more severely affected by the disaster [3].

Epidemiological research suggests that 60–80% of individuals with acute stress disorder (ASD) develop PTSD and a third of subjects with acute PTSD symptoms remain symptomatic for six years or longer. Moreover, over 80% of individuals diagnosed with PTSD meet diagnostic criteria for at least one other disorder. A major depressive disorder is one of the most common comorbid disorders with PTSD [5]. Developing PTSD also is influenced by economic status, the extent of house and property damage, loss of beloved people, injury, anxiety levels during the disaster, and whether survivors are living in a shelter after the disaster [2]. There is increasing evidence that PTSD is associated with suicidal behavior and comorbidity with a mental and physical health condition [6]. As PTSD is highly comorbid with other mental disorders, aside from trauma exposure, what differentiates PTSD from other disorders is the re-experiencing of symptoms (for example, nightmares and flashbacks) and many of the other symptoms of PTSD, such as hyperarousal, avoidance, and numbing, overlap with other mental disorders, such as generalized anxiety disorder, panic disorder, and depression [6,7].

In relation to the treatment of PTSD, all psychotherapies, individual psychotherapy focused on trauma is the most effective, followed by stress management techniques and group cognitive-behavioral therapy [8]. A number of trauma-specific and generic psychological therapy approaches have been used in the treatment of PTSD for adults. Existing reviews have explored the effects of psychological therapies for the treatment of PTSD in children and adolescents [9]. A systematic review and synthesis of published group treatments for adults with symptoms associated with complex PTSD already known [10]. However, specific systematic reviews explore the effect of psychological therapies against PTSD among adult survivors of natural disasters have never been done. The objective of this article is to examine the effectiveness of psychological therapies in reducing PTSD in adult survivors of natural disasters.

2. Methods

2.1. Protocol

This systematic review using Procedures outlined in the Preferred Reporting Items for Systematic-Reviews (PRISMA) were followed [11,12].

2.2. Eligibility criteria

Journal articles published in English from January 2009 to January 2019. Searching strategy used the PICOS framework to identify the keywords.

2.2.1. Type of study design.

Only studies of completed randomized controlled trials published in peer-reviewed journals written in English were induced.

2.2.2. Type of participants.

Studies were included to all adult survivors (>18 years) of natural disasters with PTSD. Survivors with comorbid conditions such as depression, stress, and anxiety disorders were included.

2.2.3. Type of interventions.

Studies were included if the intervention comprised a psychological clinical framework, and may have comprised education, uni-or multidisciplinary rehabilitation (i.e., physician, physiotherapy, psychology,occupational therapy). Interventions must have sought to prevent the incidence, or reduce the severity and impact, of psychological conditions. All psychological therapies including CBT, NET, Yoga, EMDR, and IPT. Control as comparator intervention is treatment, as usual, waiting list controls or no treatment, another psychological therapy and other treatments.

2.2.4. Type of clinical outcomes.

Intervention studies had to include assessment of PTSD (i.e. overall levels of trauma symptomatology), anxiety and depression.

2.3. Information sources

Studies were identified by comprehensive searching of five databases namely Scopus, ScienceDirect, PubMed, Proquest, and SpringerLink.

2.4. Search

Search terms in the database using a combination of keywords (1) Psychological Therapies OR (2) Psychological Treatment AND (3) Post-Traumatic Stress Disorder OR (4) PTSD AND (5) Natural Disaster.

2.5. Study selection

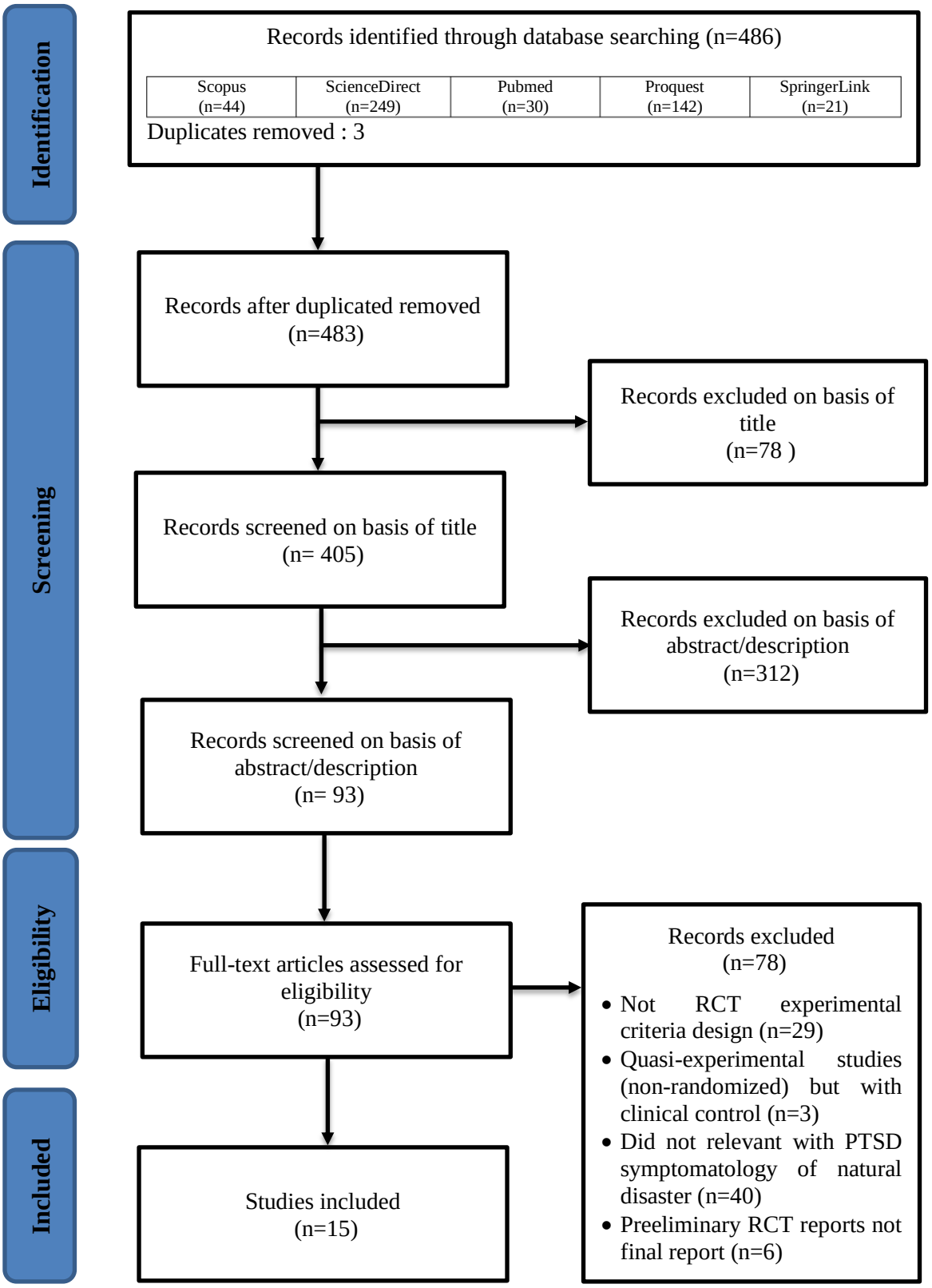
Titles and abstracts were independently screened by reviewers against the inclusion criteria. Reviewer assigned inclusion codes were yes, no or unsure. Full-text articles were then obtained and assessed for eligibility. The reviewers compared the screening results and discussed any disagreements regarding study eligibility.

2.6. Data collection process

The following data were extracted: the identity of studies, the setting of the study and the main results. Two authors (PSE and IKLTA) were involved in data extraction, and after organizing results in a table, the findings were discussed and reviewed again. One review author extracted the following data from included studies and the other checked the extracted data. Disagreement is resolved by discussion between authors.

2.7. Data items

Reviewers used a customized form to extract study information to enable the evaluation of study characteristics, heterogeneity, and likely population impact through reach, effectiveness, adoption and Implementation. The following data were extracted: (1) study country; (2) cohort characteristics (including therapy type, type trauma context, type natural disaster, gender distributions and sample size at recruitment and outcome assessment); (3) study inclusion and exclusion criteria; (4) study design; (5) characteristics of the intervention and control groups; (6) details of the intervention(s) including timing postinjury, discipline of therapy/therapists, modality (e.g., individualized, group) and intensity; (7) setting in which interventions were adopted; (8) who implemented the intervention (e.g., research staff or non-research clinicians); (9) timing of follow-up assessments; (10) primary and secondary outcomes; (11) measurement tools; and (12) intervention effects on outcomes.



1.1.1.1.2.1 **Figure 1.** Study inclusion based on the preferred reporting items for systematic reviews

2.8. Risk of bias in individual studies

As both randomized controlled trials (RCTs) studies were eligible for risk, bias assessment was undertaken using a tailored tool based on the respective Cochrane Collaboration guidelines [13]. Risk of bias was evaluated for the following domains: (1) selection bias (e.g., randomization and stratification); (2) performance bias (e.g., blinding of participants and personnel); (3) detection bias (e.g., missing data and appropriate confounders); and (4) reporting bias (e.g., selective reporting). Reviewer independently assessed each study for bias, which was coded as high, moderate, low or unclear/unknown. Where appropriate, the direction of bias was noted as favoring the intervention/control, or was unclear. The overall risk of bias ratings was determined qualitatively and some domains were weighted more heavily than others as recommended [13]. For example, trial performance and detection and analysis were given more weight as studies with a high risk of bias in these domains may be more likely to favor the intervention group. Each reviewer was blind to the assessment of the other reviewer. The reviewers crosschecked their final assessments and resolved any disagreements through discussion.

2.9. Data analysis

Studies were grouped according to the intervention used and the study population. Where possible, studies were thereafter grouped according to the time of follow-up and type of control group. All studies were individually rated for evidence level using the National Health and Medical Research Council (NHMRC) Hierarchy of evidence guidelines (IV-I, with I being the strongest level of evidence).

2.10. Meta-analysis

Meta-analysis was not possible as studies were too heterogeneous in the type of interventions, type of control group, outcomes measures used and the time of follow-up.

3. Results

3.1. Study selection

The search yielded 486 records. After the removal of 3 duplicates, 483 records remained, 78 did not meet the inclusion criteria after screening the titles, 312 did not meet the inclusion criteria after screening the abstract and description. Ninety-three full-text articles were assessed for eligibility, and 78 did not meet the inclusion criteria. Fifteen papers were included for data in systematic review[3,8,22–26,14–21]. Study characteristics, including cohort information, intervention details, and outcome measures are described in Appendix A.

3.2. Study characteristic

3.2.1 Type of participant.

About 15 included studies, four were conducted in Asia [14,16,22,25,27–32], eight in Europe [8,15,18–21,26,33], one in Africa [3,34], one in Australia [17]. Participants were predominantly recruited from the area of natural disaster. The included studies involved 1301 participants, with 332 (25%) men and 969 (75%) women. The majority of studies recruited participants aged 18 to 78 years old.

3.2.2 Type of study design.

All study adopted an RCT design, All other studies compared a single intervention to a waitlist, control or usual care group.

3.2.3 Type of interventions.

There were four key intervention designs: CBT [8,15,17,24]; NET [3,22]; yoga [14,21,25], EMDR [19,20,26,33], and IPT [16,18]. For most participants, interventions were initiated between 1-5 year post-disaster. The reported range of follow up start from one-month follow-up until 24-month follow-ups. Most interventions were delivered by a clinical psychologist, social worker or nurse who was trained and supervised to deliver the intervention. Further descriptions of the interventions, including timing and modality, are provided in Appendix 1.

3.2.4 Type of outcomes.

Each study examined PTSD symptomatology and depression outcomes. The timing of outcome assessments ranged from one month to 5 years post-disaster. In some studies, follow-up periods were specified relative to the time since commencing or completing the treatment. PTSD symptoms or diagnosis were reported as primary outcomes in all studies. Depression symptoms or diagnoses were secondary outcomes in seven studies.

Tools that used to measure PTSD symptoms was the Short Posttraumatic Stress Disorder Rating Interview (SPRINT-E) [8]; Short-Post Traumatic Stress Disorder Rating Review-Expanded [15]; Primary Outcome Measures PTSD [24]; Impact of Event Scale-Revised (IES-R) [17,20,22,24,26,33]; Clinician-Administrated PTSD Scale for DSM-IV [3,16–19]; PCL-17 [14]; Screening Questionnaire for Disaster Mental Health (SDQ) [25]; and PDS [21].

Depression and anxiety Generalized Anxiety Disorder, the PHQ-9 [17,24]; Hospital Anxiety and Depression Scale (HADS) [22]; The Beck Depression Inventory-Second Edition and The Beck Anxiety Inventory (BAI) [14,21].

3.3. Risk of bias assessments

Risk of bias judgments for each paper is summarized in Appendix B. Ten papers (66.7%) were considered to have a low risk of bias, four (26,7%) had a moderate risk of bias and one (6.6%) had a high risk of bias. Poor selection methods, lack of adjustment for confounding factors and inadequate analyses were the main sources of bias, see Fig. B2. While inadequate blinding of personnel was a key source of bias, we acknowledge that it is rarely possible to fully blind participants and clinicians to active psychological interventions.

3.4. Result of individual studies

There are various type of psychological interventions in the reviewers found, including CBT, NET, Yoga, EMDR, and IPT. Each intervention has been grouped and described separately related to its effect on the PTSD.

3.4.1. Cognitive behavioral therapy.

Cognitive-Behavioral psychotherapy that has demonstrated to be effective for PTSD treatment after a natural disaster is the cognitive-behavioral therapy for post-disaster distress (CBT-PD) that measured on four different occasions (referral, pretreatment, intermediate and post-treatment) [8]. CBT-PD is a short-term group therapy (10-12 sessions), whose objective is to identify and to intervene in the maladaptive beliefs related to the disaster and intervention which includes four

components: psychoeducation, breathing retraining, behavioral activation and cognitive restructuring [8]. CBT-PD is a manualized treatment that has a primary focus on identifying and challenging maladaptive disaster-related beliefs and it includes psychoeducation, breathing retraining, behavioral activation, and cognitive restructuring. Psychoeducation provided in the first session, psychoeducation aims to provide clients with an understanding of common reactions to disaster. Breathing Retraining and Behavioral Activation in session two clients are taught some immediate ways of managing their distress as well as skills for decreasing future distress. Breathing retraining is a skill for managing and decreasing anxiety. Behavioral activation is introduced as an effective way to combat depression and avoidance. Cognitive restructuring in session three mentioned clients are introduced to the concept that people's emotional reactions to events are determined by their interpretations of those events. In session four, clients are introduced to the cognitive distortions (called problematic thinking styles) that may result from basing current thinking on past traumatic experiences. The evaluation was minimal in the first pilots of the approach, but preliminary results were promising, and it appears that it can be rapidly disseminated to community-based clinicians [15].

Face-to-face CBT for PTSD typically involves 1–1.5 hours of treatment per week over 9–12 weeks, covering psycho-education, anxiety management, cognitive and exposure therapy, and relapse prevention [35]. However, this form of specialized treatment is unavailable to many sufferers due to a shortage of appropriately qualified professionals (especially in rural and regional communities), individual financial constraints, and the social stigma attached to seeing a mental health professional [36]. Therapist-assisted internet interventions have been found to be as effective as best practice face-to-face therapy. Both self-help and therapist-assisted internet-based treatments have been successfully delivered for a range of mental illnesses, including depression, panic, insomnia, and alcohol problems [17].

3.4.2. Narrative Exposure Therapy.

NET is a standardized short-term trauma-focused treatment approach developed to meet the needs of traumatized survivors. It is based on exposure therapy, CBT and testimony therapy. In contrast to other exposure treatments, the participant does not identify a single traumatic event as a target in therapy. Instead, NET involves constructing a narrative that covers the participant's entire life [22]. NET embeds the principles of testimony therapy, prolonged exposure therapy, cognitive-behavioral, and client-centered psychotherapy into recent findings of neurotraumatology [3]. Cognitive processing models suggest that PTSD symptoms are maintained through a distortion of explicit autobiographic memory about traumatic events and its detachment from the contents of implicit memory, which produces a fragmented narrative of the traumatic memories. Emotional processing theory states that the habituation of emotional responses through exposure leads to a decrease in post-traumatic symptoms.

NET stresses the importance of both approaches: the habituation of emotional responses to reminders of the traumatic event and the construction of a detailed narrative of the event and its consequences. NET is a strict manualized treatment. Sessions are usually 60–120 min in length and ideally occur in close succession. The person initially undergoes psychoeducation, then constructs a lifeline, with subsequent sessions dedicated to the narration of the person's life, with particular focus on and attention to the traumatic events, which are narrated in great detail, ensuring emotional engagement with the memory. The aim is to integrate the generally fragmented, gap-filled reports of traumatic experience into a coherent narrative and to bring about the habituation of emotional

responses to reminders of the traumatic event. Each session may focus on a single event, so people with multiple traumas need multiple sessions. Finally, the person and therapist have created a testimony of the person's life from birth to the present day, with a detailed narration of the traumatic events [3,22].

3.4.3. Yoga.

Yoga breath interventions could increase the symptoms of PTSD, depression, and anxiety. Multi-component mind-body programs, including breath practices postures (asanas) and movements, may alleviate symptoms of anxiety, depression, PTSD and schizophrenia. The Yoga intervention was taught as an 8-h program given in 2-h sessions over four consecutive days and included four breathing techniques: three-stage Ujjayi (Victorious Breath), Bhastrika (Bellows Breath), chanting 'OM' and Sudarshan Kriya (SK) (Clear Vision through Purifying Action). All breath forms are performed with the eyes and mouth closed while breathing through the nose. The intervention included some brief discussion about trauma reduction and life meaning. Ujjayi breathing employs a slight contraction of the laryngeal muscles and partial closure of the glottis (increasing airway resistance) while breathing through the nose. Bhastrika involves repeatedly raising the arms above the head and then bringing them down against the sides of the ribs, like the handles of a bellows, leading to vigorous exhalation through the nose Sudarshan Kriya (SK) uses a sequence of breathing at different rates starting slowly (4–6 breaths per minute), then at a moderate rate (10–12 breaths per minute), then briefly at a fast rate (80–100 breaths per minute). The sequence is repeated several times over a total period of approximately 10 min.

The yoga session was conducted in the morning between 06:00 and 07:00 hours. The yoga class included loosening exercises (sithilikarana vyayama) for ten minutes, physical postures (asanas) for twenty minutes and breathing techniques (pranayamas) for twenty-five minutes. These practices were followed by five minutes of guided relaxation in shavasana (corpse pose). Loosening exercises (sithilikarana vyayama) are a set of techniques which involve repetitive movements of all joints from the toes up to the neck to increase mobility and to prepare for the practice of yoga postures. The following yoga postures were practiced: standing posture (tadasana), lateral arc posture (ardhakaticakrasana), hand-to-foot posture (padahastasana), half wheel posture (ardhacakrasana), back-stretching posture (paschimottanasana), half lotus posture (ardha padmasana), moon posture (sasankasana), crocodile posture (makrasana), cobra posture (bhujangasana), locust posture (shalabhasana), shoulder stand posture (sarvangasana), and fish posture (matsyasana). The breathing techniques included high frequency yoga cleansing breathing (kapalabhati), alternate nostril yoga breathing (anulom-vilom pranayama), exhalation while making a humming sound like a bumble bee (brahmari pranayama) and exhalation with chanting of a syllable, OM (udgheeth pranayama). The breath rate for the high-frequency yoga cleansing breathing (kapalabhati) was approximately 60 breaths per minute. For alternate nostril breathing (anulom-vilom pranayama) the breathing rate was approximately 12 breaths per minute, whereas, for the breathing practices involving exhalation with a sound (e.g., brahmari and udgheeth pranayamas), the breath rate was lower, approximately 8 breaths per minute. The breath rates mentioned here are based on our unpublished data recorded in normal volunteers who were also novices to yoga and learned the techniques in the comparable time. This yoga program has been called Patanjali yoga as it is based on the teachings of Patanjali (circa 900 B.C.) [14,21,25].

3.4.4. Early Eye Movement Desensitization and Reprocessing.

EMDR is a structured psychotherapeutic method widely used to treat various psychopathologies and problems relating to traumatic events and emotionally stressful experiences and adopts as a theoretical base the AIP model (Adaptive Information Processing), which works on insufficiently worked-through memories. EMDR is particularly suitable for treating PTSD thanks to its applicability in emergency situations and its rapidity in achieving appreciable and lasting results [26]. The EMDR Integrative Group Protocol (EMDR-IGTP) takes about 90 min and foresees three sessions of intervention. Pointed out the advantages of EMDR in the emergency context typical of earthquake-affected populations who receive treatment in tent cities, compared to other strategies such as exposure-based cognitive behavioral therapies, or the techniques of "belief-restructuring" and "stress inoculation," strategies which are considered inappropriate and difficult to apply given the emergency situation and chaotic conditions of tent cities. Furthermore, the techniques based on exposure which center on the stressful details of the event are generally considered unsuitable for a population exposed to high levels of anxiety, suffering many bereavements and are under constant threat from the risks of further tremors [26,33].

The therapy followed a standard EMDR protocol and was composed of eight steps. The EMDR session began with the identification of patients' most disturbing memories of the traumatic event, as well as of any associated negative belief, disturbing emotion and its bodily location. Patients were then asked to focus on these traumatic events while following the bilateral finger movements performed by the therapist for about 30 seconds. After each set of horizontal movements, the patients were prompt to share any emotion/flashback/percept they have been noticing during the visual stimulation. When the patients reported no more erupting emotional burst or any other feeling related to the target memory, the therapist assessed the patient's ability to elaborate on the target with no emotional distress. The process was completed when the patient reported being able to think about the traumatic experience with no disturbing emotions or somatic reactions. Other targets were then selected and the same procedure (i.e., trauma identification, visual stimulation, assessment) was repeated. The EMDR treatment ended when patients were able to visualize themselves in a future scenario where they were able to face the re-elaborated targets while feeling no emotional discomfort. In the present sample, the EMDR required an average of 4 weeks (±2) of weekly sessions per patient. Each session lasted for approximately an hour. EMDR was performed by two certified EMDR therapists [19,20,26,33].

3.4.5. Interpersonal Therapy

IPT is 12-week structured psychotherapy established first-line treatment for depression in the U.S. IPT was delivered in one hour weekly individual sessions for 12 weeks. The goal of IPT is to examine and change current relationships and social support in order to improve mood and anxiety symptoms. IPT has been modified for other uses, including delivery by trained paraprofessionals in culturally distinct settings. Traditional IPT was modified slightly to address trauma-related mental disorders of the local population. IPT focuses on one of four areas, depending on the etiology of the patient's distress – interpersonal disputes, role transitions, grief/loss or interpersonal sensitivity/deficit. IPT protocol using a ten-point scale was used to assess the overall quality of the session (three items) and quality of key components for each of four phases (2–5 items), and two reverse coded items for off-protocol treatments, such as CBT [16,18].

4. Discussion

4.1. Summary of evidence

This systematic review explored the efficacy of interventions for the prevention and treatment of PTSD on natural disaster survivors. There are some important findings regarding the efficacy, or lack thereof, for several types of interventions, which will now be discussed in detail.

The results regarding the effect of CBT-PD show a significant reduction of PTSD in the group with severe symptoms and who received the original. The theory that supports CBT-PD can explain the effectiveness of the treatment and the role of clients (patients) and therapists. From the theoretical point of view, CBT-PD is based on the cognitive-behavioral model. In this model, the emphasis is on the creation of associations between symptoms with new ideas and rational thought to replace irrational beliefs about the traumatic event. These new associations require that the client gradually include new information to challenge these thoughts. Based on these principles, the therapy sessions are organized to give general information regarding the expected reactions after trauma until the cognitive restructuring necessary for processing the trauma. This whole process was accompanied by a change in symptoms, unpleasant feelings, behavior, and unpleasant reactions that were facilitated by breathing retraining and behavioral activation. In this way, the cognitive-behavioral psychotherapeutic model has proved to be very effective for the treatment of phobias, anxiety, quality of life, and depression; this, regardless whether the therapy is administered face to face or online.

The effect of survivors in the NET group suffered from severe symptoms of PTSD and depression and often experienced multiple traumatic experiences besides the natural disaster, including events related to the civil war. NET is a standardized form of TF psychotherapy, embedding trauma exposure in an autobiographical context. The section on NET depending on the number of traumatic events and treatment focuses on imaginary trauma exposure and on reorganizing memories. Memories of traumatic events are hypothesized to form multiple fear networks dominated by sensory–perceptual information and lacking autobiographical information. By connecting these anxiety-provoking implicit memories with episodic context, the autobiographic memory is rebuilt, allowing for reduction of anxiety. In NET, the therapist and the patient create a timeline of the patient's life, followed by chronologically elaborating this timeline in subsequent sessions [3]. At the end of therapy, the patient receives the written narrative as a documented testimony. Given its focus on the lifespan, NET is particularly suited to populations affected by multiple traumatic experiences. The PTSD and depression symptoms of participants less affected by trauma-related mental health disorders in the aftermath of the natural disaster also improved significantly over time. This result indicates that less severely affected individuals might not require a trauma-specific intervention but might benefit from spontaneous remission when they slowly regain the previous standard of living.

However, treatment survivor with PTSD of natural disaster with yoga can only be considered as an adjunct to other established treatments such as exposure therapy. If yoga is thought to be considered as a stand-alone intervention for PTSD, it should be empirically tested to an equal degree as established therapies. In line with this, the active components of yoga interventions remain unclear; dismantling studies would be needed to assess the individual effects of yoga postures, breathing exercises and meditation/relaxation. Regarding intervention types, the effects seem to be only applicable to yoga interventions which include physical postures but not to mainly breathing-based yoga intervention without physical postures. This studies demonstrate a small to medium-size effect of yoga and meditation on PTSD symptoms. In line with this, the active components of yoga interventions remain unclear, and are still needed to assess the individual effects of yoga postures,

breathing exercises and meditation/relaxation. So, there was low-quality evidence that yoga interventions including physical postures could be an effective, acceptable and safe intervention for PTSD.

This studies also evaluated the effects of EMDR provided to a large sample of individuals exposed to the earthquake. EMDR treatment was administered in the acute phase while tremors were still occurring, with severe aftershocks that went on for many months, preventing people from feeling safe at home or indoor. The results of our study mentioned that a group intervention with the EMDR G-TEP protocol can be used effectively with adults as an intervention during a period of significant on-going disruption and trauma, for screening and reducing symptoms of post-traumatic stress, self-reported distress and possibly for the reduction of depression. EMDR G-TEP is an efficient group model, in terms of time, cost and resources, even in a situation of the ongoing crisis, violence and war conditions with the effects maintained. A review of the literature showed that there are very few controlled studies on early interventions after large scale disasters.

Last, the psychological treatment IPT delivered by local personnel was not effective enough for reducing chronic PTSD and depression symptoms, as well as a full diagnosis of PTSD among earthquake survivors. IPT increased the overall quality of life, social support, and self-efficacy while reducing anger and receipt of violent victimization. Treatment gains were maintained three months following completion of the intervention with further spontaneous improvement, although additional follow up is necessary to assess maintenance of treatment gains. IPT had a long time and no significant effect against PTSD.

Overall, there is fair evidence for the role of psychological therapies in decreasing the number of adults who have PTSD. In addition, there is some evidence that psychological therapies can decrease the symptoms of anxiety and depression in an adult who diagnosed with PTSD. When each of the psychological therapies was compared to a control, the only therapy for which there was evidence of effectiveness was TF-CBT and EMDR. There was a greater improvement and decreased PTSD and depression effect in the CBT group compared to control for up to a year following treatment. In addition, CBT was shown to be superior to supportive therapy. Among the various alternatives, trauma-focused psychotherapeutic approaches such as trauma-focused cognitive behavioral therapy (TF-CBT), eye movement desensitization are the most widely used, with recent promising evidence also for mindfulness-based therapies. Despite differences in session-to-session patient management and behavioral techniques, TF-CBT, EMDR all focus on re-elaborating traumatic events or memories, favoring the emergence of new positive attitudes at the behavioral and cognitive level, leading to fear extinction and habituation. In particular, TF-CBT and EMDR further stress the cognitive component of the therapeutic process, strengthening top-down cognitive control. Specifically, TF-CBT helps patients to question and modify dysfunctional trauma-associated cognitions. Confrontation with trauma reminders helps patients to overcome their avoidance of trauma-related situations and thoughts, which leads to habituation and normalization of trauma memories. Besides habituation and conditioning, increased modulation of attentional processing and cognitive control are also associated with successful TF-CBT. Differently, during EMDR, patients mentally focus on a trauma-associated disturbing image, memory, emotion, or cognition. As a specific feature of EMDR, the exposure is usually short and intermixed with saccadic eye movements initiated by the therapist.

4.2. Limitations and future directions

Many studies had insufficient follow-up periods, with several studies only assessing outcomes

at one to four months post-treatment, which limits our capacity to determine the long-term impacts of psychological therapy. Finally, this review focused only on the effectiveness of psychological therapy on the adult survivor of natural disaster. Further studies that use population sampling methods are required to enable the comparison of outcomes with those of the broader population (sex, age and type of specific trauma).

5. Conclusions

This review cannot provide a definitive conclusion regarding the best form of psychological therapies. However, TF-CBT and EMDR were found to effectively increase PTSD adult survivor of natural disaster. TF-CBT and EMDR focus on re-elaborating traumatic events or memories, favoring the emergence of new positive attitudes at the behavioral and cognitive level, leading to fear of extinction and habituation. In particular, TF-CBT and EMDR further stress the cognitive component of the therapeutic process, strengthening top-down cognitive control. Specifically, TF-CBT helps patients to question and modify dysfunctional trauma-associated cognitions. More detailed and rigorous research is needed to strengthen the level of evidence supporting the benefits of psychological therapies against PTSD.

Appendix A

Table A1. Summary Table of study characteristics

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
CBT										
1	**Leiva-Bianchi, Cornejo, Fresno, Rojas, & Serrano, (2018)** **Effectiveness of Cognitive-Behavioral Therapy for post-disaster distress in post-traumatic stress symptoms after the Chilean earthquake and tsunami**	T: CBT-PD TT: PTSD D: Chilean earthquake and tsunami	The United States of America. 29 survivor (3 male, 26 female) Age: >18 years old (mean 48)	RCT	I & C: Groups consists of 3, 1. No PTSD & complete CBTPD (n=16) 2. With PTSD & complete CBTPD (n=9) 3. With PTSD & abbreviated CBTPD (n=4)	Ti: Between September and December 2010. M: Group Therapy F: CBT-PD consists of 10-12 (one per week) between 60 and 90 minutes sessions. S: Primary health care workers in Constitución (Chile). I: The therapists were six women with a degree in psychology	4 months follow-ups	Short Posttraumatic Stress Disorder Rating Interview (SPRINT-E)	CBT showed a significant decrease in the total symptoms PTSD	II
2	**Hamblen et al., (2009)** **Cognitive Behavioral Therapy for Post-disaster**	T: CBT-PD TR: PTSD D: Hurricane Katrina	Katrina 88 survivor (54 female, 12 male)	RCT	I: CBT-PD C: none	Ti: January 2007 and January 2008 (approximately 1,5–2,5 years post-Katrina) M: individual	Five-month follow-ups	Short Post-Traumatic Stress Disorder Rating Interview-Expanded	CBT-PD is shown to be effective in PTSD	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	Distress: A Community Based Treatment Program for Survivors of Hurricane Katrina		Age: 18-60 years old			F: CBT-PD is a manualized, 10-session intervention S: selected place I: Therapists				
3	**Spence et al., (2014)** **Internet-based trauma-focused cognitive behavioral therapy for PTSD with and without exposure components: A randomized controlled trial**	T: Internet-delivered trauma-focused cognitive behavioral therapy TT: PTSD D: not mentioned	Not mentioned 125 survivor (17 male, 108 female) Age: >18 years old	RCT	I: Internet-delivered trauma-focused cognitive behavioral therapy (n=66) C: Therapy As Usual (TAU) (n=59)	Ti: not mentioned M: individual, online, telephone F: Treatment duration was 8 weeks. The exposure and non-exposure versions included 4 and 6 online lessons. Each lesson required between 10 and 20 min of reading time. S: online, in home I: Clinical Psychologist (JS) who had completed a master's degree in clinical psychology	Three-month follow-up	1. Primary outcome measures PTSD: PSS-I and the IES-R 2. Secondary outcomes measure Depression: Generalized Anxiety Disorder.	The exposure and non-exposure-based protocols for internet-delivered PTSD treatment resulted in clinically significant improvements on measures of PTSD, anxiety, and depression in the short and medium term.	II
4	**Klein et al., (2010)** **A therapist-assisted cognitive behavior therapy internet**	T: i-CBT TR: PTSD	Australia 22 survivor (17	RCT	I: i-CBT (PTSD online) C: none	Ti: not mentioned M: telephone-based clinical interviews	3-month follow-up	1. Clinician-Administered PTSD Scale for DSM-IV	PTSD Online appears to be an efficacious treatment option for people with PTSD	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	intervention for posttraumatic stress disorder: Pre-, post- and 3-month follow-up results from an open trial	D: not mentioned	females; 5males) Age: <18 years old			F: PTSD Online is a 10-week interactive CBT program S: online I: clinical interviews administered by a registered psychologist		2. Impact of Event Scale-Revised	that can be provided entirely remotely, with far less therapist time than traditional face-to-face treatment, and without compromising therapeutic alliance.	
NET										
5	**Crombach & Siehl (2018)** **Impact And Cultural Acceptance of The Narrative Exposure Therapy in The Aftermath Of A Natural Disaster in Burundi**	T: NET TT: PTSD and depression D: Flood	Burundi 29 survivor (5 male, 24 female) Age: 14-78, (mean: 28) years old	RCT	I: NET C: None	Ti: April 2014 and May 2015 M: Individual, face to face F: consists of 4 sessions, the NET group received 6 sessions, once per week, with each session lasting between 1.5 and 2.5 hours depending on the needs of the participant S: Selecting locations (emergency camps, and church facilities during the baseline assessments, and the homes of the participants during later follow-ups)	Baseline, 3 and 9 months follow-ups	1. PTSD symptom severity: DSM-V 2. Depression symptom severity: The Patient Health Questionnaire (TPHQ)	NET significantly benefit individuals who severely affected by trauma-related mental health symptoms in the aftermath of natural disasters.	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
						I: Psychology therapies and twelve psychology students from the University Lumière of Bujumbura				
6	**Zang, Hunt, & Cox, (2014)** **A randomized controlled pilot study: the effectiveness of narrative exposure therapy with adult survivors of the Sichuan earthquake**	T: NET TT: PTSD symptoms, general mental health, anxiety and depression, social support, coping style, and posttraumatic change D: earthquake	Sichuan, Beichuan County, China 22 survivor (male, female) Age: -, (mean:) years old	RCT	I: Narrative Exposure Therapy (NET) (n=10) Narrative Exposure Therapy Revised (NET-R) (n=10) C: Waiting-List (WL) condition (n=10)	Ti: December 2009 and March 2010 (19–23 months after the earthquake) M: individual F: Those in the NET condition received 4 therapy sessions of 60–90 minutes each, which lasted 2 weeks with 2, 3, or 4 days between each session, and were assessed post-treatment (T2), after another 2 weeks (T3) and then after 2 months (T4) by using same scales. S: selected place I: NET therapies	2 month	1. PTSD: Event Scale-Revised (IES-R) Clinician-Administered PTSD Scale (CAPS), or the Structured Clinical Interview for DSM (SCID) 2. Depression and Anxiety were assessed using the Hospital Anxiety and Depression Scale (HADS)	NET is effective in treating post-earthquake traumatic symptoms in adult Chinese earthquake survivors.	II
YOGA										
7	**Descilo et al., (2010)**	T: Yoga breath program and	South-East Asia	RCT	I & C: 1. BWS received the	Ti: The study was undertaken 8 months after the tsunami	Baseline and at 6,	1. Measures for Post-Traumatic	Yoga breath-based interventions may help relieve	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	Effects of a yoga breath intervention alone and in combination with exposure therapy for post-traumatic stress disorder and depression in survivors of the 2004 South-East Asia tsunami	Exposure Therapy TR: PTSD and depression D: South-East Asia tsunami	183 survivor (23 male and 160 female) Age: 18-65 years old		breath intervention (n=60) 2. BWS + TIR received the breath intervention followed 3–10 days later by the exposure Intervention (n=60) 3. CON was the 6-week wait list control group (n=63)	M: Group and Individual F: 1. Yoga Breath Water Sound (BWS) consists of an 8-h program given in 2-h sessions over four consecutive days and included four breathing techniques 2. Exposure therapy intervention. Traumatic incident reduction (TIR) is a one-on-one method which has been shown to reduce the negative effects of trauma, consists of three to five individual TIR sessions lasting 1–3 h per session S: modification camp I: Therapies that fulfill trained Yoga and Exposure Therapy for 2 years	12 and 24 weeks follow-ups	Stress Disorder PCL-17 2. Depression: BDI-21	psychological distress following mass disasters.	
8	**Telles, Singh, Joshi, & Balkrishna (2010)**	T: Yoga TT: PTSD	India	RCT	I: Yoga (n=11)	Ti: October 2008 M: individual	One week	Screening Questionnaire	A week of yoga can reduce feelings of sadness and	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	Post-traumatic stress symptoms and heart rate variability in Bihar flood survivors following yoga: a randomized controlled study	D: Bihar flood	22 survivor (male) Age: <17, (mean: 31) years old		C: The control group did not practice yoga until the study was complete when they were given the option to learn yoga if they wanted to (n=11)	F: The yoga session was in the morning between 06:00 and 07:00 hours. All recordings were taken between 10:00 and 12:00 noon and 15:30 and 18:30 hours. The time of recording for each participant was kept constant for the initial and final assessment. S: The yoga group practiced yoga for an hour daily for seven days and during this time the control group continued with the routine they were following in the camp. The yoga session was in the morning between 06:00 and 07:00 hours I: Yoga Therapies		for Disaster Mental Health (SQD)	possibly prevent an increase in anxiety in flood survivors a month after the calamity.	
9	**Thordardottir, Gudmundsdottir, Zoëga, Valdimarsdottir, & Gudmundsdottir, (2014)**	T: yoga TT: stress-related symptoms	South Iceland 66 survivor (3 male, 23 female)	RCT	I: An intervention group was provided with a six weeks integrated	Ti: six weeks integrated hatha yoga program M: individual	Six week	1.The Posttraumatic Stress Diagnostic Scale (PDS)	Yoga showed significant improvements in stress and some stress-related symptoms such as	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	Effects of yoga practice on stress-related symptoms in the aftermath of an earthquake: A community-based controlled trial	D: earthquake	Age: 23-66, (mean:) years old		hatha yoga program. (n=31) C: A control group was on a waiting list and was assigned to start yoga sessions immediately after the yoga group had finished their program (n=35)	F: The yoga program was conducted twice a week for six weeks, 60 min in duration in normal situations among the inhabitants in the community. Each session included approximately 35 min of gentle yoga postures. Each posture was held 30-40 s, with relaxation between poses. Each session ended in a 15-minute instructed deep relaxation in a lying position S: selected place I: yoga therapies		2. The Beck Depression Inventory-Second Edition and The Beck Anxiety Inventory (BAI)	sleep, concentration, well-being, quality of life, depression, and anxiety from pre- to post-intervention	
EMDR										
10	**Saltini et al., (2018)** **Early Eye Movement Desensitization and Reprocessing (EMDR) intervention in a disaster mental health care context**	T: EMDR TT: mental health: PTSD D: earthquake that hit Emilia Romagna	Italy 529 survivor (96 male, 433 female) Age: 15-30, (mean:	RCT	I &C: 1. The early-treated (ET) (n=239) 2. The late-treated (LT) (n=290)	Ti: 1st of June 2012 until 29th of August 2012 M: individual F: EMDR 4 session S: in a camp survivor	12-week follow-up	Trauma: Impact of Event Scale-Revised (IES-R)	EMDR is a viable treatment option in response to a disaster crisis and in reducing psychological distress of acutely traumatized individuals within	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
		Region (Northern Italy) in 2012	46,4) years old			I: Therapists Clinical Psychology Unit (Department of Mental Health, AUSL Modena).			the context of a natural disaster.	
11	**Maslovaric et al., (2017)** **The Effectiveness of Eye Movement Desensitization and Reprocessing Integrative Group Protocol with Adolescent Survivors of the Central Italy Earthquake**	T: Eye Movement Desensitization and Reprocessing (EMDR) Integrative Group Treatment Protocol TT: PTSD D: earthquake in Central Italy on 24 August 2016	119 students (65 males and 51 females) aged 13-20 years old.	RCT	I: EMDR C: -	Ti: 26 August to 17 December 2016 M: Individual F: consists of 4 sessions, takes about 90 min and foresees three sessions of intervention. S: selected place I: The study therapists were psychologists or psychiatrists	3 months follow-ups	Impact of Event Scale-Revised	EMDR is very encouraging, showing significantly reduced PTSD symptoms in the majority of the subjects.	II
12	**Santarnecchi et al. (2019)** **Psychological and Brain Connectivity**	T: TF-CBT and EMDR TT: PTSD	San Giuliano di Puglia, Italy, 2002	RCT	I: TF-CBT (n = 14) C: EMDR (n = 17)	Ti: - M: individual	(10 ± 2 weeks and 4 ± 2 weeks,	Clinician-Administered PTSD Scale (CAPS)	Both EMDR and TF-CBT induced statistically significant changes in clinical scores, with no difference	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	Changes Following Trauma-Focused CBT and EMDR Treatment in Single-Episode PTSD Patients	D: earthquake in San Giuliano di Puglia, Italy, 2002	Thirty-seven (37) PTSD patients			F: the EMDR required an average of 4 weeks (±2) of weekly sessions per patient. Each session lasted for approximately an hour, trauma identification, visual stimulation, assessment. S: selected place I: EMDR was performed by two certified EMDR therapists	respectively)		in the clinical impact of the two treatments.	
13	**Yurtsever (2018)**	T: EMDR G-TEP TT: PTSD and depression D: natural disaster	47 adult participants with PTSD symptoms aged 18 and older	RCT	I: EMDR (n = 18) C: control (n = 29) groups.	Ti: - M: individually F: received two sessions of EMDR G-TEP in total, on three consecutive days. The group sessions took approximately 4 hours because the translation during the session doubled the time S: selected place I: trainer	4-week follow-up	Event Scale (IES-R), Beck Depression Inventory-II (BDI-II)	EMDR G-TEP group had significantly lower PTSD and depression symptoms after intervention.	II

No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
Interpersonal psychotherapy										
14	**Jiang et al., (2014)** **Interpersonal psychotherapy versus treatment as usual for PTSD and depression among Sichuan earthquake survivors: a randomized clinical trial**	T: Interpersonal psychotherapy TT: PTSD and Depression D: Sichuan earthquake	China 49 adults ≥ 18 years	RCT	I: Interpersonal Psychotherapy (IPT) C: treatment as usual (TAU)	Ti: July 2011 and January 2012 M: individual F: 12 weekly sessions of IPT + TAU (27) or TAU (22) alone x 12 weeks. IPT was a 12 session, weekly one-hour treatment delivered by local personnel who were trained and supervised in IPT. S: selected place I: IPT therapies	three and six months follow up	1. Clinician-Administered PTSD Scale (CAPS) PTSD diagnosis; Structured Clinical 2. Secondary measures included PTSD/depression symptoms, interpersonal conflict/anger, social support, self-efficacy and functioning	IPT is a promising treatment for reducing PTSD and depression, the two major mental health disorders affecting populations surviving natural disaster, using a design that builds local mental health care capacity.	II
15	**Markowitz et al. (2015)** **Is Exposure Necessary? A Randomized Clinical Trial of**	T: interpersonal psychotherapy (IPT), prolonged exposure, and	European 22 survivor (17 females; 5males)	RCT	I & C: Interpersonal psychotherapy (IPT) (n=60), prolonged exposure	Ti: not mentioned M: individual F: 14-week trial comparing IPT, prolonged exposure (an exposure-based exemplar), and		Clinician-Administered PTSD Scale (CAPS)	IPT and prolonged exposure improved quality of life and social functioning more than relaxation therapy.	II

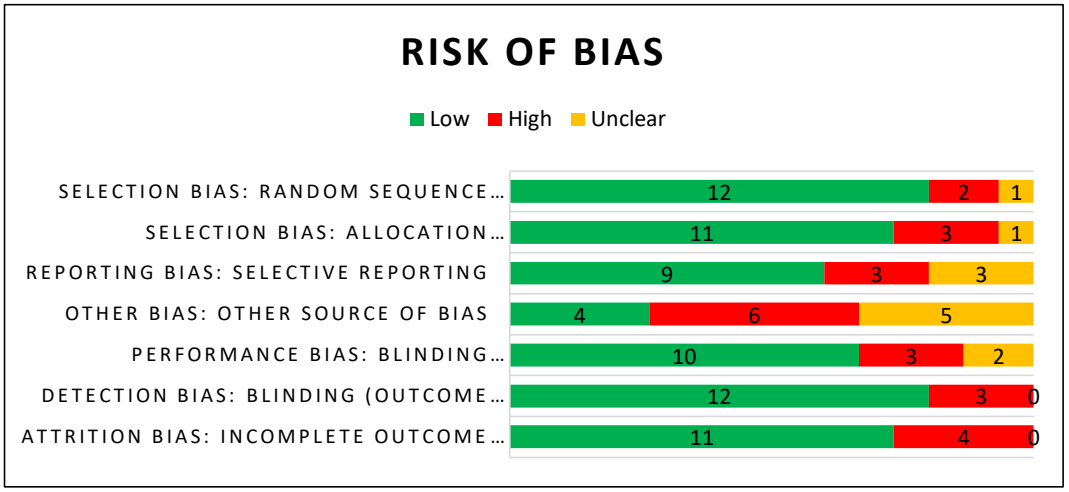
No	Study (year)	Type of treatment (T), Trauma (TR), Disaster (D)	Country, Participates (sex), Age	Design /Trial	Intervention (I) and Control (C) description	Intervention timing (Ti), Modality (M), Frequency (F), Setting (S) and Implementation (I)	Follow up length	Outcome measures and tools	Main result	Level of Evidence
	Interpersonal Psychotherapy for PTSD	relaxation therapy TR: PTSD D: not mentioned	Age: 18–65 years old		(n=60), and relaxation therapy (n=45)	relaxation therapy (active control psychotherapy) S: selected place I: The study therapists were psychologists or psychiatrists				

1.1.1.1.3 Appendix B.

1.1.1.1.4 Table B1. Risk of bias based on the title of the paper

No	Study (year)	Selection of bias		Report bias	Other bias	Performance of bias	Detection of bias	Attrition of bias
		Random	Allocation	Selective	Another source	Blinding		Incomplete outcome data
						Participants and personnel	Outcome assessment	
1	**Leiva-Bianchi et al., (2018)**	−	−	?	−	+	−	−
2	**Hamblen et al., (2009)**	−	−	−	+	?	−	−
3	**Spence et al., (2014)**	−	−	−	+	−	−	−
4	**Klein et al., (2010)**	+	−	−	?	−	−	−
5	**Crombach & Siehl (2018)**	−	−	+	?	−	−	−
6	**Zang et al., (2014)**	−	−	−	?	+	−	−
7	**Descilo et al., (2010)**	+	+	+	−	?	−	−
8	**Telles et al., (2010)**	−	−	−	?	−	+	−
9	**Thordardottir et al., (2014)**	+	+	−	−	?	+	+
10	**Saltini et al., (2018)**	+	+	−	−	+	−	?
11	**Maslovaric et al., (2017)**	−	−	−	?	−	+	−
12	**Santarnecchi et al., (2019)**	−	−	−	+	−	−	−
13	**Yurtsever (2018)**	−	−	−	+	−	−	−
14	**Jiang et al., (2014)**	−	−	?	+	−	−	−
15	**Markowitz et al., (2015)**	−	−	+	+	−	?	+

Information:
− Low Risk
+ High Risk
? Some Concern



1.1.1.1.4.1 **Figure B1.** Risk of bias based on judgments for all papers

References

[1] American Psychiatric Association (APA) 2013 Trauma- and stressor-related disorders. Diagnostic and statistical manual of mental disorders *Am. Psychiatr. Assoc.* **5th Ed**

[2] Warsini S, Med M, West C, Dip G, Tt E, Cert G, Meth R, Mills J and Med M N 2014 The Psychosocial Impact of Natural Disasters among Adult Survivors : An Integrative Review 420–36

[3] Crombach A and Siehl S 2018 Impact and cultural acceptance of the Narrative Exposure Therapy in the aftermath of a natural disaster in Burundi *BMC Psychiatry* **18**

[4] Roudini J, Khankeh H R and Witruk E 2017 Disaster mental health preparedness in the community : A systematic review study

[5] Rytwinski N K, Scur M D, Feeny N C and Youngstrom E A 2013 The Co-Occurrence of Major Depressive Disorder Among Individuals With Posttraumatic Stress Disorder : A Meta-Analysis 299–309

[6] Sareen J 2014 Posttraumatic Stress Disorder in Adults: Impact, Comorbidity, Risk Factors, and Treatment **59** 460–7

[7] Ur Rahman M I 2017 Disaster and post-traumatic stress: A psychological study *Indian J. Heal. Wellbeing* **8** 1064–7

[8] Leiva-Bianchi M, Cornejo F, Fresno A, Rojas C and Serrano C 2018 Effectiveness of cognitive-behavioural therapy for post-disaster distress in post-traumatic stress symptoms after Chilean earthquake and tsunami *Gac. Sanit.* **32** 291–6

[9] Gillies D, Taylor F, Gray C, O'Brien L and D'Abrew N 2013 Psychological therapies for the treatment of post-traumatic stress disorder in children and adolescents (Review). *Evid. Based. Child Health* **8** 1004–116

[10] Mahoney A, Karatzias T and Hutton P 2019 A systematic review and meta-analysis of group treatments for adults with symptoms associated with complex post-traumatic stress disorder

J. Affect. Disord. **243** 305–21

[11] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration **6**

[12] Moher D, Tetzlaff J, Altman D G, Liberati A and Group P 2009 Preferred reporting items for systematic reviews and meta-analyses : the PRISMA statement **339**

[13] Higgins J P T, Altman D G, Gøtzsche P C, Jüni P, Moher D, Oxman A D, Savović J, Schulz K F, Weeks L and Sterne J A C 2011 The Cochrane Collaboration's tool for assessing risk of bias in randomised trials *BMJ* **343** 1–9

[14] Descilo T, Vedamurtachar A, Gerbarg P L, Nagaraja D, Gangadhar B N, Damodaran B, Adelson B, Braslow L H, Marcus S and Brown R P 2010 Effects of a yoga breath intervention alone and in combination with an exposure therapy for post-traumatic stress disorder and depression in survivors of the 2004 South-East Asia tsunami *Acta Psychiatr. Scand.* **121** 289–300

[15] Hamblen J L, Norris F H, Pietruszkiewicz S, Gibson L E, Naturale A and Louis C 2009 Cognitive behavioral therapy for postdisaster distress: a community based treatment program for survivors of Hurricane Katrina. *Adm. Policy Ment. Health* **36** 206–14

[16] Jiang R F, Tong H Q, Delucchi K L, Neylan T C, Shi Q and Meffert S M 2014 Interpersonal psychotherapy versus treatment as usual for PTSD and depression among Sichuan earthquake survivors: a randomized clinical trial *Confl. Health* **8**

[17] Klein B, Mitchell J, Abbott J, Shandley K, Austin D, Gilson K, Kiropoulos L, Cannard G and Redman T 2010 A therapist-assisted cognitive behavior therapy internet intervention for posttraumatic stress disorder: Pre-, post- and 3-month follow-up results from an open trial *J. Anxiety Disord.* **24** 635–44

[18] Markowitz J C, Petkova E, Neria Y, Biyanova T, Hembree E, Marshall R D, Van Meter P E, Lovell K and Zhao Y 2015 Is Exposure Necessary? A Randomized Clinical Trial of Interpersonal Psychotherapy for PTSD *Am. J. Psychiatry* **172** 430–40

[19] Santarnecchi E, Bossini L, Vatti G, Fagiolini A, Porta P La, Lorenzo G Di, Siracusano A, Rossi S and Rossi A 2019 Psychological and Brain Connectivity Changes Following Trauma-Focused CBT and EMDR Treatment in Single-Episode PTSD Patients **10** 1–17

[20] Yurtsever A 2018 An Eye Movement Desensitization and Reprocessing (EMDR) Group Intervention for Syrian Refugees With Post-traumatic Stress Symptoms : Results of a Randomized Controlled **9** 1–8

[21] Thordardottir K, Gudmundsdottir R, Zoëga H, Valdimarsdottir U A and Gudmundsdottir B 2014 Effects of yoga practice on stress-related symptoms in the aftermath of an earthquake: A community-based controlled trial *Complement. Ther. Med.* **22** 226–34

[22] Zang Y, Hunt N and Cox T 2014 Adapting narrative exposure therapy for Chinese earthquake survivors: a pilot randomised controlled feasibility study *BMC Psychiatry* **14**

[23] Saltini A, Rebecchi D, Callerame C, Fernandez I, Bergonzini E and Starace F 2018 Early Eye Movement Desensitisation and Reprocessing (EMDR) intervention in a disaster mental

health care context *Psychol. Heal. Med.* **23** 285–94

[24] Spence J, Titov N, Johnston L, Jones M P, Dear B F and Solley K 2014 Internet-based trauma-focused cognitive behavioural therapy for PTSD with and without exposure components: A randomised controlled trial *J. Affect. Disord.* **162** 73–80

[25] Telles S, Singh N, Joshi M and Balkrishna A 2010 Post traumatic stress symptoms and heart rate variability in Bihar flood survivors following yoga: a randomized controlled study. *BMC Psychiatry* **10** 18

[26] Maslovaric G, Zaccagnino M, Mezzaluna C and Perilli S 2017 The Effectiveness of Eye Movement Desensitization and Reprocessing Integrative Group Protocol with Adolescent Survivors of the Central Italy Earthquake **8** 1–8

[27] Sriskandarajah V, Neuner F and Catani C 2015 Parental care protects traumatized Sri Lankan children from internalizing behavior problems *BMC Psychiatry* **15**

[28] Pityaratstian N, Piyasil V, Ketumarn P, Sitdhiraksa N, Ularntinon S and Pariwatcharakul P 2015 Randomized Controlled Trial of Group Cognitive Behavioural Therapy for Post-Traumatic Stress Disorder in Children and Adolescents Exposed to Tsunami in Thailand *Behav. Cogn. Psychother.* **43** 549–61

[29] Retnowati S, Ramadiyanti D W, Suciati A A, Sokang Y A and Viola H 2015 Hope Intervention Against Depression in the Survivors of Cold Lava Flood from Merapi Mount *Procedia - Soc. Behav. Sci.* **165** 170–8

[30] Dawson K, Joscelyne A, Meijer C, Steel Z, Silove D and Bryant R A 2018 A controlled trial of trauma-focused therapy versus problem-solving in Islamic children affected by civil conflict and disaster in Aceh, Indonesia *Aust. N. Z. J. Psychiatry* **52** 253–61

[31] Chen Y, Shen W W, Gao K, Lam C S, Chang W C and Deng H 2014 Effectiveness RCT of a CBT intervention for youthswho lost parents in the Sichuan, China, earthquake *Psychiatr. Serv.* **65** 259–62

[32] Berger R and Gelkopf M 2009 School-based intervention for the treatment of tsunami-related distress in children: A quasi-randomized controlled trial *Psychother. Psychosom.* **78** 364–71

[33] Saltini A, Rebecchi D, Callerame C, Fernandez I, Bergonzini E and Starace F 2018 Early Eye Movement Desensitisation and Reprocessing (EMDR) intervention in a disaster mental health care context *Psychol. Heal. Med.* **23** 285–94

[34] Murray L K, Mayeya J, Michalopoulos L T M, Cohen J A, Skavenski S, Dorsey S, Bolton P A, Imasiku M and Kane J C 2015 Effectiveness of Trauma-Focused Cognitive Behavioral Therapy Among Trauma-Affected Children in Lusaka, Zambia *JAMA Pediatr.* **169** 761

[35] Harvey A G, Bryant R A and Tarrier N 2003 Cognitive behaviour therapy for posttraumatic stress disorder **23** 501–22

[36] Klein B, Mitchell J, Gilson K, Austin D, Kiropoulos L and Abbott J 2009 A Therapist - Assisted Internet - Based CBT Intervention for Posttraumatic Stress Disorder : Preliminary Results 37–41

EPD-925

THE EFFECT OF EDUCATION INTERVENTION WITH FAMILY CENTERED NURSING APPROCH TO CARE ABILITY TO CARE FOR SKIZOFRENIA: A SYSTEMATIC REVIEW

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ABSTRACT

Schizophrenia has chronic symptoms and recurrence often occurs and causes cognitive decline. Antipsychotic medication is at the core of the treatment of schizophrenia, but needs to be supported from the family as care giver in treating patients. Some factors that can cause recurrence of clients include, knowledge, education, information, socio-economic, and family roles. This condition is aggravated by family attitudes that tend to isolate and exclude clients and even shut up. The understanding of some families who are still lacking about ODGJ care results in negative attitudes towards patients. Strategies to increase family knowledge by using video education are because it uses audiovisuals where the eyes are the main factor in channeling knowledge, besides that videos are more easily understood by recipients than cerama. This study aims to identify the effect of education using videos on caregiver's ability to meet ADL client needs, control client medication adherence, prevent recurrence and help client social interaction. Scopus, PubMed, and Science Direct databases from 2014-2018 search for relevant keywords. All studies included based access, randomized controlled trials, case control studies and Random. 17 of 1521 papers were included. The family education program using videos is effective in increasing caregiver's knowledge of treating schizophrenic patients.

Keyword: education, video, family centered nursing, ability, skizofrenia patients

1. Introduction

Mental disorders not only cause suffering for the individual sufferer but also for the person closest to them. Usually the family is most affected by the presence of mental disorders in their families. In addition to high care costs, patients also need more attention and support from the community, especially families, so that families lose productivity because they take care of patients, while treatment of mental disorders requires a relatively long time, if patients do not continue treatment, they will recur (Arif, 2006).

Some factors that can affect patient recurrence include knowledge, education, information, socio-economics, and family roles. Another factor that causes clients to experience

recurrence is because families don't know how to handle clients at home. According to Sullinger (1988) (Fitryasari, Yusuf, Dian, & Endang, 2018) and Carson / Ross (1987), clients diagnosed with schizophrenia are estimated to have a relapse of 50% in the first year, 70% in the second year and 100% in the fifth year after returning from hospital due to wrong treatment while at home or in society.

Based on research in the United Kingdom (Vaugh, 1976) and in the US Synder, 1981 (in Fitryasari et al., 2018) showed that families with high emotional expression with clients were estimated that clients would relapse within 9 months, the result was that 57% returned to care from families with high emotional expression and 17% returned to being treated from a family with a low emotional expression of the family. According to Hawari (in Wiyati, et al 2010), one of the obstacles in efforts to cure mental patients is knowledge of the community and family. Family and society consider mental disorders to be a shameful disease which bring shame to the family. This condition is aggravated by family attitudes that tend to isolate and exclude even patients. The understanding of some families are still lacking in ODGJ care results in a negative attitude towards patients. The negative attitude of the family towards the patient can be seen from the assumption that the disease experienced by the patient is a permanent disease and cannot be cured so that the family tends to let the original patient not interfere. Nearly all families appreciate that the patient is only a burden to the family because of their inability to care for oneself (Purwanti, 2017)

The high rate of recurrence can indicate that the family has not been able to care for family members who have schizophrenia. Sulistiowati (2012) in her research in the village of Pariangan Ponorogo said that 83.4% of families did not have the ability to care for schizophrenic patients properly, Suryaningrum (2013) also explained that 49.5% of families in hospitals had not been able to treat schizophrenic patients. The implementation of family duties in caring for family members who suffer from schizophrenia has not yet appeared, especially in making the right decisions when patients show symptoms of relapse and inability to modify a comfortable and conducive environment for schizophrenic patients. Stigma attached to patients and families, 37.5% of families still have negative perceptions of schizophrenia. Families feel embarrassed by the existence of schizophrenic patients so that families often isolate patients even to the point of being attached (El-mallakh, Yates, & Adkins, 2013). Educational programs for schizophrenic patients have been done well when patients undergo treatment at home. It hurts but does not have an impact if there is no support or role from the family. Education in the family is difficult because families rarely visit patients when hospitalized, and when the time control is very short, education is carried out in the soul poly. One effort to improve acceptance is coping strategies, through education or health education (Oshodi, Adeyemi, Alna & Umeh, 2012). Providing education is based on family social culture. One option to maximize family education by training family skills in caring for schizophrenic patients by using videos allows families to receive video education with the aim of increasing family knowledge and skills in caring for patients at home.

Contact with patients and families in mental nursing is very important, because the intervention and implementation of nursing care focuses directly on patients and families.

Online-based education is proven to be effective in managing symptoms and decreases recurrence rates and can improve family quality of life (Seo & Kim, 2010)

The implementation of education by using video is easier for the recipient to understand, because it uses audiovisuals, where the eyes are the main factor in channeling knowledge (75% to 87%) (Heri DJ, 2009, Kumboyono, 2011). Education using images or videos is easier for the recipient to understand than the lecture method. Education using technology has an important role in providing health education, so patients and families can report on the health of patients. The existence of video education applications can increase the independence, knowledge and coping of families in treating schizophrenic patients. This family strategy and coping process functions as a vital mechanism, through which processes and mechanisms family functions become apparent (Stuart, 2009).

2. Methods

Literature searches were conducted in major databases such as Scopus, PubMed, and Science Direct databases from 2014-2018 with relevant keywords by including the keywords education, family care, schizophrenia. Type and year of study, research design, sample size sample characteristics, interventions and results are presented.

The inclusion criteria that the authors set are: 1) Quantitative study design both observation and experimentation; 2) maximum time span of 7 years ago; 3) Male and female subjects (age 17 - 50 years) families who care for schizophrenic patients ≥ 1 year; 4) families living with patients 5) Interventions given are in the form of education about family duties; 6) the outcome parameter of the study is the ability of the family to care for schizophrenic patients while the exclusion criteria were: families with visual and hearing impairments, families that cannot be found before the study is complete

3. Results

Total of 126 journals were found from search databases namely Scopus (547) PubMed (526), and Science Direct (448) totaling 1521 journals. This systematic review reviewed 25 selected journals, all of which were from international journals. The designs used included: 8 journals using RCTs, 5 journals using Cross-sectional, 3 journals using quasi experiments, 1 journal using qualitative methods.

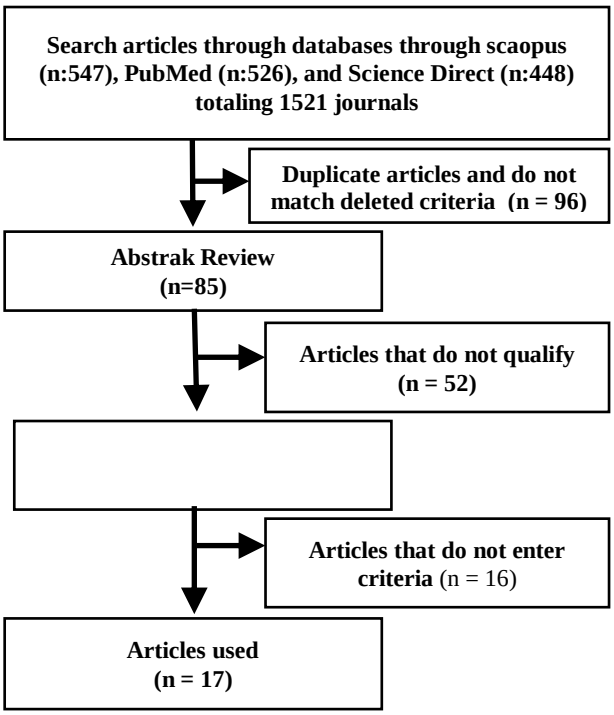

Figure 1. Flow of article selection used

3.1.Characteristics Of Participants

The journal used in the review was 17, the number of samples varied between 15-846 respondents. The respondents were taken in the psychiatric clinic, families of pediatric and adult patients suffering from schizophrenia, as a whole the control group used education that was in accordance with the standards in the hospital while the intervention group in addition to hospital education was also educated in the patient's family home using video which contains about how to treat schizophrenic patients who are assigned four times for one month. The duration of follow-up varied between 4 weeks to 5 years. This study used a Randomized Controlled Trial design, experimental Quasi, Cross-sectional, Qualitative. The total number of respondent was 4455. This research was conducted in various countries in Indonesia, Cairo, Iran, Japan, China and Hong Kong.

Table 1. Authenticity of the study of the influence of educational interventions with the Family Centered Nursing approach to the ability of families to care for schizophrenic patient

No	Title	Design	Sample	Variable	Instrument	Analysis	Results
1	Family members' perspective of family Resilience's risk factors in taking care of schizophrenia patients (Fitryasari, Yusuf, Dian, & Endang, 2018)	Qualitative design with an interpretive phenomenology approach	15 families	Variable independent : family Resilience's risk factors Variable dependent: burdens, stigma	Kuesioner	Collaizi technique	The burden of care felt by the family is confusion about illness, emotional burden, physical, time, financial and social, which causes a decrease in the quality of family life. Families also experience stigma
2	Evaluating the effectiveness of a culturally adapted behavioral family psycho-educational program for Egyptian patients with schizophrenia Article	RCT	30 patients with schizophrenia	Variable independent : psycho-education Variable dependent: cultural	Kuesioner	Chi-square test	Education in the control group showed a significant treatment effect because they experienced a reduction in psychotic symptoms, increased social function, and improved quality of life
3	Schizophrenia through the carers' eyes: results of a European cross-sectional survey A.(President et al., 2015)	A questionnaire-based cross-sectional	138 families		kuesioner	descriptive comparison	The guards recognized the importance of drugs to help patients get better (76%) and improve their quality of life (76%) and relationships (74%)
4	Effect of psycho-educational intervention for family members on caregiver burdens and psychiatric symptoms in patients with schizophrenia in Shiraz, Iran (Sharif, Shaygan, & Mani, 2012)	RCT	70 patient families schizophrenia	Variable independent : psycho-educational intervention variable dependent : caregiver burdens, psychiatric symptoms	kuesioner Family Burden	chi-squared test	psychoeducation significantly reduces symptom severity and caregiver burden both immediately after the intervention and one month later

5	Outpatient Follow-Up Care and Risk of Hospital Readmission in Schizophrenia and Bipolar Disorder (Shimada, Ohori, Inagaki, & Shimooka, 2018)	Retrospective **EPD-925**	Schizophrenia: 25401 people	Variable independent: Outpatient Follow-Up Care, Risk of Hospital Variable dependent: Schizophrenia, Bipolar Disorder	Schizophrenia, Bipolar Disorder using a diagnostic code, Outpatient Follow-Up Care and Risk: list of visits	cohort	significantly lower experience of hospitalization over a 90 day period (adjusted odds ratio [AOR] =. 88)
6	A multicenter, randomized controlled trial of individualized occupational therapy for patients with schizophrenia in Japan (Shimada et al., 2018)	randomized controlled trial	intervention of 66 schizophrenics Control: 63 schizophrenics	Variable independent: occupational therapy Variable dependent : schizophrenia	IOT program	linear mixed	Occupational therapy in schizophrenic patients significantly improves memory
7	Association of hospital stay and implementation of discharge planning in acute psychiatric inpatients in Japan Miharu (Nakanishi et al., 2015)	retrospective cross-sectional study	244 families of schizophrenic patients	Variable independent: hospital stay, implementation Variable dependent: discharge planning	questionnaires	Multilevel linear regression	The implementation of support for community care coordination did not show a significant relationship with these factors, which has been associated with an increased risk of re-accepting psychiatrists
8	Effectiveness of Needs-oriented Hospital Discharge Planning for Caregivers of Patients With Schizophrenia Li-En (Lin et al., 2017)	A quasi-experimental, non-parallel, two-group pretest and posttest	144 caregiver schizophrenia	Variable independent: oriented Hospital Discharge Planning Variable dependent:	Structured questionnaires	ANCOVA between the groups	Significant differences were found between the experimental group and the control group regarding the burden and health status of the caregiver (P <0.001). The caregivers of the burden and health status of the experimental group increased significantly compared to the control group. The repatriation planning process

		EPD-925		Caregivers Schizophrenia			involving caregivers developed in this study effectively reduces the burden placed on caregivers and improves their health status.
9	Suicide attempts in a national population of twins concordant for psychoses Stephen (Levine, Goldberg, Yoffe, Pugachova, & Reichenberg, 2014)	Experiment	116 psychotic twin pairs	Variable independent: Suicide Variable dependent : psychoses	Structured questionnaires	cohort	Age at the beginning of enrollment between 21 and 27 years is significant (po. 0.05) associated with an increased risk of suicide attempts at admission, and environmental factors 60% of causes of suicide
10	Length of stay of psychiatric admissions in a general hospital in Ethiopia: a retrospective study (Addisu, Wondafrash, Chemali, Dejene, & Tesfaye, 2015)	A retrospective study	846 schizophrenic patients	Variable independent: Length stay Variable dependent : general hospital	Long hospital stays (LOS)	Bivariate and multivariable logistic regression	The return of schizophrenic patients showed a 90.3% increase in results
11	A retrospective case comparison study of the relationship between an Integrated Care Pathway for people diagnosed with schizophrenia in acute mental health care and service users' length of stay, readmission rates and follow up within 7 days of discharge (J. Attfield PhD, 2017)	retrospective	400 caregiver schizophrenia	Variable independent : case comparison study, Integrated Care Pathway Variable dependent : schizophrenia in acute, service users' length of stay,	LOS	A cohort study	Statistical is not significant differences were observed at the rate of return or follow-up within 7 days after discharge
12	Telephone Intervention–Problem Solving (TIPS) for Schizophrenia	randomized controlled trial	185 caregiver for schizophrenic	Variable independent: Telephone	telephone	correlations, and Chi squares	Significantly related to problem reporting during TIPS (yes / no) (chi square = 8.55 df 2, p = 0.014).

	Spectrum Disorders: Responses of Stable OutpatientsOver NineMonths (L. Beebe et al., 2018)	**EPD-925**	patients	Intervention, Problem Solving Variable dependent: Schizophrenia Spectrum Disorders			
13	Telenursing Intervention Increases Psychiatric Medication Adherence in Schizophrenia Outpatients Lora (L. H. Beebe et al., 2008)	Quasy experiment	Control 69 schizophrenic caregiver Intervention of 74 schizophrenia caregivers	Variable independent: Telenursing Intervention, Variable dependent: Medication Adherence	Electronic monitoring system	ANOVA	People who receive TIPS have significantly higher medication adherence to psychiatric drugs during the study period, F (1, 20) = 5.47, p = 0.0298.
14	Mobile therapeutic attention for treatment-resistant schizophrenia (m-RESIST): a prospective multicenter feasibility study protocol in patients and their caregivers Anna (Alonso-solís et al., 2018)	RCT	45 schizophrenic patients	Variable independent: Mobile therapeutic, Variable dependent: treatment-resistant schizophrenia	mobile application	Qualitative and quantitative feedback	The results showed that 74% -86% of patients used web-based interventions efficiently, 75% -92% considered them as positive and useful, and 70% -86% of patients completed or were involved with intervention during follow-up
15	Using telehealth to augment an intensive case monitoring program in veterans with schizophrenia and suicidal ideation: A pilot trial John (Kasckow et al., 2016)	RCT	1628 schizophrenic patients hospitalized	Variable independent: telehealth Variable dependent : intensive case monitoring program	Mobile application	Qualitative and quantitative	Twenty of the 25 telehealth participants can set up the device. Monthly compliance for telehealth participants> 80%. A quantitative analysis of the endpoint survey showed that most participants had positive responses
16	Reduction of medical	RCT	51 patients at	Variable	telehealth	Mann-	Comparisons revealed that participants in

	hospitalizations in veterans with schizophrenia using home telehealth (Flaherty, Daniels, Luther, Haas, & Kasckow, 2017)	**EPD-925**	risk of suicide	independent : Reduction of medical Variable dependent: home telehealth		Whitney tests	the telehealth group had significantly fewer medical hospitalizations than the control group
17	A pilot comparative study of one-way versus two-way text message program to promote physical activity among people with severe mental illness (Chen, Chang, Kuo, & Yu, 2017)	RCT	15 participants	Variable independent : A pilot comparative study of one-way versus two-way text message Variable dependent : promote physical activity among people with severe mental illness	Mobile text message reminders	A pilot single-blinded comparative study	The two-way text message group showed a significant increase in the number of daily steps compared to baseline at weeks 6 and 11 (increasing by 21% and 32%, $p < 0.05$), respectively. No significant differences were found between groups or in one-way text message groups

4. Discussion

One strategy is to improve family knowledge and the ability to treat schizophrenic patients by providing routine education, so that family functions are real (Riley-McHugh, Brown, & Lindo, 2016). Educational programs for family members include information on the etiology of schizophrenia, current treatment modalities, interventions for behavioral problems, training in problem solving skills, effective communication, crisis management, and addressing life problems with family members suffering from schizophrenia. (Yusuf, PK, & Nihayati, 2015).

The results of the study (Pratt et al., 2015) on telehealth in depressed patients showed improvement in psychiatric symptoms, 82% decreased hospital visits (from 76 to 14 hospitalizations) and a 75% reduction in emergency room visits (from 63 to 16 visits). Improvements were observed in quality of life, severity of depressive symptoms and mental health status. Other studies say that patients and families who get treatment through telenursing experience an increase in knowledge and feel more comfortable with some contacts and advice on care through an application by nurses. This is felt because it is younger to access whatever the patient and family want to know immediately and generally are very liked (Ben-zeev et al., 2013).

The ability of families to care for schizophrenic patients is based on the role and function of the family in maintaining family health. Families play a role in fulfilling Activity Daily Living (ADL) and psychosocial fulfillment of schizophrenic patients (Pakenham & Kennet, 2012). ADL needs include meeting basic needs such as: eating, dressing, bathing and elimination (BAK / BAB). While the need for Daily Living Instrumental Activity (ADL) covers life support needs such as managing finances, work and treatment. Psychosocial fulfillment during treatment is also part of family duties by providing emotional support in an effort to prevent recurrence.

Research on educational interventions in families of schizophrenic patients has been shown to extend the relapse period of patients, improve medication adherence and improve the quality of patients and families (Ran, Chan, Ng, Guo, & Xiang, 2015) (Seo & Kim, 2010). Other studies of education can reduce psychotic symptoms (Randomized, 2015) (Rami et al., 2018) (L. H. Beebe et al., 2008) (President et al., 2015)

Educational interventions can reduce treatment days, reduce recurrence rates in psychosis (Kasckow et al., 2016) and increase family detention so families show positive responses to patients (Chen et al., 2017) (Alonso-solís et al., 2018) (Marcus et al., 2014). Education involves families in solving problems and helping families to modify the environment that supports patient health. Involving patients in daily activities is a therapy that can improve the memory of schizophrenic patients (Shimada et al., 2018) (Rotondi et al., 2005). Other studies on education can overcome family distress and provide education to improve family skills (Ghiggia et al., 2017). Through the application of education can involve the family in the care of patients both in the hospital or at home when outpatients, so that the family as an effective

source of support for patients.

5. Implications

Education using videos is an effective action in increasing family knowledge and skills in treating schizophrenic patients. Thus this research is expected to be used as a reference in educating families of schizophrenic patients in the community. This systematic review can be the basis of future researchers so that it can provide an advantage in reducing the recurrence of schizophrenic patients in the future.

6. Conclusion

Overall the results of the analysis of 17 journals on education in families of schizophrenic patients significantly reduced the rate of recurrence, leaving families in the care of schizophrenic patients compared to families who were not educated. Psychotic therapy combined with education

7. Recommendation

There needs to be ongoing research on the implementation of family education with other methods in the family and community environment to reduce the impact of stigma on psychiatric patients so as to reduce recurrence rates and improve the quality of life for patients and families. In addition, it can become a standard in the preparation of Standard Operating Procedures (SOP) in mental nursing services

References

[1] Addisu, F., Wondafrash, M., Chemali, Z., Dejene, T., & Tesfaye, M. (2015). Length of stay of psychiatric admissions in a general hospital in Ethiopia: A retrospective study. *International Journal of Mental Health Systems*, *9*(1), 1–9. https://doi.org/10.1186/s13033-015-0006-x

[2] Alonso-solís, A., Rubinstein, K., Corripio, I., Jaaskelainen, E., Seppälä, A., Vella, V. A., … Marcó-garcía, S. (2018). Mobile therapeutic attention for treatment-resistant schizophrenia (m-RESIST): a prospective multicentre feasibility study protocol in patients and their caregivers, 1–11. https://doi.org/10.1136/bmjopen-2017-021346

[3] Beebe, L. H., Smith, K., Crye, C., Addonizio, C., Strunk, D. J., Martin, W., & Poche, J. (2008). Telenursing Intervention Increases Psychiatric Medication Adherence in Schizophrenia Outpatients, 217–224. https://doi.org/10.1177/1078390308318750

[4] Beebe, L., Smith, K. D., Oppizzi, L. M., Beebe, L., Smith, K. D., Oppizzi, L. M., … Oppizzi, L. M. (2018). Issues in Mental Health Nursing Telephone Intervention – Problem Solving (TIPS) for Schizophrenia Spectrum Disorders : Responses of Stable Outpatients Over Nine Months Telephone Intervention – Problem Solving (TIPS) for Schizophrenia Spectrum Disorder. *Issues in Mental Health Nursing*, *0*(0), 1–7.

https://doi.org/10.1080/01612840.2018.1431824

[5] Ben-zeev, D., Kaiser, S. M., Brenner, C. J., Begale, M., Duffecy, J., & Mohr, D. C. (2013). Development and Usability Testing of FOCUS : A Smartphone System for Self-Management of Schizophrenia, *36*(4), 289–296. https://doi.org/10.1037/prj0000019

[6] Chen, M., Chang, J., Kuo, C., & Yu, J. (2017). A pilot comparative study of one-way versus two-way text message program to promote physical activity among people with severe mental illness. *Mental Health and Physical Activity*, *13*, 143–151. https://doi.org/10.1016/j.mhpa.2017.09.010

[7] El-mallakh, P., Yates, B. E., & Adkins, S. (2013). Family Caregiving for Adults with Schizophrenia and Diabetes Mellitus, 566–577. https://doi.org/10.3109/01612840.2013.785615

[8] Fitryasari, R., Yusuf, A., Dian, R., & Endang, H. (2018). International Journal of Nursing Sciences Family members ' perspective of family Resilience ' s risk factors in taking care of schizophrenia patients. *International Journal of Nursing Sciences*, *5*(3), 255–261. https://doi.org/10.1016/j.ijnss.2018.06.002

[9] Flaherty, L. R., Daniels, K., Luther, J., Haas, G. L., & Kasckow, J. (2017). Reduction of medical hospitalizations in veterans with schizophrenia using home telehealth. *Psychiatry Research*, *255*(May), 153–155. https://doi.org/10.1016/j.psychres.2017.05.024

[10] Ghiggia, A., Romeo, A., Tesio, V., Di Tella, M., Colonna, F., Geminiani, G. C., … Castelli, L. (2017). Alexithymia and depression in patients with fibromyalgia: When the whole is greater than the sum of its parts. *Psychiatry Research*, *255*(May), 195–197. https://doi.org/10.1016/j.psychres.2017.05.045

[11] J. Attfield PhD. (2017). A retrospective case comparison study of the relationship between an Integrated Care Pathway for people diagnosed with schizophrenia in acute mental health care and service users' length of stay, readmission rates and follow up within 7 days of discharge. https://doi.org/10.1111/ijlh.12426

[12] Kasckow, J., Zickmund, S., Gurklis, J., Luther, J., Fox, L., Taylor, M., … Haas, G. L. (2016). Using telehealth to augment an intensive case monitoring program in veterans with schizophrenia and suicidal ideation: A pilot trial. *Psychiatry Research*, *239*, 111–116. https://doi.org/10.1016/j.psychres.2016.02.049

[13] Levine, S. Z., Goldberg, Y., Yoffe, R., Pugachova, I., & Reichenberg, A. (2014). Suicide attempts in a national population of twins concordant for psychoses. *European Neuropsychopharmacology*, *24*(8), 1203–1209. https://doi.org/10.1016/j.euroneuro.2014.05.014

[14] Lin, L. E., Lo, S. C., Liu, C. Y., Chen, S. C., Wu, W. C., & Liu, W. I. (2017). Effectiveness of Needs-oriented Hospital Discharge Planning for Caregivers of Patients With Schizophrenia. *Archives of Psychiatric Nursing*, *32*(2), 180–187. https://doi.org/10.1016/j.apnu.2017.10.013

[15] Marcus, S. C., Ph, D., Chuang, C., Ph, D., Ng-mak, D. S., Ph, D., & Olfson, M. (2014).

Outpatient Follow-Up Care and Risk of Hospital Readmission in Schizophrenia and Bipolar Disorder, 1–8. https://doi.org/10.1176/appi.ps.201600498

[16] Nakanishi, M., Niimura, J., Tanoue, M., Yamamura, M., Hirata, T., & Asukai, N. (2015). Association between length of hospital stay and implementation of discharge planning in acute psychiatric inpatients in Japan. *International Journal of Mental Health Systems*, *9*(1), 23. https://doi.org/10.1186/s13033-015-0015-9

[17] Özden, S. A., & Tuncay, T. (2018). The experiences of Turkish families caring for individuals with Schizophrenia : A qualitative inquiry. https://doi.org/10.1177/0020764018779090

[18] Pratt, S. I., Naslund, J. A., Wolfe, R. S., Santos, M., Bartels, S. J., Pratt, S. I., … Santos, M. (2015). Automated telehealth for managing psychiatric instability in people with serious mental illness Automated telehealth for managing psychiatric instability in people with serious mental illness, *8237*(November). https://doi.org/10.3109/09638237.2014.928403

[19] President, V., General, S., Affairs, P., Wycombe, H., Affairs, E. M., & Affairs, S. (2015). Schizophrenia through the carers ' eyes : results of a European cross-sectional survey, 472–483. https://doi.org/10.1111/jpm.12209

[20] Rami, H., Hussien, H., Rabie, M., Sabry, W., Missiry, M. El, & Ghamry, R. El. (2018). Evaluating the effectiveness of a culturally adapted behavioral family psycho-educational program for Egyptian patients with schizophrenia, *55*(5), 601–622. https://doi.org/10.1177/1363461518782520

[21] Ran, M., Chan, C. L., Ng, S., Guo, L., & Xiang, M. (2015). The effectiveness of psychoeducational family intervention for patients with schizophrenia in a 14-year follow-up study in a Chinese rural area, 1–8. https://doi.org/10.1017/S0033291715000197

[22] Randomized, A. (2015). Effect of Antipsychotic Medication Alone vs Combined With Psychosocial Intervention on Outcomes of Early-Stage Schizophrenia, *67*(9), 895–904.

[23] Riley-mchugh, D., Brown, C. H., & Lindo, J. L. M. (2016). Schizophrenia : its psychological effects on family caregivers, (May). https://doi.org/10.14419/ijans.v5i1.5565

[24] Rotondi, A. J., Haas, G. L., Anderson, C. M., Newhill, C. E., Spring, M. B., Ganguli, R., … Rosenstock, J. B. (2005). A clinical trial to test the feasibility of a telehealth psychoeducational intervention for persons with schizophrenia and their families: Intervention and 3-month findings. *Rehabilitation Psychology*, *50*(4), 325–336. https://doi.org/10.1037/0090-5550.50.4.325

[25] Seo, M., & Kim, H. L. (2010). Effectiveness of an Education Program to Reduce Negative Attitudes Toward Persons, *4*(2), 90–101. https://doi.org/10.1016/S1976-1317(10)60009-6

[26] Sharif, F., Shaygan, M., & Mani, A. (2012). Effect of a psycho-educational intervention for family members on caregiver burdens and psychiatric symptoms in patients with

schizophrenia in Shiraz , Iran. *BMC Psychiatry*, *12*(1), 1. https://doi.org/10.1186/1471-244X-12-48

[27] Shimada, T., Ohori, M., Inagaki, Y., & Shimooka, Y. (2018). A multicenter , randomized controlled trial of individualized occupational therapy for patients with schizophrenia in Japan, 1–18.

[28] Yusuf, A., PK, R. F., & Nihayati, H. E. (2015). Buku Ajar Keperawatan Kesehatan Jiwa. *Buku Ajar Keperawatan Kesehatan Jiwa*, (May), 1–366. https://doi.org/ISBN 978-xxx-xxx-xx-x

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ADOLESCENT MENTAL HEALTH RISK FACTORS LIVE IN ORPHANAGE : A SYSTEMATIC REVIEW

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ABSTRACT

Mental health includ social and emotional well-being the foundation of children and adolescent health development. Mental health difficult are increas drastic among the children and adolescents living in orphanages. Institutionaliz child and adolescent are at risk of experiencing greater psychological problem in their lives, such as the problem of coping mechanisms, adjustment, aggression, personality problem, self-esteem, self-confidence, anxiety, depression and stress. The purpose of this study is to find out risk factors of depression, anxiety, stress, self-esteem, and self-confidence adolescent live in orphanages. Methods of the study were systematic review of adolescent living in orphanage with study selection criteria using Scopus, Science Direct, and Pubmed database among 2014-2018, with PICOS approach. Of the 15 journals carried out and reviewed depression, anxiety, stress, self- esteem, and self-confidence are mental health risk factor for adolescents in orphanage. Actions to reduce risk factor for mental health and behavior problems among children and adolescent who live in orphanages by mental health promotion and early detection of developmental growth as appropriate preventive measures in the development phase.

Keywords: adolescent, mental health, risk factors,orphanage

1. Introduction

The development of children and adolescents was an important foundation for mental health and included social and emotional well-being. Teenagers with a feeling of mental health will have problem solving skills, social abilities and have goals or ideals [1]. These assets help them get back up from any setbacks for adolescent development that might occur in the face of a bad situation, so that teens can lead productive lives [2].

Loss of parents during childhood and living in orphanages can be stressful and have a negative impact on the psychological well-being of children and adolescents [3]. This loss leads to situations where children lack basic needs, lack of physical support, social and emotional support, decreased educational attainment, substance abuse, and the possibility of leading to sexual risk behavior [3]. In addition, adolescents who live in orphanages face various problems caused by a lack of parental roles that make them experience higher daily stress levels compared to those who live with parents [4][5]

Adolescents in institutional care centers have a higher level of mental disorder, compared to adolescents who live with their families [6]. Institutionalized children and adolescents run the risk of experiencing greater psychological problems in their lives, such as coping, adjustment, aggression,

personality problems, self-esteem, self-confidence, anxiety, depression and stress [5][7][8]. Adolescents who live in orphanages are at high risk of mental illness 48% depression, 25% PTSD, 27% suicide rate [9]. The high rate of mental illness and suicide shows the importance of addressing mental health problems within institutions [10]. It is recommended to develop institutional programs that foster peer relations [6][11].

Given some mental health and behavioral problems among adolescents who live in orphanages, early detection of mental health is important and can minimize mental health problems in adulthood [12]. Depression, anxiety, stress, self-esteem, how to relate to peers, identifying successes in the development cycle, and helping adolescents express emotions or behavioral problems in order to achieve more optimal levels of mental health [3]. Prevention and intervention programs have been developed to help institutionalized children and adolescents [13][14]. Orphanages are the therapeutic environment, shelter for displaced adolescents where they get guidance in the field of education, character building and adjustment in society. Mental health promotion and early detection of developmental growth is one of the mental health promotion efforts to help increase self-confidence [15].

2. Method

2.1 Research settings

The journal search strategy begins with asking research questions, namely "are depression, anxiety, stress, self-esteem, and self-confidence a risk factor for adolescents living in orphanages?". Searching the results of research in all published journals with the type of research Quasi experiment, Cross-sectional, Quantitative related to the mental health of adolescents who live in orphanages. The databases used for journal searches are the Scopus, PubMed, and Science Direct databases. The keywords used are adolescent, orphanages, mental health. Journals are limited to 2014-2018 publication years, with journals in nursing, medicine, and psychology, social and English-language journals.

2.2 Criteria and study options

Research inclusion criteria were 1) child and adolescent respondents living in orphanages, 2) 7-17 years old, 3) Loss of one or both parents due to death or abandonment, 4) Willing to participate as respondents.

3. Results

3.1 Results and Study Selection

The results were from the Scopus, PubMed, and ScienceDirect databases. The search results obtained as many as 339 journals. Scopus database obtained by 60 journals. PubMed database obtained by 7 journals and databases Science Direct gained as much as 272 journals. All journals that have been obtained are then screened according to the area of Medicine, Nursing, and Psychology until there are 301 journals. Then do the filtering in accordance with the mental health, youth and orphanages research found 158 journals accordingly. Then filtering regained much as 15 journals according

criteria inclusion and exclusion. All journals are Quasi-experimental, Cross-sectional, Quantitative focusing on depression, anxiety, stress, self-esteem, and adolescent self-esteem living in orphanages.

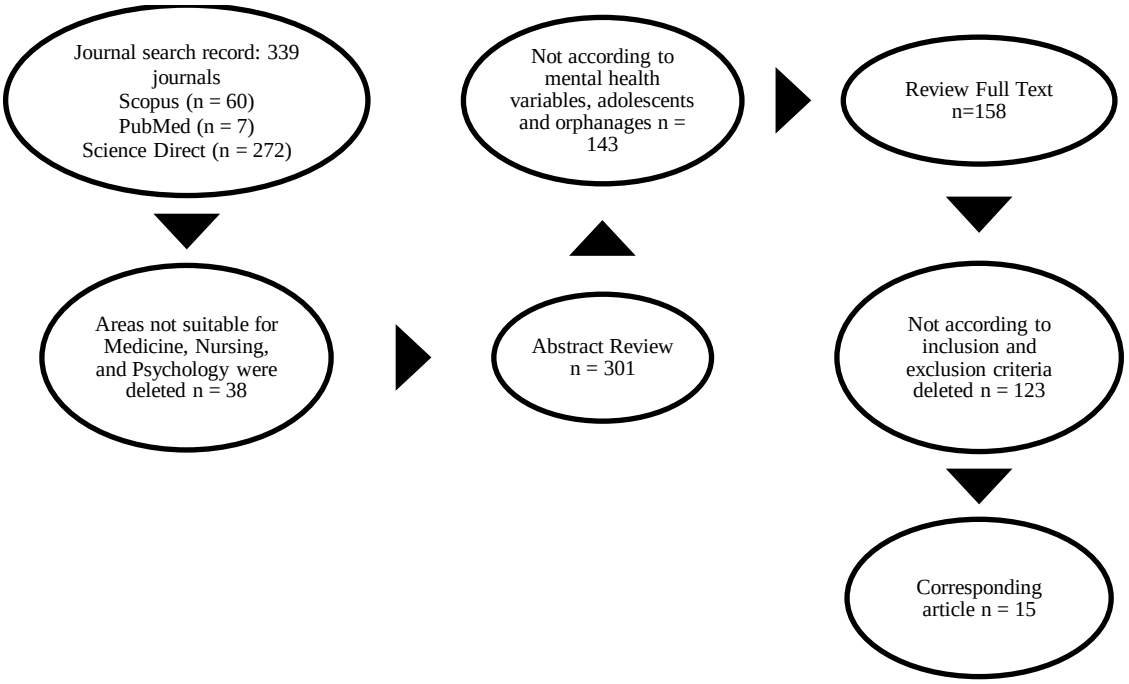

Figure 1. Search flow

3.2 Study Characteristics

The characteristics of the study are explained in picture 1. All journals obtained from the results of the study deal with the mental health problems of adolescents who live in care with depression, self-esteem, anxiety, stress, and self-confidence. Research from Malaysia as much as 3 journals, southern Africa as one of the journal, as one journal eastern Africa, Indonesia as one of the journals, USA as 6 journals, Japan by one journal, Germany by 2 journals. All studies have a minimum age rating of 7 years to 18 years. All studies of 15 study is a client who lives in an orphanage.

3.3 Limitations study

The keywords used are adolescent, orphanages, mental health. Journals are limited to 2014-2018 publication years, with journals in nursing, medicine, and psychology, social and English-language journals.

4. Discussion

Orphanages have an adverse effect on the personality development of orphans because the substitute family environment fails to replace the functions of the nuclear family [15]. Experiences of adolescents who lived in an orphanage as a child would have a negative impact on the long-term cognitive, emotional and social wellbeing[15]. Inability to accept things that are different from themselves making them vulnerable to psychological and behavioral problems. Self-acceptance is a psychological mechanism that allows individuals to survive and entertain themselves by recognizing and accepting their positive and negative traits in negative situations. Orphanages generally only

provide educational facilities and collective physical needs. While the emotional needs associated with psychological needs of foster children less considered [16].

This lack of function has an impact on passive, apathetic, withdrawal, easy despair, fear and anxious personality that makes it difficult for individuals to establish social relationships with others [7]. They also show negative behavior, fear of contacting others, feelings of hostility and selfishness, and preferences for being alone. Research conducted by [3] states that children who live in orphanages suffer from disturbances in emotional intelligence and their regulation. Mohammadzadeh et al., (2018)[4] states that there are many negative incidents in orphanages, unhealthy care will cause trauma that affects the formation of individual pathological personalities. Rules that are applied in orphanages should not obstruct the child's developmental tasks but vice versa, they need to adapt to conditions. Rules are used to harmonize life in an orphanage so that it can be harmonious. However, when the effect of the rules given has a detrimental effect, for example, it inhibits activities related to developing children's talents or social relations with the environment, it can cause damage to child development [15].

Experience while living in an orphanage with caregivers and more friends provide psychological experience, to determine an alternative choice to make certain decisions that guarantee the future. Parenting will affect independence, the formation of adolescent behavior and emotions [17]. Emotional support and social approval has a significant influence on self-esteem [18]. All of this is inseparable from the role that foster children receive from orphanage administrators as a substitute for their parents' role, which acts as a motivator to encourage children to continue learning. These studies link the poor psychological well-being of children placed in orphanages with a lack of social support, inadequate basic needs in orphanages, and the absence of problem solving skills and social skills in orphanage children. All of these factors is known as a risk factor for poor mental health in children. The research findings highlighted above indicate that placement in orphanages can have a negative impact on the psychological well-being of the orphan in question [3]. Positive findings associated with management factors are favorable in some orphanages which are run privately as well as the availability of basic needs and social support. Positive findings also indicate that the placement of the orphanage can improve psychological well-being of orphans [3]. Emotional support and social approval has a significant influence for self-esteem [18](Santrock, 2003). All of this is inseparable from the role that foster children receive from orphanage administrators as a substitute for their parents' role, which acts as a motivator to encourage children to continue learning.

Depression in orphans may be caused by the adverse effects associated with loss of parents (such as sadness, loss of care, separation from family members and social change) and poor conditions in orphanages, which include poor stimulation environments, poor care delivery, strict routines, often no care givers, stigma and administrative restrictions [3]. Anxiety is known to negatively predict the overall quality of life because it causes people to feel worse about themselves and thus aggravates their overall quality of life. Orphaned children show symptoms of anxiety are much higher, given that the loss of a parent is regarded as the most significant stressors that predict anxiety in children [3].

Given the increasing burden of orphan care, treatment and other support models have been developed to overcome the crisis of orphans who are growing, including institutional care (orphanages) and community-based care [19]. Community-based care refers to support programs that

are managed by non-governmental organizations, religious groups, or community-based organizations that usually allow children to remain in a family-based care environment [19]. The accuracy of institutional care for orphans has become a central question for international aid policies that affect many low- and middle-income countries [8].

Forms of nursing interventions that can be provided by providing counseling services, life skills training such as stress management and coping skills, formation and sustainability of healthy peer relationships, problem solving skills and decision making, and conflict management skills [3]. Thus, the variables of depression, anxiety, coping and overall quality of life can be overcome and reduce the risk factors for mental health of children and adolescents who live in orphanages.

Based on the research that has been done a study, it can be concluded that the results of these journals can be applied in Indonesia. Interventions can be done in terms of mental nursing department. This facilitates nurses in nursing care in a comprehensive manner. This facilitates nurses in full nursing care by providing counseling services to adolescents. The hope with the social support of nursing can reduce health risks in adolescents who live in orphanages.

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5. Conclusion

From the results of a systematic review it was concluded that depression, anxiety, stress, self-esteem, and self-confidence were Risk Factors for Adolescent Mental Health Living in Orphanages

References

[1] Mohammadzadeh M, Awang H, Shahar H K and Ismail S 2017 Emotional Health and Self-esteem Among Adolescents in Malaysian Orphanages *Community Ment. Health J.* **0** 0

[2] Lawrence D, Johnson S, Hafekost J, Sawyer M and Ainley J 2015 *The mental health of children and adolescents: Report on the second Australian child and adolescent survey of mental health and wellbeing* (Australia : Department of Health)

[3] Yendork J S and Somhlaba N Z 2014 Stress , coping and quality of life : An exploratory study of the psychological well-being of Ghanaian orphans placed in orphanages *Child. Youth Serv. Rev.* **46** 28–37

[4] Mohammadzadeh M, Awang H, Ismail S and Shahar H K 2018 Stress and coping mechanisms among adolescents living in orphanages : An experience from Klang Valley , Malaysia

[5] Kaur S and Rani C 2015 Exploring psychological health of orphan adolescents: A comparative analysis *Int. J. English Lang. English Lit. Humanit.* **3** 27–47

[6] Gearing R E, Brewer K B, Elkins J, Ibrahim R W, Mackenzie M J and Schwalbe C S J 2015 Prevalence and Correlates of Depression , Posttraumatic Stress Disorder , and Suicidality in Jordanian Youth in Institutional Care **203** 175–81

[7] Whetten K, Culver K A, Boyd D L and Donnell K O 2015 Yoga to Reduce Trauma-Related

Distress and Emotional and Behavioral Difficulties Among Children Living in Orphanages in Haiti : **21** 539–45

[8] Gray C L, Pence B W, Ostermann J, Whetten R A and Donnell K O 2015 Prevalence and Incidence of Traumatic Experiences Among Orphans in Institutional and Family-Based Settings in 395–404

[9] Stellern S, Esposito E, Mliner S, Pears K and Gunnar M 2014 Increased freezing and decreased positive affect in postinstitutionalized children **1** 88–95

[10] Loman M M, Johnson A E, Quevedo K, Lafavor T L and Gunnar R 2014 Risk-taking and sensation-seeking propensity in postinstitutionalized early adolescents **10** 1145–52

[11] Zhang Y, Tanaka E, Anme T, Mori S, Bradley R and Lau J Y F 2018 Children and Youth Services Review Japanese residential care quality and perceived competency in institutionalized adolescents : A preliminary assessment of the dimensionality of care provision *Child. Youth Serv. Rev.* **91** 204–12

[12] Hermenau K, Hecker T, Elbert T and Ruf-leuschner M 2014 Maltreatment And Mental Health In Institutional Care-Comparing Early And Late Institutionalized Children In Tanzania **35** 102–10

[13] Mohammadzadeh M, Awang H, Shahar H K and Ismail S 2017 The effects of a life skills-based intervention on emotional health , self-esteem and coping mechanisms in Malaysian institutionalised adolescents : Protocol of a multi-centre randomized controlled trial *Int. J. Educ. Res.* **83** 32–42

[14] Hermenau K, Goessmann K, Rygaard N P, Landolt M A and Hecker T 2016 Fostering Child Development by Improving Care Quality : A Systematic Review of the Effectiveness of Structural Interventions and Caregiver Trainings in Institutional Care

[15] Pramono R B and Astuti D 2017 Cognitive Behavioral Therapy as an Effort to Improve Self 161–9

[16] Save The Children, Departemen sosial RI and UNICEF 2015 *Seseorang yang berguna (Kualitas pengasuhan di Panti Sosial asuhan anak)* (Jakarta : Save the Children, Departemen Sosial RI, dan UNICEF.)

[17] Stuart G W and Laraia M T 2005 *Principles and practice of psychiatric nursing* (St. Louis: Mosby)

[18] Santrock J W 2003 *Perkembangan remaja* (Jakarta: Erlangga)

[19] Embleton L, Ayuku D, Kamanda A, Atwoli L, Ayaya S, Vreeman R, Nyandiko W, Gisore P, Koech J and Braitstein P 2014 Models of care for orphaned and separated children and upholding children ' s rights : cross-sectional evidence from western Kenya

FNH-513

IDENTIFYING HOW TO DIETARY ADHERENCE BEHAVIOUR TO TYPE 2 DIABETES MELLITUS PATIENTS: A SYSTEMATIC REVIEW OF QUALITATIVE STUDIES

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ABSTRACT

People with type 2 diabetes mellitus (type 2 DM) had a uniqueness to behave dietary adherence.The purpose of this study was to identify behaviour of dietary adherence to type 2 diabetes patients. A systematic review focused on qualitative research. A literature search resulted in 15 articles: 10 on the topic of dietary adherence behaviour. Searches were conducted in SAGE, PUBMED, Scopus and Google scholar using keyword "Qualitative study" AND "Type 2 Diabetes" AND "Dietary Adherence". Results were synthesised with the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) protocol. Result showed, overall behaviour dietary adherence practices were different. Some patients to dietary adherence behaviour influenced by knowlodge and clear information, family supports, social and cultural support and individual perception and motivation. Some factors acted as reinforces had an impact on patient adherence to nutrition care guidelines. These factors should be considered by diabetes educators, health practicioner including nutritionists, nurses and doctors, when planning dietary treatment for patients with type 2 diabetes mellitus.

Keywords: qualitative study, type 2 diabetes, dietary adherence

1. Introduction

Diet compliance sufferers with DM, up till now, have remained a health problem in the world. No compliance regarding diet means that, progressively, year by year, DM sufferers have increased. According to a report by the WHO in 2013, the average patient compliance toward diet and long-term therapy against chronic diseases such as DM in developed countries only amounted to 50% whereas in developing countries, the number was lower. It is estimated that 285 million people worldwide have diabetes mellitus, 90% of whom have type-2 diabetes mellitus[1]. The prevalence of diabetes for all ages worldwide was estimated to be 2.8% in 2000 and this is projected to be 4.4% in 2030.

The burden of this disease poses a serious public health threat. More recent studies have shown that the rate of undiagnosed diabetes in this region is also high and that these individuals are at great risk of chronic health complications[1]. DM requires intensive management to address them and long-term treatment. The management intended to control blood sugar levels in the normal range so then complications can be avoided. Lifelong treatment and diet affects the compliance of the patient [2].

The purpose of this study was to conduct a systematic review to identify the behavior of dietary adherence for type 2 diabetes patients. This study is expected to give ideas for further research to increase the control of attacks and the behavior of dietary adherence in patients with diabetes mellitus so then the quality of life of diabetes mellitus patients has increased.

2. Methods

2.1. Design

A systematic review of the qualitative studies was conducted involving the following steps:

a) Developing the review question
b) Developing the search strategy
c) Conducting a quality appraisal of selected papers that meet inclusion and exclusion criteria.
d) Extraction of themes
e) Synthesis of themes
f) Evaluation of confidence in the evidence

As described meta-syntheses are integrations that are more than the sum of parts, in that they offer novel interpretations of findings. These interpretations will not be found in any one research report but, rather, there are inferences that can be derived from taking all of the reports in the sample as a whole.

2.2. Search method

A literature search resulted in 15 articles on the topic of dietary adherence behavior. Searches were conducted in SAGE, PUBMED, Scopus and Google Scholar using the keyword “Qualitative study” AND “Type 2 Diabetes” AND “Dietary Adherence”. Reference lists of the papers identified by the online search were manually searched as well. The articles that met the inclusion/exclusion criteria that were eligible for quality appraisal also had their reference lists searched. Full-text articles were excluded for reasons such as not being in English language, not having a relevant study design and not having a relevant outcome

2.3. Assessment of relevance for inclusion

The full papers of the abstracts were described using a qualitative method and they focused on the dietary adherence behavior of type – 2 diabetes patients.

2.4. Data extraction

The initial search resulted in 120 citations. The first screening of the titles and abstracts according to the inclusion criteria resulted in a total of 38 studies. A secondary screening of the full text of each study resulted in 15 studies in the sample. A data extraction table (Table 1) was developed to summarize the information within each study. The criteria developed for the systematic review were used to measure the methodological quality of the systematic review: namely the study design, attrition, sample selection and instrument reliability. Each criterion was measured on a 4-point scale resulting in a maximum quality score of 13 and a minimum score of 0. The minimum methodological score accepted for this review was set at 3, a low number in order to be purposely inclusive.

Table 1. Characteristic study

Author	Participant	N	Aim	Method	Findings
[1]	Ethnic minority (non-Hispanic Black, Hispanic)	27	A descriptive qualitative study was used to explore hthe cognitive, behavioral, and psychosocial challenges associated with having and/or parenting an adolescent with pediatric type 2 diabetes (T2D) from the perspectives of ethnic minority parents and adolescents	Descriptive qualitative study	Six themes corresponding to 3 broad categories (cognitive, behavioral, and psychosocial challenges). cognitive challenges: 1. Learning about a new disease and dealing with misinformation/ myths 2. Managing youth knowledge deficits and/or superficial knowledge Behavioral challenges 3. Making and maintaining positive youth health behavior changes 4. Ensuring regimen adherence Psychosocial challenges 5. Managing youth emotions related to diabetes 6. Navigating social relationships with peers and other family members around the disclosure of T2D
[2]	Male participants aged 18 years and older. Mean years of living with diabetes was 9.6 ± 5.9.	34	The purpose of this study was to explore the current dietary practices and perceived barriers to healthy eating in non-Hispanic black men with type 2 diabetes	Qualitative approach, specifically focus groups	1. Why We Eat 2. Internal Cues 3. External Cues 4. Impact of Diabetes Diagnosis on Diet 5. Current eating practices. 6. Barriers to Change/Healthy Eating 7. Myths/Misperceptions/Misinformation
[3]	Patients who are members of the M'Bour diabetes association	41	To identify cultural enablers and barriers to dietary management of type 2 diabetes in M'Bour,	Qualitative study	Perceptions, enablers, nurtures

Author	Participant	N	Aim	Method	Findings
	and the patients who sought care for diabetes at the local hospital.				
[4]	African American women (AAW) with T2DM	20	Describe the day-to-day selection, preparation, and consumption of food among African American women (AAW) with type 2 diabetes mellitus (T2DM) identify their typical food selections and consumption practices when dining out at restaurants and at social gatherings (i.e., church functions and holidays highlight the valued behaviors and beliefs that influence these women's food practices; and (4) determining how social interactions influence food practices.	Descriptive ethnographic study	Striving to have healthier food practices 1. Food preparation focusing on taste 2. Portion sizes 3. Trying to overcome the daily food challenges caused by diabetes Challenges associated with dining outside the home 4. Local restaurants 5. Church socials and holiday meals Faulting cultural traditions and their influences on food practices 6. Valued behaviors based on tradition 7. Beliefs based on tradition The clash of social interactions and their influences on food practices 8. Health care practitioner recommendations for healthier diets because of diabetes 9. A desire to please others through traditional meal preparation
[5]	Participants were non-pregnant adults aged ≤ 70 years with newly diagnosed pre-diabetes (defined as HbA1c 41–49 mmol/mol	20	To explore the experiences of people recently diagnosed with pre-diabetes and who were overweight or obese in making dietary changes following a six-month primary care nurse-delivered dietary intervention	Qualitative research methods	Three core themes, each containing sub-themes, emerged: (i) supportive factors - determination not to develop diabetes, clear information and manageable strategies and supportive relationships; (ii) barriers - lack of family support, financial constraints, social expectations around food,

Author	Participant	N	Aim	Method	Findings
	(5.9–6.6%) in New Zealand) [11], BMI ≥ 25 kg/m2, and not prescribed metformin.		pilot		and chronic health issues; and (iii) overcoming challenges - growing and sharing food, using frozen vegetables and planning.
[6]	Adults with Type 2 diabetes	33	To examine the perceptions of participants in Thailand regarding Type 2 diabetes and to utilize	Grounded theory	Causing lifelong stress and worry Finding their own ways After a while Still cannot Wanting a normal life
[7]	Only people receiving care for diabetes	30	To provide qualitative information about food knowledge, attitude and practice	Qualitative study	Increasing vegetable consumption and a concern about unhealthy food preferences among the younger generations.
[8]	Two databases (PubMed andOvid Medline)	-	To examine how people from ethnic minorities in Western countries describe their experiences of managing type-2 diabetes mellitus.	Qualitative meta-synthesis	1. The cultural significance of food 2. Powerlessness 3. Accessibility and the acceptability of treatment 4. Stigma 5. Family role regarding
[9]	Diabetic patients (four males and four females) attending the Groote Schuur Hospital Diabetes Clinic who were between 40-70 years old.	8	To explore the experiences of patients with type 2 diabetes mellitus attending the Groote Schuur Hospital Diabetes Clinic in relation to the contextual factors that promote or impede adherence to nutrition care guidelines.	Explorative study, using a qualitative approach	motivation, individual knowledge, the perceptions of moderation, self-responsibility, taste concept or cravings and temptation.
[10][10][10][10]	Patients generated by the clinic appointment system: (a) adults (age 18 years) with a T2DM of at	17	To explore the diabetic patients' views on the various factors contributing to non-adherence to dietary therapy.	Qualitative study	The main factors that affect the diabetes' patients' dietary adherence were individual preference, family support, and social and cultural activities

Author	Participant	N	Aim	Method	Findings
	least 1-year duration; (b) had previously received dietary therapy advice from a team comprising the physician, diabetes educator, and the dietetic officer; (c) receiving treatment from the diabetes outpatient clinic at Hospital Sultanah Bahiyah and (d) fluent in spoken national language (Bahasa Malaysia).				
[11]	The inclusion criteria participants were: the diagnosis of Type 2 diabetes of < 4 or> 8 years; HbA1c level < 80 mmol/mol (9.5%); BMI 28–40 kg/m2; age 25–80 years and having had a stable weight in the previous	18	To evaluate the acceptability of an 8-week very-low-energy diet for the remission of Type 2 diabetes, and to identify the barriers and facilitators of adherence and behavior-regulation strategies used by participants in the Counter balance study.	Qualitative research methods	Motivation and initial expectations, Experience with the VLED, Facilitators of adherence, behavior regulation, and changes in physical and psychological well-being. This is in addition to the acceptability of the VLED.

Author	Participant	N	Aim	Method	Findings
	6 months (within a range of 5 kg).				
[12]	Diabetic patients for at least five years	13	To describe the self-care practices among individuals with type II diabetes in Addis Ababa, Ethiopia	Qualitative method	Most patients reported irregular self-monitoring of their blood sugar. Dietary and physical exercise recommendations were inadequately practiced by most of the participants. Most patients better adhered to medication prescriptions. Patients generally lack proper information/knowledge regarding the importance of self-care and how it should be implemented. Based on the reported behavior, we identified three main categories of patient; those who 'endeavor to be compliant', those who are 'confused' and those who are 'negligent'
[13]	Participants with type 2 diabetes, aged 68 to 85 years.	13	The project explored the experience of living with diabetes and the factors that facilitate or inhibit access to diabetes services	Qualitative method	The findings indicate five main themes, including (a) the value of health, (b) the impact of diabetes, (c) making changes, (d) managing diabetes, and (e) access to information and services
[14]	Participants who complied with the recommended attendance at nutritional counseling sessions and those who did not	12	To ascertain the role of the dietitian–patient relationship and the counseling approach in influencing individual patient decisions to adhere to counseling by persisting with the nutritional treatment.	Qualitative method	Four sub-themes, as follows: 1. Patients' perceptions of dietitians and the physician's role in shaping these perceptions. 2. How district dietitians understand the patients' perceptions of their profession. 3. Dietitians' perceptions of their profession. 4. Barriers to the long-term counseling process
[15]			To synthesize the recent research on depression and the adherence to dietary	Systematic review	Twenty-seven studies involving 7,266 participants were selected; participants were 54%

Author	Participant	N	Aim	Method	Findings
			and physical activity recommendations in persons with type 2 diabetes (T2DM).		female and 62 years of age, on average. When reported, depression prevalence in the study samples ranged from 4.5% to 74%. Six intervention studies targeted diabetes treatment, with or without depression treatment. No studies focused solely on treating depression. Twenty-one descriptive studies examined the relationship between depression and diet/physical activity adherence, finding there to be a negative association. Only 2 of the 6 intervention studies examined this relationship; findings were inconsistent.

3. Results

The analysis produced the following themes: knowledge and clear information, family support, social and health professional support, and individual perception and motivation.

3.1. Theme 1: knowledge and clear information

The participants described their limited dietary knowledge and their confusion regarding the mixed dietary messages pre-intervention. They reported feeling empowered and motivated by the information and strategies gained from their primary care nurses and the community education groups. Individualized, clear and achievable goals facilitated the initiation and continuation of dietary behavioral changes.

> 'It wasn't stop this, stop that. It was cut down on this, cut down, little steps...The favorite saying is "little steps". And that's probably one of the most helpful sayings I've ever heard...Not trying to do it in a week or two weeks, or two months or three months. It's over a period of time, you know?'

A particularly empowering achievement was learning to read food labels:

> 'Yeah, the label reading, that was excellent, that was really excellent.... I must admit that has changed my thoughts when I do go shopping. I think oh I'll just have a look at what the fat level is, or sugar, you know.'

Many of the participants commented that they were previously unaware of the extent of the hidden sugars, salt and fat in commonly consumed processed foods.

3.2. Theme 2: family supports

Support from their family and friends appeared to significantly support the participants' confidence and determination to improve their diet. Lack of adult support was detrimental to their resolve to make important lifestyle changes. The others felt that close adults in their daily lives were almost obstructive to their dietary efforts. Two women reported having to continue to cook unhealthy food for their family members because they did not want to change their diets, and others reported finding it difficult when their household members continued to eat unhealthy foods in their presence.

> 'You have stuff out to cook tea but you decide, no, you'll go and get takeaways because there's somebody else sitting there with takeaways.'

Although most of the participants had control over the household food purchasing and cooking, they found that the behavior of others undermined their ability to maintain healthy eating habits.

The decision to disclose T2D diagnosis to those within the adolescent's social network, including peers and other family members, varied within and across the parent- adolescent dyads. Some adolescents described being initially reluctant to disclose to their friends and the school faculty, yet their parents encouraged disclosure so then others would have knowledge of the diagnosis in case of a medical emergency. One adolescent mentioned disclosing to many of their classmates and she displayed a confident, self-assured attitude with her response: "Don't be [sorry], it's not like I'm dead, I just have diabetes," when others apologized upon finding out that she had T2D. Still, the other adolescents felt that disclosing their diagnosis could be used against them in the form of teasing or bullying.

3.3. Theme 3: social and health professional support

The importance of strong supportive relationships when attempting and maintaining healthy changes in eating behaviors was clearly evident. The participants drew on the support of others across the spectrum: health professionals, fellow participants with pre-diabetes, family and friends[1], [3]. Regular contact and a good relationship with a trusted health professional was considered to be especially helpful. Many of the participants were deeply grateful to their practice nurses and community education facilitators, and felt that the quality of these relationships was paramount.

> 'It's the way that she encouraged me, how she uplifted me. I'm so grateful...So I think having the right people at the forefront there, just to open you up, you know, and acknowledging where I am at.'

Feeling accountable to someone else motivated some to 'keep on track'. This feeling appeared to reflect the quality of the relationship and the value placed on that person's opinion:

> 'It was knowing that I was going to be checked up on [laughter]...If you're accountable to someone, you don't want to upset them, you know.'

Those who attended the community education sessions commented that they drew strength and inspiration from others with pre-diabetes. At a day-to-day level, friends and family were considered to be invaluable, particularly those in the household who understood the participant's need to make dietary changes. They encouraged them to do so.

> 'My family, they all know so they're all very helpful. You know, they'll say how are you going with your diabetes and so forth...They check to see how my diet is. My wife is very good. She'll make sure that I have the good stuff, you know.'

While it took personal commitment and effort to make the necessary dietary changes, this effort was not achieved in isolation but within the context of supportive relationships, clear information and manageable strategies[4].

3.4 Theme 4: individual perception and motivation

A few of the participants alluded to the fact that some of the members of their family may not understand what diabetes is and that this lack of understanding causes difficulty for them to follow the therapeutic diet[6,9].

4. Discussion

This review describes the systematic synthesis of the results from a variety of literature regarding the dietary compliance of type-2 DM sufferers. Knowledge is the result of human sensing. This is when someone knows the results of objects through the senses (eyes, nose, ears and so on)[1,2]. By itself, the knowledge produces a sensing that is strongly influenced the intensity of attention and perception towards the object[6]. Most of a person's knowledge is obtained through the sense of hearing (ear) and the sense of sight (eyes). Knowledge itself is influenced by several factors such as formal education, age and occupation. Level of education provides enough stock to allow someone to understand the information received, thereby providing sufficient understanding[7]. It will affect the attitude of someone in digesting the information received, including the knowledge of diet as related to DM.

Family support is the most important thing in a family due to the effects of the family support on health and welfare functions simultaneously. The role of the family in providing support will raise the coping methods of the other family members. The greater the support given to the diabetic patients, the higher the level of compliance with the diet given. Support is provided in the form of supervision and support when carrying out the recommended diet to make sure that the patient does not violate the diet given. The participants drew on the support of others across the spectrum: health professionals, fellow participants with pre-diabetes, family and friends. Regular contact and a good relationship with a trusted health professional was considered to be especially helpful. Family participation and decision making are common themes supporting the dietary management of diabetes[8]. Families that participate in meal planning and preparation facilitate understanding and healthier dietary habits for the diabetic family members, and in some cases, the entire family[9].

Finally, the patient is regarded as a decision maker and their compliance is a result of the process of decision making. In general, people who feel that they are receiving consolation, attention and the help they need from a person or group usually tend to more easily comply with medical advice than patients who get less social support.

5. Conclusion

Type 2 DM patients appear to want individualized treatment. In order to change patient eating patterns, the dietitian’s approach needs to be adapted to the patient’s individual and psychological needs, desires and narrative. This change in the profession should be communicated to the patient to encourage patient compliance. Further research may be necessary to determine whether a transformation in the field of dietetics has occurred and how the patients perceive it. Moreover, the scope of this research should be broadened to include additional countries and languages.

References

[18] George S M S, Pulgarón E R, Ferranti D, Agosto Y, Toro M I, Ramseur K C and Delamater A M 2017 No Title **43** 180–9

[19] Lee L T, Willig A L, Agne A A, Locher J L and Cherrington A L 2016 Challenges to Healthy Eating Practices 325–35

[20] Foley E and Belue R 2017 Identifying Barriers and Enablers in the Dietary Management of Type 2 Diabetes in M ' Bour , Senegal

[21] Sumlin L L and Brown S A 2017 Culture and Food Practices of African American Women With Type 2 Diabetes 1–11

[22] Abel S, Whitehead L C and Coppell K J 2018 Research : Educational and Psychological Aspects Making dietary changes following a diagnosis of prediabetes : a qualitative exploration of barriers and facilitators 1693–9

[23] Suparee N, Mcgee P, Khan S and Pinyopasakul W 2014 Chronic Illness

[24] Doherty M L, Owusu-dabo E, Kantanka O S, Brawer R O and Plumb J D 2014 Type 2 diabetes in a rapidly urbanizing region of Ghana , West Africa : a qualitative study of dietary preferences , knowledge and practices 1–8

[25] Jones V and Crowe M 2017 How people from ethnic minorities describe their experiences of managing type-2 diabetes mellitus : A qualitative meta-synthesis *Int. J. Nurs. Stud.***76** 78–91

[26] Educator Z E C and Scientist A D V S 2014 Factors influencing adherence to dietary guidelines : a qualitative study on the experiences of patients with type 2 diabetes attending a clinic in Cape Town Factors influencing adherence to dietary guidelines : a qualitative study on the experiences of p **9677**

[27] Azri M, Suan M, Asli S E, Abdullah W M, Shafie Z and Johari N H 2018 Patient Perspective on Factors Contributing to Nonadherence to Dietary Therapy : A Qualitative Study in Multicultural Population of Kedah , Malaysia

[28] Adamson A J, Steven S, Taylor R, Rehackova L, Ara V and Sniehotta F F 2017 Research : Educational and Psychological Issues Acceptability of a very-low-energy diet in Type 2 diabetes : patient experiences and behaviour regulation 1554–67

[29] Tewahido D and Berhane Y 2017 Self-Care Practices among Diabetes Patients in Addis Ababa : A Qualitative Study 1–10

[30] Carolan-olah M, Cassar A and Extn M H A M P H 2018 The Experiences of Older Italian Migrants With Type 2 Diabetes : A Qualitative Study

[31] Brown S A 2014 Depression and Adherence to Lifestyle Changes in Type 2 Diabetes 731–44

[32] Press D 2014 A qualitative study of adherence to nutritional treatment : perspectives of patients and dietitians 147–54

FNH-515

COMPLEMENTARY FEEDING WITH GENESIS STUNTING IN CHILDREN: A SYSTEMATIC REVIEW

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ABSTRACT

Stunting is a problem of chronic malnutrition caused by insufficient nutrition in a long time due to feeding that is not in accordance with nutritional needs. One of the problems in feeding infants is the cessation of breastfeeding breastmilk and insufficient complementary feeding. The purpose study literature review is to identify the complementary feeding with the incidence of stunting in children. The authors conducted a relevant literature review in various data using the keywords "complementary feeding, stunting, child". Data based on SCOPUS, Science Direct, Proquest, Pubmed and Scholar. The criteria consisted of full text published in criteria were five years limit journal (2013-2018) use article using English. The Results as much as 2.090 articles found, and selected 15 article that suitable with criteria. On the process of the analysis of the articles showed that timely complementary foods, frequency of food and drinks, diversity of foods and drinks associated with the incidence of stunting. Good complementary feeding potential to improve children's nutritional status and can prevent stunting.

Keywords: complementary feeding, stunting, children

1. Introduction

Stunting is defined as a height that is more than two standard deviations below the World Health Organization's (WHO) child growth standard median [1]. Stunting is at issue in public health compilations of the prevalence of stunting in children greater than 40% [2]. Stunting is caused by poor nutrition and recurrent infectious diseases during the first 1000 days of life and will be irreversible [3]. The bad effects caused by stunted children in the short term include the disruption of brain development, intelligence, impaired physical growth, bodily metabolic disorders and a long-term decline in cognitive abilities and learning achievements. This also includes decreased immunity, a high risk for the emergence of diabetes, obesity and disability at the end of old age [4]

Stunting is caused by various factors such as parental status, socio-demography, economy, cultural and environmental practices and health [5]. Low parental education, family size and lag interval, a lack of sanitation, recurrent infections, not being given breast milk, low food intake and poor feeding practices are considered to be the main determinants of stunting [6]. Among all of the risk factors, the practice of feeding has the most direct impact on stunting. especially in appropriate interventions to modify feeding practices that have been proven to be effective [7].

Poor food intake is the cause of malnutrition [8]. Children aged 6-23 months are in a period of growth that is also a period of high risk because the fulfillment of nutrition cannot be fulfilled through

breast milk alone. However, children are not ready to consume the family food so early. The provision of complementary feeding refers to the introduction of nutritious solid foods in accordance with inclusions into the diet of other than breast milk [9]. The knowledge of parents or caregivers about the practice of providing complementary breast milk right (for example, offering a variety of nutritious solid foods, safe and developmental food preparation, the frequency of appropriate feeding and continuous breastfeeding) is an effective strategy to increase a child's intake [10].

Stunting occurs in many low and medium income countries during the period of complementary feeding (6-23 months), which is 500 days from the granting of exclusive breast milk before consuming a wide variety of food while breastfeeding. During the period of complementary feeding regarding breast milk, the children consumed little [11]. Therefore, ensuring the adequate intake of complementary foods and feeding for children aged 6-23 months is crucial to achieve the global target of reducing 40% of toddlers from being hampered, from around 171 million in 2010 to 100 million in the 2012 [12]. The study focus in this systematic review is "How can food companions affect the incidence rate of stunting in children?"

2. Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews) statement.

2.4 Data Sources and Searches

The databases searched were Scopus, Science Direct, Proquest, Pubmed and Google Scholar, which provided studies related to complementary feeding and stunting from 2013 to 2019.

2.5 Study Selection

The literature review was conducted using complementary feeding, stunting and child keywords. The selection of the articles was determined by the following inclusion criteria: full text published, articles published between 2013 and 2019, articles published in English, the age limit for the children being 0-59 months, and articles focusing on complementary feeding and stunting.

2.6 Data extraction and quality assessment

All citations retrieved from the electronic databases were imported into the Mendeley Program. Two reviewers (BU, SNK) independently analyzed the titles and abstracts of every study retrieved from the literature search to identify potential eligible studies. The full text of the remaining studies was obtain for further examination. The last review was conducted by the first reviewer (TPD).

The data of the included studies was independently extracted by the same two reviewers by including the first author's name, the year of publication, the study design, sample size, general characteristics of the participants, the research measurement tool and the main outcome of interest.

A descriptive analysis was done of the data obtained from the reviewed papers to include the information on complementray feeding and the incidence rate of stunting. Our hypothesis was that stunting was independent of complementary feeding in the 15 articles.

3. Results

3.1. Study Design

As many as 2,090 articles were found and the results came from five databases: 295 articles in Scopus, 287 articles in Science Direct, 687 articles in Proquest, 275 articles in Pubmed and 549 articles in Google Scholar. The results of the article selection were according to the inclusion criteria of the 15 articles. They were then given their serial number and we conducted article analysis to facilitate the review process. There were several inclusion criteria in this study, namely children of the age of 0-23 months, 0-59 months, 6-23 months, and 6-59 months. All studies had to use a 24-hour questionnaire and food recall. This study used a cross-sectional quasi-experimental study design, prospective cohort study and randomized controlled trial.

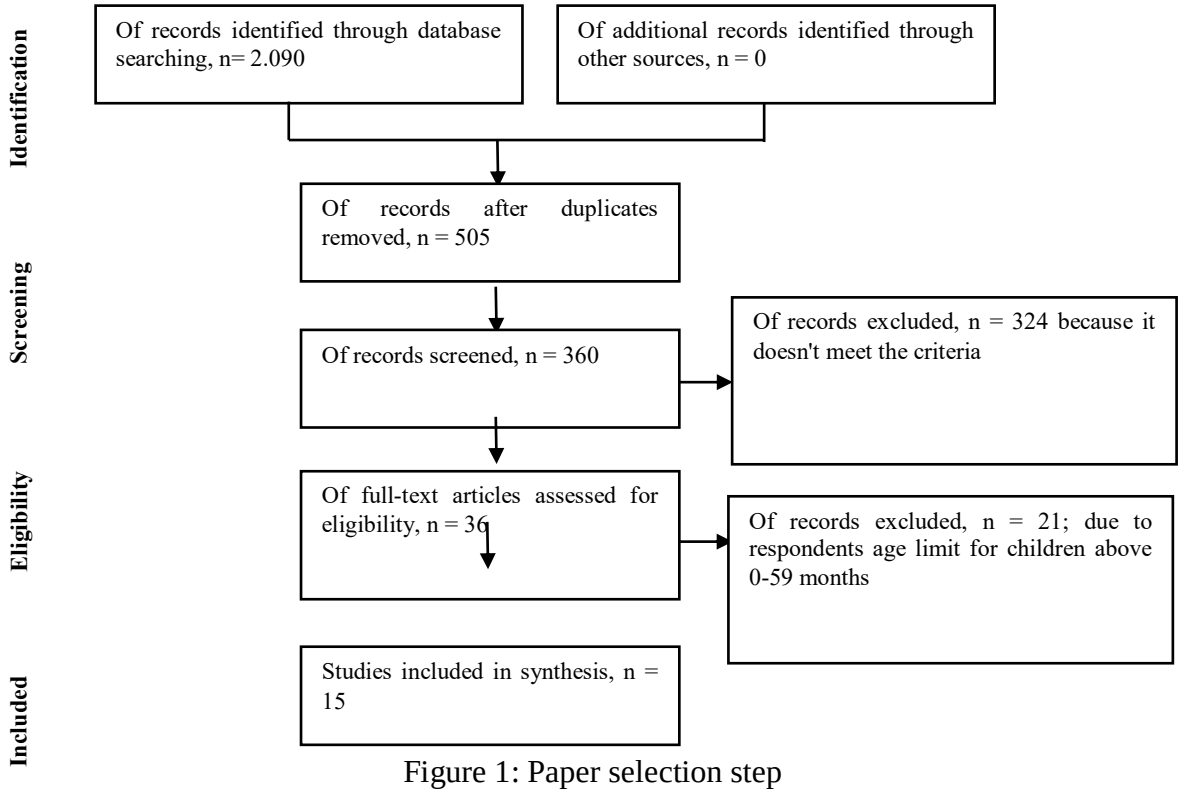

Figure 1: Paper selection step

3.2. Characteristics of Participant

In this systematic review of 15 studies, all of the population was older, with a varied sample of 120-74.548 for the age of the respondents namely the mother and the children aged 0-59 months. The research was carried out in various parts of the world including Asia, the Middle East, Europe, Australia, and the Americas.

3.3 Complementary Feeding of infants

Diet and feeding management in a timely and adequate manner escorts the children aged 6 months and above to a point where breast-feeding exclusively is not enough to meet the nutritional needs of the child. The parent's socio-economic situation also affects the diversity of the food, so 44.5% of the diversity of complementary foods do not meet the WHO recommended minimum food diversity guidelines (MDD). Alongside this, 17.8% of the overall rate of dwarfing exists in poor

countries in China's West. MDD found that stunting in childhood was inadequeately dealt with [13]. Stunting affects food diversity. Children who only consume foods rich in micronutrients are more likely to experience stunting, as the child who consumed foods rich in vitamin A and micronutrients are experiencing a reduction in the incidence rate of stunting [14]. Consuming animal food sources (ASF) such as eggs, meat and dairy 12.6% can inhibit the occurrence of child stunting [15].

In India, not reaching the minimum dietary diversity and an adequate minimum diet was found to be significantly related to the occurrence of stunting and wasting.The existence of wasting and stunting needs a more integrated intervention. That is, a program that aims to prevent (among low birth weight) Low Birth Weight and poor infant and young child feeding (IYCF) in order to prevent stunting. This program should be linked more effectively with the actions aimed at the management of the wasting [16].

.The frequency of eating the minimum associated with the nutritional status of the child [17]. Less than half (40%) of the kids 6-23 months old (n = 174) achieved a satisfactory feeding practices (frequency of eating food diversity and at a minimum minimum).The level of wasting (n = 180), dwarfing (n = 180) and underweight (n = 343) was 10%, 22.2% and 9.3% respectively [18].

4. Discussion

As a result of this systematic review, the analysis showed that feeding the right complementary food, having good food diversity, and having an appropriate frequency of food and drinkinfluences the incidence rate of stunting as found in 15 reviewed journals. The diet of the children is influenced by maternal socio-economic status [13]. Diet is also influenced by the age of the child. Those aged 6-11 months consuming animal foods and with food sources in the zero group were associated with a higher chance of being inhibited. There is a lack of difference in food recognition at that age [15]. Stunting is also influenced by exclusive breastfeeding when they are less than 6 months old, and if they are not given exclusive breastfeeding [24].

The provision of complementary food is not adequately affected by the reading and writing skills of the formal education of the mothers. They will be given literature in the process of gaining important information on inadequate child feeding and on the protection of malnourished children [18]. Knowledge of micronutrient-rich foods and parental education has a relationship with micronutrient food consumption [14]. In Ethiopia, stunting, thin and thin / fat rivals were 40%, 19.8%, 11.6% and 2.7% respectively. The prevalence of malnutrition was very high. Therefore, health professionals and health education officers must provide nutritional counseling about the frequency and diversity of food, about the environment and on personal hygiene by placing an emphasis on the mothers who do not have formal education [25]. The mother's knowledge is influenced by the level of education of the mothers in providing appropriate complementary breastfeeding foods that are appropriate for the variety of foods that children need to prevent stunting

The feeding of poor babies and children (IYCF) is very bad in malnourished children. In the feeding practices related to waste and stunting, many children in developing countries become stunted during infancy because of improper weaning practices and a poor diet. Feeding from a friend is not exactly related to malnutrition and stunting [17]. The fulfillment of nutrition in children during the stage of exclusive breastfeeding, through the use of supplementary food and the use of worm tablets has the potential to substantially reduce the incidence rate of stunting [19]. Preventing stunting does not only fulfill the provision of various additional foods. It is necessary to provide iron and

vitamin A-rich foods [26] as well as to increase exclusive breastfeeding [20]. According to the research conducted in Chile, the recommended breastfeeding adherence is 11.8 - 97.9% and the practice of supplementary feeding is 9.7 - 90.3% [22]. Compliance can improve the nutrition in children so then it can prevent the occurrence of stunting.

5. Conclusion

In this review, stunting is influenced by the accuracy of the complementary feeding, exclusive breastfeeding for 6 months, the frequency of eating and drinking, the diversity of iron and vitamin A-rich foods and the regular administration of worm medicine. Not only diet but also stunting were influenced by their socio-economic status, parental education, family size and environmental cleanliness. It is necessary to provide counseling routinely about fulfilling the nutrition for children so then it can prevent the occurrence of stunting.

References

[33] World Health Organization 2013 Childhood Stunting : Challenges and Opportunities *WHO Geneva*

[34] Kementrian Kesehatan RI 2016 Situasi balita pendek *Info Datin* 2442–7659

[35] Geberselassie S B, Abebe S M, Melsew A, Mutuku S M and Wassie M M 2018 Prevalence of stunting and its associated factors among children 6-59 months of age in Libo-Kemekem district , Northwest Ethiopia ; A community based cross sectional study 1–11

[36] Keino S, Plasqui G, Ettyang G and Borne B Van Den 2014 Determinants of stunting and overweight among young children and adolescents in sub-Saharan Africa **35**

[37] Gelano T F, Birhan N and Mekonnen M 2015 Prevalence of undernutriton and its associated factors among under-five children in Gonder city, NorthWest Ethiopia *J. Harmon. Res. Med. Heal. Sci.* **2** 163–74

[38] Correia L L, Campos J S, Andrade F M de O, Machado M M T, Lindsay A C, Leite Á J M, Rocha H A L and Cunha A J L A da 2014 Prevalence and determinants of child undernutrition and stunting in semiarid region of Brazil *Rev. Saude Publica* **48** 19–28

[39] Black R E, Victora C G, Walker S P, Bhutta Z A, Christian P, De Onis M, Ezzati M, Grantham-McGregor S, Katz J and Martorell R 2013 Maternal and child undernutrition and overweight in low-income and middle-income countries *Lancet* **382** 427–51

[40] Aguayo V M, Arimond M, Dahal P, Na M, Lamichhane B, Pokharel R, Chitekwe S and Stewart C P 2018 Trends and predictors of appropriate complementary feeding practices in Nepal : An analysis of national household survey data collected between 2001 and 2014 **14** 1–13

[41] Panjwani A and Heidkamp R 2017 Complementary Feeding Interventions Have a Small but Significant Impact on Linear and Ponderal Growth of Children in Low- and Middle-Income Countries : A Systematic Review and Meta-Analysis 1–10

[42] Dewey K G 2016 Reducing stunting by improving maternal, infant and young child nutrition in regions such as South Asia: evidence, challenges and opportunities *Matern. Child Nutr.* **12** 27–38

[43] World Health Organization 2012 Sixty-fifth World Health Assembly. Geneva, 21-26 May 2012. Resolutions and decisions, annexes. WHA65. 6. Comprehensive implementation plan

on maternal, infant and young child nutrition [Internet]. Geneva: World Health Organization; 2012 [cited 2015 Novemb

[44] Wang A, Scherpbier R W, Huang X, Guo S, Yang Y, Josephs-spaulding J, Ma C, Zhou H and Wang Y 2017 The dietary diversity and stunting prevalence in minority children under 3 years old : a cross-sectional study in forty-two counties of Western China 840–8

[45] Fadare O, Mavrotas G, Akerele D and Oyeyemi M 2018 Micronutrient-rich food consumption , intra-household food allocation and child stunting in rural Nigeria

[46] Krasevec J, Kumapley R and Frongillo E A 2017 Diet quality and risk of stunting among infants and young children in low - and middle - income countries **13** 1–11

[47] Harding K L and Webb P 2019 Birthweight and feeding practices are associated with child growth outcomes in South Asia **14** 1–12

[48] District B 2018 Dietary Practices of Lactating Women and Nutritional Status of Children in Baglung District, Nepal **38** 19–24

[49] Bwenge E, Id M, Tumwine J K, Ndeezi G, Marie I, Wamani H, Sommerfelt H, Id S E, Tylleska T and Nankabirwa V 2019 Effects of complementary feeding on attained height among lower primary school-aged children in Eastern Uganda : A nested prospective cohort study 1–17

[50] Ock C, D A P and D V P 2019 Predictors of stunting with particular focus on complementary feeding practices : A cross-sectional study in the northern province of Rwanda Vestine **60** 0–7

[51] Aguayo V, Kang Y, Dzed L, Campbell R K, Joshi V, Waid J, Datta S, Nancy G and Jr K P W 2017 Infant and young child feeding practices and nutritional status in Bhutan 1–6

[52] Belén, Salesa, Edson, Romel , Gloria M and U 2018 Influence of Feeding Practices on Malnutrition in 1–15

[53] Pediatría T O, Zaragoza-cortes J, Trejo-osti L E, Ocampo-torres M, Maldonado-vargas L and Ortiz-gress A A 2018 Nutrición Hospitalaria

[54] Demilew Y M 2019 Food security is not the only solution to months old children in Western Amhara region , Ethiopia 1–9

[55] Wang J, Chang S, Zhao L, Yu W, Zhang J, Man Q, He L, Duan Y, Wang H, Scherpbier R and Yin S 2017 Effectiveness of community-based complementary food supplement (Yingyangbao) distribution in children aged 6-23 months in poor areas in China **50** 1–14

[56] Kubuga C K, Hong H G and Song W O 2019 Hibiscus sabdariffa Meal Improves Iron Status of Childbearing Age Women and Prevents Stunting in Their Toddlers in Northern Ghana

[57] Kinjo Y, Vodounon A J, Alao M J and Nagahori C 2018 Possible effect of maternal safe food preparation behavior on child malnutrition in Benin , Africa 875–81

Table 1. Description and Paper Analysis

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
Fadare *et al* Negeria 2017 [14]	Cross-sectional study	The study included 419 children aged 6–59 months and 413 households	The targeted sampling technique was used in selecting farming households with children aged 0–59 months. The surveyed communities were predominantly divided between two ethnic communities, Nupe and Yoruba.	The intrahousehold food allocation patterns were assessed using Likert-scale questions. The caregivers were asked to rank the household members based on their food allocation in the order of 'more diverse' to 'least diverse'. These were separate questions assessing the diverse food allocation among male adults, the diverse food allocation among female adults and the diverse food allocation among children.	Owning small livestock and a refrigerator, knowledge of micronutrient-rich foods and higher parental education had strong associations with the households' micronutrient-rich food consumption. Children from households that consumed micronutrient-rich foods that received more diverse diets were less likely to experience stunting. The combined effect of micronutrient-rich food consumption and vitamin A supplementation was stronger on the likelihood of stunting reduction than the separate effect of each.
Krasevec *et al.* Nigeria 2016 [15]	Cross-sectional study	The sample size of children 6–23 months old in the pooled analysis was 74,548	The inclusion criteria for the surveys used in the analyses are the following: 1. Dataset available on the DHS website and this allowed for the generation of the seven food groups used in the dietary diversity measure (WHO, 2008)	They were assessed on the basis of the consumption of specific food items in the 24 hours prior to being surveyed. In the DHS survey, the mothers provided the food consumption data for their youngest child under 2 years of age using a	Those who did not consume any animal source food (ASF) the previous day had 1.436 higher odds of being stunted compared to children consuming all three types of ASF (egg, meat,

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
			2. Child length measurements were part of the survey 3. All of the control variables were available in the dataset 4. Minimum of one (most recent) national level survey per country.	questionnaire assessing the previous days intake from a list of food items. These food items were then categorized into one of the following seven food groups as defined by the WHO for diet diversity.	and dairy). We estimated that 2,629 cases of stunting would have been averted (12.6% of those stunted). Outcomes by country-income grouping showed larger associations between diet diversity and ASF consumption for the upper and lower middle income countries compared to the low income countries. In summary, dietary diversity and ASF consumption were associated with stunting, with the association varying by the stratified groups
District *et al.* Nepal 2018 [17]	Cross-sectional	The sample size was 343 lactating women and their children. Out of 343 children, underweight was measured for all children while stunting and wasting were calculated for children whose age was above six months.	The inclusion of the participants in the study was determined by the mother's consent and the age of the child being between 0-23 months.	After taking verbal and written informed consent from the lactating woman of child, the data was collected regarding her dietary practices, child feeding practices and their nutritional status through using a pre-designed, pre-tested questionnaire in Pokhara Lekhnath Municipality, Nepal.	Less than half (40%) of 6-23 months od children (n=174) had achieved satisfactory feeding practices (minimum meal frequency and minimum dietary diversity). The rate of wasting (n=180), stunting (n=180) and underweight (n=343) was 10%, 22.2% and 9.3% respectively.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
					The feeding practices of the children were thus associated with wasting and stunting.
Ock *et al.* Rwanda 2019 [19]	Cross-sectional study	138 children 5 to 30 months in age	All households with a child 5 to 30 months of age had an equal chance of being asked to participate in the survey.	A structured questionnaire was used to collect information on the sociodemographic characteristics of each mother and child and breast-feeding and complementary feeding practices. Anthropometric status was assessed using height-for-age z- scores for the children and body mass index for the caregivers. Dietary intakes were estimated using a 24-h recall.	Interventions focusing on optimal nutrition during the complementary feeding stage, exclusive breastfeeding and the use of deworming tablets have the potential to substantially reduce stunting in children in the northern province of Rwanda.
Aguayo *et al* Bhutan [20]	Cross-sectional	441 children < 24 months	All <24 months old children in the study area participated in the study.	In each selected household, the interviewers administered a questionnaire about their household members, durable and productive asset ownership and the physical structure of the family's home, including access to improved water and sanitation facilities. A second questionnaire asking about pregnancy care and IYCF was administered only to the mother of the youngest child under age 2 years in the household. Length or height and weight were measured for all children under 5	Low rates of exclusive breastfeeding (EBF), given the possible protection of breastfeeding against being overweight and inadequate dietary diversity, offered evidence to guide future program interventions to improve the nutritional status of young children.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
				years living in selected households.	
Belén *et al.* Chile 2018 [22]	Cross-sectional study	Sample of 200 children.	Children younger than two years old whose parents agreed to participate and who signed the informed consent form were included. Children who required immediate care due to severe disease or with clinical dehydration were excluded. The excluded children were similar in age and sex to the final sample.	The questionnaire was used to collect information on the sociodemographic characteristics and 24 hours dietary recall, which was collected once per participant in a personal interview with each caregiver to assess portion size. The use of nutritional supplements was during the last week. Additional breastfeeding-related questions, including age at first breastfeeding, the duration of exclusive breastfeeding, age at introduction to solid foods, and age at weaning from breastfeeding were also taken.	Adherence to the recommended breastfeeding practices was 11.8–97.9%, and complementary feeding practices was 9.7–90.3%. Adherence was associated with a lower prevalence of malnutrition. Adherence to the WHO recommended feeding practices was associated with a better nutritional status.
Pediatría *et al.* Mexico 2018 [24]	Cross sectional	189 mother child dyad in children 1-24 months of age	The total group of children were divided into the following groups: 1. Breastfed children 2. Not breastfed children the day before, day or night. In breastfed children less than six months of age, maternal milk is exclusive when no other food or drink (including water) is offered. 3. Women who did not breastfeed their child or who combined it with formula.	A questionnaire to obtain the mother's data (age, education, occupation) and that of the the child (sex, birth date, and if they were born by cesarean section). Their socio-demographic data was applied.	One hundred and eighty-nine mother-child dyads were evaluated; 59.3% were breastfed and 40.7% were not. Stunting was found in 10.1% and it was identified starting in the fourth month of life. This was accompanied by early complementary feeding close to the third month (57.0%) and by a reduction in exclusive

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
					breastfeeding during the second month of life to only 30%. The proportion of not breastfed children with stunting (27.5%) was almost twice that of breastfed children (12.0%) ($p < 0.03$). By age, the mean Z-scores for length for age (ZLA) was different from the trend showing that stunting increasing with age ($p < 0.05$): 1-6 months and 13-24 months.
Harding *et al.* South Asia 2019 [16]	Cross-sectional	62,509 children aged 0 to 59 months.	Each household sampled was from one of these sub-regions. Each country has a unique distinction for the sub-regions: 34 provinces in Afghanistan, 7 divisions in Bangladesh, 29 states in India, 6 geographic regions in the Maldives, 3 ecological zones in Nepal, and 6 provinces and regions in Pakistan	The DHS IYCF questionnaires were designed in such a way to build on these variables. The IYCF practices and indicators are (a) initiating breastfeeding with the first hour after birth, (b) breastfeeding exclusively for the first 6 months post-partum, (c) continuing to provide breast milk for at least 2 years post-partum, (d) introducing complementary foods at about 6 months, (e) meeting the minimum meal frequency (MMF) of receiving solid, semi-solid, or soft foods per day in children aged 6 to 23 months, and (f) meeting theMDDof	In India, not achieving minimum diet diversity and a minimum adequate diet were significantly associated with the co-occurrence of stunting and wasting. The co-occurrence of wasting and stunting requires more integrated interventions. That is, programmes aimed at preventing (between low birthweight) LBW and poor young child feeding (IYCF) to avert stunting should be linked more effectively with actions

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
				consuming four or more of the seven food groups per day in children aged 6 to 23 months, and (g) meeting the MAD, an indicator that combines meeting the MDD and MMF among children aged 6 to 23 months.	aimed at the management of wasting.
Wang *et al.* China 2017 [13]	Cross-sectional	5196 children aged 6–23 months	All 6–23 months old children in the study area participated in the study.	A structured questionnaire for caregivers was provided in our survey. The items in the questionnaire were selected from the 'Multiple Indicator Cluster Survey' manual published by UNICEF. The dietary intake diversity assessment involved seven foods groups: (1) grains, roots and tubers, (2) legumes and nuts, (3) dairy products (milk, yogurt and cheese), (4) flesh foods (meat, fish, poultry and liver/organ meats), (5) eggs, (6) vitamin A rich fruits and vegetables and (7) other fruits and vegetables. The data on the dietary intake for the children 24h before the survey was obtained through the caregivers' recall.	Our study found that nearly 44·5% of the complementary feeding diversity did not met the WHO recommended minimum dietary diversity (MDD). An overall 17·8% stunting rate existed in the poor counties of Western China. Inadequate MDD was found to be positively associated with childhood stunting.
Demilew *et al.* Ethopia 2019 [25]	Cross-sectional study	A total of 841 mothers, with children who were 6–59 months old	All 6–59 months old children who resided in food-secure households in the study area who participated in the study.	The data was collected by interviewing the study participants using a pretested, structured questionnaire. The questionnaire consisted of socio	The prevalence of stunting, underweight, wasting and overweight/obesity was 40%, 19.8%, 11.6%, and 2.7%, respectively.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
				demographic and obstetric characteristics, environmental factors, anthropometry, child health and caring practices. The questionnaire was developed in English referring to the related literature.	The prevalence of under-nutrition was very high. Therefore, health professionals and health extension workers should give nutrition counseling about the frequency and diversity of meal content, environmental and personal hygiene by emphasizing this to mothers who have no formal education.
Wang J, *et al.* China 2017 [26]	Cross-sectional survey	832 children 6-23 months of age from 41 villages	All 6–59 month old children in the study area to participate in the study.	A questionnaire was designed to collect data on the basic characteristics of the children, their food consumption and their appetite for YYB and breastfeeding according to a 24-hour dietary intake (WHO IYCF).	The proportion of children fed a diverse diet and foods rich in iron or vitamin A increased ($P < 0.01$) in the follow-up study. The prevalence of stunting and underweight decreased ($P < 0.05$).
Geberselassie SB Northwest Ethiopia [3]	Cross-sectional survey	1287 children aged 6-59 months	1. Children aged 6-59 months who do not experience severe pain with spinal curvature. For example, kyphosis, scoliosis and kyphoscoliosis). 2. For households which had more than one eligible child.	Mothers or care givers were interviewed on their socio-demographic, economic, child health-related characteristics and environmental conditions with a pre-tested structured questionnaire.	The prevalence of stunting was high in the study area.We found that stunting was significantly correlated with child age, the occupational status of the household head, family size, and the fathers' education. Therefore, the intervention focused on supporting the housewives,

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
					family planning, and education on child feeding and nutrition should be implemented.
Kubuga *et al* Africa 2019 [19]	Quasi-experimental study	Childbearing age women (15–49 years, intervention-Kassena NankanaWest district: n = 60; control-Builsa North district: n = 60) and their toddlers (6–24 months)	Inclusion criteria of having a functional borehole (water source) throughout the dry season, existing women's groups and access to Community-Based Health Planning and Services (CHPS) compounds ina sizeable number of mother and young children (6–23 months) dyads for a good sampling frames. The community health nurses were willing to work with researchers between May and August 2016.	Questionnaire on food intake frequency and a 24 h food intake recall was administered at the baseline and at the end of the study. At baseline, the information on the sociodemographic characteristics was also taken and the anthropometry of the participants' weights and heights were measured at the baseline, midpoint, and at the endpoint, according to the standard procedures.	Food parenting with the awarding of a iron-rich food source (Leaf Hibiscus sabdariffa) for three times a week for 12 weeks can prevent stunting in toddlers.
Malembaka EB, *et al.* Uganda 2019 [18]	Prospective cohort study	506 children who had adequate complementary feeding.		The main exposure variable was adequate complementary feeding (CF) measured using a parent questionnaire at 18 – 24 months of age.We defined adequate CF as having received animal food, cereals and fruit, juice and/or vegetables during the 24 hours preceding the interview. An adapted minimum acceptable diet was defined as having been given milk or milk products at least twice a day, having an adapted meal frequency of two and solid or semi-solid food	The predominantly rural population had a high prevalence of inadequate complementary feeding. Adequate complementary feeding between 18-24 months of age did not have a strong effect on the attained height in later childhood, though children adequately fed at 5–8 years of age tended to catch up with attained height better than those who were not.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
				meals from at least four food groups in a 24-hour dietary recall.	
Kinjo Y, *et al.* Africa 2018 [23]	Randomized controlled study	300 mother–child pairs visiting the University Hospital of Mother and Child Cotonou Lagoon.	The children were at the hospital to receive pediatric immunizations. The children targeted were those determined by the hospital nurse to be free of diarrhea, fever or other symptoms, and who were healthy enough to be immunized.	The mothers were interviewed using a structured questionnaire. The child's height/length and weight measurements were determined and their Z-scores were calculated using the 2006 World Health Organization Child Growth Standards. Children with a Z-score <2 were considered to have stunting or the status of being underweight.	Maternal safe food preparation behaviors can prevent child malnutrition, even after considering the biological and socioeconomic factors.

FNH-517

MATERNAL EDUCATION REDUCES STUNTING IN UNDERFIVE CHILDREN: A SYSTEMATIC REVIEW

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ABSTRACT

Stunting describes the condition of chronic malnutrition during the most critical period of growth and development at the beginning of life. Children are calssified as stunting if their height according to their age is below WHO standards. Factors that can affect stunting in developing countries include maternal education. The purpose of study literature review is to identify the education of mothers with the incidence of stunting in children. The authors conducted a relevant literature in various data using the keywords "maternal education, stunting, and children". Data based on Scopus, Google Scholar, Pubmed, Science Direct, Spingerlink, Ebscohost, and Sage. The criteria consisted of full text published in five years limit journal (2014-2019) using English. The result as much as 4.036 articles found and selected 15 article that suitable with criteria. On the process of the analysis, the articles showed that maternal education was a determinant of stunting in children. Higher maternal education reduces the likelihood of a child becoming stunting. Educated women are more likely to distinguish and practice appropriate child nutrition, hygiene, and health care that can greatly improve the nutritional status of their children.

Keywords: maternal education, stunting, children

1. Introduction

Stunting is a condition of chronic nutritional deficiency over the period of growth and development that is most critical at the beginning of life[1]. Children are classified as being stunted if their nutritional status based on height according to age is below the standard of the World Health Organization (WHO) with the value of the Z score being <-2 SD[2]. Stunting represents the failure of linear growth, both physically and cognitively, due to poor nutrition and infection both before and after birth[3]. Children who experience stunting worldwide amount to 90% in the African region and in Asia so it is important to be attentive in developing countries[4]. The latest data indicated that 38% of South Asia's under-fives are stunted[3].

The causes of stunting are multi-factorial. The WHO's conceptual framework on childhood stunting describes the complex interaction of household characteristics such as water, sanitation and hygiene, environmental issues, socioeconomic status, and cultural influences with childhood stunting [5]. The factors that may indirectly influence stunting levels among children in developing countries include socioeconomic status such as the mother's education and occupation, household income and

health expenditure. In addition, factors such as micronutrient deficiencies, inadequate protein intake, and infections may directly cause stunting[6].

The importance of a mother's education on child health and nutrition has been well demonstrated in a number of studies. The mother's education is associated with better child health and nutritional outcomes through improving the socioeconomic status of the mothers[7]. Maternal education has long been recognized as a key determinant of child nutrition through a number of pathways, such as better health and nutrition knowledge and practices, improved access to and use of information, and improved self-confidence and decision-making power. A number of studies showed that the importance of household wealth for child nutrition and health varies according to maternal education[8]. Based on the importance of maternal education in a number of studies and because there has been no specific literature review to discuss maternal education and its relationship to the incidence of stunting, this systematic review aims to find out the relationship between the education of mothers with stunting in children based on the collected research results.

2. Material and Methods

The design used in the present study was a systematic review. The research design was not limited to a particular research design from the start. The journals were browsed using online databases.

2.7 Data Sources And Searches

The databases searched were Scopus, Google Scholar, Pubmed, Science Direct, Spingerlink,Ebscohost and Sage. The studies were related to maternal education, stunting, and children from 2014 to 2019.

2.8 Study Selection

The literature review was conducted using maternal education, stunting and children as the focal points. The selection of the articles was determined using the following inclusion criteria: the full text was published, the articles were published between 2014 and 2019 and they were in the English language. All of the citations retrieved from the electronic databases were imported into the Mendeley Program. The reviewers independently analyzed the titles and abstracts of every studies retrieved from the literature search to identify potentially eligible studies. The full text of the remaining studies was obtained for further examination. The last review was conducted by the first reviewer. The data of the included studies was independently extracted by the same two reviewers by including the first author's name, the year of publication, the study design, the sample size, the general characteristics of the participants, the research measurement tool and the main outcome of interest. Descriptive analysis was conducted on the data obtained from the reviewed papers and this included maternal education with the incident rate of stunting.

3. Results

3.2 Literature Search

Four hundred and 36 journal articles were selected according to particular criteria from 7 databases: 233 articles from Scopus, 727 articles from Google Scholar, 457 articles from Pubmed, 494 articles

from Science Direct, 869 articles from Spingerlink, 78 articles from Ebscohost and 1.086 articles from Sage. The results of the article selection according to the inclusion criteria resulted in 15 articles.

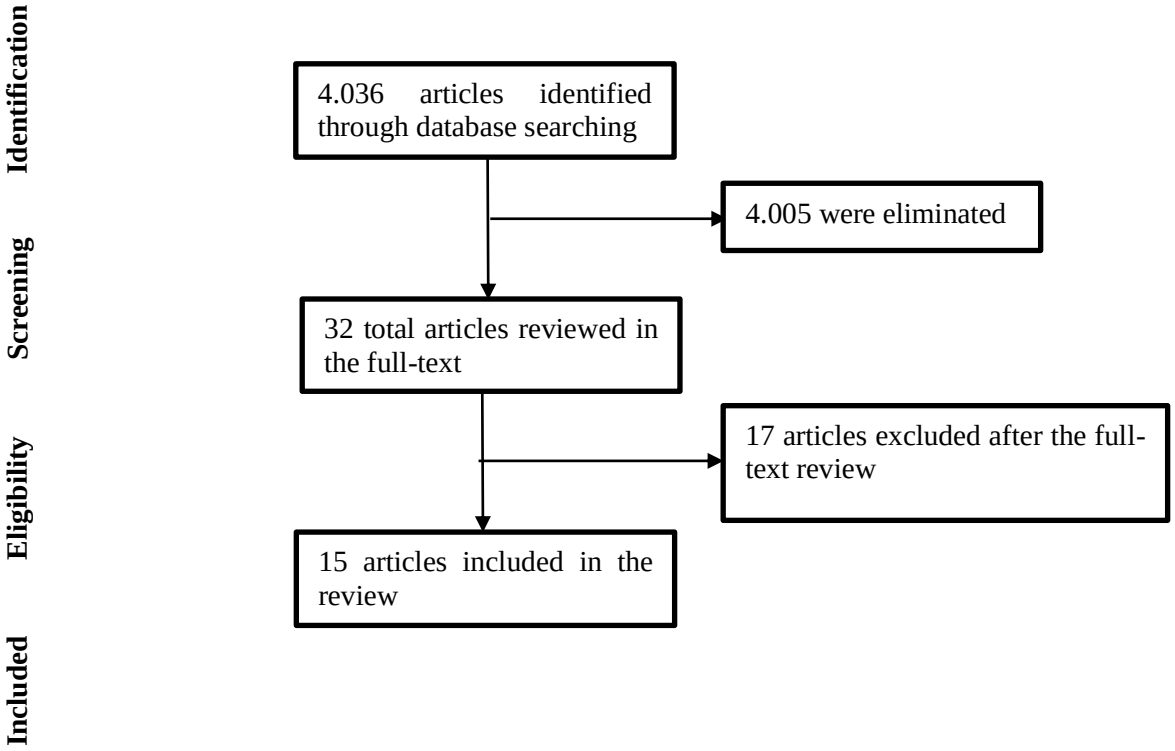

Figure 1. Flow diagram of the database search process

3.3 Respondents Characteristics

There were thirteen cross-sectional designs, one cohort study, and one case-control study reviewed. The respondents were drawn and recruited from the data under supervision, and the socio-demographic characteristics of each household and related information was collected from the mothers at antenatal clinics, from birth records and through face-to-face interviews with the caregiver. These studies were conducted in Asia, Africa, Australia and America. The studies in the sample used an average of more than a thousand children.

3.4 Measure Outcome

The results were measured by employing the following instruments: a semi-structured questionnaire, structured questionnaire, household questionnaire, women's and men's questionnaire, and the child's anthropometric Z-score using the WHO's growth reference standard.

3.5 Maternal education

The children whose mothers attended higher education reduced risk of their children being stunted by 90% compared to the mothers who could not read and/or write[1]. Stunting was significantly associated with the mother's education level in all three countries. Half of the children whose mothers had no education were stunted in Malawi, 45 % in Tanzania and 34 % in Zimbabwe. Child stunting was the lowest among children whose mothers had senior secondary education and above in the three countries[2]. HAZ did not increase with the wealth scores among the children whose mothers had not completed primary schooling, but the opposite was true for the children of mothers

with primary school or higher[3]. In another country, the result indicated that the children whose parents' attained secondary educations were less likely to be stunted compared to those whose parents had no formal education [4]. The prevalence of stunting decreased significantly with the increase in maternal education. A total of 38,7% of children whose mothers had no education were stunted, among children whose mothers had completed grade 5–9 and grade 10 or more [5].

4. Discussion

The results of this systematic review and analysis showed that maternal education was significantly associated with stunting in children (1-15,19). Maternal education appeared to strongly affect childhood stunting. Children born to mothers with higher education had a reduced risk of stunting compared to those born to illiterate mothers. This finding is in agreement with the study conducted in the Sidama zone that reported a higher risk of stunting among the children of uneducated mothers [1]. Maternal education appeared to be a protective factor for avoiding childhood stunting. Higher maternal education reduces the likelihood of a child becoming stunting. Educated women are more likely to distinguish and practice appropriate child nutrition, hygiene, and health care that can greatly improve the nutritional status of their children[17]. This study has highlighted three things related to education can affect the children's health, namely formal maternal education, which directly influences the health knowledge of prospective mothers. Second, the literacy and numeracy skills obtained by the women in schools improve their ability to recognize illness and to seek treatment for their children. In addition, they are better able to read the medical instructions for any treatment when the child is sick. Third, the length of time studying in school makes the women more receptive to modern treatment [18]. Children born to mothers with a higher level of education have reduced the risk of stunting compared to illiterate mothers. Highly educated mothers tend to distinguish and practice appropriate child nutrition practices, hygiene, and health care in terms of improving the nutritional status of their children[1]. Moreover, due to exposure to the media, they are likely to have better child and healthcare knowledge of nutrition, thus leading to better feeding practices[7]. The mother's education level is related to the ease of the mothers in receiving information about nutrition and health from outside. Mothers with a higher level of education will find it easier to receive information from outside than those with lower education. However, higher or lower education and even illiteracy have the same opportunity to obtain information from various media. The limitation of this systematic review is that it does not explain how the mothers obtain knowledge other than where the mothers are educated. This is because science can be found anywhere other than at school, namely through informal channels and technological advances.

5. Conclusion

In this review, maternal education was found to be significantly associated with stunting in children. Education is an important predictor of children's health and nutritional status. It has been estimated that the increase in women's education is responsible for nearly 43% of the total malnutrition, and that it is also related to the provision of specific supplementary foods. Higher educational attainment can increase the ability of the caregivers to understand the messages and to respond to the nutritional behavior. This results in the person being more receptive to alternative methods or recipes for food preparation, and for reading and interpreting food labels with ingredients.

References

[58] Abeway S, Gebremichael B, Murugan R, Assefa M and Adinew Y M 2018 Stunting and Its Determinants among Children Aged 6 – 59 Months in Northern Ethiopia : A Cross-SectionalStudy *Hindawi J. Nutr. Metab.***2018** 1–8

[59] Makoka D and Masibo P K 2015 Is there a threshold level of maternal education sufficient to reduce child undernutrition ? Evidence from Malawi , Tanzania and Zimbabwe *BMC Pediatr.* 1–10

[60] Leroy J L, Habicht J-P, Gonzalez de Cossio T and Ruel M T 2014 Maternal Education Mitigates the Negative Effects of Higher Income on the Double Burden of Child Stunting and Maternal Overweight in Rural Mexico *J. Nutr.***144** 765–70

[61] Sarma H, Khan J R, Asaduzzaman M, Uddin F, Tarannum S, Hasan M M, Rahman A S and Ahmed T 2017 Factors Influencing the Prevalence of Stunting Among Children Aged Below Five Years in Bangladesh *Food Nutr. Bull.***38** 291–301

[62] Mistry S K, Hossain B, Khanam F, Akter F, Parvez M, Yunus F, Afsana K and Rahman M 2018 Individual- , maternal- and household-level factors associated with stunting among children aged 0 – 23 months in Bangladesh

[63] Nshimyiryo A, Hedt-gauthier B, Mutaganzwa C, Kirk C M, Beck K, Ndayisaba A, Mubiligi J, Kateera F and El-khatib Z 2019 Risk factors for stunting among children under five years : a cross-sectional population-based study in Rwanda using the 2015 Demographic and Health Survey 1–10

[64] Mzumara B, Bwembya P, Halwiindi H, Mugode R and Banda J 2018 Factors associated with stunting among children below five years of age in Zambia : evidence from the 2014 Zambia demographic and health survey 1–8

[65] García Cruz L M, González Azpeitia G, Reyes Súarez D, Santana Rodríguez A, Loro Ferrer J F and Serra-Majem L 2017 Factors associated with stunting among children aged 0 to 59 months from the central region of Mozambique *Nutrients***9** 1–16

[66] Tariq J, Sajjad A, Zakar R, Zakar M Z and Fischer F 2018 Factors Associated with Undernutrition in Children under the Age of Two Years : Secondary Data Analysis Based on the Pakistan Demographic and Health *Nutrients***10** 1–20

[67] Taguri A El, Betilmal I, Mahmud S M, Ahmed A M, Goulet O, Galan P and Hercberg S 2015 Risk factors for stunting among under-fives in Libya *Public Health Nutr.***12** 1141–9

[68] Geberselassie S B, Abebe S M, Melsew Y A, Mutuku S M and Wassie M M 2018 Prevalence of stunting and its associated factors among children 6-59 months of age in Libo-Kemekem district, Northwest Ethiopia; A community based cross sectional study *PLoS One***13** 1–11

[69] Chirande L, Charwe D, Mbwana H, Victor R, Kimboka S, Issaka A I, Baines S K, Dibley M J and Agho K E 2015 Determinants of stunting and severe stunting among under-fives in Tanzania : evidence from the 2010 cross-sectional household survey 1–13

[70] Casale D, Espi G and Norris S A 2018 Estimating the pathways through which maternal education affects stunting : evidence from an urban cohort in South Africa Public Health Nutrition *Public Health Nutr.* 13–6

[71] Ramos C V, Dumith S C and César J A 2015 Prevalence and factors associated with stunting

and excess weight in children aged 0-5 years from the Brazilian semi-arid region ଌ**91**
[72] Bhowmik K R 2019 On selection of an appropriate logistic model to determine the risk factors of childhood stunting in Bangladesh 1–10
[73] Maňhalová J and Tóthová V 2016 The potential use of conceptual models of cultural competence in the nursing profession *Kontakt***18** e69–74
[74] Akram R, Sultana M, Ali N, Sheikh N and Sarker A R 2018 Prevalence and Determinants of Stunting Among Preschool Children and Its Urban – Rural Disparities in Bangladesh **39** 521–35
[75] Abuya B A, Ciera J and Kimani-murage E 2012 Effect of mother ' s education on child ' s nutritional status in the slums of Nairobi *BMC Pediatr.***12** 1–10

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THOUGHT STOPING AND GUIDED IMAGERY THERAPY EFFECTS ON ANXIETY LEVEL OF THIRD TRIMESTER PRIMIGRAVIDA PREGNANT WOMEN IN PUSKESMAS BASIRIH BARU AREA

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ABSTRACT

The first pregnancy can cause psychological problems, namely anxiety, if left untreated it will have a negative impact on both the mother and the fetus. Actions to reduce anxiety include thought stopping and guided imagery. The purpose of this study was to analyze the effect of Tought Stopping and Guided Imagery therapy on the anxiety level of third trimester primgravida pregnant women in the New Basirih Health Center area. This type of research is quantitative with a non equivalent control group design pretest-posttest. The study population was all third trimester primigravida pregnant women in the Puskesmas Basirih Baru area in 2018. The research samples were 20 trimester primigravida pregnant women, divided into thought stopping intervention and guided imagery groups with total sampling technique. Instruments for measuring anxiety, namely HRS-A, Wilcoxon and Mann Whitney test analysis. The results of the study were thought stopping intervention with p-value = 0.005 so that thought stopping therapy had an effect on the anxiety level of pregnant women and guided imagery p-value = 0.007 so guided imagery therapy affected the anxiety level of pregnant women. It can be concluded that thought stopping and guided imagery can be used by pregnant women to reduce anxiety levels..

Keywords: anxiety level, guided imagery, primi-gravida trimester III, pregnant women, thought stopping

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1. Preliminary

In general, pregnancy is a valuable experience for a woman, especially if the pregnancy is the first and most desirable pregnancy. The first pregnancy can give a very big emotional meaning such as feeling happy and hopeful, but can also cause anxiety caused by doubts about the ability to go

through various difficulties in terms of adjusting to the conditions that will be faced during pregnancy. Pregnancy is a natural process, where there will be changes in various physiological organs (Zuhrotunida, 2016).

These physiological changes include changes in physical and psychological aspects. In general, changes in physical aspects include changes in anatomy and organ function, while psychological changes that are often felt are changes that occur in the natural feeling and mood swing that causes the mother's emotions to become unstable, irritability, fear, discomfort and excessive anxiety (Anggarani et. al., 2013).

Anxiety is an individual response that occurs due to unpleasant conditions, which can be experienced by all living things when experiencing deep pressure and feelings (Shodiqoh, 2014).

Anxiety can also be felt during pregnancy, which can occur throughout the pregnancy process but with different levels, ranging from mild anxiety to panic. The inability of pregnant women to deal with anxiety constructively is the main cause of pathological behavior that will continue until the postpartum period. In the first trimester (1-3 months gestational age) anxiety is often associated with the incidence of morning sickness and the risk of abortion. Trimester II (4-6 months of gestation) anxiety will be felt a little reduced because physiologically the pregnant woman has begun to be able to adapt to the changes that occur and start enjoying her pregnancy. In the third trimester (7-9 months of gestation) anxiety will be felt to increase again, which is often caused by excessive thinking about the smooth delivery, physical condition of the prospective baby, pain that will be felt and so forth (Maimunah, 2009). This description is supported by the results of a study by Astria (2009) who obtained data that the increase in majority anxiety occurred in mothers who had pregnancy in the third trimester.

The World Health Organization (WHO, 2017) outlines the global prevalence of anxiety that occurred in 2015 as many as 3.6% of pregnant women, the Ministry of Health of Republic of Indonesia (MOH) also explained that in 2016 there were approximately 377,000,000 people experiencing anxiety and of the 377,000,000 pregnant women obtained as many as 107,000,000 people experienced an increase in anxiety in the third trimester. There are a lot of negative impacts that occur when during pregnancy, mothers experience anxiety including risk of weakening uterine muscle contractions, inhibiting cervical dilatation, slowing labor, increasing the risk of emotional imbalance after childbirth, baby blues and postpartum depression and weak bonding attachments between mothers with baby.

In addition to having a negative impact on pregnant women, babies conceived are also at risk of developing growth disorders, low birth weight (LBW) and increased hypothalamic activity Adrenal Pituitary (HHA) which causes changes in steroid hormone production, damage to social behavior and a high risk of infertility as adults (Shahhosseini, 2015). The description above is supported by research conducted by Maimunah, S. (2009) with the results of mothers who experience anxiety during pregnancy, most of whom experience premature birth and give birth to babies with LBW.

In order to avoid negative impacts on pregnant women and babies who are conceived, measures must be taken to overcome these anxieties. There are 2 types of therapy that can be used, namely pharmacological therapy and non-pharmacological therapy. Pharmacological therapy can be done by administering anti-anxiety drugs, but it has an adverse effect, especially for pregnant women because it can cause a high risk of drug dependence, giving birth to babies with low weight and preterm birth, so it is advisable to use non-pharmacological therapy for reasons of therapy it is simpler and easier to do. Some literature also states effective and minimal side effects. Many types of non-pharmacological therapies are currently being developed with the aim of relaxing pregnant women including thought stopping and guided imagery therapy.

Therapeutic thought stoppping is one of the behavioral therapies used to help pregnant women change the thinking process. Positive thinking habits can form positive behavior too. Thought stopping therapy can also cause changes in brain wave activity (the pre frontal cortex, limbic system, and hypothalamus) which are capable of increasing regulation of emotions and sympathetic nerve activity thereby increasing relaxation conditions, increasing neurotransmitters (melatonin, sirotonin, beta endorphin and acetycholine) that affect positive emotional conditions that depress

neurotransmitters (norepinephrine and cortisol) which can increase anxiety (Agustarika, 2009).

In addition to thought stopping, another therapy that is recommended is guided imagery therapy, which is a relaxation technique using directed imagination to reduce anxiety. This therapy can stimulate the emergence of chemical substances similar to beta blockers in the peripheral nerves that can close the sympathetic nerve nodes which are useful for lowering blood pressure, reducing tension which has an impact on reducing anxiety levels (Mayasari, 2015)

The results of a preliminary study conducted at the New Basirih Community Health Center showed that of the 10 primigravida trimester III pregnant women, 50% of pregnant women experienced moderate anxiety and 10% experienced severe anxiety. In general, the impact of perceived anxiety include mothers feeling restless, easy to cry, disrupted rest and sleep patterns that have an impact on daily living activities. Based on the description above, the purpose of this study is to analyze the effect of Tought Stopping and Guided Imagery therapy on the anxiety level of third trimester primgravida pregnant women in the New Basirih Health Center area.

2. Research Methods

This research is a quantitative research with a quasi experiment non equivalent control group (pretest-posttest) design. The entire population in the study was taken as a sample of the third trimester primigravida pregnant women in the work area of the New Basirih Health Center in 2018 with 20 people divided into 2 groups, namely 10 thought stopping intervention groups and 10 guided imagery intervention groups. The thought stopping intervention was carried out after giving the pretest to the sample. If the sample is stated to have anxiety, the intervention is carried out. In the thought stopping intervention group, the intervention was carried out for 10 times with a frequency of 1 time in 1 day with the duration of implementation of the 30-minute work phase every 1 intervention, as well as the same actions carried out in the guided imagery intervention group. After the intervention was completed in the 2 groups, then on the 10th day posttest will be conducted to assess the level of anxiety by using the same measuring instrument as the pretest.

The instrument used to measure anxiety levels are standard questionnaire Hamilton Rating for Anxiety (HRS-A) and non-verbal observation sheets to measure anxiety levels. The sampling technique used was consecutive sampling. The analysis test used in this study was the Wilcoxon signed rank test used to test the differences in the value of anxiety levels before and after intervention both in thought stopping intervention groups and in guided imagery intervention and Mann Whitney test to determine the differences in the effects of thought stopping and guided therapy imagery of the anxiety level of primigravidian pregnant women.

3. Research Result

1. *Frequency distribution of age of third trimester primigravida pregnant women based on anxiety level.*

Table 1. The frequency distribution of age in third trimester primigravida pregnant women based on anxiety level

Ages	Anxiety Level			f	%
	Low	Mid,	High		
	f (%)	f (%)	f (%)		
< **20 yo.**	4 (20)	3 (15)	4 (20)	11	55
21 – 35 yo.	4 (20)	5 (15)	0	9	45
≥ **35 yo.**	0	0	0	0	0
Jumlah	8 (40)	8 (40)	4	20	100

Table 1 shows that most pregnant women aged less than 20 years experience moderate levels of anxiety as many as 3 people (15%) and experience anxiety levels of as many as 4 people (20%)

2. *Frequency distribution of education level in third trimester primigravida pregnant women based on anxiety level*

Table 2. Frequency distribution of education level for third trimester primigravida pregnant women based on anxiety level

No	Education Level	Anxiety Level			f (%)
		Low	Mid	High	
		f (%)	f (%)	f (%)	
1	**Basic Edu.**	4 (20)	3 (15)	4 (20)	11 (55)
2	**Middle Edu.**	4 (20)	3 (15)	0	7 (35)
3	**College**	2 (10)	0	0	2 (10)
	Jumlah	10	6	4	20(100)

Table 2 shows that the majority of pregnant women with elementary education (SD-SMP) experience moderate levels of anxiety as many as 3 people (15%) and anxiety levels as heavy as 4 people (20%)

3. *The frequency distribution of work in third trimester primigravida pregnant women based on anxiety level*

Table 3. The frequency distribution of work in third trimester primigravida pregnant women based on anxiety level

No	Work	Anxiety Level			f (%)
		Low	Mid	High	
		f (%)	f (%)	f (%)	
1	**Work**	5 (25)	0	0	5 (25)
2	**Unemployee**	6 (30)	5 (25)	4 (20)	15 (75)
	Jumlah	11	5	4	20(100)

Table 3 shows that the majority of pregnant women who are not working experience moderate

levels of anxiety as many as 5 people (25%) and anxiety levels as heavy as 4 people (20%)

4. *Frequency of gestational age of primigravida trimester III mothers based on anxiety level*

Table 4. Frequency of gestational age for primigravida third trimester mothers based on anxiety level

No	Usia Kehamilan	Anxiety Level			F (%)
		Ringan (%)	Sedang (%)	Berat (%)	
1	**28-32 minggu**	5 (25)	4 (20)	1 (5)	10 (50)
2	**33-36 minggu**	4 (20)	3 (15)	3 (15)	10 (50)
3	**37-40 minggu**	0	0	0	0
	Jumlah	9	7	4	20

Table 4 shows that most mothers who enter gestational age 33-36 weeks experience moderate levels of anxiety as many as 3 people (15%) and anxiety levels as heavy as 3 people (15%)

5. *The difference in the significance value of the anxiety level of third trimester primigravida pregnant women before and after given thought stopping intervention*

Table 5. The difference in the significance value of anxiety levels of third trimester primigravida pregnant women before and after administration thought stopping intervention

No	Anxiety Level	Group Thought Stopping			
		Pretest		Posttest	
		F	(%)	F	(%)
1	**Low**	5	50	8	80
2	**Medium**	3	30	2	20
3	**High**	2	20	0	0
4	**Very High**	0	0	0	0
	Total	10	100	10	100
***Wilcoxon Signed Rank Test p* = 0,005, *α*= 0,05**					

Table 5 shows that the Wilcoxon Signed Rank Test test results obtained p = 0.005 and α = 0.05, it can be concluded that there are differences in the anxiety level of primigravida pregnant women in the third trimester before and after thought stopping therapy.

6. *Differences in the significance value of anxiety level of third trimester primigravida pregnant women before and after guided imagery intervention*

Table 6. The difference in the significance value of the anxiety level of third trimester primigravida pregnant women before and after being given guided imagery intervention

No	Anxiety Level	Kelompok *Guided Imagery*			
		Pretest		***Posttest***	
		F	**(%)**	**F**	**(%)**
1	**Low**	5	50	8	80
2	**Medium**	3	30	2	20
3	**High**	2	20	0	0
4	**Very High**	0	0	0	0
	Total	10	100	10	100
***Wilcoxon Signed Rank Test p* = 0,007, α= 0,05**					

Table 6 shows that the Wilcoxon Signed Rank Test test results obtained p = 0.007 and α = 0.05, it can be concluded that there are differences in anxiety levels of third trimester primigravida pregnant women before and after guided imagery therapy.

7. *Differences in mean values between thought stopping intervention groups and guided imagery intervention groups*

Table 7. Mean Value Differences between thought stopping intervention groups and intervention groups guided imagery

Tingkat Kecemasan (Kelompok N=20)	*Wilcoxon Signed Rank* *ρ value*
Intervention Group *Thought Stopping* *Pretest* *Posttest*	0,005
Intervention Group *Guided Imagery* *Pretest* *Posttest*	0,007
Mann whitney p = 0,007 α= 0,05	

Table 7 describes the results of the Mann Witney test, p = 0.007 and α = 0.05, then p <α. so that it can be concluded that there is the effect of giving thought stopping and guided imagery therapy to the anxiety level of third trimester primigravida pregnant women

4. Discussion

The frequency distribution of age in third trimester primigravida pregnant women based on anxiety level.

The results showed that most pregnant women aged less than 20 years experience moderate anxiety and experience severe anxiety. The age of the mother during pregnancy is very influential on the process of pregnancy itself. This is related to the readiness of the physical and psychological aspects of the mother, where if the pregnancy occurs at a young age (less than 20 years) then the reproductive organs are still immature and not ready to perform their functions properly related to pregnancy so they are at risk of complications, disability and even maternal death and fetus.

In addition, during pregnancy, the physiological levels of the hormone progesterone will experience an increase which results in the mother becoming more irritable, easily experiencing changes in feelings and experiencing a mood swing which results in increased susceptibility to higher levels of anxiety, which in this study proved to be the mother pregnant who are less than 20 years old mostly experience moderate and severe anxiety. An increase in the grade of anxiety that is felt also occurs due to undergoing the first pregnancy (primigravida) where the mother still does not have sufficient experience so that the ability to adapt to changes that occur is also lacking, which results in the emergence of excessive anxiety,

If viewed from the psychological aspect where pregnancy itself causes physiological and emotional stress simultaneously, which is aggravated by emotional instability, maturity in the thinking process and problem solving perspective is not yet adaptive, this will result in the mother being more at risk of anxiety with a more severe level.

.The above description is supported by the results of the study of Astria et al. (2009) where the majority of pregnant women with young age experience anxiety when compared to reproductive age pregnant women. The above description is in line with the results of Zamriati's research (2013) where the age of the mother during pregnancy affects the emergence of feelings of fear and anxiety. If pregnancy occurs at less than 20 years of age, the tendency of the mother is not ready to adapt adaptively to the physical and psychological changes that occur due to pregnancy and has not yet experienced emotional maturity, making it very easy to experience anxiety.

Frequency distribution of education level for third trimester primigravida pregnant women based on anxiety level

The results showed that the majority of pregnant women with only elementary education (SD-SMP) mostly experienced moderate level anxiety and severe anxiety. Notoatmodjo (2013), describes that education is one of the basic human needs that is very necessary for self-development and increased intellectual maturity. This intellectual maturity influences one's insight and way of thinking, both in actions that can be seen as well as in the way decisions are made. Intellectual maturity is very necessary for pregnant women to be able to undergo the pregnancy process normally.

During the pregnancy process, there are many changes that occur in the physical and psychological aspects. If pregnant women do not have intellectual maturity in this case, they are insights and good thinking skills, they will have difficulty not even being able to adapt to these changes so that they are susceptible to disorders such as anxiety. In order for pregnant women to

adapt well, intellectual maturity is needed, one of which is obtained from education. The results of Hawari's study (2008) describe that the level of education is related to a person's ability to adapt to anxiety.

The description above is in line with the results of this study, where most pregnant women with elementary education (SD & SMP) experience moderate and severe anxiety. Low education for pregnant women is one of the things that causes intellectual maturity (insight, ways of thinking and the ability to adapt) become less so that anxiety occurs at moderate and severe levels.

The frequency distribution of work in third trimester primigravida pregnant women based on anxiety level

The results showed that most pregnant women who did not work experienced moderate anxiety and severe anxiety. Working generally is an activity that can take time and focus attention so that there is a shift in focus from things that can cause interference.

According to Said (2015) work can divert someone's attention from something that is felt like anxious feelings, because dense activity is very time consuming so that a person does not have the opportunity to focus more on perceived anxiety. Likewise the case with pregnant women who have jobs will be more active outside the home and will interact more with other people so they do not have the chance and a lot of time just thinking about something that is felt. Working outside the home can also be used as an activity to refresh thoughts and feelings because they can see and find new experiences so that they are not only fixated on routines, things are monotonous and there are no changes. This description confirms that pregnant women who have jobs rarely experience higher levels of anxiety when compared to pregnant women who do not have jobs.

The above description is in line with the results of this study, where the third trimester primigravida pregnant women who do not have work (housewives) mostly experience moderate and severe levels of anxiety. Pregnant women who do not have jobs have more free time so they will be more focused on thinking about things that make them feel anxious, lack the opportunity to interact with other people and not get the opportunity to see and have new experiences, so that one of the impacts is limited information -New information and help to overcome the anxiety that is felt, which if left to drag it will fall into a more severe state. namely moderate and severe anxiety.

Frequency of gestational age for primigravida third trimester mothers based on anxiety level

The results showed that most mothers who entered gestational age 33-36 weeks experienced moderate level anxiety and severe anxiety. The gestational age approaching labor is one of the causes of anxiety that occurs in third trimester pregnant women. Anxiety will be felt to increase again because too much thinking about various things such as the smooth delivery, physical condition of the prospective baby and pain that is felt during labor. Anxiety is felt to increase in level (moderate and severe anxiety) when the mother does not have previous experience through labor. The results of this study are supported by Maya, et. al (2017) where mothers with gestational age> 33 weeks the majority experience anxiety which is higher in level when compared to mothers whose gestational age is less than 29 weeks.

Value difference Significance of anxiety level of third trimester primigravida pregnant women before and after thought stopping intervention.

The results of the study showed that before being given thought stopping therapy, most pregnant women experienced moderate anxiety and severe anxiety. Anxiety is an unpleasant feeling characterized by concern, concern and fear that is sometimes experienced at different levels. The higher the level of anxiety that is felt, the greater the risk of harm that will be obtained by the individual. In this case, anxiety can be experienced by all individuals including women who are undergoing pregnancy. Anxiety that occurs in the mother during pregnancy can occur throughout the pregnancy period (from the first trimester to the third trimester), but when the pregnancy enters the third trimester, anxiety will be felt more because it will face the labor process.

Mothers who experience prolonged anxiety are more likely to experience difficulties during labor and are at risk of giving birth to abnormal babies compared to mothers who are relatively calm (Desmita, 2010).

In this study before being given thought stopping therapy, most primigravida pregnant women who entered pregnancy in the third trimester experienced moderate levels of anxiety and severe levels of anxiety, which if not treated immediately would provide a very detrimental risk to the mother and baby contained, including increasing the risk of baby blues, postpartum depression, weak bonding attachments, developmental disorders in infants, LBW, damage to social behavior and a high risk of infertility in adulthood. In order to avoid the adverse risks above, action must be taken to overcome these anxieties. One simple and safe action is thought stopping therapy.

The results of Malfasari's study (2017) showed a significant decrease in anxiety rates in patients who received thought stopping therapy. This is also in line with the theory of Nursalim (2013), where thought stopping therapy is one example of therapy that uses cognitive psychotherapy techniques. behavior that can be used to help and improve the ability of pregnant women to control their thoughts and images of themselves by suppressing or eliminating negative awareness.

In this study, after being given thought stopping therapy, pregnant women who experienced moderate levels of anxiety decreased because there was a decrease in anxiety levels and those who experienced severe anxiety decreased to moderate levels of anxiety, so it can be concluded there were differences in anxiety levels of third trimester primigravida pregnant women before and after thought stopping therapy.

This research result is in line with Naikare VR, Kale P, Kanade A. B., Mankar S., Pund S, and Khatake S (2015) research which adresses intervention thought stopping has significant influence of anxiety level decrease. Based on the data above, the thought stopping is one of the non-pharmacological therapies that have been shown that reduces anxiety levels in pregnant woman and help stop thoughts that cause anxiety, then replace those thoughts by choosing alternative positive thoughts.

The difference in the significance value of the anxiety level of third trimester primigravida pregnant women before and after being given guided imagery intervention

The results showed that before being given guided imagery therapy most pregnant women experienced moderate anxiety and severe anxiety. Moderate level anxiety and severe anxiety is a very detrimental situation for pregnant women, because when the anxiety is felt by pregnant women

unable to think positively about things that are real, the concentration level deteriorates and is unable to solve problems effectively. This situation must be addressed immediately in order to reduce the adverse risks that might occur.

According to Mayasari (2015) guided imagery is one of the non-pharmacological interventions that has been shown to be effective in reducing anxiety. This is also in accordance with the study of Bastani (2014) which describes that relaxation exercises in pregnant women can improve the psychological health of the mother by reducing perceived anxiety. Relaxation can stimulate the emergence of chemicals similar to beta blockers in the peripheral nerves that can close the sympathetic nerve nodes which are useful for lowering blood pressure and reducing tension

The results of this study also showed that after being given guided imagery therapy, pregnant women who had moderate levels of anxiety decreased to mild levels of anxiety and those who experienced severe anxiety decreased to moderate levels, so it can be concluded that there *Wilcoxon Signed Rank* ere differences in anxiety levels of third trimester primigravida pregnant women before and after guided imagery therapy.

Jall0 N. (2014) proved that the guided imagry theraphy have influence in improving the anxiety level decrease. The above can occur because guided imagery therapy teaches someone who experiences anxiety to focus more on positive imagination that can lead to a relaxed state (Nguyen, 2012). When the body is relaxed and parasympathetic it will work to stimulate the appearance of chemicals similar to beta blockers in the peripheral nerves to suppress or close the sympathetic nerve nodes which are useful for lowering blood pressure and reducing tension so that the body and mind can be relaxed. Based on the data above, the guided imagery are able to decrease anxiety levels in pregnant woman twice as great than who were only treated by general nursing intervention.

Effect of thought stopping therapy and guided imagery therapy on anxiety levels in third trimester primigravida pregnant women

The results of the study describe that the provision of thought stopping and guided imagery therapy affected the anxiety level of the third trimester primigravida pregnant women. Thought stopping therapy is a form of behavioral therapy that is used to help pregnant women change the thinking process. Changing the thinking process of pregnant women who experience anxiety is very important so that behavioral changes that are expected to be very bad are expected to become adaptive behavior.

Thought stopping therapy in addition to being able to change the thinking process that is all negative to positive, this therapy also causes changes in brain wave activity (cortex, pre-prontal, limbic and hypothalamus systems) which increase emotional regulation, increase parasympathetic activity and increase heart rate relaxation conditions, improve neurotransmitters that affect positive emotional conditions such as melatonin, serotonin, beta endorphin, and acetylcholine so as to reduce neurotransmitters (norepinephrine and cortisol) which have an increased anxiety (Parmadi, 2015)

In this study for the implementation of thought stopping therapy the pregnant women were directed to do attention so that it would be easier to do each thought stopping therapy session. In session 1, pregnant women are asked to identify and disconnect threatening thoughts or cause anxiety. This is done because when a pregnant woman realizes and can identify negative thoughts

that appear to accompany an event that demands self-adjustment, pregnant women will more easily overcome the problem, which in this case is anxiety. During session 2 of thought stopping therapy, pregnant women practiced to decide their thoughts by using the recording of the word "STOP" and if it was successful the recording would be replaced with a whisper and imagine hearing the word "STOP", and finally changing the voice "STOP" using rubber bracelet, pinch yourself or press finger nails so that negative thoughts can be removed immediately and replaced with positive thoughts. In session 3 pregnant women practiced deciding negative thoughts automatically. This therapy is done 10 times with a frequency of 1 time in 1 day with a duration of approximately 65 minutes. This study found that thought stopping therapy can reduce the anxiety level of pregnant women.

The results of this study are supported by Laela (2010) where pregnant women who get thought stopping therapy experience decreased levels of anxiety. This is also in accordance with Rafati et al. (2017) 's research, where thought stopping therapy is an effective therapy to stop negative thoughts. And then this research result is in line with Bakker M., Ross D. M (2009) research which adresses thought stopping theraphy is effective to change and control negative thoughts in someone who has anxiety, depression and especially in someone who has obsessive compulsive disorder. Changing the thinking process is an action that must be done immediately so that the mechanism of destructive behavior change will change into constructive behavior.

This therapy is proven to be effective in reducing anxiety, issuing negative thoughts and suggesting oneself with positive thoughts. By thinking positively indirectly can make a person become calmer and relaxed.

In addition to thought stopping therapy, the results of this study also prove that guided imagery therapy is effective in reducing anxiety levels in pregnant women. Guided imagery is a relaxation technique that uses directed imagination from yourself by imagining pleasant things so that the body's condition will relax which results in a reduction in anxiety levels.

Someone who is in a state of anxiety often focuses only on negative thoughts and because of the above causes a feeling of fear and excessive worry about things that will happen in the future without being accompanied by rational reasons. Pomerantz (2014) supports a description of someone who is in a state of psychological disorders such as depression and anxiety psychologically due to a reaction to his own thoughts so that an action is needed to relax physical and psychological conditions.

Relaxing conditions in the body will inhibit the increase in sympathetic nerves, so that the hormones that cause body dysregulation can be reduced in number. The parasympathetic nervous system that has work functions that are opposite the sympathetic nerves will slow or weaken the workings of the body's internal organs. The result is a decrease in heart rate, rhythm of breath, blood pressure, muscle tension, metabolic rate and production of stress-causing hormones. With the regulation above, pregnant women will feel relaxed along with the decrease in anxiety symptoms.

In guided imagery therapy, pregnant women who are used as research participants are directed to focus on pleasant experiences, while also involving all the senses of the body to share the comfort and beauty of the experience, such as being able to see, smell, feel and experience fun that has been experienced before so that there is interaction between cognitive and affective centers in the brain which can lead to psychomotor changes that can lead to relaxed conditions in the body and mind. This therapy is done 10 times with a frequency of 1 time in 1 day with a duration of approximately 65 minutes. This study found that guided imagery therapy can reduce the anxiety level of pregnant

women.

This is supported by Naparstek (2007) by imagining time, place and events in all sensory comforts and beauty - sights, sounds, smells, feelings can produce a positive emotional response as a pleasant distraction to divert thoughts and attention from an inconvenience such as anxiety.

The above description is in line with Resmaniasih (2014) where guided imagery therapy is effective in reducing tension by stimulating the emergence of chemicals similar to beta blockers in the peripheral nerves that can close the sympathetic nerve nodes which are useful for lowering blood pressure and reducing tension. Based on the data above, the thought stopping and guided imagery is one of the choice non-pharmacological therapies that have been shown to reduce anxiety levels in pregnant woman.

5. Implication

The results of this study have implications for the choice of safe (non-pharmacological) actions that nurses can make when implementing nursing in pregnant women to reduce anxiety levels and the development of nursing science regarding nursing actions especially handling anxiety in pregnant women.

6. Conclusion

There are differences in anxiety levels of third trimester primigravida pregnant women before and after thought stopping therapy. There are differences in anxiety levels of third trimester primigravida pregnant women before and after guided imagery therapy. There is an effect of giving thought stopping and guided imagery therapy to the anxiety level of third trimester primigravida pregnant women.

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8. Refferences

Afdila, J. N. (2016). *Pengaruh Terapi Guided Imagery terhadap Tingkat Stress pada Mahasiswa Tingkat Akhir dalam Menyelesaikan Skripsi*. Disertasi, Universitas Airlangga.

Agustarika, B. (2009). *Pengaruh Terapi Thought Stopping terhadap Ansietas Klien dengan Gangguan Fisik di RSUD. Kab. Sorong*. FIK UI. Tesis.

Arikunto, S. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rinerka Cipta.

Astria, Y., Nurbaeti, I., Rosidati, C. (2009). *Hubungan Karakteristik Ibu Hamil Trimester III dengan Kecemasan dalam Menghadapi Persalinan di Poliklinik Rumah Sakit X Jakarta*. 10 (19), pp.38-48.

Astuti, M. (2011).*Buku Pintar Kehamilan*. Jakarta: EGC.

Bakker, G. M. (2009). *In Defence of Thought Stopping. Journal Clinical Psychologist* Vol. 13, 2009. Diakses tanggal 27 Mei 2019. Dari https//www.onlinelibrary.wiley.com/doi/abs/10.1080/13284200902810452.

Dharma, K. K. (2011).*Metodologi Penelitian Keperawatan.* Jakarta: TIM.

Erford, B. T. (2016). *40 Teknik yang harus diketahui setiap konselor*. Yogyakarta: Pustaka Pelajar.

Ermawati., Susilawati., Farida, P., Rokhimah, & Banon, E. (2009). *Asuhan Keperawatan Jiwa dengan Masalah Psikososial*. Jakarta: Trans Info Media

Handayani, R. (2015*). Faktor-Faktor yang Berhubungan dengan Tingkat Kecemasan Menjelang Persalinan pada Ibu Primigravida Trimester III di Wilayah Kerja Puskesmas X*. *Ners Jurnal Keperawatan,* 11 (1) Maret, pp.62-71.

Hawari, D. (2011). *Manajemen Stres, Cemas, dan Depresi.* Jakarta: Balai Penerbit FKUI

Hasdianah, S. S., Indasah, & Wardani, R. (2015).*Buku Ajar Dasar-Dasar Riset Keperawatan.* Yogyakarta: Nuha Medika.

Hidayat, A. A. A. (2017). *Metodelogi Penelitian Keperawatan dan Kesehatan*. Jakarta: Salemba Medika.

Hidayati, R.. et al. (2014). *Praktik Laboratorium Keperawatan.* Jakarta: Erlangga

Hidayati, E., Riwayati. 2015.. *Terapi Thought Stopping Penghentian Pikira*n: *Modul Keperawatan Jiwa*. Universitas Muhammadiyah Semarang, Fakultas Ilmu Keperawatan dan Kesehatan.

Indrayani. (2011). *Buku Ajar Asuhan Kehamilan.* Jakarta: Trans Info Media

Jallo, N. (2014). *Guided Imagery for Stress and Symptom Management in Pregnant African Woman*. *Research Article*, 2014. Diakses tanggal 28 Mei 2019, dari http://www.hindadewi.com/journal/ecam/2019/840932.

Kusumawati, E. (2010). *Hubungan Pengetahuan Primigravida tentang Kehamilan dengan Kecemasan dalam Menghadapi Kehamilan Trimester I di PBS Fathonah W.N.* DIV, Universitas Sebelas Maret.

Laela, S., Budi, A. K, & Mustikasari (2018*). Penurunan Postpartum Blues dan Ansietas melalui Terapi Thought Stopping dan Terapi Suportif pada Ibu Postpartum dengan Bayi Prematur* . 6 (1), pp.26-31.

Lestari, T. (2015). *Kumpulan Teori untuk Kajian Pustaka Penelitian Kesehatan*. Yogyakarta: Nuha Medika.

Malfasari, E., Devita, Y., Erlin, F, & Ramadania, I. (2017). *Faktor-faktor yang Mempengaruhi Kecemasan Mahasiswa yang sedang Menjalani Praktik Klinik. STIKES Payung Negeri Pekanbaru*. *Jurnal Keperawatan*. Vol 2, No 1, pp. 57-65.

Mandang, J., Tando, N. M, & Tombokan, S. G. J. (2016).*Asuhan Kehamilan.* Bogor: In Media.

Manuaba, G. B. (2008). *Ilmu Kebidanan Penyakit Kandungan & KB*. Jakarta: EGC

Menajang, N. K., Pondaag, L, & Kundre, R. (2017). *Hubungan Dukungan Suami dengan Tingkat Kecemasan pada Ibu Primigravida Trimester III di Puskesmas Sonder,* 5(1) Mei, pp. 2.

Mayasari, T. (2015). *Pemberian Terapi Guided Imagey dan Iringan Musik untuk Meningkatkan Kualitas Tidur.* Sekolah Tinggi Ilmu Kesehatan Kusuma Husada Surakata.

Murni, N. N. A., Suhartono., Suherni, T. (2014). *Pengaruh Latihan Relaksasi Guided Imagery And Music (GIM) pada Kelas Ibu yerhadap Derajat Kecemasan Ibu Hamil Menghadapi Persalinan Pertama: Studi di Puskesmas Meninting Kabupaten Lombok Barat*. *Jurnal Kesehatan Prima,* 8(1) Februari, pp.1197-1206.

Naikare, V. R., Kale P., Kanade A. B., Mankar S., Pund S, and Khatake S (2015). *Thought Stopping Activity as Innovative Trend to Deal with Stresses*. *Journal of Psychiatric Nursing*: 4:63-6.

Naparstek, B. (2007). *Guided Imagery: A Best Practice for Pregnancy and Childbirth. International*

Journal of Childbirth Education. 22. (3). Diakses tanggal 28 Mei 2019, dari http//www.icea/sites/default/files/09-07pdf.

Nguyen. T. T. N. (2012). *Utilization of Guided Imagery within the Four Phases of Adlerian Theraphy. Research Paper*. The Faculty ot the Adler Graduate School.

Notoatmojo. (2010). *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta.

Nursalam. (2016). *Metodelogi Penelitian Ilmu Keperawatan Pendekatan Praktis Edisi 4.* Jakarta: Salemba Medika.

Nursalam. (2011). *Konsep dan penerapan Metodelogi Penelitian Ilmu Keperawatan pedoman Skripsi, Tesis dan Instrumen Penelitian Keperawatan*. Jakarta: Salemba Medika

Nursalim, M. (2013). *Strategi & Intervensi Konseling*. Jakarta: Akademia Permata.

Parmadi, E. H., Adi, P. S. (2015). *Program Bantu Diri Terapi Kognitif Perilaku: Harapan bagi Penderita Depresi*, 42(1) April, pp.78-90.

Pomerantz A. M. (2014). *Psikologi Klinis: Ilmu Pengetahuan, Praktik dan Budaya*. Yogyakarta.

Prawirohardjo., Sarwono. (2009). *Ilmu Kebidanan*. Jakarta: PT. Bina Pustaka.

Rahmitha, N. (2017). *Tingkat Kecemasan pada Ibu Hamil Primigravida Trimester III di Puskesmas Kecamatan Tamalanrea Makassar*. Disertasi, Universitas Hasanuddin.

Resmaniasih, K. (2014). *Pengaruh Teknik Pernapasan Diafragma Terhadap Kecemasan pada Ibu Hamil Trimester III*. Tesis. Universitas Diponegoro Semarang.

Sadock B. J., Sadock V. A., Ruiz P. (2015*). Kaplan Sadock's Synopsis of Psychiatry: Behavioral Scinces/Clinical Psychiatry*. Edisi 11. Wolters Kluwer Health: New York-USA.

Saryono. (2013). *Metodologi Penelitian Kualitatif dan Kuantitatif dalam Bidang Kesehatan.* Yogyakarta: Nuha Medika.

Shodiqoh E. R., Syahrul F. (2014). *Perbedaan Tingkat Kecemasan dalam Menghadapi Persalinan antara Primigravida dan Multigravida. Jurnal Berkala Epidemiologi*, 2(1), pp.141-150.

Ross. D. M. (2009). *Thought Stopping: A Coping Strategi for Infending Feared Even. Journal Pediatric Nursing.* Vol 7. 2009. Publish on 16 Juli 2009.

Sugiyono. (2012). *Metode Penelitian Kuantitatif, Kualitatif, dan Kombinasi (Mixed Methods).* Bandung: Alfabeta.

Sugiyono. (2017). *Metode Penelitian Kualitatif (untuk penelitian yang bersifat: Eksploratif, Enterpretif, Interaktif dan Konstruktif).* Bandung: Alfabeta.

Suyanti, E. (2003). *Keefektifan Relaksasi untuk Mengurangi Kecemasan pada Ibu Hamil*. Universitas Sanata Dharma.Yogyakarta.

Usman F. R., Kundre R. M., Onibala F. (2016). *Perbedaan Tingkat Kecemasan Ibu Hamil Menghadapi Persalinan dengan Kepatuhan Antenatal Care (ANC) di Puskesmas Bahu Kota Manado. Ejournal Keperawatan (e-Kp)*, 4(1), pp.1-7.

Walyani, S., Elisabeth. (2015). *Asuhan pada Kehamilan*. Yogyakarta: Pustaka Baru

World Health Organization. (2017). *Depression and Others Common Mental Disorder: Global Health Estimates.* Geneva

Yuliani D. R. (2017). *Buku Ajar Aplikasi Kehamilan Ter-Update. Disertasi Program Pemerintah Berkaitan dengan Antenatal Care*. Jakarta: CV. Trans Info Media.

Yusuf, M. (2015). *Metode Penelitian: Kuantitatif, Kualitatif, dan Penelitian Gabungan.* Jakarta: Prenadamedia Group.

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WHY DIETARY ADHERENCE BEHAVIOUR WERE DIFFICULT TO APPLY AMONG TYPE 2 DIABETES MELLITUS PATIENTS? A SYSTEMATIC REVIEW

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ABSTRACT

Patients with Diabetes Mellitus should have skills for managing their disease to prevent complications and to increase their quality of life. One of that skills is to do health life behaviour, especially diet. Dietary adherence was being the most important foundation for Type 2 DM Management. This study aims to collect evidence based by previous research about factors that influence dietary adherence in Type 2 DM patients. The article was searched through electronic data base such as: Scopus, ProQuest and Google Scholar using keyword "dietary adherence" AND "diabetes mellitus patients" AND "qualitative study". There were 372 studies found and 16 studies were selected based on inclusion criteria to reviewed. Result showed that dietary adherence difficult to do because some factors: culture, individual factors, knowledge, perceptions about diet, motivation, social supports, barriers to do dietary behaviour, and menu of diet. These review result could be a reference for health workers to plan alternative intervention which more suitable to applied for improving dietary adherence of Type 2 DM patients.

Keywords: dietary adherence, type 2 diabetes mellitus, qualitative study, systematic review

1. Introduction

Type 2 Diabetes Mellitus (T2DM) continues to be a major threat to public health in many countries[1]. According to the Global Status Report on Non-Communicable Diseases by the World Health Organization, the global prevalence of diabetes in 2014 was estimated to be 9% among adults aged 18 years old and over. In Indonesia, The International Diabetes Federation (IDF) estimated that the increase in the number of people with Diabetes Mellitus went from 9.1 million in 2014 to 14.1 million in 2035 [2].

Self-care is an important component in the management of type 2 diabetes mellitus. Self-care management focuses on lifestyle adaptations (diet and physical activity), blood glucose monitoring, medication use, and foot and eye care[3]. Dietary management is central to effective diabetes care as it is considered vital for improving and maintaining blood glucose control and promoting weight loss in those who are overweight/obese. The diet recommended to people with type 2 diabetes is the same "healthy", balanced diet that the general public is encouraged to follow, being low in fat, sugar and salt. Specific recommendations highlight the importance of replacing fat-rich foods and other dietary sources of fat with starchy carbohydrate foods (e.g. those that are cereal based) and fruit and vegetables. Where weight management is required, people are encouraged to reduce their overall

energy content, rather than the bulk of what they consume, as it is considered to be important to continue to consume a 'sufficient volume for satiety' [4].

The World Health Organization in 2003 stated that the research results in several countries stated that the non-adherence of DM patients had reached 40-50%, which in developed countries was 50% and in developing countries, the number was even lower. Other study results showed that only a few patients (2,4%) adhered to the diet program, while 20,9% did not follow any diet and 61,8% ate a diet that was self-made (not according to the program)[5]. Another researcher also found that non-adherent patients with a diet made up 44,8% and the effect was that they had a low quality of life[6]. Other data showed that the dietary adherence rates for Type 1 and Type 2 Diabetes were only 39% and 37% respectively [7].

Adherence is the level of patient behavior which is directed at the instructions given in the form of prescribed therapies, whether they be focused on diet, exercise, treatment, or keeping up with the doctor's appointments [8]. Research conducted at Puskesmas Krian in Sidoarjo found that diabetic patients had low adherence, with some among of them stating that it was difficult to adhere to a diet program and that they often ate carelessly. Patients who have been suffering from diabetes for a long time said that they were bored, that they did not stick to the diet because their blood sugar had dropped, and that they had taken the medication. Others also said that it was difficult to go on a diet because they were travelling and while attending parties. All of these were the reasons for the difficulties encountered while dieting. In the new patients, difficulties were found because they were unfamiliar and found it difficult to change the habits that were contrary to the diet programs, in addition to a lack of support and information[9].

The purpose of this study was to collect evidence based on previous research results about the factors that influence dietary adherence in Type 2 Diabetes Mellitus adult patients using the systematic review method.

2. Research Methods

The method used in this paper was a systematic review. The article search was conducted using electronic databases: Scopus, ProQuest and Google Scholar. The keywords used in the article search were "dietary adherence" AND "diabetes mellitus patient" AND "qualitative study". The article search was limited from 2004 to 2018. The inclusion criteria for the study selection ere (1) explaining dietary adherence, (2) type 2 diabetes mellitus patients, (3) study design was qualitative and (4) adult patients.

The study excluded what didn't focus on factor influence adherence for diabetes patients, diabetes mellitus patients caused by gestational conditions and the diagnosis not being the focus (due to having other diseases besides DM), child patients and quantitative studies.

From Scopus, ProQuest, and Google Scholar, there were 372 studies identified. From the 372 articles identified, 86 articles did not have the full text available, 120 articles were not suitable according to the topic, 13 articles were duplicated and then the remaining 153 articles were re-selected using the inclusion and exclusion criteria. Finally, 16 studies were found that were suitable for review.

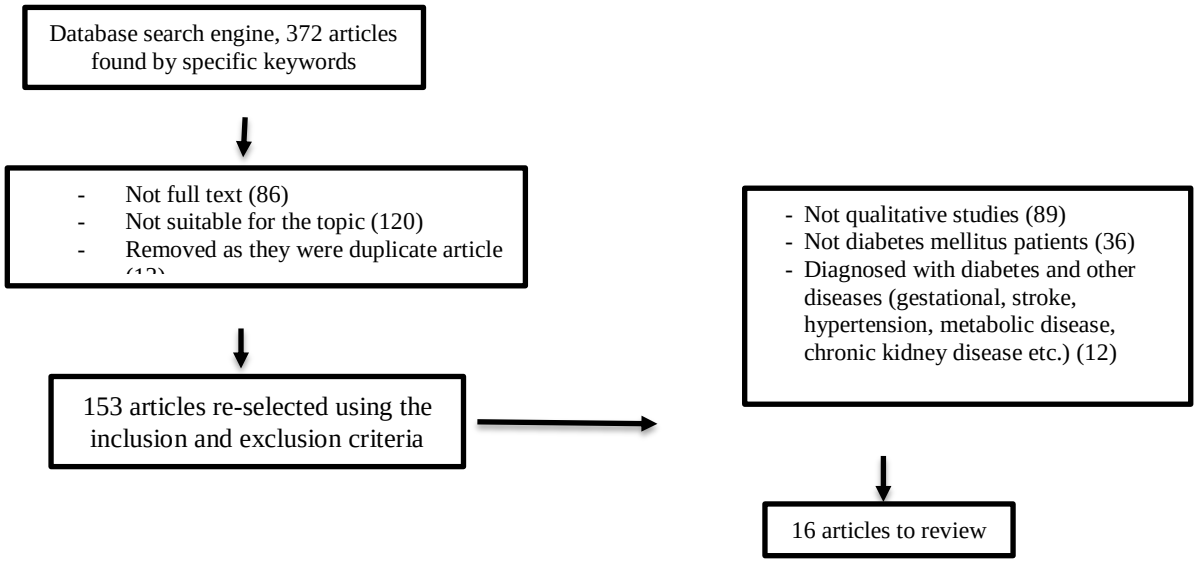

Figure 1. Article Search Scheme.

3. Results

Table A.1 Summary of the Evidence Studies

Title	References	Study Design	Variable	Results
Challenges to Healthy Eating Practices: A Qualitative Study of Non-Hispanic Black Men Living with Diabetes	Lee *et al.* (2016)	Qualitative study	Dietary practices, perceived barriers to healthy eating	The participants' self- reported eating practices did not always relate to hunger. Internal cues to eat included habit and as a response to emotions, and the external cues to eat included media messaging, medication regimen and work schedule. Men identified multiple barriers to healthy eating including hard breaking habits, limited resources, and the availability of food at home and in the neighborhood grocery stores, and perceived

				poor communication with health care professionals.
Factors influencing adherence to dietary guidelines: a qualitative study on the experiences of patients with type 2 Diabetes attending a clinic in Cape Town	Ebrahim *et al.* (2014)	Qualitative study using semi-structured interviews	Lived experiences of Type 2 Diabetic Patients, Diet Adherence	The main identified factors at the individual level were motivation, individual knowledge, the perceptions of moderation, self-responsibility, taste concept or cravings, and temptations. At the small group (family and friends) level, the family relations with the patients were identified as the main support system used to manage diabetes. At the organizational or health systems level, long waiting times and the theme of seeing different doctors emerged as problematic factors, but overall, the patients were satisfied with the clinic service. At the community and policy level, culture and the cost of food were identified as the key influential factors with regard to adherence to nutrition care guidelines.
Knowledge and perceptions about diet	Ranasinghe *et al.*	Qualitative Study using	Knowledge and	All were aware of the importance

and physical activity among Sri Lankan adults with diabetes mellitus : a qualitative study	(2015)	FGD and verbatim recorded	perceptions about diet and physical Activity for diabetes patients	of diet in the management of DM. But most had difficulty in incorporating this knowledge into their lives, mostly due to their social circumstances. The majority described a list of ‘good foods’ and ‘bad foods’ for DM. They believed that ‘good’ foods can be consumed at all times, irrespective of quantity and that ‘bad’ foods should be completely avoided. Many believed that fruits were bad for diabetes, while vegetables were considered to be a healthy food choice. The majority thought that there were ‘special’ foods that could help to control blood glucose, with the most common being curry leaves and bitter-gourd. Most of the study participants were aware of the importance of being physical active. However, there was lack of consensus and clarity with regards to the type, duration, timing and

				frequency of physical activity.
Dietary Pattern of self care among Asian and Caucasian diabetic patients	Meeto (2004)	Qualitative study using semi-structured interviews and a 7-day health diary to explored self care activities	Self care, Self help group, Nutrition and diet	Diet-related health actions are influenced by a host of interrelated factors, which include individual differences, social and cultural influences and the nature and experience of diabetes itself. Efforts to promote self-care must take into account the breadth of these factors and encompass both individual and sociocultural initiatives.
Support systems for and barriers against diabetes management in South Asians and White Europeans in the UK	Singh*et al.* (2012)	Qualitative study using semi-structured interviews with an interpretative phenomenology analysis	Support system and the barriers to diabetes managemen t	Both South Asian and White participants emphasized adherence to dietary recommendations as being the most difficult aspect of living with diabetes. In addition, the social stigma attached to diabetes was a prominent concern among South Asian participants that seemed to have a significant negative impact on their diabetes control and overall management. Given the South

				Asian patients' reliance on their family for the management of their condition, intervention targeting to improve the diabetes outcomes in this population may prove more successful if they are designed to involve significant family members.
Pengalaman Ketidakpatuhan Pasien terhadap Penatalaksanaan Diabetes Mellitus	Purba *et al.* (2008)	Qualitative Study : Studi Fenomenologi	Non-adherence, diabetes managemen t	There were seven themes of non-adherence in diabetes management: unpleasant diet foods, not understanding the benefits of the diet, not understanding the benefits of physical exercise, age, limited physical exercise, mistaken understanding about the benefits of the drugs and failing to take the medication for economic reasons.
"I've made this my lifestyle now": a prospective qualitative study of motivation for life style change among people with newly diagnosed type two diabetes mellitus	Sebire *et al.* (2018)	Qualitative study	Motivation, behavior change, intervention	The findings revealed the diversity in motivation quality both between and within individuals over time and that patients with newly diagnosed diabetes have multifaceted and often competing

				motivations for lifestyle behavior changes. Motivation for lifestyle change following diagnosis with type two diabetes is complex and can be relatively low in self determination. To achieve patient empowerment regarding the aspirations of the current national health care plans, intervention developers and clinicians would do well to consider the quality and not just quantity of their patient's motivation.
"We should change our selves, but we can't" - accounts of food and eating practices amongst British Pakistanis and Indians with type 2 diabetes	Lawton *et al.* (2008)	Qualitative interview study	Food, diet, identity, Pakistani, Indian	Despite considerable diversity in the dietary advice received, the respondents offered similar accounts of their food and eating practices following diagnosis. Most had continued to consume South Asian food, especially in the evenings, despite their perceived to concerns that these foods could be "dangerous" and detrimental to their diabetes control. One respondent described such food as "strength-

				giving', and highlighted a cultural expectation to participate in acts of commensality with family/community members. The male respondents often reported limited input into food preparations. Many of the respondents attempted to balance the perceived risks of eating South Asian foodstuffs against that of alienating themselves from their culture and community by eating such food in smaller amounts. This strategy could lead to a lack of satiation and it is not recommended in the current dietary guidelines.
Perceived impact of Nepalese food and food culture in diabetes	Sapkota *et al.* (2017)	Qualitative study	Diet management, food culture, perceptions, Nepalese, behavior	Perceived dietary restriction requirements created social and emotional discomfort in the patients. Meals high in carbohydrates, limited food choices, and food preparations

				methods were identified as barriers, particularly in Nepal. In Australia, the participants reported greater availability and easier access to appropriate food and healthier cooking options. The socio-cultural aspects of food behavior, mainly food practices during social events, were identified as significant barriers.
Patients' perspective of disease and medication adherence for type 2 diabetes in an urban area in Bangladesh: a qualitative study	Islam *et al.* (2017)	Qualitative study	Medication adherence, compliance, perception, glycemic control, Bangladesh	The data analysis generated rich information on the participants' knowledge and perception of diabetes. They also reported numerous misconceptions about the disease. Knowledge on diabetes medication, its appropriate use and its side effects were rather poor. The

				respondents also reported non-compliance to the dietary and physical activity advice by their physicians and concern with diabetes diabetes-induced psychological stress.
A qualitative study to explore the perceptions and behavior of patients toward diabetes management with physical disability	Gillani *et al*. (2017)	Qualitative study	Patient education, disease understanding, counseling	When the participants were asked in their opinion what was the preferred method of recording the blood glucose test, several participants with a low socioeconomic status and who were either divorced or widowed denied adapting to telemonitoring, instead preferring to record manually. There were mixed responses about the barriers to controlling diet/calories. Even patients with a high

				economic status, who were of middle age (35-50) and who had a diabetes history of 5-10 years were influenced towards alternative treatments.
Determinanketidakpatuhan diet penderita Diabetes Mellitus Tipe 2	Al Tera (2011)	Qualitative study	Dietary adherence, diabetes mellitus	The results of 13 studies showed that there were no respondents who made the appropriate eating arrangements concerning the amount of energy, the type of food, and scheduled meals as recommended. Predisposing factors are a lack of knowledge, a lack of confidence about the effectiveness of their diet, and misperceptions about the seriousness of the disease. The enabling factors are the lack of availability and affordability of nutrition

				education and counseling facilities. The reinforcing factors are a friend's suggestions, a lack of family support and a lack of education and counseling support from health workers.
Considerations affecting the dietary behavior of immigrants with type 2 diabetes: a qualitative study among Surinamese in the Netherlands	Kohinor *et al.* (2011)	Qualitative study	Dietary behavior, Suriname ethnic minority, type 2 diabetes	Suriname food was eaten regularly by all of the respondents. Most of the participants were aware of the need to change their diet but they reported difficulty with changing their dietary behavior to meet the dietary guidelines. Many perceived these guidelines to be based on Dutch eating habits, making it difficult to reconcile them with Suriname cooking and eating practices. Firstly, the respondents

				indicated that they did not choose foods based on their nutritional qualities. Instead, the choices were based on Surinamese beliefs regarding "good" (e.g. bitter vegetables) or "bad" (e.g. spicy dishes) foods for diabetes. Secondly, the respondents often perceived recommendations such as eating at fixed time as extremely important since the respondents perceived these to be a core element of their identity as Surinamese
Understanding the experiences of participating in a weight loss lifestyle intervention trial; evaluation of South Asians at high risk of diabetes.	Morrison *et al.* (2014)	Qualitative study	Dietary adherence, life style modification intervention, diabetes mellitus	Many of the participants were motivated to participate because of a known family history of diabetes and the desire to better understand diabetes-related risks to their

own and their family's health. They wanted to know the ways to mitigate the risks and to benefit from personalized monitoring. Home-based interventions, communication in the participant's chosen language(s) and continuity in the dietitians support were made a part of their continuing engagement with the trial. Adaptations in terms of food choices were initially accommodated by the participants, although social and faith-based responsibilities were reported as being important barriers to persevering with agreed dietary goals. Many of the participants reported that increasing their

				level of physical activity was difficult given their long working hours, physically demanding employment and domestic commitments. This being compounded by Scotland's challenging climate and a related reluctance to exercise in the outdoors.
Diabetic patient's compliance to the recommended treatment: a qualitative study in Greece	Krepia *et al.* (2011)	Qualitative study	Dietary program, compliance, diabetic patients	Passivity, un-readiness, weakness to accepting the disease, ignorance about the illness and its complications, poor doctor-relations, insufficient family support, the environment, an insufficient variety of tasty foods, chronic exhaustion, and the complexity of the illness were shown to be detrimental toward the patient's progress. Health

				education can help diabetic patients to address issues such as diet or exercise, and it can recommend a healthy dietary program which regulates the glucose levels and avoids complications.
Patient Perspective on Factors Contributing to Non-adherence to Dietary Therapy: A qualitative study in Multicultural Population of Kedah, Malaysia	Mohd *et al.* (2018)	Qualitative study	Non-adherence, diet therapy, DM type 2	The main factors that affected the diabetic patients' dietary adherence were "individual preference", "family support" and "social and cultural activities". It is difficult to change the exciting meals, there is poor family support, there is the practice of eating out, and social culture gatherings were among the factors that influenced the diabetes patients' adherence toward dietary therapy. Most challenges were

	related to the social role of food in the multicultural population. Therefore, in addition to family and community involvement, dietary therapy should be individualized to improve patient adherence.

\both the participants and their cultures. One study was conducted on 34 non-Hispanic black men in Birmingham in the Alabama area [10] and another study was conducted on 50 adults suffering from diabetes in the National Hospital of Sri Lanka [11]. In another study, it described the selection of the participants who had two differences in their cultural characteristics, in which there were 25 Asians and 25 Caucasians. Asians were defined as those with an Indian sub-continent background while Caucasians referred to anyone who was White European. One of the factors considered to be important in the sampling was the influence of ethnicity on adherence to diet since the incidence rate of diabetes has shown a dramatic rise among Asian populations. This pattern is reflected in other ethnic communities[12].

Some of these studies indicate being *culturally influenced* as one of the factors that made adhering to the diet as difficult to do. Research conducted by [13] described that most had continued to consume South Asians food especially in the evenings, despite their perceived concerns that these foods could be "dangerous" and detrimental to their diabetes control. One respondent described such food as "strength-giving', and highlighted a cultural expectation to participate in acts of commensality with family/community members. The male respondents often reported having a limited input in food preparations. Many of the respondents attempted to balance the perceived risks of eating South Asian foodstuffs against those of alienating themselves from their culture and community by eating such food in smaller amounts. This strategy could lead to a lack of satiation and it is not recommended in the current dietary guidelines. Another study also found that social culture gatherings were among the factors that influenced the diabetes patients' adherence toward dietary therapy. Most of the challenges were related to the social role of food in a multicultural population[1].

The results from this systematic review also found that both South Asian and White participants emphasized adherence to dietary recommendations as the most difficult aspect of living with diabetes[14]. In Australia, the participants reported greater availability and easier access to appropriate food and healthier cooking options. The socio-cultural aspects of food behavior, mainly food practices during social events, were identified as significant barriers[15]. Another study

conducted by [16], which explored the dietary behavior among the Surinamese in the Netherlands, showed that most of the participants were aware of the need to change their diet but they reported difficulty when it caem to changing their dietary behavior to meet their dietary guidelines. Many perceived these guidelines to be based on Dutch eating habits, making it difficult to reconcile them with Suriname cooking and eating practices. Firstly, the respondents indicated that they did not choose foods based on their nutritional qualities. Instead, the choices were based on Surinamese beliefs regarding "good" (e.g. bitter vegetables) or "bad" (e.g. spicy dishes) foods for diabetes. Secondly, the respondents often perceived recommendations such as eating at a fixed time as extremely important since the respondents perceived these to be a core element of their identity as Surinamese.

Besides the cultural factors, dietary adherence behavior is also influenced by *individual factors*. Many of the participants were motivated to participate because of a known family history of diabetes and the desire to better understand diabetes-related risks to their own and their family's health[17]. A study conducted by [12] found that diet-related health actions are influenced by a host of interrelated factors, which include individual differences, social and cultural influences and the nature and experience of diabetes itself. Another study also showed that other individual characteristics like marital status, age, social economic, and the time period during which they had been suffering from diabetes also influenced the patients when they did diabetes self-management, including dietary adherence[18]. Even patients with a high economic status who were middle aged (35-50 years old) and who had a diabetes history of 5-10 years were influenced towards alternative treatments. A study which was conducted in an urban area in Bangladesh also found that individual psychological stress which was stimulated by their concern with diabetes could influence non-adherence to the dietary and physical activity advice given by their physicians[19]. This finding is in accordance with the study which found that passivity, un-readiness, weakness when it came to accepting the disease, ignorance about the illness and its complications were influencing dietary program compliance. These factors come from the individual's characteristics[20].

The third factor that also influenced the diabetes patient when it came to adhering to the dietary management was *knowledge*. This was found in a study conducted focused on type 2 DM patients at the Groote Schuur Hospital Diabetes Clinic in Cape town[21]. In the study and among the adults with diabetes in Sri Lanka, it was found that all of the participants were aware of the importance of diet in the management of DM. Most had difficulty incorporating this knowledge into their daiy lives mostly due to social circumstances[11].The data analysis generated rich information on the participants' knowledge and perception of diabetes. They also reported numerous misconceptions about the disease. The knowledge of diabetes medication, their appropriate use and the side effects was rather poor[19].

Another factor that influenced dietary adherence was perceptions *about diet*. Perceived dietary restriction requirements created social and emotional discomfort in the patients [15]. A study conducted in Indonesia also found that predisposing factors to dietary adherence besides knowledge include a lack of confidence about the effectiveness of the diet, and misperceptions about the seriousness of the disease[22]. Patients who do not understanding the benefits of the diet were also an influence toward the patient's dietary adherence [23].

The fifth factor that influenced dietary adherence was *motivation*. The findings revealed the diversity in motivation quality both between and within individuals over time and that patients with

newly diagnosed diabetes have multifaceted and often competing motivations for their lifestyle behavior changes. The motivation for lifestyle change following the diagnosis of type two diabetes is complex and can be relatively low in self-determination[24]. The motivational descriptions of individuals who had been newly diagnosed with type 2 DM patients in this study were amotivation, external motivation, identified motivation, integrated motivation, and intrinsic motivation.

The sixth factor which also influenced dietary adherence was social support. Sources of social supports can be obtained from one's family, friends, health workers, other patients and other communities with diabetes. At the small group (family and friends) level, family relations with the patients were identified as the main support system used to manage diabetes[21]. At the organizational and health systems level, long waiting times and the theme of seeing different doctors emerged as the problematic factors but overall, the patients were satisfied with the clinic's services. This is in accordance with the study conducted[22], which also found that the enabling factors for dietary adherence are the lack of availability and the affordability of nutrition education and counseling facilities. The reinforcing factors are a friend's suggestions, a lack of family support, a lack of education and counseling supports from the health workers, just like in [20],[1]which found that poor doctor-relations, insufficient family support and the environment as the social support had impact on dietary adherence among type 2 diabetes patients.

The barriers to dietary behavior was the next factor that influenced dietary adherence. Some of these barriers were unpleasant diet foods [23], taste concept or cravings and temptations[21], hard to break habits, limited resources, the availability of food at home and in neighborhood grocery stores, the perceived poor communication with health care professionals[10], meals high in carbohydrates, limited food choices, and food preparations methods s, particularly in Nepal[15]. The internal cues to eat include habits and as a response to emotions, and the external cues to eat included media messaging, a medication regimen, and their work schedule[10].

The menu of the diet was the last factors found in the studies reviewed in the systematic review. The majority described a list of 'good foods' and 'bad foods' for DM. They believed that 'good' foods can be consumed at all times, irrespective of their quantity and that 'bad' foods should be completely avoided. Many believed that fruits were bad for diabetes while vegetables were considered to be a healthy food choice. The majority thought that there were 'special' foods that help to control blood glucose, with the most common being curry leaves and bitter-gourd [11].The results also showed that an insufficient variety of tasty food had an impact for dietary adherence[20]. The other was the difficulty of changing from exciting meals [1].

4. Discussion

Based on the journals that have been reviewed in this systematic review, it can be seen that cultural factors are one of the important types of factors that can influence the compliance of diabetics undergoing a diet. This is because there are certain cultures that have certain beliefs related to foods, the selection of foods, and how to process food, such as the belief in "good" food and "bad" food[16], "dangerous" foods and food as being "strength giving" [13]. The relations of foods with culture is also associated with the community and the typical habits in that community, like the perceptions of South Asian foodstuffs necessarily being comprised of "risky" options. It is perceived that the dietary guidelines are made based on "Dutch" habits or another culture, so the people - for example, like the Suriname people with diabetes - do not want to follow the dietary guidelines because they are of the

belief that their habits of cooking and eating practices are related to deeply rooted cultural beliefs and values.

The patients preferences or individual factors including age, social economic, marital status, psychological stress, diabetic history and the family history of diabetes have an influence on the dietary adherence of diabetic patients. This is because individual factors relate to the patient's awareness, ability and responsibility when it comes to adhering to the dietary program and understanding the concept of calorie counting in the diet modification plan. The majority of the participants with an age that was >40 years and with a diabetes history >11 years showed concern about financial conflicts. However, the patients age >60 years were either dependent on another caregiver for their blood glucose monitoring or they were usually reluctant to self-monitor with a limited experience of diabetes-related symptoms[18]. The psychological stress associated with diabetes often negatively affects the patient's ability to maintain the rigors of the recommended treatment and care. The respondents often lamented on the restrictions imposed by diabetes on their food habits [19].

As knowledge and the perception of diet are interconnected, where and when the knowledge gained by diabetic patients is good, their perceptions about diet become appropriate. Purba, Sitorus and Afiyanti (2008) described the association between the misperception of diet and the wrong knowledge level where the diabetic patients think that the benefit of diet is to reduce the level of sugar. They also think that the dietary limitations can be violated occasionally, that the diet is about reducing sweet foods or only lessen the sugar. Snacks can be included in the diet as long as it is low, the portion in the diet is not known well, and the patients could take cookies as a snack as long as they did not use sugar as an ingredient.

Diagnosis with T2DM provokes a range of emotional responses, including the close scrutiny of the patients' lifestyle, the threat to people's social life and personal identity and the need to construct a new identity representation. It is not surprising therefore that many of the participants' motivation for change was controlled or not self-regulated. The external motivation for diet or physical activity change was experienced as the participants complied with what they perceived to be restrictive dietary advice through a fear of non-compliance (i.e., "lapses") being identified in the appointments and assessments [24]. This was supported in the findings, stating that the participants often experienced these motivations concurrently, by complying with recommendations and labeling themselves as "good" or "naughty" and their behavior as "right" or "wrong" based on the extent to which their behavior change was successful. However, there is a when the diabetic patients are in an amotivation condition, which is defined as being reluctant to change and it is articulated as a passivity towards any changes reported. Ignoring one's diabetes, feeling helpless, not being able to change or being resigned to one's current way of life and not believing the health benefits of recommended treatments could be barriers to dietary adherence.

The social life of diabetic patients is one of the most important factors [20]. The most prevalent reasons behind the diabetic patients' dietary non-compliance are feelings of shame, feeling tired of the need to explain their condition to others and feeling deprived of foods that others enjoy in front of them[20]. The support needed by the patients with this condition can be obtained from their family friends, or health workers. A lack of family support is because the family thought that the patients understood how to manage their meals. Friends also having a role in the spreading of terms and perceptions that are not true about DM, and the lack of support from the health workers is because

of the limited amount of health workers that are available to give nutrition counseling and health education [22]

The others factors associated with the taste concept are habit, how to create the right menu of diet including how to get good ingredients for making foods, managing the patients' time due to their activities and their adherence to their diet. Findings from the other studies have [10]highlighted the importance of integrating a culture-specific menu and meal planning and promoting the foods to eat more of, as opposed to a negative focus on the foods to restrict. It is important to discuss the socio-economic barriers to healthy eating as the diabetes-self management strategies are often designed, as it was found that African American areas in Louisiana have more convenience stores than supermarkets, potentially limiting access to foods such as fresh fruits and vegetables while increasing the availability of snack foods. Other barriers may result from a combination of external factors (e.g. jobs, school and family) and there is the perception that prepared healthful meals are excessively time-consuming. The participants' perception of limited access to healthy foods may thus be related to a lack of access to convenient, easy-to-prepare forms of healthy food (e.g. prepackaged prepared and inexpensive foods) as well as to a lack of knowledge about how to quickly prepare foods using available healthy ingredients. Several interviewed patients feel that changes in meal pattern and reducing the meal portions were not suitable for them. Some of the common quotes from them suggest that the dietary advice recommended was not tailored to the local culture and their personal preferences[1]

The limitations of this systematic review are that all of the studies used in this study are not focused on diet. They also involve other things related to diabetes patients, such as motivation, self-care and other components of diabetes management (medication adherence, physical activity etc. as seen in the appendix). A deeper discussion about non-adherence to diet and the factors that influence it is very limited. The most notable differences in this study are that there were studies that purely discussed the dietary inhibitors as related to the cultural factors only such as the research conducted [13], [15], [16], while there were also studies that discussed the factors that originate in individual patients such as knowledge and the perceptions of diet, motivation and the individual factors carried out by [11], [21], [1] Other studies have also discussed the factors outside of the individual, especially support during the diet and dietary barriers (see appendix).

5. Conclusion

Diet is one diabetes management strategies used to reach a point of good blood glucose control for type 2 diabetic patients. To reach this goal, the patients cannot reach this aim by themselves. They are in need of support from their social life and support from policy makers is also needed, especially when it comes to making a dietary program for diabetic patients that is suitable and in line with the recommendations. This is because although the current dietary program has enough promotion from the health workers to the diabetic patients, their adherence is still low. There are some factors related to this: culture, individual factors, knowledge, perceptions about diet, motivation, social supports, barriers to dieting, and the menu of their diet. The most influential factor is culture.

These factors make it difficult for type 2 diabetic patients to adhere to their responsibility of following the dietary program, meaning that blood glucose control becomes unachieved. From the sixteen journals reviewed, a dietary program needs to consider all of these factors, especially those

related to culture and the habits of the diabetic patient's community. As the American Diabetes Association has suggested, dietary therapy should be individualized according to personal preference (tradition, culture, region, health beliefs) and their metabolic goals. These findings could be a reference for health workers to plan an alternative intervention that is more suitable to applied to improve the dietary adherence of Type 2 DM patients.

Further studies should be able to explore more of the non-adherence that is culture-based concerning the diets of different individuals and their respective backgrounds, because the results of the studies of this systematic review indicate that cultural differences and individual characteristics give different results for understanding diet and dietary behavior. The nursing practical implications from the results of this review include and incorporate the discovery of the various factors that influence dietary adherence in Type 2 DM patients. This can be some of the input for further research to explore this in greater depth and with more focus for each of the themes.

References

1. Mohd Suan M A, Asli S E, Abdullah W M, Shafie Z and Johari N H 2018 Patient Perspective on Factors Contributing to Nonadherence to Dietary Therapy: A Qualitative Study in Multicultural Population of Kedah, Malaysia *Int. Q. Community Health Educ.* 0272684X1882130
2. KONSESUS PERKENI 2015 *Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia 2015*
3. Mishali M. O H H A 2011 The Importance of Measuring Self-Efficacy in Patients with Diabetes *Farm Pr.***28** 82–7
4. Nutrition Sub Committee of the Diabetes Care Advisory Committee of Diabetes 2003 The Implementation of Nutritional Advice for People with Diabetes *Diabetes Med.***20** 786–807
5. Ponzo V, Rosato R, Tarsia E, Goitre I, Michieli F De, Fadda M and Monge T 2017 Nutrition , Metabolism & Cardiovascular Diseases Self-reported adherence to diet and preferences towards type of meal plan in patient with type 2 diabetes mellitus . A cross-sectional study **39** 642–50
6. Saleh F, Mumu S J, Ara F, Hafez A and Ali L 2014 Non-adherence to self-care practices & medication and health related quality of life among patients with type 2 diabetes : a cross-sectional study 1–8
7. Delamater a. M 2006 Improving Patient Adherence *Clin. Diabetes***24** 71–7
8. Stanley 2007 Buku Ajar Keperawatan Gerontik ed E Meiliya and M Ester (Jakarta: EGC)
9. Kusnanto Et al. 2015 Penerapan Health Action Process Approach Untuk Meningkatkan Kepatuhan Diet Penderita DM Tipe 2 *J. Ners***10 No. 2**
10. Lee L T, Willig A L, Agne A A, Locher J L and Cherrington A L 2016 Challenges to Healthy Eating Practices: A Qualitative Study of Non-Hispanic Black Men Living With Diabetes *Diabetes Educ.***42** 325–35
11. Ranasinghe P, Pigera A S A D, Ishara M H, Jayasekara L M D T, Jayawardena R and Katulanda P 2015 Knowledge and perceptions about diet and physical activity among Sri Lankan adults with diabetes mellitus : a qualitative study *BMC Public Health* 1–10
12. Meetoo D 2004 Dietary pattern of self-care among **13** 1074–8
13. Lawton J, Ahmad N, Hanna L, Douglas M, Bains H and Hallowell N 2008 "We should change

ourselves, but we can't": Accounts of food and eating practices amongst British Pakistanis and Indians with type 2 diabetes *Ethn. Heal.***13** 305–19

14. Singh H, Cinnirella M and Bradley C 2012 Support systems for and barriers to diabetes management in South Asians and Whites in the UK : qualitative study of patients ' perspectives 1–8
15. Sapkota S, Brien J anne E, Gwynn J, Flood V and Aslani P 2017 Perceived impact of Nepalese food and food culture in diabetes *Appetite***113** 376–86
16. Kohinor M J E, Stronks K, Nicolaou M and Haafkens J A 2011 Considerations affecting dietary behaviour of immigrants with type 2 diabetes: A qualitative study among Surinamese in the Netherlands *Ethn. Heal.***16** 245–58
17. Morrison Z, Douglas A, Bhopal R and Sheikh A 2014 Understanding experiences of participating in a weight loss lifestyle intervention trial : a qualitative evaluation of South Asians at high risk of diabetes
18. Gillani S W, Sulaiman S A S, Abdul M I M and Saad S Y 2017 A qualitative study to explore the perception and behavior of patients towards diabetes management with physical disability *Diabetol. Metab. Syndr.***9** 58
19. Islam S M S, Biswas T, Bhuiyan F A, Mustafa K and Islam A 2017 Patients' perspective of disease and medication adherence for type 2 diabetes in an urban area in Bangladesh: a qualitative study *BMC Res. Notes***10** 1–8
20. Krepia V, Tzenalis A, Lavdaniti M, Beneka A, Psychogiou M, Serpanou I and Sapountzi-Krepia D 2011 Diabetic patients' compliance to the recommended treatment: A qualitative study in Greece. *Int. J. Caring Sci.***4** 126–32
21. Ebrahim Z, Villiers A De and Ahmed T 2014 Factors influencing adherence to dietary guidelines : a qualitative study on the experiences of patients with type 2 diabetes attending a clinic in Cape Town Factors influencing adherence to dietary guidelines : a qualitative study on the experiences of p **9677**
22. Al Tera B H 2011 Determinan Ketidakpatuhan Diet Penderita Diabtete Melitus Tipe 2 *Skripsi***2**
23. Purba C I H, Sitorus R and Afiyanti Y 2008 Pengalaman Ketidakpatuhan Pasien Terhadap Penatalaksanaan Diabetes Mellitus : Studi Fenomenologi *J. Ilm. Keperawatan* 1
24. Sebire S J, Toumpakari Z, Turner K M, Cooper A R, Page A S, Malpass A and Andrews R C 2018 " I ' ve made this my lifestyle now " : a prospective qualitative study of motivation for lifestyle change among people with newly diagnosed type two diabetes mellitus 1–10

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USE OF THE TERM RESILIENCE IN ADULT CANCER PATIENTS: A SYSTEMATIC REVIEW OF QUALITATIVE STUDY

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ABSTRACT

Resilience is a dynamic process of positive adaptation to adversity, including cancer. While the term is used frequently by researchers, controversy exists over its conceptualisation and little is known if and how cancer patients use the term resilience. We examined qualitative studies exploring cancer patient experiences of resilience to understand: (a) definitions of resilience as identified by patients and researchers and (b) the themes relating to attributes of resilience as identified by patients. The literature review was conducted through SCOPUS, MEDLINE, PsycINFO, and CINAHL databases were searched from database inception to November 2017, identifying qualitative studies of adult cancer patients/survivors. Thematic analysis was used to code studies and generate analytical themes, and a single author identified definitions of resilience within the studies. After reviewing 573 citations there were only 32 studies that were suitable. Four thematic categories emerged; coping strategies, social support, spirituality, and growth. Eight researcher definitions and no patient definitions of resilience were identified. This review does not find a definition of cancer resilience. Patients and cancer patients rarely use the term resilience directly, rather than identifying coping strategies, social support, growth, and spirituality as attributes related to resilience.

Keywords: resilience; qualitative; coping strategies; social support; spirituality; growth

1. Introduction

Resilience, a dynamic process of positive adaptation within the context of significant adversity [1], has been linked to various positive health outcomes, including reduced psychological distress, protection from depression, and improved quality of life [2,3]. However, despite the vast body of literature regarding resilience, significant controversy exists about its conceptualization and there is a lack of consistency regarding how the term resilience is used and defined [1].

While some researchers use the term resilience to describe pre-existing personality traits, others regard it as a dynamic process of adaptation that develops over time, while a third perspective argues for resilience as a psychosocial outcome [1,4]. An integrated biopsychosocial approach to resilience harmonizes all of the prior definitions by the concept of resilience being the psychological equivalent of a somatic immune system, protecting against adversity through multi-level defense mechanisms [5]. Thus while some resilience mechanisms may be innate/pre-existing, others may be developed through individual adaptation, or through external influences. Furthermore, when exposed to adversity, resilience may grow in effectiveness through behavioral immunization, allowing for a more effective response to that specific adversity in the future [6].

The concept of resilience has attracted considerable interest in cancer. A diagnosis of cancer represents substantial adversity and it is often associated with significant physical and emotional distress, at times resulting in mental health conditions such as depression and anxiety [1]. Resilience promoting interventions would seem to be advantageous for cancer patients but at present, evidence for such interventions is limited in the cancer setting, with individual results ranging from no statistically significant change in quality of life, to reduced distress and improved quality of life [5]. One reason for this may be a lack of consistency in how the term resilience is used and defined within the oncology setting.

To date, there have been two reviews of resilience in adult cancer care. Eicher and their colleagues undertook a review of 11 quantitative papers with the aim of describing the current scientific perspectives of resilience in adult cancer care and their implications for cancer nursing [3]. They defined resilience as a dynamic process of facing adversity related to cancer and confirmed the association of resilience with improved health outcomes, recommending the development of a conceptual framework for nursing interventions and the refinement of scales/instruments to measure resilience [3].

Molina and their colleagues reviewed 57 papers to describe the ways in which elements of resilience have been defined and studied at each phase of the cancer continuum from risk assessment/screening through to survivorship and end of life. They concluded that as the stress and adaptation required at each phase may be different, each phase of the cancer experience has unique as well as shared aspects of resilience. In all phases of the cancer continuum, the resilience attributes included baseline characteristics, mechanisms of adaptation and psychosocial outcomes [6]. In the statement of the limitations of their reviews, Molina acknowledged the diversity of the definitions, literature, and study design, while Eicher acknowledged the exclusion of qualitative studies on resilience.

Reviewing the qualitative literature that focuses on patient usage of the term resilience may add to the conceptual definitions of resilience but to date, no systematic literature review has synthesized the qualitative research in adult cancer care examining how patients use the term resilience in their day-today life. To address this gap, the aim of the present review is to enhance the understanding of cancer patients' use of resilience with a focus on the following questions: [1] 'What are the definitions of resilience as identified by patients and researchers/study authors?' and [2] 'What are the themes relating to the attributes of resilience as identified by the patients?'

2. Research Methods

This review followed the guidelines from the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement [7].

2.1 Inclusion and exclusion criteria

To meet the inclusion criteria, the studies needed to have a qualitative design, to be printed in English and to include patients or survivors over the age of 18 with any type or stage of cancer. Qualitative studies were defined as using qualitative methods of data collection, such as interviews and focus groups and using qualitative data analysis methods such as thematic analysis or discourse analysis. The studies needed to include "resilience" and "cancer" (or a derivative) in their title,

abstract, or keywords and in the full text. Studies were excluded if resilience was not a theme or outcome, if it was studied primarily from the perspective of non-patient members (family members or caregivers), or if it was defined in the context of a group rather than an individual (i.e. family resilience).

2.2 Search strategies

A pre-planned comprehensive search of four electronic databases (SCOPUS, MEDLINE, PsycINFO, and CINAHL) was conducted to identify all of the relevant studies between database inception and the the end of November 2017. The search strategy (initially created in MEDLINE then accurately translated for the other databases) involved using database-specific controlled terms (where available) and the key words "resilience" and "cancer" (or derivatives such as melanoma), as well as Boolean operators in the title and abstract and medical subject headings. Qualitative studies were identified by using the keyword "qualitative" and searching for studies using qualitative methodology, such as phenomenology or qualitative analysis methods. A single author screened the study titles and abstracts to identify the studies for a full-text review. An example of the search strategies used has been provided in Figure 1.

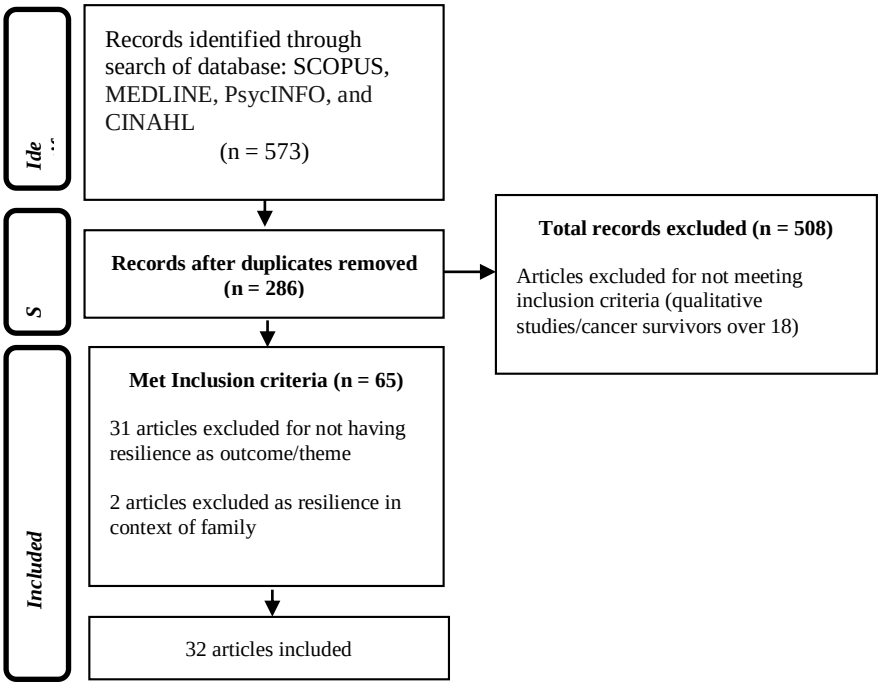

Figure 1. Diagram summarizing the search of the literature

3. Results

3.1 Definitions of resilience

No patient definitions of resilience were identified within the reviewed studies, and the patient's usage of the term resilience was only reported in a single study [8]. Resilience was explicitly defined eight times by the researchers in the included studies with varying definitions as shown in

Table 1. Four definitions described a process of adaptation to adversity or threats [9], with one study explicitly noting the adaptation as being positive [10]. Two definitions described resilience as a phenomenon of maintained or recovered psychological health after adversity [10,11], with one study adding the concept of physical changes and suggesting the notion of "growing past" [10]. One study defined resilience as "a comprehensive process, including existential meaning making, selection and optimization (of goals) and growth" [8], and the final study defined resilience as having three main components: social embeddedness, positive life perspective, and personal resourcefulness [12].

3.2 Themes of resilience

Figure 2 depicts the conceptual map of the themes identified in the thematic analysis. A full list of themes can be found in the supplementary material. Seventy-nine unique themes of resilience were initially identified as used by the authors of individual studies, which were then combined based on similarity. Studies contributed between one and four individual themes, with each study contributing a mean of three individual themes. Four overarching thematic categories emerged and they were ordered according to prevalence: (1) coping, (2) social support, (3) spirituality, and (4) growth. Fourteen studies identified resilience themes within only one category, fifteen studies identified themes within two categories, two studies identified resilience themes across three main categories, and one study identified themes across all four categories. Spirituality, growth, and social support were commonly grouped with coping strategies due to the plethora of coping strategies raised as a theme, and spirituality was associated with coping in all but one study [8]. No other clusters of themes were evident within the analyzed studies.

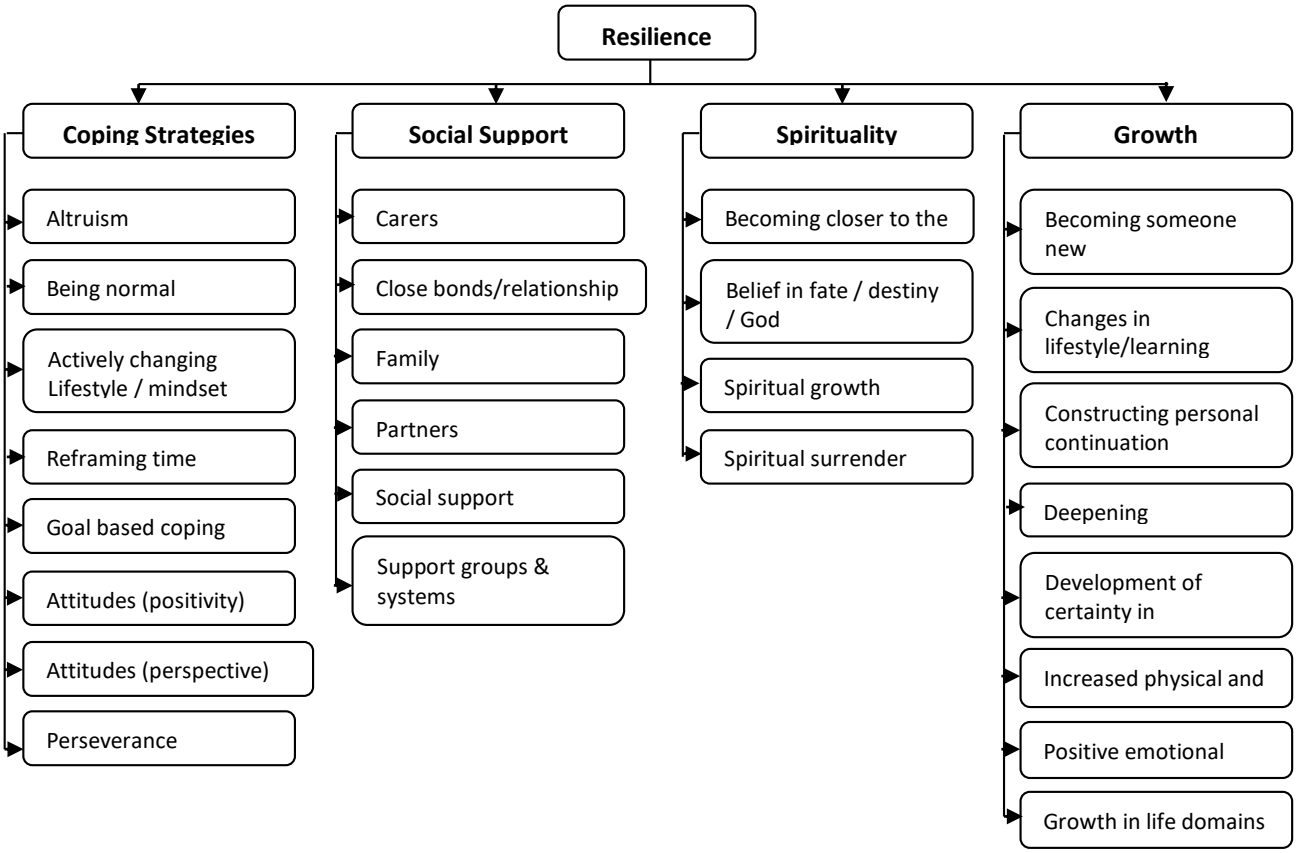

Figure 2. Conceptual map of themes of resilience

Coping

The thematic category most commonly associated with resilience was coping with the stressors of the cancer experience, which was identified in all but one study [13]. Themes related to coping emerged 55 times across all studies and they were further summarized under the following eight subordinate themes: positivity, perspectives, perseverance, being normal/denial, actively changing lifestyle and mindset, reframing time, altruism, and goal-based coping, as summarized in detail below.

Maintaining a positive attitude was a frequently discussed coping strategy, succinctly expressed in one study as "if I was a negative person, I wouldn't be sitting here with you today". Variations of positivity as a theme of resilience included thinking positively and remaining positive [14], having the right mindset [15], being grateful [10], and seeing the bright side [2,10,14,15]. The perspectives of the patient helped to shape their coping strategies, with studies describing this theme as acceptance of their diagnosis, being self-reliant [9], or identifying the meaning of life and the situation [12]. Being pragmatic and seeing things in perspective were variants of this theme [14,16].

The concept of persevering through cancer-related stress is another coping strategy that the patients used frequently. One study identified this theme as "doing what has to be done" [9], and another patient recounted her experience of perseverance as "these are challenging times and may be rough times, but keep on" [26]. Others described this theme as inner strength [17], not giving up [10] or stoicism [18]. Perseverance was described in one study as the process of handling decline and loss, where the patients endure tough treatment periods to have a life prolonging effect [9]. In contrast, the concept of "toxic" resilience was raised, where the patient's drive to stay resilient eventually becomes problematic and counterproductive to quality of life in the participants [18].

Another coping strategy displayed was the concept of being "normal", with one patient stating "I think what I wanted to preserve was the absolute preciousness of normality" [19]. This was achieved through methods such

as minimizing the impact of cancer [20], avoiding conventional sick roles [14], maintaining normal life [9], and coping through distractions, such as work [5,12]. Some of the patients sought to cope by actively changing one's mindset and lifestyle, with variations of this theme including being more flexible [16], dealing with adversity [17], embracing paradoxes [21], existential meaning making through selection and the optimization of goals [8], finding ways to keep going [21], and having a voice in their treatment [13]. Reframing time was another common mechanism of coping [21], with another related strategy being living in the present [21]. Other coping strategies included helping others/altruism [22], the assimilation or accommodation of cancer through goal-based coping [18,19], and surrendering to life impermanence and circumstances [23].

Social support

Resilience was commonly described in relation to a background of receiving support from friends, family, the community and health care workers, and this was described 10 times as a theme of resilience. A study conducted in the USA on 13 older adult patients with lung, prostate, or digestive system cancers stated that social support contributed to resilience and that it held symbolic and literal

meaning for patients, suggesting that this was one aspect of resilience which allowed them to maintain and grow past their previous level of functioning. Conversely, the participants characterized as non-resilient were described as being remarkable in their lack of social support [10]. Similarly, another patient described the support that her family provided as "My family never left me alone … if it was not for them, I do not know what I would have done" [5]. The importance of supportive relationships was further shown in another study when women resilient to distress had stable, supportive families, while the sole participant with a lack of family support displayed distress [24]. Other social supports discussed included partners and ex-partners [3,25], children, friends, religious and social groups and healthcare professionals [17].

Growth

Growth, described as growth in one or more life domains following exposure to cancer-related stressors, was raised as a theme of resilience nine times across all of the identified studies. Patients resilient to distress often demonstrated growth in at least one domain including changes in worldview, faith, and family relations [9]. Growth as a theme was identified as becoming someone new, with new values, causing the patients to become more resilient [20]. One study described the process as the deepening of connections with others and spiritual forces, stating that cancer "prompted everyone to connect with someone bigger" [23]. Another study discussed the development and growth of personal strength as a consequence of cancer, with one patient stating "I don't think there's any way I'd be so positive or determined. I think that totally came from that experience" [26]. Growth was not limited to cancer-related growth; mental/physical growth and improved self-esteem occurred in patients with cancer who practiced yoga [13].

Spirituality

Spirituality and religion were a theme of resilience in several of the studies, occurring nine times across all identified studies as a theme of resilience with eight unique themes. The idea of entrusting one's self to fate and destiny was expressed by one patient who stated "I believe nothing can happen without His (God) will … my prayers helped me and gave me strength" [22]. Other patients discussed cancer as being an opportunity to become closer to the Lord and they emphasized the importance of religion to their coping with cancer [15]. Spirituality was characterized in one study in the context of a "belief frame" ranging from traditional Christian faith to atheism, in which the participants experienced as something positive and contributory to resilience [8]. Spirituality-faith was similarly described in another study as expressing feelings of gratitude and being blessed. Patients who demonstrated spirituality were characterized by a general lack of fear [10]. A comparable concept was characterized as "spiritual surrender", which is a form of spiritual awakening which enables the patients to find inner peace and comfort by surrendering to impermanence [27].

4. Discussion

This systematic literature review aimed to determine the definitions of resilience as identified by researchers/study authors in examining patient experiences of resilience and to determine the themes relating to the attributes of resilience as identified by the patients. Our review showed that

the use of the term resilience by patients was rare. No studies included a patient definition of resilience, and only one study [9] included a patient using the term resilience. Whether this is because the patients did not use the word or because the researchers did not include the patient usage of the term is unclear. However, none of the studies included questions on what the term resilience meant to subjects. In fact, one of the included studies [10] explicitly stated that the usage of the term resilience was actively avoided by the researchers while formulating questions and that the term was never brought up during any of the interviews. Researcher definitions of resilience were lacking in the 32 studies included in the review. Only eight studies provided an explicit in-text definition of the term resilience. The most common definition to emerge from the included studies described a process of adaptation in response to threats or adversity. However, the definitions used varied widely, thus supporting the idea that resilience is poorly defined and potentially poorly understood. This may be one of the factors contributing to the varying effects of resilience as reported in the extant literature.

Although the term resilience was not commonly used by either the researchers or the patients, coping strategies, social support, growth, and spirituality were the most commonly identified attributes of resilience. Coping strategies were the most common theme, being represented in nearly every study, and it appeared as a stand-alone theme in more than half of the studies. Coping strategies included concepts such as positivity, perspectives, perseverance, being normal/denial, actively changing their lifestyle and mindset, reframing time, altruism, and goal-based coping. Social support was the next most common theme and it involves individuals receiving support from external sources, such as their friends, family, healthcare workers, and cancer support groups. Growth was another theme of resilience, with individuals exhibiting growth in various life domains. Spirituality emerged as the final theme, with the beliefs of the individuals contributing towards resilience. Coping strategies were the main theme most commonly grouped with other main themes, and spirituality was grouped with coping in all but one study [28], thus suggesting that spirituality may act as a coping mechanism as well as a main theme. Additionally, only the psychosocial aspects of resilience were identified as themes of resilience, suggesting that other aspects of resilience such as physical resilience were either not discussed by the patients, or not reported by the researchers.

One finding of interest was how growth was conceptualized as a theme of resilience. Although growth has been included in some definitions of resilience [10], most definitions refer to a return to baseline functioning [10]. This finding suggests that researchers may use the term resilience interchangeably with post-traumatic growth. Although a similar construct to resilience, post-traumatic growth is described as a “positive psychological change experienced as a result of the struggle with highly challenging life circumstances”, implying that individuals achieve a higher level of functioning than before the trauma [29]. This has been both positively and negatively associated with resilience [4]. While this does not discount growth as a theme of resilience, further research should be undertaken to investigate whether resilience is conflated with post-traumatic growth. It is unclear from the analysis of the studies whether the attributes of resilience were used to describe resilience as a process of adaptation, as an innate trait associated with resilient behaviors or as an outcome. Many of the individuals who appeared to be resilient displayed similar attributes such as positive or stoic attitudes and with good social support. Similarly, Lam et al. and Pentz [10,12] described individuals lacking in resilience as lacking social support, suggesting that resilience has characteristics of both a trait and a process facilitated by personal factors and resources, such as social

support. As this review was unable to determine whether resilience is best characterized as a trait, process, outcome, or as a combination of these descriptions, a longitudinal approach may be more appropriate to examine how resilience changes over time and thus to clarify its construct definition.

The current review has notable limitations. As many of the identified articles did not focus on resilience as a primary goal of analysis, the patient's usage and definitions of the term may not have arisen during the course of each study or they may have been omitted. Similarly, researchers may not have found it necessary to include their operational definitions of resilience if this was not a focus of their study, thus limiting the number of definitions found. Grey literature, such as dissertations, case reports, and non-published studies, were excluded. By not examining sources outside of traditional publishing channels, the review may have missed important sources of information which may have contributed to the understanding of resilience. Given the complexity of qualitative data, single author coding/analysis may lead to a loss of alternate interpretations of the data, and thus potential themes may have been excluded, although we have attempted to minimize this through a collaborative discussion of the dataset with other study authors.

Previous research have suggested that resilience is a developmental process unfolding over time and circumstances, with the determinants of resilience differing depending on global, cultural, and contextually specific aspects and challenges [6]. As the data was drawn from a global population of diverse sociocultural backgrounds with different cancer types and disease burdens, the relevance of our findings to specific cancer populations is limited. Additionally, the term "resilience" may not be used in non-English speaking backgrounds. Nine of the included studies were from countries where English is not the official language and another study explicitly sought participants who did not speak English as their first language. When translated into English, subtle cultural nuances of the term resilience may be lost.

5. Conclusion

This review found that patients are seldom quoted as using the term resilience, and that no cancer patient definitions of resilience were identified. Furthermore, the usage and definitions of the term resilience by researchers are notably inconsistent. While patients do not use the term resilience, they identify various coping strategies, spirituality and growth, and social support as important attributes commonly associated with resilience. Further research specifically identifying how cancer patients understand and use the term "resilience" is needed.

References

1. Luthar S S, Cicchetti D and Becker B 2000 The Construct of Resilience : A Critical Evaluation and Guidelines for Future Work **71** 543–62
2. Min J, Yoon S, Lee C, Chae J, Lee C, Song K and Kim T 2013 Psychological resilience contributes to low emotional distress in cancer patients 2469–76
3. Eicher M, Matzka M, Dubey C and White K 2015 Resilience in Adult Cancer Care: An Integrative Literature Review **42**
4. Bonanno G A, Westphal M and Mancini A D 2011 Resilience to Loss and Potential Trauma
5. Rosenberg A, Ma M S, Ms M B, Bs V K, Mph N E, Bs C W, Shaffer M and Yi-frazier J 2018

Paper Session (TH320 e TH321) The ‘“ Promoting Resilience in Stress Management ”’ (PRISM) Intervention for Adolescents and Young Adults : A Pilot Randomized Controlled Trial (TH320A) Changes Over Time in Good-Parent Beliefs Among Parents of Children with Serious Illness : Two Year Cohort Study (TH320B) Family Satisfaction with Symptom Management Practices and Child Comfort During Pediatric Hematopoietic Stem Cell *J. Pain Symptom Manage.* **55** 569–70

6. Molina Y, Yi J C, Martinez-gutierrez J and Reding K W 2012 Resilience Among Patients Across the Cancer Continuum: **18**
7. Tong A, Flemming K, Mcinnes E, Oliver S and Craig J 2012 Enhancing transparency in reporting the synthesis of qualitative research : ENTREQ 1–8
8. Helene S, Haug K, Ph D, Danbolt L J, Kvigne K and Ph D 2016 Older people with incurable cancer : Existential meaning-making from a life-span perspective **79** 20–32
9. Jahn A L and Herman L 2012 Research in Human Development Distress and Resilience After Cancer in Veterans 37–41
10. Pentz M Journal of Gerontological Resilience Among Older Adults with Cancer and the Importance of Social Support and Spirituality-Faith 37–41
11. Stefanic N, Caputi P, Lane L and Iverson D C 2015 European Journal of Oncology Nursing Exploring the nature of situational goal-based coping in early-stage breast cancer patients : A contextual approach *Eur. J. Oncol. Nurs.*
12. Engeli L, Hospital P and Moergeli H 2016 Resilience in patients and spouses faced with malignant melanoma . A qualitative longitudinal study
13. Article O 2013 Cancer patients ’ experiences with and perceived outcomes of yoga : results from focus groups 1861–70
14. Bache R A, Bhui K S, Dein S and Korszun A 2012 African and Black Caribbean origin cancer survivors : a qualitative study of the narratives of causes , coping and care experiences **17**
15. Harper F W K, Nevedal A, Eggly S, Francis C, Schwartz K and Albrecht T L “ It ’ s up to you and God ” : understanding health behavior change in older African American survivors of colorectal cancer
16. Spek N Van Der, Vos J, Uden-kraan C F Van, Breitbart W, Tollenaar R A E M, Cuijpers P and Leeuw I M V 2013 Meaning Making in Cancer Survivors : A Focus Group Study **8** 22–6
17. Grant M, Mcmullen C K, Altschuler A, Mohler M J, Hornbrook M C, Herrinton L J, Wendel C S and Baldwin C M 2011 Gender Differences in Quality of Life Among Long-Term Colorectal Cancer Survivors With Ostomies 587–96
18. Macartney J I, Broom A, Kirby E, Good P and Wootton J 2014 On resilience and acceptance in the transition to palliative care at the end of life 1–17
19. Radcliffe O 2009 Patients ’ constructions of disability in metastatic spinal cord compression 132–40
20. Baker P, Psychologist T C, Section H P, Baker P, Beesley H, Fletcher I, Ablett J, Holcombe C and Journal S P E 2016 ‘ Getting back to normal ’ or ‘ a new type of normal ’? A qualitative study of patients ’ responses to the existential threat of cancer 180–9
21. Skeath P, Norris S, Katheria V, White J, Baker K, Handel D, Sternberg E, Pollack J, Groninger H, Phillips J and Berger A 2013 The Nature of Life-Transforming Changes Among Cancer

Survivors

22. Saraf S, Singh T B and Khurana S 2013 Cervical Cancer Survivors : Meaning in Life **58** 144–52
23. Grunfeld E A, Drudge-coates L, Rixon L, Eaton E and Cooper A F 2013 " The Only Way I Know How to Live Is to Work ": A Qualitative Study of Work Following Treatment for Prostate Cancer **32** 75–82
24. Lam W W T, Yoon S W, Sze W K, Ng A W Y, Soong I, Kwong A, Suen D, Tsang J, Yeo W, Wong K Y and Fielding R 2016 Comparing the meanings of living with advanced breast cancer between women resilient to distress and women with persistent distress : a qualitative study
25. Paul L B, Pitagora D, Brown B, Tworecke A and Rubin L 2014 Support needs and resources of sexual minority women with breast cancer **584** 578–84
26. Parry C 2015 Embracing Uncertainty : An Exploration of the Experiences of Childhood Cancer Survivors **13** 227–46
27. Kong H, Kong H, Palliative M, Manitoba C C, Kong H, Kong H, Centre C M, Kong H and Kong H 2013 Living and dying with dignity in Chinese society : perspectives of older palliative care patients in Hong Kong 455–61
28. Southwick S M, Bonanno G A, Masten A S, Panter- C, Yehuda R, Southwick S M, Bonanno G A, Masten A S and Panter- C 2017 interdisciplinary perspectives **8198**
29. I R G T and Calhoun L G 1996 The Posttraumatic Growth Inventory : Measuring the Positive Legacy of Trauma **9** 455–71

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EXPERIENCE OF DIET AND FLUID RESTRICTIONS IN PATIENTS WITH HEMODIALYSIS: A SYSTEMATIC REVIEW

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ABSTRACT

Hemodialysis (HD) is a kidney replacement therapy that aims to support kidney function for the care of individuals end-stage renal disease (ESRD), kidney function is replaced by an external dialyzer to filter blood so it is necessary to limit diet and fluid intake and manage medicines. Compliance with fluid and dietary restrictions needs a complex adaptation process because hemodialysis patients must try to change their diet, lifestyle, and culture. The purpose of this systematic review is to summarize the experience of hemodialysis patients in limiting diet and fluids. This systematic review is a synthesis of qualitative studies. Data is collected with a vulnerable time of 10 years from 2008-2018. An electronic database used to search for relevant keywords; Scopus, Medline, Proquest, and Science Direct. There are 16 best qualitative study articles found, qualitative research methods include, phenomenology, ethnography, grounded theory, mixed method, descriptive explanatory, and thematic analysis. There are 4 themes that often arise from each study identified: Understanding about dietary and fluid restriction, Experience of support, Experience of psychology, Experience of behavioral and Experience of financial. The experience of hemodialysis patients in restricting diet and fluids is faced with a variety of efforts and barriers, various experiences of hemodialysis patients can have implications in practice in the field in providing interventions to improve adherence to hemodialysis patients in diet and fluid restrictions.

Keywords: experience, hemodialysis patients, diet and fluid restriction

1. Introduction

Hemodialysis (HD) is a kidney replacement therapy that aims to support kidney function for the care of individuals with end-stage renal disease (ESRD), where the kidney function is replaced by an external dialyzer to filter the blood [1,2]. Dialysis therapy continues throughout life because dialysis does not cure ESRD but it does prolong their life, therefore limiting their diet and fluid intake and managing their medication needs to be done [3,4].

Restrictions on diet and fluids are the biggest challenges for hemodialysis patients. Fluid imbalances will cause an increase in their interdialytic weight gain (IDWG), which can be associated with increased blood pressure and increased cardiovascular risk. Dietary non-compliance will cause malnourishment, an increase in potassium and an increase in phosphorus in the body (E. Leigh Gibson et al., 2016). Compliance with the fluid and dietary restrictions requires a complex adaptation process because hemodialysis patients must strive to change their diet, lifestyle, and culture [6,7].

Non-adherence to fluids and diet in hemodialysis patients is quite high, with the non-compliance with fluid restrictions being 9,8-75,3% and 2-81,4% for diet [8]. Compliance with diet and fluid restrictions is a multidimensional phenomenon. There are six factors that influence the compliance of hemodialysis patients in terms of restrictions on their diet and fluids, namely knowledge, self-assessment, and th psychological, social, physical and environmental factors. The factors that are most commonly felt by hemodialysis patients when limiting their fluid and diet are the psychological factors. The psychological factors that are often felt by the patients are feeling boredom, discomfort, distress, and other emotional responses when limiting their diet and fluids [9–12]. The knowledge factor (education) is a supporter of adherence, as it is a component of knowledge that is effective and cognitive that affects the psychomotor responses (behavior). Providing education to hemodialysis patients about heir and fluid restrictions can effectively affect their behavior and compliance measures [13,14].

The aim of this systematic review was to summarize the experience of hemodialysis patients who were limiting their diet and fluids by synthesizing the existing qualitative studies to inform them of the hemodialysis facilitators and clinical research.

2. Methods

2.1 Design

The design of this study was a systematic review of qualitative study approach that was formulated to review the relevant qualitative studies and to put forward a comprehensive analysis. This systematic goal was developed based on the PICO (Patient, Intervention, Comparison, and Outcome) framework model [15]. *This systematic reporting structure used PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) [16].*

2.2 Inclusion and exclusion criteria

This systematic review established an inclusion and exclusion criteria that focused on qualitative studies and mixed method studies that partly used a qualitative approach. A feasibility study was conducted to describe the experience of hemodialysis patients in limiting their diet and fluids tie into the language eligibility criteria with minimal abstracts using English. The year of publication was limited to the last 10 years from 2008 to 2018. Further criteria for the inclusion group were the live experience research concept and the research into adult hemodialysis patients. The exclusion criteria were peritoneal dialysis patients,

hemodialysis patients who were children, the health workers associated with hemodialysis (nurse, doctor, and nutritionists), family, and caregivers.

2.3 Search strategy

A systematic search of the PICO database electronic data framework was carried out according to the PICO framework [15]. For the first step, we looked on the electronic databases of Scopus, Medline, Proquest, and Science Direct in order to identify key articles and to identify keywords by adjusting the key concepts: 1. patients undergoing hemodialysis, 2. life experience 3. diet and fluid restriction and 4. qualitative studies. Our keywords were used to look for quotes and full articles, including the title, abstract, text and reference information. The second step was translating the keywords into English to find the relevant articles in the chosen electronic databases. The third step was to filter using the PICO framework to determine which articles passed for further review according to the topic. The search strategies were limited to the last 10 years between 2008 and 2018.

2.4 Quality *of appraisal*

The quality assessment of articles will be reviewed using a qualitative Critical Appraisal Skills Program (CASP) study tool. There are 10 different questions that consider the results of qualitative studies, the validity of studies, and their uses [17]..

CASP is a tool for evaluating the quality and utility of research reports [18]. The 10 questions in CASP were answered by selecting "yes", "no" or "not now" for each question. The allocation of the scores on a scale of 10 for each article reviewed was based on how many "yes" answers were in the score. A score that is above 7 refers to the quality of the article being very good. The purpose of this quality assessment was not to distinguish between the different qualities within the studies but instead to conduct a systematic process. The standard process can provide high-quality reviews based on the existing topics.

3. Results

3.1 Study selection

The search strategy was carried out by generating a total of 561 citations, in which 248 citations were deleted 248. In addition, 270 existing items of literature were deleted during the first screening because the title and/or abstract did not match with the specified eligibility criteria. Then, 43 complete articles were found in the second phase of screening and 10 articles obtained were retained for review. Following this, 6 additional articles were obtained from the reference screening stage and thus the last session included 16 articles based on the experience of fluid restriction and diet in hemodialysis patients.

3.2 Study characteristics

A total of 16 studies were reviewed. They were published between 2008 and 2018 were conducted in 13 countries: the USA, Italy, South Korea, Japan, Singapore, Turkey, New Zealand, London, China, Chile, the Netherlands, and Australia,. The qualitative research

methods included phenomenology, ethnography, grounded theory, mixed method and a descriptive explanation.

3.3 Result of synthesis

The literature search identified 16 journals that described the experience of fluid and dietary restrictions in hemodialysis patients. Finally, the 5 main theme findings of the synthesis were summarized briefly: the understanding of the dietary and fluid restrictions, the experience of support, the experience of psychology, the experience of behavior and the experience of the financial factors.

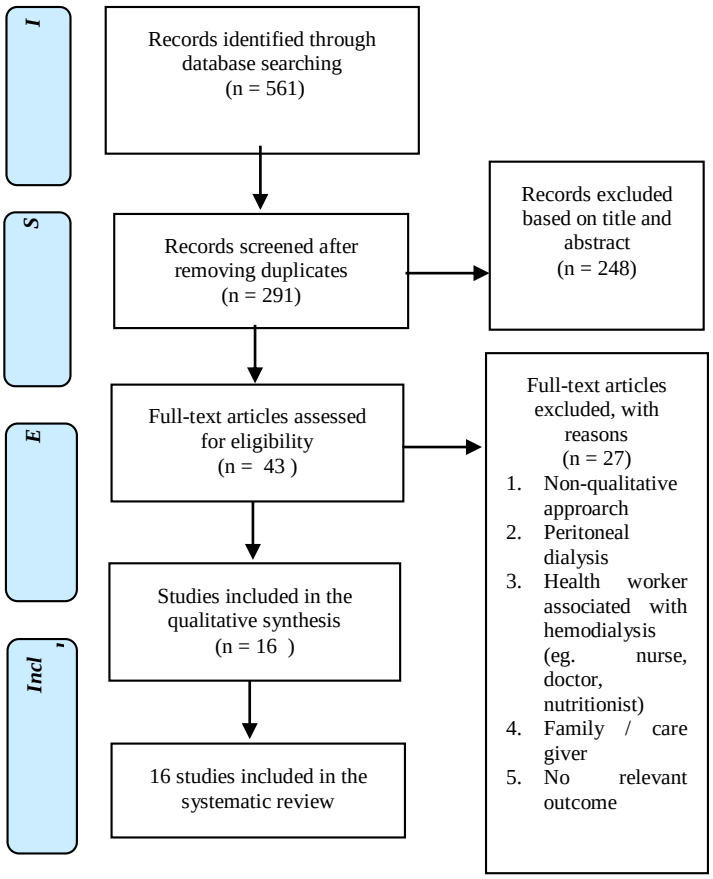

Figure 1. Flow Diagram

3.3.1 *Understanding dietary and fluid restrictions.*

Compliance with the diet and fluid restrictions is important for hemodialysis patients, and they must understand the dietary and fluid restrictions in order to comply. A lack of adherence to the dietary and fluid restrictions is due to the limited patient education such as a lack of understanding and purpose, self-educateion and the consequences of fluid and dietary restrictions [14].

Hemodialysis patients claim that it is difficult to control their diet and fluids because they are unable to resist their thirst and because they are hesitant to consume the recommended foods. This is as the foods that are recommended seem bland to consume. They know that limiting their diet and fluid intake to maintain their health is the best thing to do because their kidneys are not functioning [19,20]. Based on [21] and [6], patients consciously ignore the dietary and fluid restrictions intentionally because they consider it to be less important and unreasonable. However, the fluids and food are a necessity and they are an element that is needed by the body to carry out activities. However, most patients have knowledge of the effects and complications of non-compliance with their diet and fluid restrictions but they do not adhere to them because they do not feel the negative effects [9].

A few patients who do carry out diet and fluid restrictions do so due to not wanting to be hospitalized. The patient must accept their new identity as a hemodialysis patient and cultivate their mind to accept the limits that they need to apply to their food and drink [12].

3.3.2 Experience of support. Changes in the lifestyle of hemodialysis patients in terms of regulating their food and drink intake must be done because of the decline in the function of their kidneys. The patients need support from the people around them.

Family support was identified as a support system for the hemodialysis patients so as to improve patient self-management. The role of the family reminded the patients of what to do and they actively participated in limiting their drinks, and regulating and providing the patient's diet. However, the form of family support differs between the sexes; male patients get direct support from their partners regarding diet and fluid preparation by regulating their diet and limiting the ingredients, while the female patients receive support from their family members and they prepare their own food menu [7,9,22–24].

Support from fellow hemodialysis patients is done by sharing experiences focused on carrying out fluid restrictions, and the impact that is experienced also increases their compliance [19,22]. Health professional support strengthens the patient's self-control when it comes to fluid retention. The form of support given by the health professionals (nutritionists) is counseling done routinely to regulate the dietary restrictions. This includes the explanation of the food, what can be consumed and what to avoid, and how to cook food so then the potassium is not too high and demonstrations by the nutritionists to make the patients motivated. The frequency of the contact with the health professionals makes the patients feel valued and cared for in regulating their dietary and fluid restrictions [3,7,19,25]. However, the lack of family support and that of the health professionals was where they reported that they did not measure their intake of fluid objectively. They remembered what they drank because they were uninformed

about measuring their fluid and food intake, so they searched for their own information regarding fluid restrictions through the internet [14,24]. The patients reported lacking social support (environment/friends), they ate and drank normally when they were in social situations because they had difficulty controlling themselves and when they were unable to explain their condition to others, especially when visiting. There were also special events to take into account such as eating at restaurants, parties and meeting others while on vacation [6,14].

3.3.3 Experience of the psychological factors. The most common obstacle for hemodialysis patients in terms of restricting diet and fluids is psychological. The stress and frustration experienced by the hemodialysis patients when their lifestyle changes includes the limits in terms of the recommended fluid and diet. Ignoring their thirst when it is hot and eating the same food all of the time makes them suffer and get bored. According to them, the technique of limiting their fluid intake and diet is not effective. The patient does not feel that there is an effect on him when they are consuming excess liquid or sodium. The patient has the belief that the person who knows his condition best is himself and that the patient understands the fluid needs of their body [9,11,12,14,23].

Frustration when carrying out diet and fluid restrictions is felt by the hemodialysis patients ho reported that they psychologically perceived their desired food and thirst as their enemy that they can no longer perceive as pleasure. Psychological management is done because they do not want to be hospitalized and because they do not want any complications to occur [12].

3.3.4 Experience of the behavioural factors. The efforts of the hemodialysis patients when it comes to limiting their diet and fluids involve a self-assessment. Self-assessments include measuring their urine production and weighing themselves every day. They control the fluid entering but do not assess the overall status of the fluid and they often do not objectively measure the volume of fluid entering their body. They control the desire of wanting something and avoid direct contact with the food that they want because they don't want to be hospitalized and lose a lot of energy when taking fluids at the hemodialysis session [2,12,14].

However, hemodialysis patients who carry out the diet and fluid restrictions cheat for many years. They eat and drink freely like they were before they were sick, but they measure their food and drink intake. They consume based on their intuition and trial and error, so the patients understand their limits and how much they eat without causing negative effects to their bodies [6,7,13].

3.3.5 Experience of the financial factors. Finances are one of the obstacles to adhering to diet restrictions. The restricting of the diet for hemodialysis patients is "expensive" diet. The financial factors are a barrier factor for making kidney diet recommendations. The diet menu settings are that they should not consume meat that contains salt, so more money is needed to adjust to the kidney diet and dietary recommendations. These are sometimes not done because of adjusting to their new financial condition [3,11].

Going on a kidney-specific diet adjusts their income. This is because they have sufficient

income for their current lives but they find it difficult to deal with the cost of the disease. This is because everything is measured and when they want something that is in accordance with the kidney recommendations, the money to buy it is often not enough [20].

4. Discussion

This systematic review was prepared to explore the experience of hemodialysis patients in limiting their diet and fluids. We identified of 16 articles where the objectives were consistent with the systematic review.

Diets depend on the approval of the therapy regimen, one of which requires fluids and a balanced diet [8]. The understanding of the patients is needed to carry out their fluid and dietary agreements. Their fluid intake is noted every time and their diet is managed by consuming foods that are low in phosphorus, potassium and sodium, and maintaining their protein intake [14]. However, the decision to refuse the management of fluids and diet was not followed due to an increased interdialytic weight (IDWG), cardiovascular morbidity and mortality. Increased phosphorus levels are directly related to the risk of death and ventricular arrhythmias if there is an excess of potassium [8].

Support for the hemodialysis patients comes from the health professionals, their family, and their fellow patients. Family support involves someone who can motivate them directly to carry out fluid and diet management [22].

The psychological problems (stress and frustration) that occur in general hemodialysis patients are because of problems related to prevailing lifestyle changes regarding the patients associated with risks and a diet that is needed to improve health and to maintain bodily functions [9].

The lifestyle of the hemodialysis patients persists, providing boredom in relation to the therapy, depending on the compatibility and any trial problems with fluids and diet [7].

The setting of menus for hemodialysis patients in accordance with the dietary recommendations of kidney patients requires a large amount of money, and some families also have difficulty as the menu of hemodialysis patients to be shared by other family members [11,20].

5. Conclusions

Various studies have provided informed perspectives on the life experiences of hemodialysis patients in carrying out diet and fluid restrictions. This research is related to the life experience of hemodialysis patients in terms of diet and fluids. In this review, we have discussed diet and fluids, the support experience, the psychological experience, the behavioral experience and the financial experience.

Further research is very important, especially related to the meeting in the perspective of supporting hemodialysis patients in a community. In addition, the research must determine whether the research on fluids is the same between patients whether they join the community or not. There is also whether and how the frequency of hemodialysis and comorbidity makes it difficult to improve diet and fluids to consider. Clinically speaking, understanding fluids and

the importance of social, psychological, and economic support, including those used in increasing approval of fluids and diet, is important.

References

1. Bayhakki and Urai Hatthakit 2012 Lived Experiences of Patients On Hemodialysis: A Meta-Synthesis *Nephrol. Nurs. Journal*, **39** 295–304
2. Kim, Yoonsoo ·Kim M 2015 The Experience of Fluid Management in Hemodialysis Patients **45** 773–82
3. Clark-Cutaia. M N and Mary Ann Sevick., Jennifer Thurheimer-Cacciotti., Hoffman., Linda Snetselaar. L E B and S L Z 2018 Perceived Barriers to Adherence to Hemodialysis Dietary Recommendations 1–21
4. Mi-Kyoung Cho., Gisoo Shin. 2016 Gender-based experiences on the survival of chronic renal failure patients under hemodialysis for more than 20 years *Appl. Nurs. Res.* **32** 262–8
5. E. Leigh Gibson., Ines Held., Dina Khawnekar., Peter Rutherford. 2016 Differences in Knowledge , Stress , Sensation Seeking , and Locus of Control Linked to Dietary Adherence in Hemodialysis Patients **7** 1–10
6. Suetonia C. Palmer., Camilla S. Hanson., 2 Jonathan C. Craig. G F M S and Marinella Ruospo., Katrina Campbell., David W. Johnson., and Allison Tong., PhD2 3 2014 Dietary and Fluid Restrictions in CKD: A Thematic Synthesis of Patient Views From Qualitative Studies *Am. J. Kidney Dis.*
7. Jessica Stevenson., Allison Tong, PhD., Talia Gutman. K L C and Jonathan C. Craig,., Mark A. Brown., and Vincent W. Lee. 2018 Experiences and Perspectives of Dietary Management Among Patients on Hemodialysis: An Interview Study *J. Ren. Nutr.* 1–11
8. Beerappa H and Chandrababu R 2018 Adherence to dietary and fluid restrictions among patients undergoing hemodialysis: An observational study *Clin. Epidemiol. Glob. Heal.*
9. Leting Isabella HONG., Wenru WANG., Ee Yuee CHAN., Fatimah MOHAMED., and Hui- Chen CHE. 2017 Dietary and fluid restriction perceptions of patients undergoing haemodialysis: An exploratory study *J. Clin. NursingClinical Nurs.* **26** 3664–76
10. Clarke A L, Yates T, Smith A C and Chilcot J 2016 Patient's perceptions of chronic kidney disease and their association with psychosocial and clinical outcomes: A narrative review *Clin. Kidney J.* **9** 494–502
11. Margorit Rita KRESPI BOOTHBY., Peter SALMON. 2013 Self-Efficacy and Hemodialysis Treatment : A Qualitative and Quantitative Approach *Turkish J. Psychiatry* 1–11
12. Junhong Yu., Hui J Ng., Mooppil Nandakumar., Konstadina Griva. 2015 The management of food cravings and thirst in hemodialysis patients : A qualitative study *J. Health Psychol.*
13. Onbe H, Oka M, Shimada M, Motegi E, Motoi Y and Okabe A 2013 Defining The Culture

and Attitude Towords Dietary Management Action In People Undergoing Hemodialysis 90–5

14. Kimberly Smith., Melinda Coston., Kimberly Glock., Tom A. Elasy., Kenneth A.Wallston., Alp Ikizler., Kerri L. Cavanaugh. 2010 Patient Perspectives on Fluid Management in Chronic Hemodialysis *J. Ren. Nutr.* **20** 334–41
15. Xiaoli Huang., Jimmy Lin. D D-F 2006 Evaluation of PICO as a Knowledge Representation for Clinical Questions *AMIA 2006 Symposium Proceedings* pp 359–63
16. Alessandro Liberati., Douglas G Altman., Jennifer Tetzlaff. Cynthia Mulrow., Peter C Gøtzsche. J P A, Ioannidis. M C, P J Devereaux. J and Kleijnen., David Moher. 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions : explanation and elaboration *BMJ Online*
17. Critical Appraisal Skills Programme 2018 CASP Qualitative Checklist
18. Katrak P, Bialocerkowski A E, Massy-Westropp N, Kumar V S S and Grimmer K A 2004 A systematic review of the content of critical appraisal tools *BMC Med. Res. Methodol.* **4** 1–11
19. Maria Elena Tovazzi. V M 2012 Personal Paths of Fluid Restriction In Patients on Hemodialysis *Nephrol. Nurs. J.* **39** 207–17
20. Verónica Guerra-Guerrerro., Maria del Pilar Camargo Plazas. B L and González., Anna Valeria Santos Salas. C G C G 2014 Understanding the Life Experience Of People on Hemodialysis : Adherence To Treatment and Quality of Life *Nephrol. Nurs. J.* **41 No. 3**
21. Karamanidou C, Weinman J and Horne R 2014 A qualitative study of treatment burden among
22. K. Griva., H.J. Nga, J. Loei.,, N. Mooppil., H. McBain. and S P N 2013 Managing treatment for end-stage renal disease - A qualitative study exploring cultural perspectives on facilitators and barriers to treatment adherence *Psychol. Heal.* **28** 13–29
23. Jaimon T. Kelly., Katrina L. Campbell., Tammy Hoffmann., Dianne P. Reidlinger. 2017 Patient Experiences of Dietary Management in Chronic Kidney Disease : A Focus Group Study *J. Ren. Nutr.* 1–10
24. Yvette Meuleman., Lucia ten Brinke ., Arjan J. Kwakernaak., Liffert Vogt ., Joris I. Rotmans., Willem Jan W. Bos., Paul J. M. van der Boog., Gerjan Navis., Gert A. van Montfrans ., Tiny Hoekstra . F W D and S van D 2015 Perceived Barriers and Support Strategies for Reducing Sodium Intake in Patients with Chronic Kidney Disease: a Qualitative Study *Int. J. Behav. Med.* **22** 530–9
25. Reid C, Seymour J and Jones C 2016 A thematic synthesis of the experiences of adults living with hemodialysis *Clin. J. Am. Soc. Nephrol.* **11** 1206–18

Table 1. Journal Analysis Table

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
1	Patient Perspectives on Fluid Management in Chronic Hemodialysis [14]	19	Qualitative	Focus groups	Knowledge, self-assessment, psychological factors, social, physical, and environmental.
2	Personal Paths of Fluid Restriction In Patients on Hemodialysis [19]	18	Phenomenological analysis	Interviews	- Fluid restriction introduces the perception of individuals to see themselves as addicts who deal with a constant inner conflict - The difficulty in finding the right boundaries between common sense and scientific knowledge about fluid restriction - The role of personal motivation and willingness in the pursuit of compliance.
3	Defining the culture and attitude towards dietary management actions in people undergoing haemodialysis [13]	9	Ethnography	Observation & interviews	Propensity of behaviour, Affect and cognition of dietary management, and Culture and cognition
4	Managing treatment for end-stage renal disease – A qualitative study exploring cultural perspectives on facilitators and barriers to treatment adherence [22]	37	Descriptive exploratory	Interviews & Focus groups	Perceived facilitators of adherence and Perceived barriers to adherence
5	Self-Efficacy and Hemodialysis	16 &	A Qualitative and Quantitative	Interviews	practical constraints, being with others, the view of hemodialysis as

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
	Treatment: A Qualitative and Quantitative Approach [11]	156	Approach		compensating for dietary non-compliance, and emotional challenges including discomfort, distress, and boredom with dietary and fluid restrictions.
6	A Qualitative Study of Treatment Burden among Hemodialysis Recipients [21]	7	Interpretative, Phenomenological analysis	Interviews	Identity, cause, consequences, timeline, cure, cause, control, non adherence.
7	Dietary and Fluid Restrictions in CKD: A Thematic Synthesis of Patient Views From Qualitative Studies [6]	816	Qualitative study	Thematic analysis	Preserving relationships, navigating change, fighting temptation, optimizing health, and becoming empowered
8	Understanding the Life Experience Of People on Hemodialysis: Adherence To Treatment and Quality of Life [20]	15	Mixed method approach	Interviews	1. Embracing the disease and dialysis, and 2. Preventing progression of the disease through treatment management
9	The Management of Food Cravings and Thirst in Hemodialysis Patients: A Qualitative Study [12]	32	Thematic analysis	Interviews	Emotional responses, cognitive, behavioral strategies to manage food cravings and thirst, and other strategies employed to regulate diet and fluid intake in general
10	The Experience of Fluid Management in Hemodialysis Patients [2]	11	Phenomenological	Interviews	- Recognizing the need for fluid control - Observing the status of fluid accumulation - Controlling fluid intake and output - Getting used to fluid management

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No	Title, Authors, & Time	N	Design	Data Collection	Main Result
11	Perceived Barriers and Support Strategies for Reducing Sodium Intake in Patients with Chronic Kidney Disease: a Qualitative Study [24]	25	Qualitative	Interviews and focus group	1. Motivational phase - Knowledge - Motivation - Goal setting 2. Action phase - Coping - Feedback - Support 3. Maintenance phase - Adaptation - New habit
12	A Thematic Synthesis of the Experiences of Adults Living with Hemodialysis [25]	576	Qualitative study	Thematic analysis	A new dialysis–dependent self, a restricted life, regaining control and relationships with health professionals
13	Dietary and fluid restriction perceptions of patients undergoing haemodialysis: An exploratory study [9]	14	Exploratory, Qualitative study	Interviews	Pessimism, Existing struggles, Perceived quality of support, and the Immensity of self-discipline.
14	Patient Experiences of Dietary Management in Chronic Kidney Disease: A Focus Group Study [23]	21	Thematic analysis, grounded theory.	Focus group	- Exasperating stagnancy - Supporting and sustaining change - Fostering ownership - Motivators and positive learning - Threats and ambiguities of risk
15	Perceived Barriers to Adherence to Hemodialysis Dietary Recommendations [3]	30	Qualitative study	Interviews	Barriers associated with time and convenience, financial constraints, and the experience of routine dietary counseling.

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No	Title, Authors, & Time	N	Design	Data Collection	Main Result
16	Experiences and Perspectives of Dietary Management Among Patients on Hemodialysis: An Interview Study [7]	35	Thematic analysis, grounded theory.	Interviews	- Reflect the barriers to dietary change: exacerbating disruption and losing control - Represent the enablers for dietary change: attaining health benefits, achieving treatment goals, and succeeding with gaining support

FNH-798

THE ACCURACY OF CURCUMIN AS A DIAGNOSIS MEASUREMENT PREMATURE RUPTURE OF MEMBRANES

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ABSTRACT

Reduced infant mortality began from antenatal care and continues with good intranatal treatment. Enforcing an accurate diagnosis of premature rupture of membranes could prevent further complications for mother and fetus. The gold standard for diagnosing premature rupture of membranes used litmus paper. But unfortunately, the availability of litmus paper was not always ready in primary health care. This research proposes a diagnosis of premature rupture of membranes measurement used curcumin. Initially, characterization of change color at curcumin carried out to find a type of liquid based on pH value. This measurement basis was validated by measuring the change of color on underpad curcumin during delivery care or amniotomy from 30 respondent. Results show that change of color in the underpad has significant linear relation (R = 0.9434). curcumin can be used to measure premature rupture of membranes with a high accuracy of up to 91.4%.

Keywords: curcumin, change of color, accuracy, premature rupture of membranes

1. Introduction

Amniotic fluid is one of the most important aspects of pregnancy. It protects the baby from trauma, provides space for growth and prevents the cord from experiencing outside compression[1,2]. Amniotic fluid also has bacteriostatic properties that serves as a barrier to protect the fetus from infection[3,4]. However, amniotic fluid that comes out before the onset of labor results in several effects including intrauterine infection and cord compression. It is also directly related to fetomaternal morbidity[5,6]. Establishing an accurate diagnosis of premature membrane rupture is the key to effective management in order to improve fetomaternal well-being [7]. This will also help to increase the success of vaginal delivery [8].

Premature membrane rupture occurs in 10% of pregnancy, 7% of aterm pregnancy and 3% of preterm pregnancy [9]. Premature membrane rupture incidence in China in 2015 was at 2.7% - 7%, while in North America, it was 5 - 15% [10]. Meanwhile, Indonesia witnessed an incidence of premature membrane rupture in 12% of pregnancies[11]. Premature membrane rupture is not a direct cause of death but it can trigger infection that may result in both maternal and perinatal mortality as well as morbidity. One third of women with premature membrane rupture in a less-term pregnancy experience results in more severe infections for the babies instead of the mothers [12]. Up to 47.9% of infants die from the complications of infection after premature membrane rupture [13]. Infection ranked third as the direct cause of maternal death in Indonesia in 2015 [14].

The diagnosis for premature membrane rupture usually uses litmus paper [15,16] as it can

easily be performed using the remaining amniotic fluid that is held in gloved hands. The interpretation is also simple in that it only requires the observation of the litmus paper discoloration. Amniotic resistance is detected when the litmus paper turns blue (alkaline) [17]. However, this visual observation is prone to subjectivity.

Another drawback is that litmus paper is not always available in primary health care facilities, especially in rural areas. This is why there is the need to use a locally available organic material such as leaf extract, flowers and some medicinal plants as natural pH indicators to replace synthetic litmus paper [18][8]. This approach is also gaining momentum as such natural ingredients are widely available in Indonesia and they are cost effective [19][20]. One of the natural pH indicators that have been developed focuses on the color pigments of turmeric [21].

Turmeric contains curcuminoid. This substance is yellow in color, soluble in oil, insoluble in ether, and sensitive to acidic or base conditions. The pattern of discoloration of the turmeric crystals is more conspicuous than in litmus [22]. Curcumin provides clear and fast color changes (in less than 5 seconds) and shows different color changes at each pH level[23].

Nonetheless, the proposed substitution titration must be able to explain the effective performance of the substance using objective methods[24]. Digital image processing can accurately detect the color changes of amniotic fluid [25]. Image processing allows for the interpretation of the Red, Green and Blue (RGB) elements, based on sensitivity and resolution [26]. This study aims to test the accuracy of curcumin to diagnose premature membrane rupture.

2. Methods

This was an experimental study with a post-test only control design. The population was intrapartum mothers who were treated at RSUD Ungaran (Regional General Hospital of Ungaran) and Klinik Bersalin Esti Husada (Esti Husada Maternity Clinic) in Semarang, Indonesia, from February 1 to 28 February 2019. Ethical clearance was obtained from the Ethics Committee of Universitas Sultan Agung Semarang number 013 / B.1-KEPK / SA-FKG / I / 2019. It was also in accordance with the 7 points of the WHO Ethical Standard for Research with Human Beings of 2011, which includes: 1) Social Value, 2) Scientific Value, 3) Fair Valuation and Benefits, 4) Risk, 5) Persuasion, 6) and 7) Informed Consent. It also referenced the 2016 CIOMS Guidelines as indicated by the fulfillment of the indicators of each standard.

This study was initialized by characterizing the color changes of curcumin. The curcumin extract used was put on pantyliners which were then exposed to amniotic fluid. The measured amniotic pH from the panty liners was then compared with the values of the color elements on the pantyliners captured using a camera. Red, Green and Blue were the default colors. The camera was 3500 pixels x 4700 pixels. It comes with a focal distance of 3.87 mm and 500 lux of lighting, which is standard hospital lighting. The color changes of the pantyliners were validated with content validation using the Spearman-Brown coefficient. Pantyliner accuracy tends to be expressed in sensitivity values. The procedure for measuring the Red, Green and Blue color values has been shown in Fig. 1.

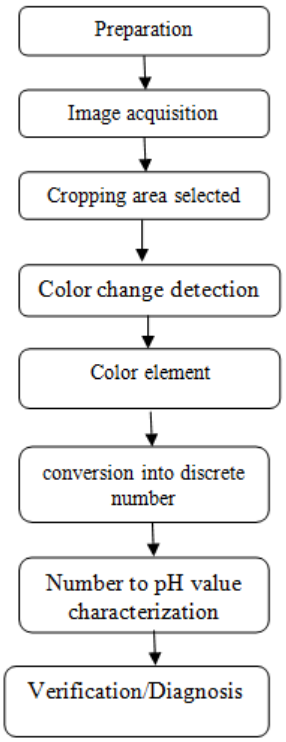

Figure 1. Procedure of amniotic fluid diagnosis using digital image processing

The data was taken from February 1 to 28 2019 involving as many as 44 amniotic samples of first-time pregnant women who underwent an amniotomy or those having their remaining amniotic water on delivery onset. Out of the 44 amniotic samples obtained, one pantyliner could not be used due to exposure to maternal urine and feces, 2 panty liners were too contaminated with delivery blood and 1 underpad sample was contaminated with meconium. The remaining 40 respondents who met the inclusion criteria were then divided into 2 groups. They were the amniotic treatment group tested using curcumin and the amniotic control group tested using litmus paper.

The color changes observed in both groups were then converted into pH standard values using MatLab. The respondent characteristics are shown in Table 1.

Table 1. Respondent characteristics

Characteristics	Curcumin Group	Litmus Group
Mean Age (year)	24.3	25.7
Mean Parity	165	1.02
Age of Pregnancy (week)	38.5	39.3
Premature membrane rupture, n	18	15
Amniotomy, n	2	5
Meconium in amniotic fluid	2	1

The curcuminin this study was extracted using 70% ethanol and 90% glacial acetate acid that was macerated for 3 days and concentrated using a rotary vacuum evaporator at 70˚C. The results of the extraction test using several treatments are as shown in Fig.2.

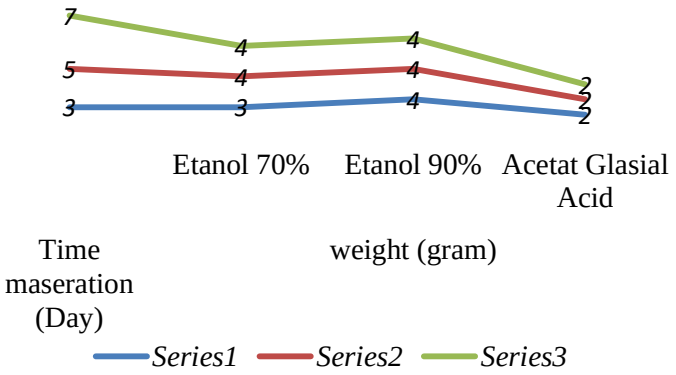

Figure 2. Maceration process of curcumin

The best performance for the curcumin was obtained from dried turmeric rhizome maceration using 70% ethanol for 3 days. The extraction products were put on the pantyliners, along with the design of the panty liner as shown in Fig. 3.

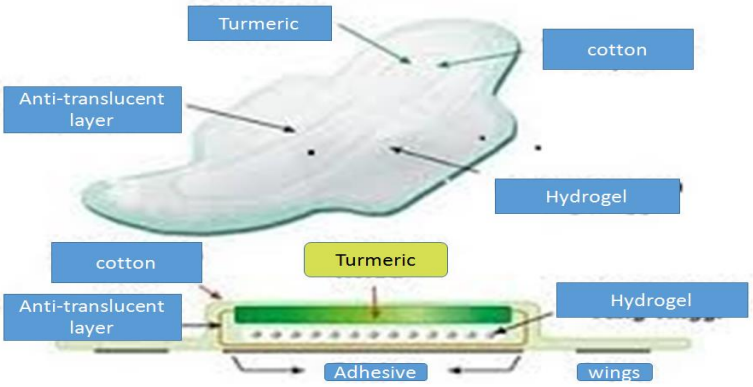

Figure 3. Product design of the pantyliner

3. Results

3.1 Characteristics of color change

Discoloration of the curcumin by liquid with a concentration of pH 4.0 - 10.0 produced 10 different color change images. The naked eye observation of the color changes in the panty liners are as shown in Fig. 4.

1 2 3 4 5

Figure 4. Color change of curcumin

Pantyliner color changes from left to right are as follows: image1 shows pH 5.0, image 2 shows pH

6.0, Image 3 shows pH 7.0, image 4 shows pH 8.0 and image5 shows pH 9.0. The duration that it took for curcumin to change color as observed by the naked eye was 0.75 seconds with good absorption. The exposure and application of the curcumin to a mixture of pH concentrations showed a unique pattern of color change that formed color blocks in line with the particle catches on concentrated liquid. The segments that absorbed the base changed color to brownish red but those that that absorbed the yellow acid tended to fade.

3.2 Conversion of curcumin color changes

A normal and clean vagina has a pH range of 4.5 - 5.5 with acidic characteristics. This property can be obtained using simulation fluids of HCL with pH concentrations in the range of 4.5 - 5.5. Prior to the simulation, the fluid was measured using a pH meter. The simulation did not show any color change in the curcumin. Urine, having a pH value of 6-7, is equivalent to a neutral pH with a slight shift to weak acidic properties. The liquid used for simulation was purified water mixed with a few drops of HCL until the same concentration as that of urine was reached with urine. Subsequent visual observations did not show any significant color change. The color was bright yellow, as original curcumin is.

Amniotic has alkaline properties with a pH range of 7.5-8.5. The liquid used here was NaOH 0.001 M. At this pH range, curcumin showed a quick and clear color change in less than 10 seconds. The color change that occurred was yellow to brick red. This simulation fluid was then measured using a digital pH meter with a pH value of 4.0 until 10.0. Each liquid was exposed to 10 curcumin pantyliners. The resulting color changes in curcumin were captured using the camera. The comparison of the average RGB values against the standard pH is as shown in Fig. 5.

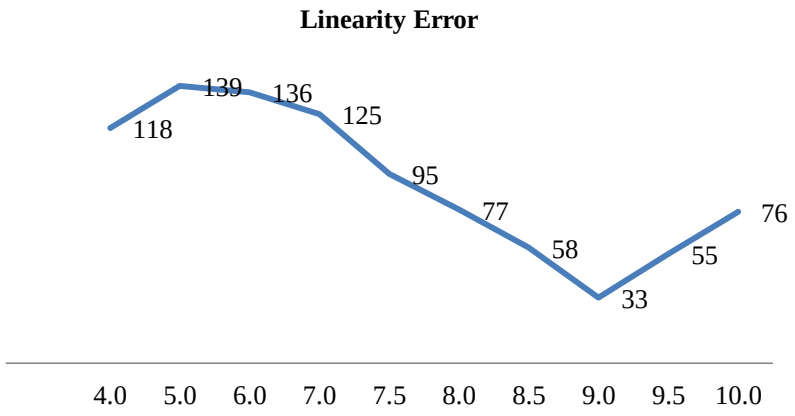

Figure 5. Comparison of the average Red, Green and Blue values with the pH standard

3.3 Linearity test between the color elements and the standard pH of amniotic fluid

Visual observation is prone to subjectivity, hence why an objective alternative is required to assess the level of consistency in the color changes of curcumin. This consistency assessment made use of image processing to explain the discrete numbers that can be justified [28]. The calculation results of the average Red, Green and Blue values shows poor linearity (R = 0.51). The measurement of the linearity of curcumin is as shown in Fig.6.

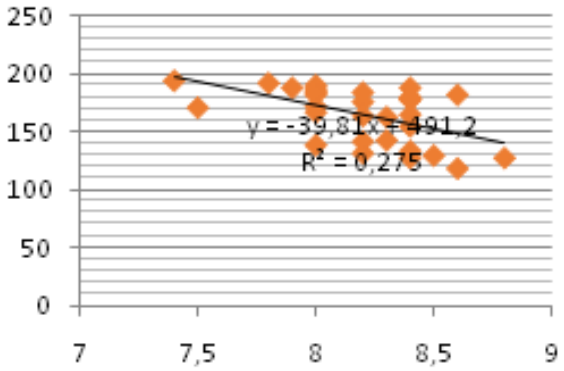

Figure 6. Significant linear relationship

3.4 Validity and reliability of curcumin

The content validity test was conducted by Dr. Adil Zulkarnain, SpOG (K), Head of the Secondary Mortgage Facility (SMF) for Obstetrics and Gynecology at RSUD Ungaran in Semarang. This expert judgment suggests that turmeric could be used as a pH detector for amniotic fluid. Curcumin reliability, according to the Spearman-Brown coefficient formula, was 0.78, which means that it has a high level of consistency.

3.5 Accuracy of curcumin

In order to be accurate, the diagnosis method using curcumin must produce small false positive and false negative group categories. There are two things that must be considered; how well the curcumin screening test identifies women positively diagnosed with premature membrane rupture and how precisely the tests classify women with normal pregnancy, albeit with negative curcumin test results or known sensitivity. This study has a sensitivity value of 95%, as shown in Table 2.

Table 2. Sensitivity of curcumin pantyliners

Positive	Positive	Negative
Curcumin Pantyliner	True Positive (19)	False Positive (1)
Negative	False Negative (0)	True Negative (0)

4. Conclusion

Amniotic fluid can be tested using curcumin with the concept of changing pH. Appropriate diagnostic information can be provided by the sensitivity values. In the intrapartum condition, getting amniotic fluid with good characteristics without blood and meconium contamination is not easy. The presence of other fluids during labor will affect the titration results. There is no standard measurement that can be used as the gold titration standard so as to ensure zero errors in the final diagnosis. Nonetheless, seeing a significant color jump is quite an effective pH detector for amniotic fluid. Other methods to improve the accuracy of the premature membrane rupture diagnoses must be developed in further studies.

References

[1] Pilliod R A, Page J M, Burwick R M, Kaimal A J, Cheng Y W and Caughey A B 2015 The risk of fetal death in nonanomalous pregnancies affected by polyhydramnios *American Journal of Obstetrics and Gynecology*

[2] Caughey A B, Robinson J N and Norwitz E R 2008 Contemporary diagnosis and management of preterm premature rupture of membranes. *Reviews in obstetrics & gynecology*

[3] Luo H, Xie A, Hua Y, Wang J, Liu Y and Zhu X 2018 Aquaporin 1 gene deletion affects the amniotic fluid volume and composition as well as the expression of other aquaporin water channels in placenta and fetal membranes *Clinica Chimica Acta*

[4] Zheng Z, Liu H, Beall M, Ma T, Hao R and Ross M G 2014 Role of aquaporin 1 in fetal fluid homeostasis. *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians***27** 505–10

[5] Lovereen S, Khanum A, Nargis N, Begum S and Afroze R 2018 Maternal and neonatal outcome in premature rupture of membranes *Bangladesh Journal of Medical Science*

[6] Ehsanipoor R 2016 Practice Bulletin No. 172: Premature Rupture of Membranes *Obstetrics and Gynecology*

[7] Van Der Ham D P, Van Melick M J G J, Smits L, Nijhuis J G, Weiner C P, Beek J J V, Mol B W J and Willekes C 2011 Methods for the diagnosis of rupture of the fetal membranes in equivocal cases: A systematic review *European Journal of Obstetrics Gynecology and Reproductive Biology*

[8] Singh S Y A 2011 Acid-Base Indicator properties of Dyes from local flower *Pharmacognosy Journal***3** 35–9

[9] Mercer B 2015 Premature Rupture of the Membranes *Protocols for High-Risk Pregnancies: An Evidence-Based Approach: Sixth Edition*

[10] Chandra I and Sun L 2017 Third trimester preterm and term premature rupture of membranes: Is there any difference in maternal characteristics and pregnancy outcomes? *Journal of the Chinese Medical Association*

[11] Irsam M, Dewi AK W E 2017 Jumlah Paritas dan Anemia sebagai Faktor Prediktor Kejadian Ketuban Pecah Dini *Jurnal Kedokteran Muhamadyah***5** 64–70

[12] Chan G J, Lee A C C, Baqui A H, Tan J and Black R E 2015 Prevalence of early-onset neonatal infection among newborns of mothers with bacterial infection or colonization: A systematic review and meta-analysis *BMC Infectious Diseases*

[13] Tchirikov M, Schlabritz-Loutsevitch N, Maher J, Buchmann J, Naberezhnev Y, Winarno A S and Seliger G 2018 Mid-trimester preterm premature rupture of membranes (PPROM): Etiology, diagnosis, classification, international recommendations of treatment options and outcome *Journal of Perinatal Medicine*

[14] Kementerian Kesehatan and Indonesia R 2015 *Kementerian Kesehatan Republik Indonesia*

[15] POGI H K F M 2016 *Pedoman Nasional Pelayanan Kedokteran Ketuban Pcah Dini*

[16] Simhan H N and Canavan T P 2005 Preterm premature rupture of membranes: Diagnosis, evaluation and management strategies *BJOG: An International Journal of Obstetrics and Gynaecology*

[17] Liang D K, Qi H B, Luo X, Xiao X Q and Jia X Y 2014 Comparative study of placental α-microglobulin-1, insulin-like growth factor binding protein-1 and nitrazine test to diagnose premature rupture of membranes: A randomized controlled trial *Journal of Obstetrics and Gynaecology Research*

[18] Okoduwa S I R, Mbora L O, Adu M E and Adeyi A A 2015 Comparative analysis of the properties of acid-base indicator of rose (Rosa setigera), Allamanda (Allamanda cathartica), and

hibiscus (Hibiscus rosa-sinensis) flowers *Biochemistry Research International***2015**
[19] Khan P, Scientific M F-J of A and 2011 undefined Analytical Applications of Plant Extract as Natural pH Indicator: A Review. *search.ebscohost.com*
[20] Burungale S H and Mali A V. 2014 Natural indicator as a eco-friendly in acid base titration *Journal of Chemical and Pharmaceutical Research*
[21] Sri Harjanti R, Lpp P, Urip Sumoharjo J and Yogyakarta B 2008 Pemungutan Kurkumin dari Kunyit (Curcuma domestica val.) dan Pemakaiannya Sebagai Indikator Analisis Volumetri *Jurnal Rekayasa Proses***2** 49
[22] Sundari R 2017 Pemanfaatan dan Efiseiensi Kurkumin Kunyit (Curcuma domestica val) Sebagai Indikator Asam Basa *Jurnal Teknoin***22**
[23] Mohammad R, Ahmad M and Daud J M 2007 Potensi reagen fenilfluoron sebagai penunjuk pH untuk pembangunan sensor optik pH *Sains Malaysiana*
[24] ASTM International 2010 Standard Test Method for Acid and Base Number by Color-Indicator Titration 1 *Annual Book of ASTM Standards*
[25] Kusumanto R D and Tompunu A N 2011 Pengolahan Citra Digital Untuk Mendeteksi Obyek Menggunakan Pengolahan Warna Model Normalisasi RGB *Seminar Nasional Teknologi Informasi & Komunikasi Terapan 2011*
[26] Blum M, Springenberg J T, Wülfing J and Riedmiller M 2012 A learned feature descriptor for object recognition in RGB-D data *Proceedings - IEEE International Conference on Robotics and Automation*

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INFORMATION TECHNOLOGY AND EDUCATION ENHANCE DIETARY ADHERENCE AMONG HEMODIALYSIS PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Dietary adherence has become the fundamental component of effective healthcare as the treatment regimen itself among Chronic Kidney Disease (CKD) receives Hemodialysis (HD). It becomes the key to reduce morbidity and mortality. Education using pamphlets or video is common method to enhance patient dietary adherence. Information technology (IT) has offered new tools to facilitate communication and monitor patient's dietary consumption. This systematic review aims to know the effectiveness of education and IT using in dietary adherence among HD patients. Literature obtained through Science Direct and Scopus data bases. This literature is restricted from 2011 until 2017. Based on a study of 15 selected journals, obtained some types of education and IT that is used to enhance dietary adherence in HD patients. The education can be group or individually using pamphlets, video or flip chart, the technologies include mobile phone applications, SMS, and web-based. This systematic review shows that education and IT are effective to enhance dietary adherence among HD patients. Information from this systematic review can be used to design future research combining Education and IT on enhancing dietary adherence among patients who receive HD therapy.

Keywords: education, information technology, dietary adherence, hemodialysis

1. Introduction

Lack of adherence to treatment is common in hemodialysis patients. Patients with end-stage renal disease, care goals focus on optimal control of mineral markers and fluid management to reduce the risk of complications and mortality [1]. Besides dialytic procedures, patient self-management or patient ability and the willingness to change and then maintain appropriate behaviors regarding diet, fluid intake and medicines, is critical to maximizing good clinical outcomes [2]. Adherence to this complex regimen is poor, with non-adherence estimates of 2% to 57% for diet, 10% to 60% for fluid intake, and 12.5% to 98.8% for medication, contributing to morbidity, avoidable hospitalization, and death [1]

Self-efficacy education facilitates the patients' acquisition of knowledge and skills to improve disease management and it has been reported to improve health outcomes across a range of chronic diseases [3]. Education using pamphlets or video is a common method to enhance patient dietary adherence. Besides that, education materials that usually are used include brochures, fact sheets, lists of foods to avoid, referral to Internet sites, and ongoing counseling [4].

Education can be an effective tool used to increase adherence but in order to facilitate dietary and fluid self-management in daily living, nurses and other health professionals are challenged to make information available at a time that is convenient for the patients, thus providing information tailored to their individual needs, cultures, and food preferences. It must also complement patient decision-making with useful feedback (5). They tried using information technology (IT) [6]. Dietary

Intake Monitoring Application (DIMA) was one of the examples of IT, based on mobile technology to facilitate self-monitoring [7].

These findings suggest that both education and electronic dietary intake self-monitoring using IT has the potential for persons receiving HD [7]. But to our knowledge, there has been no conclusion about using education and IT at the same time to increase dietary adherence with patient hemodialysis. So this systematic review aims to know the effectiveness of education and mobile application using in dietary adherence and self-efficacy among HD patients.

2. Research Methods

2.1 Search Strategy

This Systematic review uses a guide based on the Preferred Reporting Item for Systematic review and Meta-Analysis (PRISMA). The literature was obtained through the ScienceDirect and Scopus databases. This literature is restricted from 2011 until 2017. The reviewer assessed all of the articles for rigor, key research methods, credibility and relevance. Search terms using a combination of keywords mobile application AND education AND dietary adherence AND self-efficacy AND hemodialysis.

2.2 Inclusion and exclusion criteria

All of the studies used in this systematic review were experimental studies that studied mobile application and education effectiveness on enhancing dietary adherence and self-efficacy among HD patients.

2.3 Analysis

The analysis method in this systematic review refers to the PRISMA guidelines. The studies were specified according to the hypotheses before conducting the analysis. The validity of the studies included in this systematic review was assessed by random allocation, the blinding of the study, the outcome and involving of the health care provider. After determining their validity, we analyzed the studies included by following the PRISMA guidelines.

3. Result

3.1 Literature search and study selection

A total of 15 articles were identified to be included in the systematic review. The search was done through the Science Direct, Scopus, PubMed, ProQuest and CINAHL databases. After duplication screening, there were 625 articles left. Searching for full-text articles allowed for the identification and elimination of as many as 10 articles. The 15 articles included in this systematic review were made up of randomized control trials published in English.

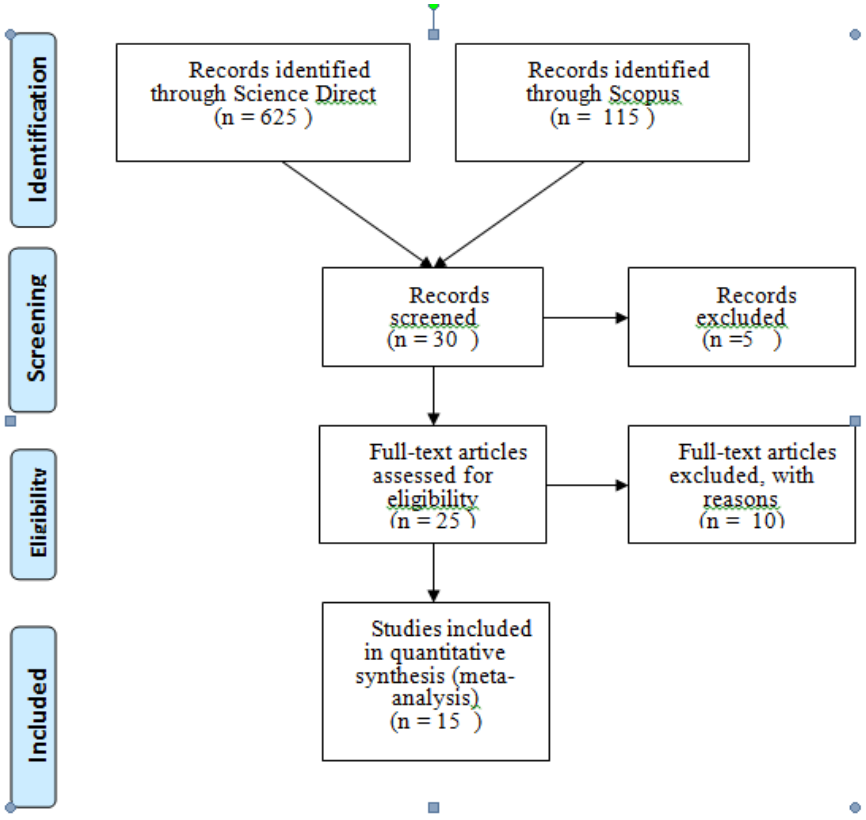

Figure 1. Flow Diagram

3.2 Mobile application and education enhancing dietary adherence and self-efficacy

Mobile applications and education are effective at enhancing the dietary adherence and self-efficacy of the HD patients. From the 15 articles, it can be concluded that the education given through nursing using many different kinds of education intervention are effective at enhancing dietary adherence. The education methods that can be used include psychological interventions (nursing as a facilitator in group discussion making a comforting environment and giving motivation to patients), systematic nursing instructors, targeted interventions by the nursing staff, direct education through nursing and using technology like smartphones or game education.

Self-efficacy is the personal judgment of their ability to manage their health. Effective education helps the patient to live healthier and for them to be more independent through self-efficacy enhancement[8]. The nurses can help the patients to increase their knowledge, positive perception, skills and achievement through a support group. This can increase patient self-efficacy and help the patient to manage their health, including dietary management.

The mobile application facilitates the user in monitoring their daily food intake. Some applications allow the user to count their daily calories, fluid or protein intake. In order to maximize the application's functions, the mobile application should be designed to present daily food recommendations. Both education and the mobile application can increase the dietary adherence by increasing fluid management, lowering the dietary phosphorus, increasing self-management and controlling BMI.

4. Discussion

Health education is an important external factor that influences self-management behavior, although a further study found that self-management education that simply provided information only produced a slight improvement in the self-management behavior of the patients [1]. The present study showed that, despite receiving health education, the behaviors associated with poor self-management continued to be observed in the patients [8]. Patients with good self-management knew what they should and should not do. This would thus increase the adherence to the diet of the patients with hemodialysis.

On the results of this study, the intervention giving to the patient was for five week to maintain good motivation. The strong motivation to maintain good health was the key to the patients realizing the benefits and necessity of the treatment, thereby improving their overall self-management[7,9].

Education has the definition of giving knowledge to others. Knowledge is essential for effecting changes in behavior. Individuals can obtain knowledge and skills through learning [3]. Accordingly, patients and their families need to actively receive knowledge, which can lead to the gradual development of healthy beliefs and attitudes that are reinforced with the adoption of healthy behaviors [3].

The mobile application used can increase dietary adherence. These findings suggest that the level of self-efficacy might improve if technology was used more. The trend for improved self-efficacy in those who used the application more often was consistent with the theoretical assertion that performance attainment is an influential source of efficacy information [7].

5. Conclusion

Adults receiving HD have difficulty implementing the complex, restrictive diet and fluid regimen in their daily living. The results of this study indicate that both IT and education are effective at increasing the dietary adherence of HD patients. The data from this study can be used to inform the development of future intervention studies designed to combine IT and education used to increase the adherence to the prescribed dietary and fluid intake regimen among the adults receiving HD.

References

[1] Cheng T, Tarng D, Liao Y, Lin P. 2016. Effects of systematic nursing instruction on a low-phosphorus diet , serum phosphorus level and pruritus of patients on haemodialysis. *Journal of Clinical Nusing.* https://doi.org/10.1111/jocn.13471.

[2] Griva K, Nandakumar M, Ng JH, Lam KFY, Mcbain H, Newman SP.2017. Hemodialysis self-management intervention randomized trial (HED-SMART): a practical low- intensity intervention to improve adherence and clinical markers in patients receiving hemodialysis. *American Journal Kidney Disease.* https://doi.org/10.1053/j.ajkd.2017.09.014.

[3] Howren MB, Cozad AJ, Christensen AJ.2016. The interactive effects of patient control beliefs on adherence to fluid-intake restrictions in hemodialysis : results from a randomized controlled trial. *Journal of Behavioral Medicine* https://doi.org/10.1177/1359105316631813.

[4] Diamantidis CJ, Zuckerman M, Fink W, Hu P, Yang S, Fink JC. 2012. Article usability of a ckd educational website targeted to patients and their family members. *Clinical Journal of the American Society of Nephrology.* https://doi.org/10.2215/CJN.03690412.

[5] Wu SV, Hsieh N, Lin L, Tsai J.2016. Prediction of self-care behaviour on the basis of knowledge about chronic kidney disease using self-efficacy as a mediator. 2016;(1):1–10.

[6] Welch JL, Astroth KS, Perkins SM, Johnson CS, Connelly K, Siek KA, et al. 2013.Using a Mobile Application to Self-Monitor Diet and Fluid Intake Among Adults Receiving Hemodialysis. *Journal of Clinical Nusing.* https://doi.org/10.1111/jocn.13305.

[7] Timmerman GM, Tahir MJ, Lewis RM, Samoson D, Temple H, Forman MR. 2017. Self-management of dietary intake using mindful eating to improve dietary intake for individuals with early stage chronic kidney disease. *Journal of Behavioral Medicine*.

https://doi.org/10.1007/s10865-017-9835-1.

[8] Teng H, Yen M, Fetzer S, Sung J, Hung S. 2013. Effects of Targeted Interventions on Lifestyle Modifications of Chronic Kidney Disease Patients : Randomized Controlled Trial. *American Journal Kidney Disease*.https://doi.org/10.1053/j.ajkd.2016.01.018.

[9] Agapito G, Simeoni M, Calabrese B, Car I, Lamprinoudi T, Guzzi PH, et al. 2018. Computer Methods and Programs in Biomedicine DIETOS : A dietary recommender system for chronic diseases monitoring and management. *Computer Methods and Programs in Biomedicine*, *153*, 93–104. https://doi.org/10.1016/j.cmpb.2017.10.014.

[10] Navis G, Vogt L, Boog PJM Van Der.2017. Original Investigation Sodium Restriction in Patients With CKD: A Randomized Controlled Trial of Self-management Support. 2017;69(5):576–86.

[11] Ann M, Woolf K, Mattoo A, Katz SD, Li H, St-jules DE, et al.2017. The Healthy Hearts and Kidneys (HHK) study : Design of a 2 × 2 RCT of technology-supported self-monitoring and social cognitive theory-based counseling to engage overweight people with diabetes and chronic kidney disease in multiple lifestyle changes. 2017;(August)

[12] Nauta JM, Boog PJM Van Der, Slegten JT, Janssen R, Hettinga M. 2013. Web-based Lifestyle Management for Chronic Kidney Disease Patients in a Clinical Setting. 2013;(c):141–6.

[13] USRDS. 2015.Chapter 1: Incidence, prevalence, patient characteristics, and treatment modalities. 2015 Annu Data Rep. 2015;2:139–58.

[14] Sabate E. 2011. WHO Adherence Meeting Report. Geneva: World Health Organization.

[15] Ishani A, Christopher J, Palmer D, Otterness S, Clothier B, Nugent S, et al. 2016. Original investigation telehealth by an interprofessional team in patients with CKD: A randomized controlled trial. *American Journal Kidney Disease*.https://doi.org/10.1053/j.ajkd.2016.01.018.

[16] Aliasgharpour M, Shomali M, Moghaddam MZ, Faghihzadeh S, Hospital AM. 2012.Effect of a self-efficacy promotion training programme on the body weight changes in patients undergoing haemodialysis. *J Ren Care* **38**(3), 155-161. 2012;155–61.

[17] Bellomo G, Coccetta P, Pasticci F, Rossi D, et al. 2015.The Effect of Psychological Intervention on Thirst and Interdialytic Weight Gain in Patients on Chronic. J Ren Nutr [Internet]. 2015;1–7. Available from: http://dx.doi.org/10.1053/j.jrn.2015.04.005

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SELF-MANAGEMENT OF DIABETES MELLITUS TYPE 2 IN ASIA: A SYSTEMATIC REVIEW OF QUALITATIVE LITERATURE

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ABSTRACT

Limited research is known about self-care management among patients with diabetes in Asian populations. Understanding the factors contributing to diabetes self-care-management (DSCM) in these populations based on literature can guide interventions aimed at improving self-care practices, achieving glycaemic control and preventing diabetes complications. This study aims to identify self-management barrier and strategies for diabetes in Asia. Literatures are obtained through Scopus and Science Direct data bases. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model for reporting integrated reviews was used for this systematic review. The result of this review, there are 7 articles (N=
147) included in this systematic review. The range of the sample sizes from the articles is 14 to 40. The range of ages is 28 to 70 years. Four major finding of self-management strategies are self-monitoring practice, social support, knowledge, and faith. Asian with diabetes experience barriers to self-care including lack of resources, stress, lack of social support, stigma, and depression. The conclusion of this review is Asian is at high risk for developing diabetes because of their race, gender, and lifestyle. Although there are many barriers to self- management, such as stress and depression, there are many positive self-management behaviours exhibited.

Keywords: self-management, diabetes mellitus type 2, qualitative

1. Introduction

Diabetes is a complex chronic illness that requires performing multiple daily self-management behaviors [1]. People with diabetes often face challenges related to diet, physical activity [2], taking medications and stress management. Such factors may be barriers to achieving optimal glycemic outcomes [3].

The prevalence of diabetes mellitus type 2 in Asian countries is high [4]. The most common version of the disease, Type 2 Diabetes Mellitus (T2DM), is a growing health concern in Asian countries such as India or China where approximately 62 million citizens have the disease [5,6]. India has the highest disease burden of T2DM among the Asian countries with the prevalence rates increasing steadily over the past 40 years [6]. Yet, besides conducting research on the diabetes risk factors [7], limited research is known about the self-care management among the patients with

diabetes in Asian populations. Understanding the factors contributing to diabetes self-care management (DSCM) in these populations can guide the interventions aimed at improving self-care practices, achieving glycemic control and preventing diabetes complications [8].

DSCM is considered to be a cornerstone for glycemic control and it is a key aspect of care [9]. According to some estimates, DSCM comprises as much as 95% of diabetes care. However, a healthy diet, regular exercise, blood glucose self-monitoring (BGSM), medication adherence and foot care adherence can be challenging [10]. They require lifestyle changes for many patients with diabetes, as well as the monitoring of a variety of daily behaviors [11].

While considerable research effort has gone into trying to understand why people do not achieve good control over their diabetes, we know little about the experiences and management practices of the minority who do [12]. A study conducted using Leventhal's Common-sense model to inform the qualitative analysis of the interview data illustrated the value of appropriately supported blood glucose monitoring in achieving an understanding of blood glucose levels [1]. To our knowledge, there has been no conclusion about self-management strategies and barriers among an Asian population. It is important to assess the self-management strategies [13] and barrier among Asians due to the differences with other regions. The purpose of this study was [1] to identify the self-management strategies used for diabetes in Asia and [2] to identify the barriers to the self-management of diabetes in Asia as well.

2. Methods

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model for reporting on integrated reviews was used for this systematic review. Scopus, ScienceDirect, PubMed, CINAHL and Google Scholar were the databases used to search the literature about diabetes mellitus type 2 management in Asia. The search terms used were as follows: self-management, diabetes mellitus and qualitative (see Figure 1). Initially, 52 articles about diabetes mellitus were found. After removing the duplicates, the titles and abstracts were examined according to the inclusion and exclusion criteria. The full articles were reviewed for goodness of fit. Articles that discussed self-management strategies were included. Secondary data analysis, reviews, non–peer-reviewed articles and qualitative studies on the caregivers of persons with other conditions were excluded. In addition, all of the qualitative studies in which the sample population was not fully Asian were excluded in order to focus on the cultural and social experience that is unique to Asians. Of the 62 articles retrieved from Scopus about diabetes, 7 met the inclusion criteria.

The reviewer assessed all of the articles for rigor, key research methods, credibility and relevance. The assessment was made using the Critical Appraisal Skills Progam (CASP's), which consists of 10 questions for qualitative research. This tool includes 10 essential appraisal questions with individual sub-prompts to guide the critical analysis and data extraction. While there were small variations of strength and weaknesses between sections of the articles, all had a clear statement of the aims and they provided convincing evidence for why a qualitative methodology was appropriate for their study; 7 articles withstood critical appraisal via the CASP tool by the reviewer and they were thus deemed valid and worthy of inclusion in the qualitative literature review. Finally, the data was

extracted into a table for review. The data fields included the study purpose, study design, sample and setting and any major findings. The data was examined to identify the major themes and any unexpected findings, particularly on the self-management of diabetes mellitus type 2 and the associated barriers.

3. Results

There were 8 articles (N=147) included in this systematic review (Table 1). The range of the sample sizes was 14 to 40. The range in age was 28 to 70 years old. The years for the articles being published dated from 2013 - 2019. The participants in this literature were Malaysian, Indian, Chinese, Vietnamese, Thai, Korean and Singaporean that contained the Chinese, Indian and Malaysian races.

3.1. Self-management strategies for diabetes mellitus type 2

The 4 major findings of self-management strategies are self-monitoring practices, social support, knowledge and faith. Almost all articles discuss these strategies as patients with both a low and high economic status do self-management practices. Patients with a high economic status keep their records with technology while patients with a low economic status keep manual records [14]. The patients used trial and error to find out the effects of the food that they ate, including taking notes and remembering and avoiding foods that cause blood sugar spikes [15].

Social support is very helpful for women in terms of self-management; 4 articles discussed social support. Women have the role of being the main support provider in their families. They want someone to help them to cook and to help them get to their doctor's appointment [16]. In addition, women also explained about their family members and friends helping them with their daily routines related to self-care and problem solving. When the support in society in the community is low, they consider it to be a barrier to agreeing to adhere to the diet and self-management of diabetes [17].

Knowledge is something that is important in the management diabetes [14]. The participants in 4 articles were interested in getting new knowledge with the initiative of attending a diabetes seminar. They came to the seminar that was organized by the local clinics to gain knowledge in order to better manage their disease. They also gained knowledge by asking healthcare professionals for information on diabetes management and diabetes care, including their family doctors, medical specialists, diabetes educators, podiatrists, ophthalmologists and dieticians [15,16].

Belief is the last theme that was discussed in all articles. Believing in their health is a very important thing and it is more essential to life than financial wealth [15]. Faith in God’s help, coupled with the fear of the consequences of diabetes, motivated them to engage in self-care practices [18].

3.2 Barriers to Diabetes Self Care

Asians with diabetes experience barriers to self-care, including a lack of resources, stress, a lack of social support, stigma, and depression. Many of the participants reported that they worried about diabetes complications, which added to their stress. Other factors that increased stress included shift work, multiple jobs and a lack of empathy from their family members [19].

The caregiving role, which caused added pressure, was reported many times by the women and not men [20]. They reported that they felt frustrated by their family obligations and responsibilities. Many Asians in these studies reported that the barriers were the most important self-care activities for diabetes: healthful eating and physical activity [17,19]. They said that a lack of motivation and a lack of time were the barriers to exercise. Similarly, many Asians reported that they struggled to make healthful food choices. In the study by Tan, it reported on the role of food as a source of comfort and stress and that trying to make healthy decisions became a source of shame for the participants. Their perception of a diet low in carbohydrates was associated with deprivation rather than building skills and strategies to successfully use food as a tool to manage their blood glucose and diabetes [17,19,20]. On the other hand, they said that they were hesitant to completely change their diets in order to maintain a healthy relationship with their family members [14].

Also evident in the research of Ansari et al was that many women felt that their family did not understand their life with diabetes well enough to assist them in meaningful ways. They believed that "their energy output was much greater than their energy input." They experienced the demand of caring for others yet they experienced very little energy flowing from others into their own lives. Almost all of the articles in the study described dissatisfaction with their health care providers as well as a lack of communication and understanding about their illness. Their physicians often rushed through their appointments and thus, they did not feel comfortable asking questions. General information and diabetes education were respected and used by the participants. However, many reported difficulties in adapting the information to their particular needs [18].

Stigma occurs in almost all countries in Asia. There is the stigma that diabetes is a disease that affects themselves. In Korea, the stigma occurs in themselves where the patients develop negative thoughts in themselves about their illness. This can ultimately disrupt their self-esteem and self-efficacy. In addition, the patients tend to avoid conversations that lead to discussing their illness and they simultaneously withdraw socially (21). In Pakistan, stigma occurs more extremely in men than women, where almost all men don't let other people know that they have diabetes. This happens in both rural and urban areas. They assume that other people will start looking down on them because of mistakes made in their past [17].

4. Discussion

The important role of diabetes management is self-care practices including the self-monitoring of blood glucose (SMBG) [14,22]. There is a relationship between knowledge and self-care practices including physical activity and adherence to diet, as shown in several studies [17,23]. Functional knowledge about the disease is reflective on the patient's behavior (SMBG) [14].

Making a behavior change in relation to the self-monitoring of blood glucose (SMBG) needs to include aspects of the process of self-management such as structuring the situation and activating resources [self-perception], accepting the options for actions [self-reflection] and believing in self-efficacy [self-regulation]. This leads to a change in the metabolic profile of the patients using blood glucose self-monitoring [24]. SMBG with structured brief counseling provided the patients with a tool for taking on more self-control resulted in an improved outlook on life [25]. Therefore, the care

plan must include the elements of disease knowledge, the potential determents that influence the treatment course and the patient's participation in treatment planning [14]. This type of care plan makes it easier to do during fasting where there is a decrease in blood sugar by up to 8.61 mg / dl [26]. Care plan can be a lifestyle intervention that has been proven effective in Muslims with diabetes [27].

Family and support systems are also something that are of a high value, although their support systems seem to play a complex role [16]. Many of them viewed caregiving as both a barrier and a facilitator of self-care. Almost all of the participants said that they had many responsibilities to others that compromised the amount of time that they had to care for themselves. They were also motivated to manage their condition so then they could be there for their family in the future. A major theme that emerged was that they felt the need to take care of others. The need of take care others made the patients stressed and it became a stigma [28]. Besides this, dietary behaviors and the perceptions are linked to culture and tradition may contribute to problems with balancing the dietary guidelines for diabetes and cultural traditions [29].

Believe in God/spirituality and believe in themselves was a major facilitator of self-care for those with diabetes [18]. Many Asians highly value their religious and spiritual beliefs, as expressed in these qualitative studies. This spirituality continues to be an important part of managing their condition [30]. They turn to God to pray and they are very active in their church, including volunteering and sometimes singing in the choir. Practicing their spirituality was a major facilitator of self-care behavior [18,30].

In contrast to caring for others, self-reliant behaviors were also important for women, as they facilitated their independence and increased their self-worth [15]. Many of the self-care behaviors that were identified, including indulgent self-care such as shopping and maintaining their favorite hairstyles, allowed the women to be more self-reliant. Attending support groups with others affected by their conditions was also a major facilitator of self-care [31]. They enjoyed the sense of belonging that they felt when they met others who were going through similar experiences. This decreased their sense of loneliness related to their condition [16].

Asian reported there to be a lack of understanding from their family and negative experiences with health care professionals [15]. Health care is an important aspect of diabetes management related to the support of individual efforts to modify their habits and to adopt a healthier lifestyle [32]. The families did not seem to understand the implications of their condition or what their life was like while living with diabetes [14]. It is thus more because of the low knowledge of their family[33]. These conditions were associated with negative experiences with health care providers, such as feeling rushed during appointments or feeling that the health care provider exercised a negative attitude toward them. For many participants, stress made it difficult to emotionally and physically manage their diabetes [18]. It is important for nurses to continuously evaluate the patient's psychological reaction to disease management because changes associated with the diagnosis of diabetes may lead to psychological effects such as depression and a negative coping style [34].

The stigma in Asia also needs to pay attention to culture. Culturally appropriate diabetes education, with specific attention to cultural beliefs about diabetes, is essential because it consistently

contributes to improved diabetes knowledge and glycemic control [35]. In San Jose Tecoh, it is particularly important to address the traditional Mayan–Yucatecan understanding of the deep relationship between the body, nature, the emotional self and society with regard to physical health [36].

Stigma and cultural barriers also exist for people living with T2DM in Mexico and the biomedical approach to disease management (i.e., acute care of T2DM symptoms and conditions) may not adequately consider these determinants of health [37]. Access to health care services may be limited due to financial constraints [38]. For example, individual financial concerns may be related to the high cost of medications, exams and healthy foods. Even when the health services are covered by public insurance, individuals may be required to pay for extra services. Culturally constructed perceptions of T2DM's causes and treatments, such as the relationship between stress and disease, may affect the individual understanding of proper diabetes management [39].

Asians with diabetes experience similar daily barriers like the patients in other countries, such as a lack of financial resources, health insurance, transportation, a flexible work schedule and the need to take daily medication and to maintain an exercise schedule and healthy diet [25,40]. As both conditions require maintaining self-care behaviors, these barriers can lead to the inefficient maintenance of self-management strategies [15]. Nurses need to consider patient co-morbidity in the compilation of skills and self-management needs. There should be a review of all patients who have management expertise that can be used in their diabetes management. They should also assess patients who have problems with social support to facilitate them accessing social support. Nurses also need to examine whether they needs to be supported to look for social support related to stigma, such as support groups or mosque communities (if appropriate).

5. Findings

Asians are at high risk of developing diabetes because of their race, gender and lifestyle. Although there are many barriers to self-management such as stress, depression and stigma, there are many positive self-management behaviors shown by Asian patients. The uniqueness of Asia is that people's trust in a God is still high. Both culture and stigma are something important to them. Both of these features can be important aspects of good self-management or not. In addition, the role of the health care providers is to listen to their patients' needs and to provide support when needed, which can affect the health of the community.

References

[1] Tanenbaum ML, Leventhal H, Breland JY, Yu J, Walker EA, Policy HC. 2016. Successful self-management among non-insulin-treated adults with Type 2 diabetes: a self-regulation perspective M. *Diabet Med*. https://doi:10.1111/dme.12745.

[2] International Diabetes Federation. IDF Diabetes Atlas (8th ed). 2017. Available from: www.dianetesatlas.org

[3] Aghili R, Polonsky WH, Ebrahim A, Malek M, Keshtkar AA, Esteghamati A. 2016. Type 2

Diabetes : Model of Factors Associated with Glycemic Control. *Can J Diabetes* http://dx.doi.org/10.1016/j.jcjd.2016.02.014.

[4] Chan K, De Souza LR, Kobayashi K, Fuller-Thomson E. 2018. Diabetes and diabetes care among non-obese South Asian Americans: Findings from a population-based study. *Diabetes Metab Syndr Clin*. https://doi.org/10.1016/j.dsx.2018.08.025.

[5] Chen XZ, Yu SJ, Li CY, Zhan XX, Yan WR. 2018. Text message–based intervention to improve treatment adherence among rural patients with type 2 diabetes mellitus: a qualitative study. *Public Health*. https://doi.org/10.1016/j.puhe.2018.06.016.

[6] Woo P, Carpenter MA, Trunkey D. 2007. Epidemiology of type 2 diabetes: Indian scenario. *Indian J med* ;26(6):217–30.

[7] Daoud N, Osman A, Hart TA, Berry EM, Adler B. 2015. Self-care management among patients with type 2 diabetes in East Jerusalem. *Health Educ J*. doi: 10.1177/0017896914555038.

[8] Ezhilarasi K, Dhamodharan U, Vijay V. 2018. BSMI single nucleotide polymorphism in vitamin D receptor gene is associated with decreased circulatory levels of serum 25-hydroxyvitamin D among micro and macrovascular complications of type 2 diabetes. *International Journal of Biological Macromolecules*. https://doi.org/10.1016/j.ijbiomac.2018.05.026.

[9] Chrvala CA, Sherr D, Lipman RD. 2016. Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. *Patient Educ Couns*; 99(6):926–43. http://dx.doi.org/10.1016/j.pec.2015.11.003.

[10] Nev A, Tiro-s T, Wacher-rodarte N. 2014. Triggering Factors of Primary Care Costs in the Years Following Type 2 Diabetes Diagnosis in Mexico. *Archives of Medical Research*. doi: 10.1177/0017896914555038.

[11] Aweko J, Man J De, Absetz P, Östenson C-G, Peterson SS, Alvesson HM. 2018. Patient and Provider Dilemmas of Type 2 Diabetes Self-Management: A Qualitative Study in Socioeconomically Disadvantaged Communities in Stockholm. *Int J Environ Res Public Heal*, Vol 15, Page 1810 Available from: http://www.mdpi.com/1660-4601/15/9/1810.

[12] Smith DM, Donnelly PJ, Howe J, Mumford T, Campbell A, Ruddock A. 2018. A qualitative interview study of people living with well-controlled Type 1 diabetes. *Psychol Health*. 0446:1–16. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29350063%0Ahttps://www.tandfonline.com/doi/full/10.1080/08870446.2017.1423313.

[13] Walker RJ, Lynch CP, Strom J, Voronca D, Egede LE. 2015. Meaning of illness and quality of life in patients with type 2 diabetes. *Journal of Diabetes and Its Complications* ;2–6. Available from: http://dx.doi.org/10.1016/j.jdiacomp.2015.04.006.

[14] Gillani SW, Sulaiman SAS, Abdul MIM, Saad SY. 2017. A qualitative study to explore the perception and behavior of patients towards diabetes management with physical disability. *Diabetology and Metabolic Syndrome* ;9(1):1–10.

[15] Carolan-Olah MC, Cassar A, Quiazon R, Lynch S. 2013. Diabetes care and service access among elderly Vietnamese with type 2 diabetes. *BMC Health Services Research*;13(1).

[16] Lundberg PC, Thrakul S. 2018. Self-care management of Thai Buddhists and Muslims with type 2 diabetes after an empowerment education program. *Nursing and Health Science*;20(3):402–8. doi: 10.1111/nhs.12423.

[17] Ansari RM, Hosseinzadeh H, Harris M, Zwar N. 2018. Self-management experiences among middle-aged population of rural area of Pakistan with type 2 diabetes: A qualitative analysis. *Clinical Epidemiology and Global Health*. https://doi.org/10.1016/j.cegh.2018.04.003.

[18] Saidi S, Milnes LJ, Griffiths J. 2018. Fatalism, Faith and Fear: A case study of self-care practice among adults with type 2 diabetes in urban Malaysia. *Journal of Clinical Nurse*. doi: 10.1111/jocn.14559.

[19] Medagama A, Galgomuwa M. 2018. Lack of infrastructure, social and cultural factors limit physical activity among patients with type 2 diabetes in rural Sri Lanka, a qualitative study. *PLoS One*. https://doi.org/ 10.1371/journal.pone.0192679.

[20] Tan CCL, Cheng KKF, Sum CF, Shew JSH, Holydard E, Wang W. 2017. Perceptions of Diabetes Self-Care Management Among Older Singaporeans With Type 2 Diabetes. *The Journal of Nursing Research*. 2017;00(0):1. Available from: http://insights.ovid.com/crossref?an=00134372-900000000-99870.

[21] Song Y, Youngshin, Song. Self-stigma Among Korean Patients with Diabetes: A Concept Analysis. :0–3. doi: 10.1111/jocn.14789.

[22] Mcgowan P. 2015. The Relative Effectiveness of Self-Management Programs for Type 2 Diabetes. *Canadian Journal of Diabetes.* 2015. http://dx.doi.org/10.1016/j.jcjd.2015.04.005.

[23] Shahar MA, Omar AM, Loh HH. 2018. High Proportion of Type 2 Diabetes Adults with Poor Glycated Hemoglobin Perceived that Their Diabetes Control was "Excellent." *Canadian Journal of Diabetes*.doi: 10.1016/j.jcjd.2018.06.003.

[24] Wermeling PR, van den Donk M, Gorter KJ, Beulens JWJ, Rutten GEHM. 2012. Frequency of monitoring diabetes in primary care: What do well-controlled patients prefer? *Canadian Journal of Diabetes* .http://dx.doi.org/10.1016/j.jcjd.2012.07.012.

[25] Vicente A, Candila J, Thomas JJ, Aguilar PG, Aviles CO. 2018. Living With Type 2 Diabetes in San Jose Tecoh , Yucatan , Mexico : A Phenomenological Study.*Journal of Transcultural Nursing*. doi: 10.1177/1043659618790090.

[26] Srulovici E, Leventer-roberts M, Curtis B, He X, Hoshen M, Rotem M. 2019. Effectiveness of Managing Diabetes During Ramadan Conversation Map intervention : A difference-in-differences (self-comparison) design. *International Journal of Nursing Studies.* https://doi.org/10.1016/j.ijnurstu.2019.04.020.

[27] Aktas MF, Mähler A, Hamm M, Perger G, Simon F, Westenhöfer J. 2018. Lifestyle interventions in Muslim patients with metabolic syndrome — a feasibility study. *European Journal of Clinical Nutrition*. http://dx.doi.org/10.1038/s41430-018-0371-z.

[28] Shiyanbola OO. 2018. Sociocultural Influences on African Americans ' Representations of Type 2 Diabetes : A Q ualitative S tudy. *Ethnicity and Disease*.;28(1):25–32.

[29] Benavides-vaello S, Brown SA. 2016. Sociocultural construction of food ways in low-income Mexican-American women with diabetes : a qualitative study. *Journal of Clinical Nursing.*

doi: 10.1111/jocn.13291.

[30] Yazla E, Karadere ME, Kkler FK, Karşıdağ Ç, İnanç L, Kankoç E.2018. The Effect of Religious Belief and Forgiveness on Coping with Diabetes. *J Relig Health*;57(3):1010–9.

[31] Vaala SE, Lee JM, Hood KK, Mulvaney SA. 2017. Sharing and helping : predictors of adolescents ' willingness to share diabetes personal health information with peers. *Journalof the American Medical Informatics Association.* doi: 10.1093/jamia/ocx.

[32] Wacher H, Miguel C. 2016. Effect Of An Intensive Metabolic Control Lifestyle Intervention In Type 2 Diabetes. *Patient Education and Counseling.* doi:10.1016/j.pec.2016.01.017.

[33] Ortiz LGC, Del B, Pérez Á, González ER, Martínez SP, Quirarte NHG. 2015. Self-Care Behaviors and Glycemic Control in Low-Income Adults in México With Type 2 Diabetes Mellitus May Have Implications for Patients of Mexican Heritage Living in the United States.*Clinical Nursing Research.* doi: 10.1177/1054773815586542.

[34] Shayeghian Z, Hassanabadi H, Aguilar-vafaie ME, Amiri P, Besharat MA. 2016. A Randomized Controlled Trial of Acceptance and Commitment Therapy for Type 2 Diabetes Management : The Moderating Role of Coping Styles. *Plos One*. doi: 10.1371/journal.pone.

[35] Creamer J, Attridge M, Ramsden M, Hawthorne K. 2015. Systematic Review or Meta-analysis Culturally appropriate health education for Type 2 diabetes in ethnic minority groups : an updated Cochrane Review of randomized controlled trials. *Diabetic Medicine.* doi:10.1111/dme.12865.

[36] Hale-Gallardo J. 2015. Theorizing interculturality in healthcare: A care from a rural indigenous hospital in Mexico. In M. Rozbicki (Ed.), Perspectives on interculturality: The construction of meaning in relationships of difference. New York: Palgrave Macmillan; 207-222 p.

[37] Juárez-ramírez C, Théodore FL, Villalobos A, Jiménez- A. 2015. Social Support of Patients with Type 2 Diabetes in Marginalized Contexts in Mexico and Its Relation to Compliance with Treatment : A Sociocultural Approach. *Plos One*. doi: 10.1371/journal.pone.0141766.

[38] Gutiérrez T, Fort MP, Alvarado-molina N, Peña L, Montano CM, Murrillo S. 2013. Barriers and facilitating factors for disease self-management : a qualitative analysis of perceptions of patients receiving care for type 2 diabetes and / or hypertension in San José. *BMC Family Practice.*

[39] Frank SM, Durden TE. 2017. Two approaches , one problem : Cultural constructions of type II n , Mexico diabetes in an indigenous community in Yucat a. *Social Science & Medicine*. http://dx.doi.org/10.1016/j.socscimed.2016.11.024.

[40] Loerbroks A, Nguyen XQ, Vu-Eickmann P, Krichbaum M, Kulzer B, Icks A. 2018. Psychosocial working conditions and diabetes self-management at work: A qualitative study. *Diabetes Research and Clinical Practice*. https://doi.org/10.1016/j.diabres.2018.03.023.

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Figure 1. Preferred Reporting Items for the Systematic Reviews and Meta-Analyses (PRISMA) flowchart

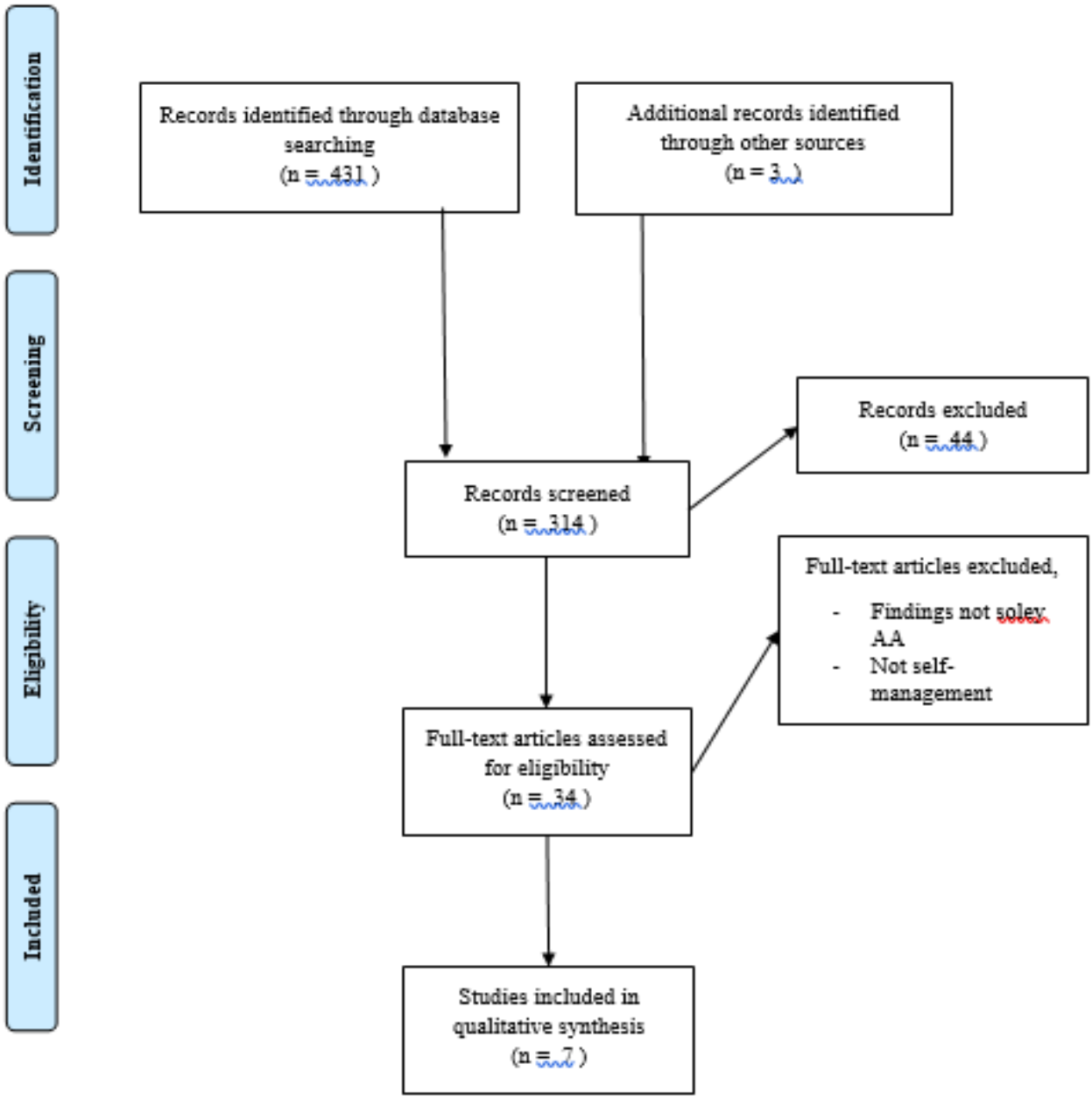

Table 1. Studies of the Self-Management of Diabetes Mellitus in Asia

Author(s) (Year)	Design and Purpose of study	Sample and Setting	Major Findings
Gillani et al 2017 (14)	Descriptive analysis To determine the used self-monitoring practices and to determine the awareness of dietary modifications and the barriers to medication adherence among the physically disabled type 2 diabetes mellitus patients	N= 21 Age range: 35-67 years old Setting: Clinic in Penang General Hospital, Malaysia	**Self-monitoring practice:** Those with a low economic status denied adopting technology and kept manual record. However, the participants from moderate or high economic status and who were either single or married showed a positive perception/willingness to adapt to technology-based monitoring. **Barrier Self-care practices**: The majority of participants were aged >40 years and had a diabetes history >11 years. They showed concern about financial conflicts. **Awareness towards diet management:** All of the participants didn't know about food management. **Barrier to diet:** A reduction in food intake in terms of carbohydrate seems to be ineffective. They may also be hesitant to change their diet because of a large number of family members eating it. **Behavior to medication**: The majority said that it was not important and that it didn't relate to diabetes management. **Improved Knowledge**: The patient usually attended a seminar to increase their knowledge
Carloan-Olah et al 2013 (15)	Phenomenology To gain a deeper understanding of the difficulties that Vietnamese patients experience when accessing services and managing their type 2 diabetes	N= 15 Age range: 60-70 years old Setting: Inner Northwest, Melbourne Region	**The value of being healthy:** The participants in this study rated their health as very important and more essential to life than financial wealth. **Controlling Disease:** The participants were proactive at controlling their disease, which included modifying their diet, restricting their consumption of certain foods, exercising and seeking advice on the best way to control

Author(s) (Year)	Design and Purpose of study	Sample and Setting	Major Findings
			their blood sugar levels. Many used a trial and error approach to work out the effect of certain foods and in the future, they avoided foods that caused a spike in their blood sugar. Other strategies included being prepared for hypoglycemic episodes and making the most of the doctors' visits to ask questions and to make sense of their medication. **Information Access**: In the final theme, the issues related to service and information access were explored. The participants attended a number of healthcare professionals for their diabetes care, including family doctors, medical specialists, diabetes educators, podiatrists, ophthalmologists and dieticians. **Barrier**: The participants mostly didn't understand when the doctor spoke too fast.
Lunberg et all (2017) (16)	Phenomenology explorative qualitative To explore the self-care management of Thai Buddhists and Muslims with type 2 diabetes	N= 27 Age range: 28-70 years old Setting: Thailand	**Becoming a self-care management practice:** They discussed practical approaches to self-care with a focus on the reduction of their blood glucose levels. **Changing daily self-care:** This theme refers to the participants' behavior in their daily lives. They worked hard to follow their plans and advice from their doctors and nurses. **Support from family and other:** Diabetes self-care is a part of family life and social life in general. The participants described that their family members and friends helped them with their daily routines when it came to self-care and problem-solving. **Barrier:** Diet was the most difficult problem, and economic difficulties, incorrect knowledge, and misleading beliefs were also barriers.
Saidi et al (2018) (18)	Phenomenology explorative qualitative To explore the self-care	N= 27 Age range: 28-69 years	**Fatalism:** Patients were fatalistic about developing diabetes – they perceived it as inevitable because it is so common in Malaysia.

Author(s) (Year)	Design and Purpose of study	Sample and Setting	Major Findings
	and self-care support of patients with type 2 diabetes in urban Malaysia	old Setting: Malaysia	**Faith**: Faith in God, coupled with fear of the consequences of diabetes, motivated them to engage in self-care practices. **Fear:** Fear was largely induced by the diabetes health care professionals working in overcrowded clinics stretched thinly across the service. They used a direct and uncompromising approach to instill the importance of self-care in order to avoid severe long term complications.
Tan et al (2017) (20)	Descriptive qualitative To explore the experiences of older Singaporeans with Type 2 diabetes in diabetes self-care management in order to understand their perceived needs, expectations and the barriers associated with their diabetes self-care management	N=14 Age range: 50-71 years old Setting: Singapore	**Diabetes is genetic, destined, and not serious; complications, let it come:** It is a family genetic condition and not cancer. Complications let them came. **I don't know diabetes**: There was a widespread expression of frustration and unhappiness over the inadequacy of health information and their lack of understanding about diabetes converging in all of the participants. **Doctor and nurses are important facilitators of self-care management:** There was a convergence of the perception that a doctor and/or nurse is the best alternative for patient who seek advice related to self-management. **Barrier:** **Diabetes self-care is difficult:** Eating is meaningless and cultural. There is no time for physical exercise and they often forget the medicine.
Ansari et al (2018) (17)	Phenomenology, qualitative To explore the patients' perceptions and the experience of the self-management of diabetes in the rural area of Pakistan and to better	N=30 Age range: 40-60 years old Setting: a medical center at	**Stigma attached to the disease:** Diabetes is considered to be "self-inflicted disease" in Pakistan – there is a moral aspect to self-management of diabetes. **Self-management in context:** In Pakistan, women often subjugated their own needs to those of other family members, usually their

Author(s) (Year)	Design and Purpose of study	Sample and Setting	Major Findings
	understand differences in diabetes self-management among men and women living with type 2 diabetes mellitus. This is as well as the barriers and challenges related to the self-management of diabetes	Al-Rehman hospital in Abbottabad, Pakistan.	husbands and children, who preferred non-diabetic foods. **The patient-doctor relationship:** The diabetic patients need to engage with a range of health professionals in order to develop and participate in self-management activities. **Adherence to diet and exercise:** It appears that the aspect of self-management is almost missing from the population. In particular, the concept of diet and exercise was not there, although some participants mentioned walking in the evening but not regularly. This was evident from the culture, tradition and lifestyle behavior of the people in the rural area of Pakistan where the eating patterns and physical activity pose a lot of difficulties for the middle-aged population in the self-management of diabetes. **Access to diabetes resources:** In Pakistan, the diabetes management program in the community health clinics is not equipped well enough to help and support the patients with diabetes. The health services in the community are not adequate. **Social support:** The lack of social support in the community in the rural area of Pakistan was very much evident from the discussions with the patients, particularly with their friends and family **Barrier:** There is a shortage of community doctors and expensive consultations with private doctors pose many problems for patients.
Medagama et al (2017) (19)	Descriptive qualitative To explore the contextual reasons that limited physical activity among the type 2 diabetic patients living in a rural community	N=40 Age range: 40-60 years old Setting: the Diabetes	**Engaging in physical activity:** None of the participants engaged in a regular regimented exercise program, and any significant PA that was performed was a part of their lifestyle. **Barriers to physical activity:** health-related, time and lifestyle

Author(s) (Year)	Design and Purpose of study	Sample and Setting	Major Findings
		Clinic at the Teaching Hospital, Peradeniya Srilanka	management, environmental, social and cultural.
Kawoun Seo (2019) (21)	Concept analysis To conduct a concept analysis of self-stigma among patients with diabetes and to introduce an operational definition of self stigma	N= 9	**Barrier to self management:** The meaning of self stigma in patients with diabetes is a state in which the persons develop negative self-feelings as they deal with the disease. This can cause low self esteem or self-efficacy or both. Then there is the tendency to avoid disclosing the illness along with social withdrawal.

FNH-844

THE EFFECT SPIRITUAL STORY TELLING TO DECREASE STRESS LEVELS OF CHILDREN TREATED AT SULTAN AGUNG ISLAMIC HOSPITAL

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ABSTRACT

Hospitalization create a good condition for children and their family. However, children's perceptions of illness vary. This was caused by the stages of development of the age of the children, previous experience of sickness, supporting factors that exist, and the ability to overcome a problem. Children will feel uneasy because they cannot play like when they were healthy. This study aimed to determine the effect of spiritual storytelling on stress levels of children admitted to hospitals.The design of the study was a design model used in conducting research. The type of this study was observational quantitative research. It used the One Group Pre and post-test with control design. The results of statistical tests of stress levels in the intervention group obtained p-value of 0.000, which means there was a significant difference between stress levels before and after treatment because the p value was <0.005. The use of spiritual story telling therapy as a non- pharmacological effort to reduce stress should be carried out in the application of nursing science.

Keywords: hospitalization, stress, spiritual story telling

1. Introduction

Being ill is a condition that can occur in anyone, especially children. During their growth and development, children who get ill can bring in stress responses both to the children themselves and to their families. The hospitalization of children increases the stress felt by the children and their families (Widayat, 2017).

According to Wahyuningsih, hospitalization is when the condition of a person in relation to their bodily functioning decreases and they are admitted to health care facilities or to a hospital. The hospitalization reactions shown by children include feeling uneasy, being unwilling to be approached by the health workers, fear and crying, feeling anxious, uncooperative and even having a temper tantrum (Wahyuningsih, 2012).

When a child gets sick, there tends to be a stress response in both the child and their family. Hospitalization creates a good condition for the children and their family. However, a child's perception of illness varies. This is caused by the stages of development depending on the age of the children, their previous experience when sick, any supporting factors that exist and the ability to overcome a problem. Children will feel uneasy because they cannot play like when they are healthy (Wong, 2009).

According to Achmad's research, (2015), storytelling has the effect of reducing the degree of stress felt by 8 year old children with leukemia who are hospitalized. This was characterized by changes in behavior before and after the intervention was given. Nurses must be able to understand the stressors and behavior of children during unhealthy conditions and when they are admitted to the hospital according to their developmental stage. Nurses are expected to provide nursing care and to be able to meet the psychological needs such as play and spirituality of the children who have experienced hospitalization (Masulili, 2013).

Previous research has shown that story telling reduces anxiety and pain. Fairy tale therapy can also address sleep disorders in children. Arad (2004) revealed that story telling with the parents helps children with Attention Deficit / Hyperactivity Disorder (ADHD). It helps the children with this disease to stay in school and to practice concentrating when they are receiving lessons. Arad said that story telling helps the children receive lessons with their parents and teachers in a state of concentration and happiness (Banarto, 2017).

Interventions to improve the ability to control stress are by teaching techniques to express their problems experienced physically, verbally, socially and spiritually. Previous research has proven that story telling effectively heals a person post-trauma. The results of the story telling and managing trauma research focused on health and spirituality at work concluded that telling stories is able to help the child to heal from trauma as a result of disasters. It also helps the therapists to do cathartic communication, which can help someone to express the burden of feelings that they do not want to be conveyed (Ruesch, 2017).

Playing is an activity that is favored by children. When playing, children directly apply various kinds of activities such as communicating and achieving satisfaction during the process of socialization with others. In vulnerable children, they need full attention from their parents and the environment around them. If the children’s needs are psychologically not fulfilled, then it can cause the children to easily experience stress. (Russell, 2017)

Therefore, the emotions of children can be directed and also trained by telling stories. By telling stories, the children can be directed to feel various things. Children can be directed on how-to live in a state of sadness and happiness. Storytelling is a good children's coping mechanism to divert the stress that they feel about their illness. Through storytelling, a feeling or emotion is trained well and it will be able to make the children feel and live with various types of roles in their life. Moreover, by telling stories, the children will be able to let go of their fear, anxiety and pain directed towards the illness, and they may be able to express anger and hostility (Gubrium, 2017).

The results of a preliminary study survey conducted at the Sultan Agung Islamic Hospital in Semarang City showed that there were around 30 pediatric patients in 2017. The percentage of children cared for, by more than 60%, was made up of pre-school age children. Of the 30 patients, 23 of them showed maladaptive behavioral changes to care. Maladaptive behavioral characteristics such as rejection, fear, sadness, no acceptance and crying when being taken care of were some of their. This happens because the child does not understand or know the health worker, the type of care and

the new environment. This creates stress in the patient. Child psychology is strongly affected by stress conditions and it can also affect the programs provided by health care workers.

Based on the description of the problems found, the researchers were interested in conducting a study on the effect of spiritual storytelling on the stress levels in the children treated at Sultan Agung Islamic Hospital.

2. Methods

The research design was a design model used in conducting research (Hidayat, 2007). This study was an observational quantitative research study. The design of this study was a one group pre-test-post-test with a control design. Therefore, the sample consisted of two groups, i.e. the control and the intervention group (Hidayat, 2014). The study aimed to determine the effect of spiritual storytelling on the stress levels of children treated in hospitals.

The population was all of the subjects with the characteristics that will be examined (Hidayat, 2007). The population in the study was 30 children treated in the hospital. The sample was part of the population to be studied (Hidayat, 2007). The sample in this study was part of the total population which can represent the children who experience increased stress. The sample was taken using the total random sampling technique. The random sampling (18 control and 18 intervention) was taken by taking the entire population to be used as samples (Hidayat, 2007). The criteria for the sample taken were the inclusion criteria resulting in an affordable target population. They were examined according to the general characteristics of the research subject (Nursalam, 2013). The inclusion criteria in the research were as follows: children who were willing to become participants in the research gave their consent verbally and this was permitted by their parents by them filling out the informed consent form. The children were aged 6 - 12 years old and they were treated for at least 3 days at Sultan Agung Islamic Hospital Semarang. The exclusion criteria resulted in removing the subjects who did not meet the inclusion criteria from the study according to the problems experienced by the children while they were being hospitalized (Nursalam, 2013).

The exclusion criteria in the study were children with special needs such as autistic children, children with hydrocephalus disease, hyperactive children and children who were in isolation rooms. This was in addition to the patients taking anxiety or stress medication.

The research was conducted at Sultan Agung Islamic Hospital, Semarang beginning in November 2017.

3. Results

The results of the study on the effect of spiritual story telling on the stress level of children treated at the hospital can be explained as follows.

The study was conducted over 4 weeks from December 3rd 2017 to January 5th 2018. The number of samples obtained was based on the following criteria, i.e., 30 respondents divided into 15 respondents as the control and intervention group. The results of the study obtained data on the characteristics of the respondents according to age, education, disease and their length of time in the

hospital under care. This is as shown in the below table.

Table 4.1. Characteristics of the Children Who Experience Stress in the Hospital

Variable	Category	Control Group N=15		Intervention Group N=15	
		N	%	N	%
Age	6 Y.O.	3	10.00	3	10.0
	7 Y.O.	4	13.35	4	13.35
	8 Y.O.	3	10.00	3	10.00
	9 Y.O	4	13.35	4	13.35
	12 Y.O	1	3.35	1	3.35
	Total	15	100	15	100
Education	1st Graders	3	10.00	3	10.00
	2nd Graders	4	13.35	4	13.35
	3rd Graders	3	10.00	3	10.00
	4th Graders	4	13.35	4	13.35
	5th Graders	0	0	0	0
	6th Graders	1	3.35	1	3.35
	Total	15	100	15	100
	Total	15	100	15	100
Diseases	DBD	2	6,35	2	6.35
	Debris	9	30,00	9	30.00
	Typhoid	4	13,35	4	13.35
	Total	15	100	15	100
Length of Hospitalization	3 Days	7	23,35	7	23.35
	4 Days	6	20,00	6	20.00
	5 Days	2	6,65	2	6.65
	Total	15	100	15	100

Based on Table 4.1, it shows that in the treatment group, most of the children were aged 7 and 9 years old, totaling 4 children (13.35%). Education on the average was in the 2nd and 4th grade of elementary school. The disease suffered from was debris for 9 children (30%) and the length of hospitalization was, on average, 3 days for 7 children (23.35%). The control group was mostly the same as the treatment group.

Univariate analysis in this study illustrated the results of the analysis on the age of respondents, in addition to the frequency distribution of the respondents' characteristics including education, disease, length of stay and their stress levels before and after the story telling treatment.

Table 4.2. Stress Level Before and After Treatment in the Control Group

Variable	Before Treatment	Percentage (%)	After Treatment	Percentage (%)
Normal	0	0	5	16,7
Mild Stress	5	16,7	10	33,3
Moderate Stress	10	33,3	0	0
Severe Stress	0	0	0	0
Chronic Stress	0	0	0	0
Total	15	100	15	100

Based on Table 4.2, the data shows that in the control group, the stress level before treatment was in the moderate stress category with 10 respondents (33.3%) and after treatment, this turned into the mild stress category with 10 respondents (33.3%).

Table 4.3. Stress Level Before and After Treatment in the Intervention Group

Variable	Before Treatment	Percentage (%)	After treatment	Percentage (%)
Normal	0	0	15	50
Mild Stress	5	16,7	0	0
Moderate Stress	10	33,3	0	0
Severe Stress	0	0	0	0
Chronic stress	0	0	0	0
Total	15	100	15	100

Based on Table 4.3, the data showed that in the treatment group before the treatment, there were 5 mild stressors (16.7%). After the intervention, it became normal (0%). For moderate stress, it was experienced by 10 people (33.3%). After the intervention, the stress levels became normal in 15 people (50%).

Bivariate analysis was carried out to determine the effect of the spiritual storytelling program on the stress level of children treated in the hospital using the Kolmogrov-Smirnov test analysis. The results of the bivariate analysis are as follows.

Results of the Marginal Homogenety Test on the Stress Levels Before and After Treatment in the Control Group

Based on Table 4.4, it was found that the stress level of the respondents before therapy was that 5 respondents in the normal category and after treatment, there were 20 respondents in the normal category. Some of the respondents who were in the same category both before and after therapy experienced an increase in stress. As for the results of the marginal homogeneity test, the p-value was 1.000 which means that Ho is rejected. Therefore, there is no difference before and after the administration of therapy in the control group.

Results of the Marginal Homogenety on the Stress Levels Before and After Treatment in the Intervention group

Based on the results of the test, it was found that the stress level of the respondents before therapy was that 5 respondents were in the mild stress level category and 10 respondents were in the moderate stress level category. After therapy, the stress level of the 15 respondents was in the normal stress level category. Some of the respondents who were in the same category before and after therapy experienced an increase in average points. As for the results of the marginal homogeneity test, the p-value was 0.000, which means that Ho was accepted. Thus, it can be seen that there is a difference before and after the treatment in the treatment group.

Table 4.4. Results of the Kolmogrov-Smirnov Test on Stress Levels after Treatment in the Intervention and Control Groups

	Stress										Total	P
	Normal		Mild		Moderate		Severe		Chronic			
	n	%	N	%	N	%	n	%	N	%		
No Treatment (Control)	0	0	5	16,7	10	33,3	0	0	0	0	15	0,000
With Treatment (Intervention)	15	50	0	0	0	0	0	0	0	0	15	

Based on the results of the Kolmogrov-Smirnov test in Table 4.6, it was found that the value of p was 0.000 (p > 0.005). This means there were differences in stress after being given therapy in both the control and intervention groups. Therefore, it can be concluded that there is an effect from spiritual story telling on stress.

4. Discussion

a. Stress levels before and after treatment in the control group

The results of the study in the control group showed that the 15 respondents generally experienced a decline; 10 respondents were in the moderate stress category and 5 respondents (16.7%) were in the mild stress category. Statistically, the majority of respondents experienced stress in the moderate stress category, totaling 10 respondents (33.3%).

In the control group, an assessment of the increase in stress levels was first performed. After that, none of the intervention was given by the researcher until the intervention process in the treatment group was completed. After 4 weeks, their stress levels were assessed. Based on the analysis of the marginal homogeneity in Table 4.5, the p value was 1.000 where p > 0.005. This means that there was no difference in stress level in the control group before and after the intervention in the treatment group.

The control group in this study did not get the spiritual story telling treatment during the study and the results showed that their general statistics showed a decrease in stress levels. This is very interesting to analyze. A behavior process is something that threatens and that can also affect the individual responses to an event on the physiological, emotional, cognitive and behavioral levels. In addition, according to Lazarus and Folkman (2012), stress is an individual condition that is influenced by the environment. The condition of spirituality in children is influenced by the existence of programs that have been made by the hospital including therapy such as playing puzzles and efforts to always pray before and after taking nursing care.

It can be concluded that even though the control group did not get spiritual storytelling therapy, in general, the decrease in stress that occurred may be due to the spiritual conditions otherwise. Thus it is important to include aspects of spirituality in each intervention.

b. Stress levels before and after treatment in the intervention group

In the intervention group, an assessment of the increase in stress levels was first carried out. After that, the treatment was given by the researcher until it was completed. After 4 weeks, the assessment of the child's stress levels was carried out. The results of the study focused on the treatment group of respondents before therapy were that 5 respondents (16.7%) were in the mild stress level category and 10 respondents (33.3%) were in the moderate stress level category. After therapy, the stress level showed that all 15 respondents (50%) were in the normal stress level category.

Based on the marginal homogeneity analysis test in the previous table, the value of p was 0.000 where $p > 0.005$. This means that there is a difference in the stress felt by the control group before and after treatment as in the intervention group.

Based on this, it can be concluded that the intervention group that received spiritual storytelling therapy saw a general decrease in stress. Therefore, it is important to administer play therapy to deal with the stress in the form of spiritual storytelling therapy that makes them motivated, causing their stress levels to decline.

c. Comparison of stress after treatment in the control and intervention groups

Stress in the control and intervention group, according to the results of the study, showed that there were differences after giving the treatment in the intervention group. This can be seen in the table on the measurement of the child's stress levels. In the intervention group, the results showed that all of the respondents experienced a decrease in stress levels and categories down to normal. Meanwhile in the control group, there were some respondents who showed a decrease from the moderate stress level category to having a mild stress level.

The results of the Kolmogrov-Smirnov statistical test found that the p - value was 0.000 ($p > 0.005$). Therefore it can be concluded that play therapy had an effect on changing the stress levels of children treated in a hospital.

There was a decrease in stress levels from moderate to mild, and even down to no stress. The emotions of children can be directed and trained by telling stories. This is because it can direct the children to feel various human feelings. Children can be directed on how to live with both sadness and happiness. Storytelling is a good child's coping method to divert stress in a child about their illness. Through story telling, a feeling or emotion can be trained to feel and live well in the context of various types of role in their life. Moreover, by telling stories, the children will be able to let go of fear, anxiety and pain felt towards disease, as well as being able to express anger and hostility (Gubrium, 2017).

According to Achmad's research (2015), story telling has an effect on reducing the level of stress in 8 year old children suffering from leukemia. This is characterized by changes in behavior before and after the intervention. Nurses should be able to understand the stressors and the child's behavior during the time when they are unhealthy and admitted to the hospital according to the stage of the child's development. Nurses are expected to be able to provide nursing care and to meet the child's psychological needs, such as play and spirituality, when they experience hospitalization (Masulili , 2013).

Previous research has showed that story telling decreases anxiety and pain. Fairy tale therapy has also been used to address sleep disorders in children. Arad (2004) revealed that story telling with the parents helps children with Attention Deficit Hyperactivity Disorder (ADHD). It helps the children with this disease stay in school and to practice concentrating when receiving lessons. Arad said that story telling helps the children receive lessons with their parents and teachers in a state of concentration and happiness (Banarto, 2017). Spirituality is a good choice to mix with story telling. People are more easily accepting of moral messages that they want to convey when they are packaged into the values of spiritualism. The combination of the two results in new concepts and ways, namely spiritual story telling, is done by utilizing the values and stories of religiosity so then their spiritual elements modify the fairy tale. (Yuniarti et al., 2017). The results of the statistical tests on the stress levels in the intervention group obtained a p value of 0.000, which means that there is a significant difference between the stress levels before and after therapy because the p value is <0.05.

5. Conclusion

The characteristics of the respondents in this study were 7 and 9 year old children totaling as many as 4 (13.35). The results obtained showed that all of the respondents experienced a decrease in stress with a percentage of 100%. In the treatment group, the stress levels before the treatment showed the result that the number of respondents who experienced mild stress was 16.7% and those who experienced stress at a moderate level was 33.3% . In the control group, the stress levels after the intervention showed the result that the number of respondents with moderate stress was 15 respondents or 100% . The results of the statistical tests on the stress levels in the intervention group obtained a p value of 0.000, which means that there is a significant difference between the stress levels before and after therapy. This is because the p value is <0.005.

The patients and wider society can use spiritual storytelling to relieve stress. For the health service institution, it is expected to apply spiritual storytelling therapy as a non-pharmacological therapy to reduce stress conditions in accordance with the operational standards that have been set. For educational institutions, the actual use of spiritual story telling therapy as a non-pharmacological effort to reduce stress should be carried out in the application of nursing science. For further research, it is expected that further research on stress control can be done through other methods (for example, writing therapy techniques and batik techniques).

References

[1] Barnato, A. E., Schenker, Y., Tiver, G., Dew, M. A., Arnold, R. M., Nunez, E. R., & Reynolds III, C. F. (2017). Storytelling in the Early Bereavement Period to Reduce Emotional Distress Among Surrogates Involved in a Decision to Limit Life Support in the ICU: A Pilot Feasibility Trial. Critical care medicine, 45(1), 35-46.

[2] Brekke I, Früh EA, Kvarme LG, Holmstrøm H. Long-time sickness absence among parents of pre-school children with cerebral palsy, spina bifida and down syndrome: a longitudinal study. BMC Pediatrics. 2017;17:26. doi:10.1186/s12887-016-0774-8.

[3] Clarke, J. (2017). The Role of Everyday Interaction Rituals Within Therapeutic Communities. In Mental Health Uncertainty and Inevitability (pp. 47-72). Springer International Publishing.

[4] Gubrium, A. C., Graham, L. F., Lowe, S., Paterno, M., & Fiddian-Green, A. (2017). The Ethics and Practice of Digital Storytelling as a Methodology for Community-Based Participatory Research in Public Health.

[5] Gucciardi E, Jean-Pierre N, Karam G, Sidani S. Designing and delivering facilitated storytelling interventions for chronic disease self-management: a scoping review. BMC Health Services Research. 2016;16:249. doi:10.1186/s12913-016-1474-7.

[6] Masulili, F. (2011). Pengaruh metode bimbingan imajinasi rekaman audio pada anak usia sekolah terhadap stres hospitalisasi di rumah sakit di kota Palu. Tesis.Universitas Indonesia

[7] Nursalam. (2013). Konsep dan Penerapan Metodologi Penelitian Keperawatan. Jakarta: Salemba Medika.

[8] Potter, Perry. (2006). Buku Ajar Fundamental Keperawatan ed-4. Jakarta : EGC

[9] Ruesch, J. (2017). Communication: The social matrix of psychiatry. Routledge.

[10] Russell, W., Smith, H., & Lester, S. (2017). Practice-based Research in Children's Play. Policy Press.

[11] Santrock, J.W. (2007). Psikologi Perkembangan. Edisi 11 Jilid 1. Jakarta : Erlangga

[12] Stuart G.W dan Sundeen S.J. (2007). Buku Saku Keperawatan Jiwa Edisi.5 Jakarta : EGC

[13] Stuart, & Sundeen. (2001). Buku Saku Keperawatan Jiwa Edisi 4. Jakarta : EGC.

[14] Wahyuningsih, A., & Febriana, D. (2012). Kajian stres hospitalisasi terhadap pemenuhan pola tidur anak usia prasekolah di ruang anak RS Baptis Kediri. Jurnal Penelitian STIKES Kediri, 4(2), 66-71.

[15] Whaley, & Wong. (2009). Buku Ajar Keperawatan Pediatrik Edisi 6. Jakarta : EGC.

[16] Widayat, A., & Ns, M. (2017). Gambaran Perubahan Fisik Dan Kecemasan Pada Anak Kanker Dengan Kemoterapi Di Rsud Dr Moewardi Surakarta (Doctoral dissertation, Universitas Muhammadiyah Surakarta).

[17] Yulitasari, Brune Indah, Anchaleeporn Amatayakul, and Sirikul Karuncharernpanit. "Factors Affecting Stress in Elderly Staying in Public Nursing Home in Yogyakarta, Indonesia." ASEAN/Asian Academic Society International Conference Proceeding Series. 2015.

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COMPLEMENTARY THERAPY TO REDUCE BLOOD SUGAR LEVELS : A SISTEMATIC REVIEW

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ABSTRACT

Hyperglycemia is one of problem that happened to clients Diabetes Mellitus is a difficult problem to controled, pharmacological interference to DM Patient has not been able to guarantee control blood sugar. There is a need to discover new therapies to controling the seriusly desease, use of complementary therapy is one of the effective alternatives to reduce blood sugar levels, like a use Nigella sativa oil extract, pomegranate seed oil, Black truffle extract, and Corn silk (Zea mays L). Herbal medicine or complementary therapy the benefit very low side effects, low price, therapeuticaly potent, and easy availability. Eleven best articles were foundusing PECOT framework in some databases; Science Direct, EBSCO, Scopus, ProQuest, Pub Med, and Spinger Link. Those articles have been chosen based on some criteria. Complementer theraphy has been avective to decrease blood glucose for patient DM. Complementer theraphy was recommended for patient with DM.

Keywords : Diabetes Melitus, complementer theraphy, hyperglycemia

1. Introduction

Diabetes mellitus is a metabolic disorder that results in the pancreas not producing enough insulin, and this can affect other major organs such as the heart, kidneys, and liver [1]. The condition in DM is characterized by hyperglycemia and glucose intolerance due to decreased insulin production and or insulin not produced at all or both. [2].

Mortality and disability in clients with DM is very high, in the world diabetes mellitus is a chronic disease that affects about 5 - 10% of the world population. The estimated global estimate for diabetes is 171 million in 2000 and will increase to 366 million by 2030 [3]. diabetes mellitus is the most degenerative disease with 102,399 cases, this is based on the annual report of the East Java Health Office in 2012.

Diabetes has become a serious threat to public health and an increasing burden on the global economy [4]. One effort to reduce DM prevalence rates is for experts to carry out research and development of herbal medicines as complementary therapies or other complementary therapies, in research conducted by Ahangarpour et al., 2017 800 species of plants have the potential for diabetes. Herbal plants that can be used as anti-diabetes include Nigella sativa oil extract (black cumin), pomegranate seed oil, black truffle (mushroom), and corn silk (Zea mays L) and many others.

From research conducted by experts, it was found that herbal plants containing anti-

inflammatory and high anti-oxidants were very good for the treatment of diabetes such as Nigella sativa extract and pomegranate seed oil, and black truffles. Whereas in the corn silk plant, the research conducted by Kristover Koloay, Gayatri Citraningtyas, 2015 besides having high antioxidants, antidiabetic, and antihyperlipidemic and contains flavonoids [6]. Corn silk has been believed to be a treatment for diabetes in China for several centuries [7]. We can find corn plants easily, cheap prices, and safe for consumption [1]

The purpose of this study is to conduct a literature review to determine the effectiveness of several herbal plants that are used as non-pharmacological therapies or complementary therapies for the treatment of DM. Of the several herbs that have been studied, corn silk (Zea mays L) has more value compared to other herbs, besides being easy to get, economical, and has enormous benefits as a form of alternative herbal therapy that can reduce blood glucose levels in patients with diabetes mellitus. This study is expected to be able to provide further research ideas in the provision of interventions for alternative herbal treatments in patients with diabetes millions so as to improve the quality of life of patients with diabetes mellitus [1].

2. Methods

2.1.*Design*

The design of this study uses systematic reviews of quantitative study approaches formulated to review relevant quantitative studies and comprehensive analysis. This systematic goal was developed based on the PICO (Patient, Intervention, Comparison, and Outcome) framework model [8]. This systematic reporting structure uses PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) [9].

2.2.*Inclusion and exclusion criteria*

This systematic review establishes the inclusion and exclusion criteria that focus on quantitative studies. The feasibility study is used to describe the provision of complementary therapy to reduce blood sugar in DM patients with language eligibility criteria with minimal abstracts using English. The year of publication is limited to the last 10 years from 2008-2018. The criteria for further inclusion groups are research on the use of complementary therapy/use of herbal therapies to reduce blood sugar in DM, while the exclusion criteria are the use of pharmacological therapy in DM patients.

2.3.*Search strategy*

A systematic search was carried out using the PICO electronic data framework and was conducted in accordance with the PICO framework [8]. The first step: searching for the electronic databases of Science Direct, EBSCO, Scopus, ProQuest, Pub Med, and Springer Link to identify key articles and identify keywords by adjusting key concepts: 1. Extracts to reduce glucose in DM 2. Complementary herbs 3. Complimentary for DM 4. Diabetes mellitus. And 5 quantitative studies. Keywords to find complete quotes and articles, including title, abstract, text, and reference information. The next step was to translate keywords in English to find relevant articles in electronic databases. After that, the filter used the PICO framework to determine which articles have been passed to be reviewed according to the topic. Complete search strategies are limited to the last 10 years between 2008-2018.

2.4.*Quality of appraisal*

The quality assessment of articles was reviewed using a quantitative Critical Appraisal Skills Program (CASP) study tool. There are 10 different questions that consider the results of qualitative studies, the validity of studies, and uses (Critical Appraisal Skills Programme, 2018).

CASP is a tool for evaluating the quality and utility of research reports (Exactly Katrak et al., 2004). 10 questions in CASP by selecting "yes", "no" or "no now" from each question. Each document was assessed independently by 3 reviewers (YD, TS, and EF). Existing judgments are combined with other reviewers in one file and if there are differences of opinion among reviewers then it will be completed in the next discussion phase. The allocation of scores on a scale of 10 for each article reviewed is based on how many "yes" answers in the score and score yes above 7 or more refers to the quality of the article that is very good. The purpose of this quality assessment is not to distinguish between quality but in a systematic process and the standard process can provide high-quality reviews based on existing topics.

3. Result

3.1.*Selection of study*

The search strategy produced a total of 112 citations, deleted 53 duplicates, 27 in the existing literature were deleted during the first screening because the title and/or abstract did not match the specified eligibility criteria. 15 full articles from the second screening phase and 8 articles obtained were retained for review, 4 additional articles were obtained from the reference screening stage and thus the last session included 12 articles on complementary therapy to reduce glucose levels in DM patients.

3.2.*Study characteristic*

A total of 12 studies reviewed in 2008-2018 were conducted in 10 countries: Thailand, Iran, China, Hong Kong, Nigeria, Turkey, Pakistan, Sudan, Indonesia, and India. Quantitative research methods consist of true laboratory experiments and quasi-experimental studies.

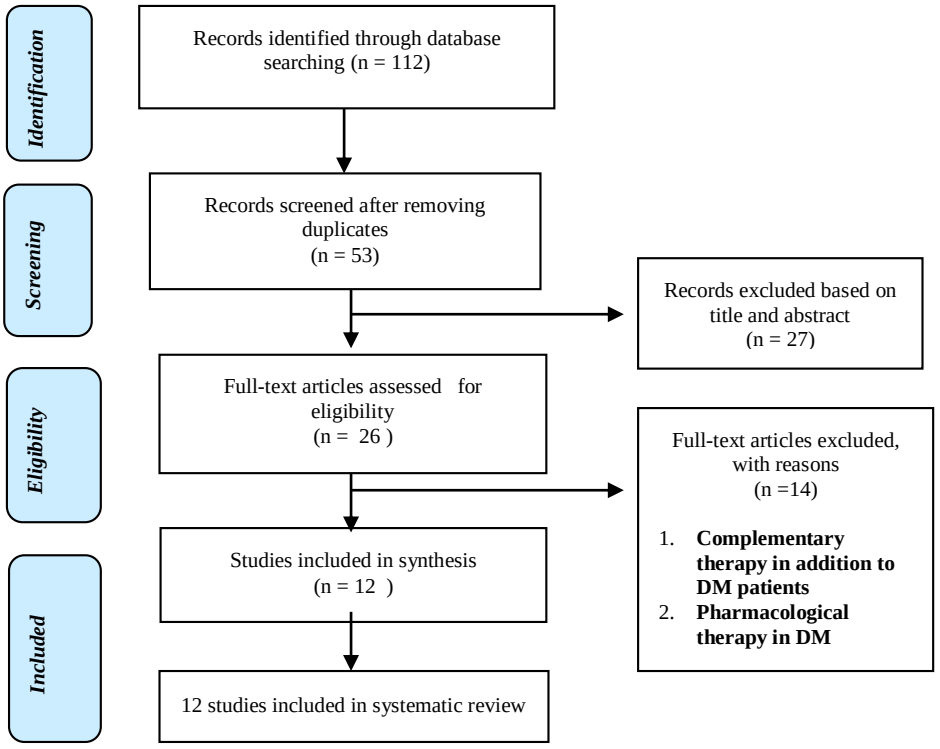

Figure 1. Flow Diagram

3.3.*Result of intervention*

Search literature identifies 12 journals that describe complementary therapy can reduce glucose levels in patients with DM. There are several advantages to using herbal ingredients as complementary therapies including:

3.3.1. Extract nigella sativa. In the research conducted by [10], it was found that administration of Nigella sativa extracts in rat experiments significantly reduced inflammation and was a good antioxidant.

3.3.2. Pomegranate seed oil. Giving pomegranate seed oil to ingredients has been shown to reduce insulin resistance by reducing inflammatory cytokines, modulating glucose homeostasis, and is antioxidant. And is one of the complementary therapies recommended for patients with DM [4].

3.3.3. Black truffle extract. Reports from [11] it was found that the administration of black truffle extract is very good for reducing inflammation and can reduce hyperglycemia.

3.3.4. Betaine treatment. Is one of the complementary therapies that can reduce HbA1c levels, and serum glucose and fat and peroxides in the liver and kidneys [12].

3.3.5. Corn silk (Zea mays L). In a study conducted by [15] corn hair (Zea Mays L) is also one of the complementary therapies that can be used as a good anti-inflammatory and anti-immunologic benefits. Research results from [11] how that in modern pharmacological studies, corn silk extract can be used as a companion drug for people with hyperglycemia, and beta cell regeneration and insulin repair. In China, corn silk has often been used as a herbal medicine [12]. Corn silk is very suitable when used as a complementary therapy in Indonesia because we can get corn plants easily, economical prices, therapeutic potential and no side effects [1].

4. Discussion

Nigella sativa extract in this study, nigella sativa extract significantly decreased fasting blood glucose significantly in the intervention condition compared with the placebo group [13]. ***Pomegranate seed oil*** in this study it was found that PA provides antidiabetic effects through various mechanisms, such as reducing inflammatory cytokines, modulating glucose homeostasis, and antioxidant properties in type 2 diabetes [4]. In Indonesia pomegranate plants are now rarely found, pomegranates are imported from abroad and are expensive. ***Black truffle***, the results of research on this study found that black truffle is one of the herbs that can reduce oxidative stress and how to regulate antioxidant synthesis at the molecular level, and can reduce the occurrence of inflammation in STZ-induced mice [10]. Black truffle is one type of plant that is less familiar, especially in Indonesia, and is only available in special places. So that it is less effective for all groups, especially middle and lower economic circles. ***Betaine treatment*** in this research study comparing two agents was compared, namely giving betain and metformin to STZ-induced DM rats. And it was produced that betain has an effect similar to metformin which can reduce blood HbA1c, serum glucose and lipid levels, and urinary protein excretion and reduce prooxidant status in the liver and kidney tissue of DM rats. However, it does not improve liver and kidney function tests in serum and histopathological findings in the liver or kidneys. In conclusion, all the findings mentioned above indicate that betain can be a supplement candidate in the treatment of DM and prevention of its complications [14]. ***Corn silk (Zea mays L)*** Corn silk is very potential to be used as an herbal plant for complementary therapy. Corn silk can be used as a good anti-inflammatory and also as an anti-oxidant. within a few decades this plant was believed in China as a hyperglycemic drug, beta cell regeneration and insulin repair [11]. Corn silk is very easy to get in Indonesia. Corn plants are spread in the provinces of Lampung, Bengkulu, East Kalimantan, West Java, West Nusa Tenggara (NTB), and East Java.

From various complementary herbal therapies of Nigella sativa extract , pomegranate seed oil, black truffle extract, betain treatment , and corn silk, it was concluded that the use of corn silk (Zea mays L) was very potential to be carried out in Indonesia, the average area of agriculture and plants corn is very easy to get in Indonesia with low prices, many benefits for therapy, no side effects [1]

5. Conclusion

Review of journals that have been done found that therapy using herbal or complementary is very significant in lowering blood glucose levels in animals try (mice) and human. Therapy the benefit very low side effects, low price, therapeutically potent, and easy availability.

Appendices

Table 1. Summary of studies

No	Title, Authors, & Time	Variable	n	Design	Result
1	**Black truffle aqueous extract attenuates oxidative stress and inflammation in STZ-induced hyperglycemic rats via Nrf2 and NF-kB pathways [10]**	Independent: extract black truffle Dependent: oxidative stress and inflammation	-	True experiment	Reducing inflammation and reducing hyperglycemia
2	**A potential compound of pomegranate seed oil in Type2 diabetes mellitus management [4]**	Independent: pomegranate seed oil Dependent: Type2 diabetes mellitus management	-	Quasi experiment	inflammatory cytokines, modulating glucose homeostasis, and antioxidant properties
3	**Betaine treatment decreased serum glucose and lipid levels, hepatic and renal oxidative stress in streptozotocin-induced diabetic rats [14]**	Independent: Betaine treatment Dependent: decreased serum glucose and lipid levels, hepatic and renal oxidative stress		True experiment	Effective in decreasing STZ-induced high levels of blood HbA1c, and serum glucose and lipid levels and prooxidant status in liver and kidney tissues.
4	**Effect of Nigella sativa oil extract on inflammatory cytokine response and oxidative stress among people with type 2 diabetes mellitus: a randomized, double-blind, placebo-controlled trial [13]**	Independent: Nigella sativa oil extract Dependent: inflammatory cytokine response and oxidative stress among people with type 2 diabetes mellitus	Sample: 43 participants divided into 2 groups, namely 1. group controls 23 participants 2. groups of 20 participants	Quasi-experiment	Potential anti-inflammatory and anti-oxidant substance

5	**Corn Silk (Zea mays L), a Source of natural antioxidants with α-amylase, α-glucosidase, advanced glycation and antidiabetic nephropathy inhibitory [2]**	Independent: Corn Silk (Zea mays L) Dependent: α-amylase, α-glucosidase, advanced glycation and antidiabetic nephropathy inhibitory	-	True experiment	Anti-inflammatory and anti-immunologic benefits
6	**Comparison of Anti-Diabetic Effects of Polysaccharides From Corn Silk On Normal And Hyperglycemia Rats [15]**	Independent: Polysaccharides Corn Silk Dependent: Normal And Hyperglycemia Rats	The 20 samples were made into 6 groups. The first group of the control group and group two were divided into 5 treatment groups	True experiment	In diabetic rats that have been given therapeutic treatment using corn-based distilled water at a dose of 100 - 500 mg / g per body weight, it significantly reduces blood gular levels, and can even reduce the total serum lipid cholesterol (TC) and total triglycerides (TG).
7	**Therapeutic Potential of Herbs Against diabetes [1]**	Independent: Therapeutic Potential of Herbs Dependent: decreased blood sugar levels and weight loss	Samples were carried out on rat experiments but the amount was not mentioned in detail	True experiment	Corn hair extract can significantly reduce blood sugar levels ($p < 0.01$) Giving extract of corn hair affects weight loss in experimental animals
8	**Hypoglycemic and Hypolipidemic Effect of Methanol Extract of Corn Silk (Zea mays) In Streptozotocin-Induced Diabetic Rats [16]**	Independent: Hypoglycemic and Hypolipidemic Effect of Methanol Extract of Corn Silk Dependent: decrease in blood sugar, blood urea, and cholesterol	24 rats were divided into 3 groups, each of which consisted of 8 rats	True experiment	The effect of methanol extract from corn in induced hyper blood glucose silk on Glycemic rat. In type II diabetes the dose of 200 mg/kg showed the highest effect of glucose reduction at 2 hours ($p < 0.001$) compared to the control group. Followed by a dose of 400 mg/kg which reduced blood glucose significantly

					(p <0.05) during the trial. Whileglibenclamide. showed a significant decrease in the second h (p <0.001) and 4 hours (p <0.05). Effect of methanol extract from corn silk In streptozotocin (type I) diabetic mice both extract doses reduced blood glucose other than blood urea (p <0.05) and the effect of cholesterol reduction was significant (p <0.001)
9	**Uji Efektivitas Ekstrak Etanol Rambut Jagung (Zea Mays L .) Terhadap Penurunan Kadar Gula Darah. Pharmacon Jurnal Ilmiah Farmasi [5]**	Independent: efektivitas ekstrak etanol rambut jagung Dependent: penurunan gula darah	15 rats were divided into 2 groups: 1. control group A (positive dick (+) 2. control group (negative control group (-)	True experiment	Based on research that corn hair ethanol extract has the effect to reduce blood glucose levels with the most effective dose is 2.25g / kgBB
10	**Corn Silk- A Medicinal Boon [11]**	Independent: rambut jagung Dependent: penurunan gula darah dan regenerasi sel beta,dan perbaikan insulin.	Using mice but not stated in detail	True experiment	Corn hair extract can be used as a medicine for hyperglycemia, and beta cell regeneration and insulin repair
11	**The ethyl acetate fraction of corn silk exhibits dual antioxidant and anti-glycation activities and protects insulin-secreting cells from glucotoxicity [17]**	Independent: The ethyl acetate fraction of corn silk exhibits dual antioxidant and anti-glycation activities Dependent: anti-glycation activities and protects insulin-secreting cells from	Separate speckle samples sprayed with anisaldehyde spray reagents and detected after ultraviolet absorption at 254 nm and 365 nm	True experiment	Corn silk can be developed as a dieting agent to protect beta cell function against pathological oxidative stress and protein breakdown in diabetes.

		glucotoxicity			
12	**Physicochemical properties and antidiabetic effects of a polysaccharide from corn silk in high-fat diet and streptozotocin-induced diabetic mice [12]**	Independent: Physicochemical properties and antidiabetic effects of a polysaccharide from corn silk Dependent: high-fat diet and streptozotocin-induced diabetic mice	48 rats were divided into 5 groups, namely: 1. Control the diabetic group 2. Positive control group 3. Group of mice with PCS1 200mg / dl 4. Groups of mice with PCS2 500mg / dl 5. Groups of mice with PCS3 800mg / dl	True experiment	PCS2 has stronger antioxidant activity and a relatively high inhibitory effect (Zhao et al., 2012) high in amylase compared to PCS1 and PCS3

References

[1] Ehsan B, Qasim M, Masoud M S and Rehman M 2013 Therapeutic potential of herbs against diabetes Beenishe **2** 138–47

[2] Wang K J and Zhao J L 2019 Corn silk (Zea mays L.), a source of natural antioxidants with α-amylase, α-glucosidase, advanced glycation and diabetic nephropathy inhibitory activities *Biomed. Pharmacother.* **110** 510–7

[3] Ahangarpour A, Heidari H, Junghani M, Absari R, Khoogar M and Ghaedi E 2017 Effects of hydroalcoholic extract of Rhus coriaria seed on glucose and insulin related biomarkers, lipid profile, and hepatic enzymes in nicotinamide-streptozotocin-induced type II diabetic male mice *Res. Pharm. Sci.* **12** 416

[4] Khajebishak Y, Payahoo L, Alivand M and Alipour B 2019 A potential compound of pomegranate seed oil in Type 2 diabetes mellitus management *J. Cell. Physiol.* **234** 2112–20

[5] Kristover Koloay, Gayatri Citraningtyas W A L 2015 Uji Efektivitas Ekstrak Etanol Rambut Jagung (Zea mays L .) Terhadap Penurunan Kadar Gula Darah *Pharmacon J. Ilm. Farm. - UNSRAT* **4** 34–40

[6] Zhang Y, Wu L, Ma Z, Cheng J and Liu J 2016 Anti-diabetic, anti-oxidant and anti-hyperlipidemic activities of flavonoids from corn silk on STZ-induced diabetic mice *Molecules* **21**

[7] Liu J, Wang C, Zhang T, Liu J, Lu S, Zhang C, Wang E, Wang Z and Zhang Y 2011 Subchronic toxicity study of corn silk with rats *J. Ethnopharmacol.* **137** 36–43

[8] Huang X, Lin J and Demner-Fushman D 2006 Evaluation of PICO as a knowledge representation for clinical questions. *AMIA ... Annu. Symp. proceedings. AMIA Symp.*

359–63

[9] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration *J. Clin. Epidemiol.* **62** e1–34

[10] Zhang T, Jayachandran M, Ganesan K and Xu B 2018 Black truffle aqueous extract attenuates oxidative stress and inflammation in STZ-induced Hyperglycemic rats via Nrf2 and NF-κB pathways *Front. Pharmacol.* **9**

[11] Vijitha T P* S D and Department 2017 Corn Silk- A Medicinal Boon **10** 129–37

[12] Pan Y, Wang C, Chen Z, Li W, Yuan G and Chen H 2017 Physicochemical properties and antidiabetic effects of a polysaccharide from corn silk in high-fat diet and streptozotocin-induced diabetic mice *Carbohydr. Polym.* **164** 370–8

[13] Hadi S, Mirmiran P, Daryabeygi-Khotbesara R and Hadi V 2018 Effect of Nigella sativa oil extract on inflammatory cytokine response and oxidative stress among people with type 2 diabetes mellitus: A randomized, double-blind, placebo controlled trial *Prog. Nutr.* **20** 127–33

[14] Doğru-Abbasoğlu S, Uysal M, Aydın A F, Evran B, Sar M and Uğuralp B 2017 Betaine treatment decreased serum glucose and lipid levels, hepatic and renal oxidative stress in streptozotocin-induced diabetic rats *Turkish J. Biochem.* **43** 343–51

[15] Zhao W, Yin Y, Yu Z, Liu J and Chen F 2012 Comparison of anti-diabetic effects of polysaccharides from corn silk on normal and hyperglycemia rats *Int. J. Biol. Macromol.* **50** 1133–7

[16] Ghada M, Eltohami M S, Nazik M M, Rawan B A, Rania E H, Azhari H N, Adurahman H N and Jessinta S 2013 Hypoglycemic and HypolipidemicEffect of Methanol Extract of Corn Silk (Zeamays)in Streptozotocin-induced Diabetic Rats **2** 668–72

[17] Chang C-C, Yuan W, Roan H-Y, Chang J-L, Huang H-C, Lee Y-C, Tsay H J and Liu H-K 2016 The ethyl acetate fraction of corn silk exhibits dual antioxidant and anti-glycation activities and protects insulin-secreting cells from glucotoxicity *BMC Complement. Altern. Med.* **16** 432

FNH-894

DIET IN PREVENTION OF HYPERTENSION : A SYSTEMATIC REVIEW

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ABSTRACT

Hypertension is a major public health problem throughout the world and is closely related to the risk of morbidity and mortality in cardiovascular and kidney disease. The purpose of this study was to determine the relationship between dietary patterns to prevent an increase in blood pressure in hypertension patient. The method used in preparing this systematic review begins with searching articles on Scopus, Science Direct and Proquest databases. Articles identified using search terms or keywords ('diet' OR 'dietary' OR 'pattern') AND ('patient' OR 'blood' OR 'pressure' OR 'hypertension') published in the last 5 years (2014-2018). The criteria for the articles used in preparing this systematic review are : cross-sectional research and / or cohort; dietary patterns related to blood pressure in hypertensive patients and / or diagnosed with hypertension; the population in the study were hypertensive patients. There were 15 journals that met the criteria to be analyzed related to diets in hypertensive patients. Food has an influence on the risk of hypertension. Nitrite diets, phenolic acid diets, high- polyphenol diets, whole grains and nuts, cereals and vegetable diets are some examples of diet or foods that can reduce the risk of hypertension.

Keywords: Hypertension; Diet; Blood pressure

1. Introduction

At present the main public health problems around the world are related to the risk of morbidity and mortality in cardiovascular and kidney disease. Hypertension according to the American College of Cardiology is defined as blood pressure above 130/80 mmHg [12].

The incidence of the number of people with hypertension increased from 600 million in 1980 to 1 billion in 2008 and is expected to increase again to 1.5 billion, accounting for a third of the world's population. The prevalence of hypertension is 46% in adults aged 25 years and over in Africa, and about 31% of US adults aged 18 years suffer from hypertension. Hypertensive complications are 9.4 million deaths annually worldwide, and at least 45% of deaths from heart disease and 51% of deaths are related to hypertension [13].

Where, the occurrence of high blood pressure (hypertension) can be used by the body for years before symptoms develop. If not controlled, sufferers can end up with disabilities, poor quality of life or even a fatal heart attack. About half of people with hypertension die of heart disease associated with poor blood flow and death from stroke due to hypertension [7].

The American Heart Association and the National Institute of Health in the United States recommend diet foods to control blood pressure and protect heart health [14]. This literature review study aims to compare what dietary patterns are, which are better at lowering blood pressure.

2. Methods

2.1 Article search strategy

The method used in preparing this systematic review begins with searching articles on Scopus, Science Direct and Proquest databases. Articles identified using search terms or keywords ('diet' OR 'dietary' OR 'pattern') AND ('patient' OR 'blood' OR 'pressure' OR 'hypertension') published in the last 5 years (2014-2018).

A total of 450 articles were found using selected keywords. There are 64 articles that are relevant to the topic, 49 articles were eliminated due to research design mismatches. So there are 15 articles chosen to be reviewed in this systematic review.

2.2 Article selection criteria

The criteria for the articles used in preparing this systematic review are : 1) cross-sectional research and / or cohort; 2) dietary patterns related to blood pressure in hypertensive patients and / or diagnosed with hypertension; 3) the population in the study were hypertensive patients and / or diagnosed with hypertension. This Systematic review was made with the aim of knowing the relationship between dietary patterns to prevent increased blood pressure in hypertensive patients.

3. Results

There are 15 journals that meet the criteria to be analyzed related to diets in patients with hypertension. From the journal, the total respondents in this discussion were 70,808 respondents who suffered from hypertension and needed the right nutrition diet to reduce or stabilize their blood pressure which consisted of ages 11 years to> 60 years. With 12 cross sectional design studies, and 3 cohort studies. From the results of this analysis it was found that food / nutrition / diet intake in patients with hypertension with several complications, such as obesity can affect the occurrence of hypertension in both children, adults, and the elderly. The diet in question is a low-acid diet, a lunch pattern, a nitrite diet, a phenotic acid diet, a diet high in polyphenols, a cereal and vegetable diet, and a grain diet. Where after concluding, only foods that contain fiber are good for lowering blood pressure or hypertension.

4. Discussion

Some studies explain the right diet to be consumed by hypertensive patients, including low-acid diets, low calcium, high-nitrite high-potassium diets, high polyphenols, fiber diets, diet of seeds and nuts. Research [6] showed that high acid consumption was directly proportional to the high systolic blood pressure and the high prevalence of hypertension in the adult population living in Germany.

In their study explained that there was no significant relationship between low calcium dietary habits and the risk of hypertension in Chinese adults [8]. The results of these studies are supported by the results of which explained that short-term interventions from calcium supplements with a daily dose of hundreds of milligrams were reported to be effective in reducing blood pressure compared to dietary calcium habits directly from food sources.

Other studies on diets recommended for hypertensive patients [4]. The results of the study explained that consuming foods containing polyphenols can reduce the risk of hypertension especially in women compared to men. Poliphenol is found in tea, beans, coffee and olive oil. Polyphenols have five main components, including flavonoids, phenolic acids, stilbenes, lignans, and others.

Phenolic acid as part of polyphenols has been shown to reduce hypertension. Explained that by consuming phenolic acid, approximately> 400 mg / day, people who experience hypertension get results with reduced high blood pressure they experience [2].

Research explained that a diet with fiber can reduce hypertension. According to the study, when people consumed 0.35 g / kg / day of fiber the risk of hypertension was reduced to 53%. The study proved that the intake of total fiber, cereals, and vegetables, but not fruit fiber, was associated with a reduced risk of hypertension in adults in the United States [13].

In line with the results who conducted a study in Korea on gender differences in the relationship between diet and the incidence of hypertension. The results showed that a diet rich in whole grains and beans was inversely proportional to the risk of hypertension in Korean women. This shows that there are gender differences in the relationship between diet and hypertension [12].

Research also explained related diets for hypertensive patients. The study explained that a diet high in nitrites can reduce the occurrence of hypertension and kidney failure. Many nitrite contained in white rice, chicken, yogurt, tomatoes, cucumber, and others. Suggestions for consumption of nitrite according to the study are 1.0 to 1.4 mg / day [1].

Describes research related to potassium diets for hypertension in adults in Germany. The study found that potassium intake had a direct lowering effect on blood pressure through lower sympathetic activity, altered baroreceptor activity, and reduced renin production and increased renal natriuresis. The potassium intake recommended by the study to reduce hypertension was 0.8 grams / day [6].

Other treatments for hypertensive patients are dietary approach to stop hypertension (DASH). As explained [14] that DASH is associated with a reduction in hypertension in people in the Philippines. The study also explained that individuals who were older, cautious, did not consume alcohol and engage in regular physical activity could have a higher DASH score. But research [5] explained that patients with hypertension were not suitable to follow the DASH guidelines. The study explained that individuals diagnosed with hypertension showed less adherence to the DASH diet than those not diagnosed with hypertension, so the diagnosis of hypertension did not seem to provide incentives to engage in healthy dietary behavior. Research on other DASH was conducted which explained that there was no significant relationship between adherence to the DASH diet and the overall incidence of obesity.

Other studies on diet related to hypertension were carried out [10] who examined the relationship of diet patterns to the incidence of hypertension in adults in Korea. The study explained that consuming alcohol and foods that contain lots of salt increases the risk of hypertension. The results of these studies provide knowledge that improving healthy lifestyles and regular exercise can reduce the risk of hypertension.

Another study on diet explained that high diet quality was measured using a dietary guidline index (DGI) associated with low incidence of hypertension. DGI is a food-based score designed to reflect the quality of the subject's diet in accordance with ADG 2013 compliance for adults in

Australia. Scores of various foods based on various foods consumed are grouped into five core food parts: fruit, vegetables, meat or alternative meat, milk and cereals [9].

Research on the Australian diet is examined [7] the study explained that there was a relationship between the frequency of eating snacks and blood pressure in men and the "later lunch" pattern associated with increased blood pressure in women.

Research[15] explained that diet and main food patterns had a relationship with the incidence of hypertension in the elderly population in China. The main food that gets attention is fast food. According to the research there is a role of the government in setting rules and policies that encourage healthy diets by using healthy foods originating locally and regionally in the prevention of hypertension. Fibrous vegetables, sprouts, soybeans, peas, and green bean sprouts are products that can be used to prevent hypertension.

5. Clinical Implication Nitrite Diets, Phenolic Acid Diets, High-Polyphenol Diets, Whole Grains and Nuts, Cereals and Vegetable Diets

Some dietary patterns that have been studied can be used as promotive, preventive, curative and rehabilitative efforts to increase blood pressure in hypertensive patients, both newly diagnosed and with a history of hypertension. So that it can minimize or eliminate complications that can occur later.

6. Conclusion

Food has an influence on the risk of hypertension. By doing dietary patterns can affect the risk factors for hypertension. Nitrite diets, phenolic acid diets, high-polyphenol diets, whole grains and nuts, cereals and vegetable diets are some examples of diet or foods that can reduce the risk of hypertension. But for a low calcium diet the results showed not so significant for lowering blood pressure. But the need for further research is done to find out the long-term side effects of dietary patterns that have been studied above.

References

[1] Bahadoran, Z., Mirmiran, P., Ghasemi, A., Carlström, M., Azizi, F., Hadaegh, F., Association between dietary intakes of nitrate and nitrite and the risk of hypertension and chronic kidney disease : Tehran lipid and glucose study. Nutrients 2016; 8, 1–13.

[2] Godos, J., Sinatra, D., Blanco, I., Mulè, S., La Verde, M., Marranzano, M., Association between dietary phenolic acids and hypertension in a mediterranean cohort. Nutrients 2017; 9.

[3] Golpour-Hamedani, S., Mohammadifard, N., Khosravi, A., Feizi, A., Safavi, S.M., Dietary approaches to stop hypertension diet and obesity : A cross-sectional study of Iranian children and adolescents. ARYA Atheroscler. 2017; 13, 7–13.

[4] Grosso, G., Stepaniak, U., Micek, A., Kozela, M., Stefler, D., Bobak, M., Pajak, A., Dietary polyphenol intake and risk of hypertension in the Polish arm of the HAPIEE study. Eur. J. Nutr. 2018; 57, 1535–1544.

[5] Kim, H., Andrade, F.C.D., Diagnostic status of hypertension on the adherence to the Dietary Approaches to Stop Hypertension (DASH) diet. Prev. Med. Reports 4 2016; 525–531.

[6] Krupp, D., Esche, J., Mensink, G.B.M., Klenow, S., Thamm, M., Remer, T., Dietary acid load and potassium intake associate with blood pressure and hypertension prevalence in a representative sample of the German adult population. Nutrients 2018; 10, 1–14.

[7] Leech, R.M., Timperio, A., Worsley, A., McNaughton, S.A., Eating patterns of Australian adults: associations with blood pressure and hypertension prevalence. Eur. J. Nutr. 2018; 0, 1–11.

[8] Liu, Z., Fang, A., He, J., Shen, X., Gao, R., Zhao, X., Li, K., Association of Habitually Low Intake of Dietary Calcium with Blood Pressure and Hypertension in a Population with Predominantly Plant-Based Diets. Nutrients 2018; 10.

[9] Livingstone, K.M., McNaughton, S.A., Diet quality is associated with obesity and hypertension in Australian adults: a cross sectional study. BMC Public Health 2016; 16, 1–10.

[10] Park, J.E., Jung, H., Lee, J.E., Dietary pattern and hypertension in Korean adults. Public Health Nutr. 2014; 17, 597–606.

[11] Ruan, Y., Huang, Y., Zhang, Q., Qin, S., Du, X., Sun, Y., Association between dietary patterns and hypertension among Han and multi-ethnic population in southwest China. 2018; 1–9.

[12] Song, S., Kim, J., Kim, J., Gender differences in the association between dietary pattern and the incidence of hypertension in middle-aged and older adults. Nutrients 2018; 10.

[13] Sun, B., Shi, X., Wang, T., Zhang, D., Exploration of the Association between Dietary Fiber Intake and Hypertension among U.S. Adults Using 2017 American College of Cardiology/American Heart Association Blood Pressure Guidelines: NHANES 2007–2014. Nutrients 2018; 10, 1–11.

[14] Tiong, X.T., Nursara Shahirah, A., Pun, V.C., Wong, K.Y., Fong, A.Y.Y., Sy, R.G., Castillo-Carandang, N.T., Nang, E.E.K., Woodward, M., van Dam, R.M., Tai, E.S., Venkataraman, K., The association of the dietary approach to stop hypertension (DASH) diet with blood pressure, glucose and lipid profiles in Malaysian and Philippines populations. Nutr. Metab. Cardiovasc. Dis. 2018; 28, 856–863.

[15] Xu, X., Byles, J.E., Shi, Z., Hall, J.J., Dietary patterns, dietary lead exposure and hypertension in the older Chinese population. Asia Pac. J. Clin. Nutr. 2018; 27, 451–459.

FNH-900

HEALTH EDUCATION PROGRAMS TO IMPROVE SELF CARE BEHAVIOR AMONG PEOPLE WITH DIABETIC FOOT ULCERS: A SYSTEMATIC REVIEW

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ABSTRACT

Self-care behavior is useful for preventing diabetic foot ulcers (DFUs) and is an important part of education that needs to be conveyed to patients. Providing an effective health education program can improve self-care behavior so that complications in the form of DFUs can be avoided. This study aims to assess health education programs to improve self-care behavior among people with DFUs. We are looking for evidence about health education programs to improve self-care behavior through the Science Direct, EBSCO and Scopus databases. We chose randomized controlled trials (RCTs) and quasi-experimental studies and searches based on inclusion criteria and keywords including 'foot', 'care' and 'diabetes'. Seven studies were assessed and reviewed in the final stages. The results showed that health education programs involving media such as videos, telephone texts, android applications and others were more effective and potential to be developed in this millennium era. However, there are certain methodological concerns in the articles reviewed, indicating the need for further evaluation.

Keywords: health education programs, self care behavior, diabetic foot ulcers.

1. Introduction

Foot care is a part of the standard practice guidelines for diabetic self-care. Continuous foot care can prevent ulcers and amputations. Compliance with DM patients in performing foot care will reduce the risk of ulcers and amputations. Efforts to change a continuous healthcare behavior need a health education. Several organizations such as the World Health Organization, International Diabetes Federation and American Diabetes Association have emphasized the importance of foot care education for DM patients (Ahmad Sharoni, Minhat, Mohd Zulkefli, & Baharom, 2016). Education and efforts to increase motivation are needed to achieve successful behavior change (PERKENI, 2015).

In the millennial era like today, the delivery of education is closely related to the use of technology. Technology is an important means of conveying information because it is more interactive and easily accessible to the public. One technology that is now developing very rapidly is mobile information and communication technology using smart-phones (Castro-López, Chávez-Mayol, Rodríguez-Piñeyro, Melendez-Mier, & Cervantes-Molina, 2017). Other method also developed to increase the foot care behavior among people with diabetes type 2 to following the update in this era.

Objective of this systematic review is to assess the health education programs to improve foot care behavior among people with diabetic foot ulcers.

2. Method

2.1.Search strategy

This Systematic review uses a guide based on the Preferred Reporting Item for Systematic review and Meta-Analysis (PRISMA) [1]. Articles identified through the Science Direct, EBSCO and Scopus databases. We chose randomized controlled trials (RCTs) and quasi-experimental studies and searches based on inclusion criteria and keywords including 'foot', 'care' and 'diabetes'.

Inclusion and exclusion criteria

2.2.Study design

All of these studies were experimental studies that studied the effectiveness of health education programs to improve self-care behavior among people with diabetic foot ulcers.

2.3.Population

Studies reviewed included people with diabetic foot ulcers, aged > 40 years.

2.4.Intervention

All types of health education programs to improve self-care behavior among people with diabetic foot ulcers.

2.5.Study selection

The protocol standard for selecting research studies is suggested in the PRISMA method for systematic review followed by screening by removing duplicates, then reviewers selecting titles, abstracts, and keywords, then deleting irrelevant text according to the selection criteria.

3. Result

3.1.Literature search and study selection

A total of 7 articles were identified to be included in this systematic review. Searching through Science Direct, EBSCO and Scopus, found 296 articles. After duplication screening, there are 268 articles left. Of these, 251 articles were eliminated because of irrelevant topics. The full text article identifies and eliminates as many as 17 articles on the grounds that it is a review article, publication is not in English, research design is not experimental and the outcome is irrelevant. See flow diagram Figure 1.

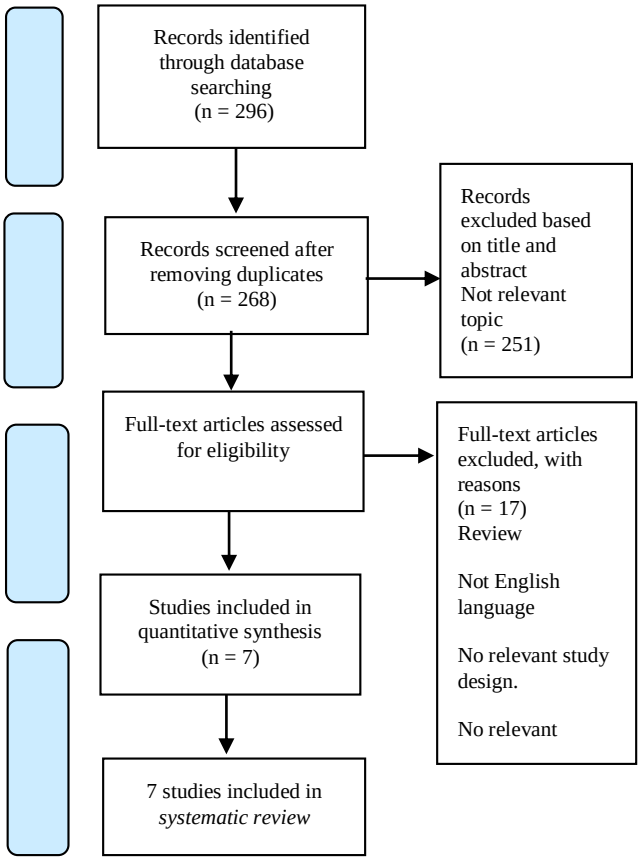

Figure 1: Flow Diagram

3.2.Type of studies

7 studies finally selected for review were three randomized controlled trial, and four quasi-experimental design.

3.3.Population

The included studies involved 977 participants. The sample size of the included studies range from 52 - 225 participants, involving people with diabetic foot ulcers.

3.4.Interventions characteristics

The interventions in this study include health education programs in an educational course, family involvement, instruction and practice program, tele homecare, mobile phone text message and written education.

3.5.Clinical outcomes measures

Studies reported foot self-care behavior, foot self-efficacy (efficacy-expectation), foot care expectation, knowledge, quality of life, fasting blood sugar, leg condition, HbA1C reduction, knowledge, foot care practices and the presence of new injuries.

3.6.Analysis of intervention

Each intervention has been explained related to its influence on the self-care behavior among people with diabetic foot ulcers.

3.7.Educational course

Brand, Musgrove, Jeffcoate, & Lincoln (2016) reported there were changes (positive to negative) STONES and NERDS occurred in 42 (84%) patients from the intervention group and 21 (42%) patients in the control group (P = 0.001). Reduction in the 60-second Diabetic Foot Screen Score was 34 (68%) for the intervention group and 24 (48%) in the control group (P = 0.03). So it was stated that the use of an integrative intervention education program was effective in reducing the danger in patients with diabetic wounds, which would lead to a decrease in infection and better dynamic conditions.

3.8.Family involvement

Marchand et al. (2018) reported that patients in the treatment group had better preventive behavior. The results of the study reinforce the importance of the duration of time and the involvement of the family to increase patients' understanding of the disease & improve the behavior of foot ulcer prevention..

3.9.Instruction and practice program

Mohammad & Khresheh (2018) reported that the implementation of educational programs developed by means of instruction and practice showed a significant increase in the level of knowledge of patients, the ability of patients to carry out their own foot care and the level of patient awareness after the implementation of the program.

3.10. Mobile phone text message

Hassan (2017) reported that knowledge and practice of patient foot care increased significantly after treatment. Providing education with Mobile phone text messages related to DFUs knowledge and prevention practices is an economical, feasible, and effective way to increase diabetic self-care, especially in developing countries.

4. Discussion

4.1.Summary of findings

This systematic review investigated the health education programs to improve foot care behavior among people with diabetic foot ulcers. The included trials were very heterogeneous, differing in outcome measures, types of intervention, types of control group and the duration of follow-up.

4.2.Limitations and future directions

There are some potential limitations related to this systematic review. (1) Heterogeneity of study design. (2) What we considered as primary outcomes (self-care behavior) was not always the same as in the original study.

5. Conclusions

This systematic review explains that health education programs to improve foot care behavior among people with diabetic foot ulcers included educational course, family involvement, instruction and practice program, tele homecare, mobile phone text message and written education.

References

[1] Ahmad Sharoni, S. K., Minhat, H. S., Mohd Zulkefli, N. A., & Baharom, A. (2016). Health education programs to improve foot self-care practices and foot problems among older people with diabetes: a systematic review. International Journal of Older People Nursing, 11(3), 214–239. https://doi.org/10.1111/opn.12112

[2] Baba, M., Duff, J., Foley, L., Davis, W. A., & Davis, T. M. E. (2015). A comparison of two methods of foot health education: The Fremantle Diabetes Study Phase II. Primary Care Diabetes, 9(2), 155–162. https://doi.org/10.1016/j.pcd.2014.05.004

[3] Bahador, R. S., Afrazandeh, S. S., Ghanbarzehi, N., & Ebrahimi, M. (2017). The impact of three-month training programme on foot care and self-efficacy of patients with diabetic foot ulcers. Journal of Clinical and Diagnostic Research, 11(7), IC01-IC04. https://doi.org/10.7860/JCDR/2017/29025.10261

[4] Brand, S. L., Musgrove, A., Jeffcoate, W. J., & Lincoln, N. B. (2016). Evaluation of the effect of nurse education on patient-reported foot checks and foot care behaviour of people with diabetes receiving haemodialysis. Diabetic Medicine, 33(2), 204–207. https://doi.org/10.1111/dme.12831

[5] Chin, Y. F., Liang, J., Wang, W. S., Hsu, B. R. S., & Huang, T. T. (2014). The role of foot self-care behavior on developing foot ulcers in diabetic patients with peripheral neuropathy: A prospective study. International Journal of Nursing Studies, 51(12), 1568–1574. https://doi.org/10.1016/j.ijnurstu.2014.05.001

[6] Chiu, S. H., Hsiao, P. J., Chan, J. S., Lin, H. C., Tu, H. M., Cheng, C. J., … Liu, C. H. (2017). The Effectiveness of the Telehomecare for Self - care Behaviors of Patients with Diabetes in Taiwan : A Consecutive Observational Study, 37(6), 245–252. https://doi.org/10.4103/jmedsci.jmedsci

[7] D'Souza, M. S., Ruppert, S. D., Parahoo, K., Karkada, S. N., Amirtharaj, A., Jacob, D., … Al Salmi, N. M. D. (2016). Foot care behaviors among adults with type 2 diabetes. Primary Care Diabetes, 10(6), 442–451. https://doi.org/10.1016/j.pcd.2016.04.002

[8] El, C., & Gonz, L. (2018). Intervención educativa de enfermería para el autocuidado de los pies en personas que viven con diabetes tipo 2, 18, 343–354. https://doi.org/10.5294/aqui.2018.18.3.8

[9] Gabish, A. M., & Mohammed, W. K. (2018). Effectiveness of health education program for patient's physical self-concept and actual foot-care behavior in people with diabetes mellitus toward managing feet at endocrinology and diabetes center in al-rusafa sector. Indian Journal of Public Health Research and Development, 9(8), 1346–1350. https://doi.org/10.5958/0976-5506.2018.00918.X

[10] Hassan, Z. M. (2017). Mobile phone text messaging to improve knowledge and practice of diabetic foot care in a developing country: Feasibility and outcomes. International Journal of Nursing Practice, 23, 1–6. https://doi.org/10.1111/ijn.12546

[11] Hemmati Maslakpak, M., Shahbaz, A., Parizad, N., & Ghafourifard, M. (2018). Preventing and managing diabetic foot ulcers: application of Orem's self-care model. International Journal of Diabetes in Developing Countries, 38(2), 165–172. https://doi.org/10.1007/s13410-017-0570-5

[12] Indrayana, S., Guo, S., Lin, C., & Fang, S. (2018). Illness Perception as a Predictor of Foot Care Behavior Among People With Type 2 Diabetes Mellitus in Indonesia, (1). https://doi.org/10.1177/1043659618772347

[13] Khuzaimah, S., Sharoni, A., Rahman, H. A., Minhat, H. S., Ghazali, S. S., Hanafi, M., & Ong, A. (2017). A self-efficacy education programme on foot self-care behaviour among older patients with diabetes in a public long- term care institution , Malaysia : a Quasi-experimental Pilot Study, 1–11. https://doi.org/10.1136/bmjopen-2016-014393

[14] Lee, D. Y., Park, J., Choi, D., Ahn, H.-Y., Park, S.-W., & Park, C.-Y. (2018). The effectiveness, reproducibility, and durability of tailored mobile coaching on diabetes management in policyholders: A randomized, controlled, open-label study. Scientific Reports, 8(1). https://doi.org/10.1038/s41598-018-22034-0

[15] Marchand, C., Margat, A., Deccache, C., Ha Van, G., M'Bemba, J., Schuldiner, S., … Hartemann, A. (2018). Evaluation of two therapeutic patient education programs for prevention of diabetic foot ulcers. Education Therapeutique Du Patient. https://doi.org/10.1051/tpe/2018004

[16] Maslakpak, M. H., Razmara, S., & Niazkhani, Z. (2017). Effects of Face-to-Face and Telephone-Based Family-Oriented Education on Self-Care Behavior and Patient Outcomes in Type 2 Diabetes: A Randomized Controlled Trial. Journal of Diabetes Research, 2017. https://doi.org/10.1155/2017/8404328

[17] Moeini, B., Haji Maghsodi, S., Kangavari, M., Afshari, M., & Zavar Chahar Tagh, J. (2016). Factors associated with health literacy and self-care behaviors among Iranian diabetic patients: A cross-sectional study. Journal of Communication in Healthcare, 9(4), 279–287. https://doi.org/10.1080/17538068.2016.1217968

[18] Mohammad, N. A., & Khresheh, R. M. (2018). Evaluate the Effect of Education Interventions in the Prevention of Diabetic Foot Ulcers through Knowledge of the Disease and Self-Care Practices in Saudi Arabia, 6(11), 2206–2213.

[19] Moradi, A., Mohammad, S., Salimi, M., & Nouhjah, S. (2019). Diabetes & Metabolic Syndrome : Clinical Research & Reviews The effect of short message service (SMS) on knowledge and preventive behaviors of diabetic foot ulcer in patients with diabetes type 2. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 13(2), 1255–1260. https://doi.org/10.1016/j.dsx.2019.01.051

[20] Østbye, T., Tell, G. S., Hausken, M. F., Graue, M., Skeie, S., & Cooper, J. G. (2017). The Effect of Telemedicine Follow-up Care on Diabetes- Related Foot Ulcers : A Cluster Randomized Controlled Noninferiority Trial, (3), 1–8. https://doi.org/10.2337/dc17-1025

[21] Sharoni, S. K. A., Rahman, H. A., Minhat, H. S., Shariff-Ghazali, S., & Ong, M. H. A. (2018). The effects of self-efficacy enhancing program on foot self-care behaviour of older adults with diabetes: A randomised controlled trial in elderly care facility, Peninsular Malaysia. PLoS ONE, 13(3), 1–23. https://doi.org/10.1371/journal.pone.0192417

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WHAT'S THE CORE QUALITY OF NURSES ON DIGITAL ERA: A SYSTEMATIC REVIEW

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ABSTRACT

Nowadays, there is a rapid changing in term of technology that lead to the transformation including nursing services. Nursing as a profession has to maintain the unique characteristic for remaining exist in this era. The purpose of this study was to find out the main quality of nurses in the digital era. This research used a systematic review design, analysed 10 articles from databases were CINAHL, Proquest, EBSCO, Web of Science, Scopus, and Wiley; and was limited to articles published in English between November 2009 and 2019. The researchers applied the Preferred Reporting Items for Systematic Reviews & Meta-Analyses (PRISMA) reporting guidelines as applicable. In this study, nurses have to adapt with all aspect of transformation without losing the main character that is humanities aspect, was formed from caring, cultural sensitivity and ethics-moral value. This systematic review provided the scientific evidence for nurses to improve humanities skill as a principle and main commodity of nurses' job which could not exchange with any form of skill for survive on the radical changing caused by technology development. Future studies are suggested to investigate driving factors leading to healthcare transformation in being a fully contributing member of the interprofessional healthcare team on the 4.0 industrial revolution.

Keywords: core quality, digital era, caring, nurses' role, transformational

1. Introduction

The 4.0 Industrial revolution has introduced the development of mass technology production which are able to operate independently or coordinate with humans. The 4.0 industrial revolution is used on three interrelated factors namely; 1) digitization and economic interaction with simple techniques towards economic networks with complex techniques; 2) digitizing products and services; and 3) new market models [1]. Furthermore, Deloitte (2015) stated that there are four characteristic on 4.0 industrial such as (1) *The vertical networking of smart production systems, (2) Horizontal integration by means of a new generation of global value-creation networks, (3) Through-engineering throughout the entire value chain, and (4) Acceleration through exponential technologies.*

The digital era brings various impacts from several aspects that are affected including those occurring in the fields of health, government, economy, and society. Nursing as one of the cornerstones of health services and the largest health workers, is one of the areas affected by this industrial revolution. Technological advances, rapid data exchange, robotic use has become a growing trend in health services in this digital era. As the evidence of technology usage in nursing, in United States of America, there are 66% nursing student and 71 % nurses use smart mobile

devices at their work. Jeleč, Sukalić, & Friganović, (2016) explained that technology can help nurses do their work like using 3D cameras, laser imaging device, and video with high definition. They also said that nurses need to manage their skills and get challenges to adapt with this new era of technology.

Technology can make nurses work more safe and fast in several things, such as perevention of medication error, speed up disease diagnosis and the treatment, prevent hospitals infection, and so on. In practice, Sommor et al. describe that using technology also impact adverse events by using devices like foley catheter (57%), arterial catheter (17%), peripheral central catheter (7% of cases), and central venous catheter (17%). These data show that possible in the next 5 years, technology will develop dramatically in nursing practice [4].

Facing this rapid and huge changing in technology development, nursing workforce need to adapt within. The millenial nurses or young nurses will not take a long period for following this digital development. However, the senior nurses especially in the rural area are going to do extra struggling for adapt with this newest technology. Besides that, nursing workforce has to be shine and perform the main quality of nursing profession. However, amid the developments that occur, nurses are also required not to lose their professional identity. Along with the demands of technological developments, many nurses are busy carrying out non-nursing tasks oriented to the use of technology facilities. Nursing workforce need to perform the uniqeness of its profession in the midst of disruption era.

The use of technology may change practice. For that, it is necessary to develop strategies and programs in dealing with this situation. The use of technology has proven to have a large impact on the system in hospitals, so that nurses' competence in the use of technology must be ensured to be adequate so that the provision of nursing care is safe and accordance with international standards. This is because nurses are at the forefront of changes on healthcare system in hospital.

In facing this era, the most important thing is the aspect of humanity. The human approach reprsent the existence of art in nursing where nurses are actively involved in the use of technology. One of the important challenges that nurses must face in the coming decade is how nurses can achieve balance between benefits of using technology and not override the human element. That is why, the purpose of this study was to find out the main quality of nurses in the digital era.

2. Method

A systematic literature review was conducted for five months. This review was used for identifying studies that describe the diverse types of nurse manager competencies in a clinical setting during a certain time period. This paper focuses on a competence-based approach for leaders and managers, instead of merely the profession-centred view of point, even though the profession-centred approach dominates previous studies. Searches have probed systematic reviews published in the journal. A review of literature published over the past 10 years uses databases: CINAHL, Proquest, EBSCO, Web of Science, Scopus, Wiley, and PubMed. The search period spanned between 2009 and 2019 because there are dramatically increasing amount of the literature regarding

the main quality of nursing profession in the digital eral during this period.

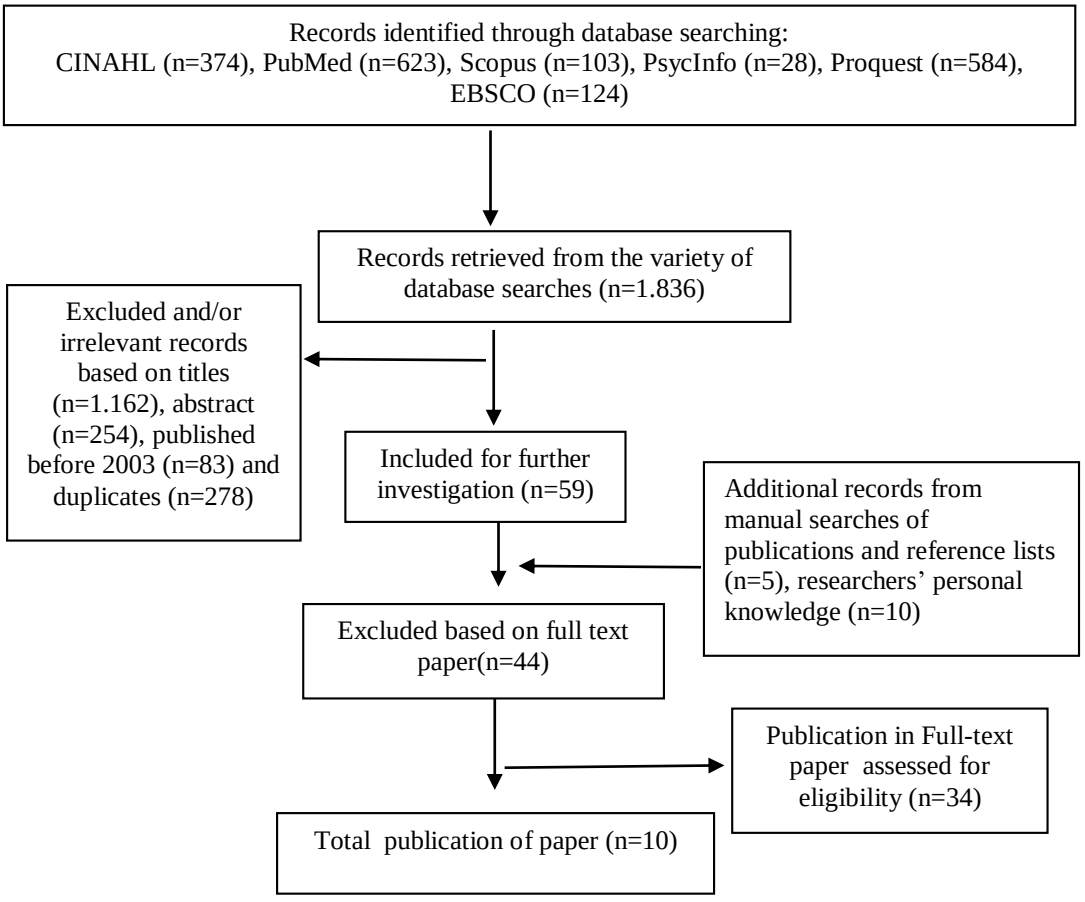
The literature was searched using these keywords: core quality, digital era, caring, nurses' role, and transformational. These words were searched for in combination and individually. The inclusion criteria for the articles were as follow: (1) full paper was publication in English; (2) focus on a nurse manager; (3) focus on a competence and its predictors or determinants, both in all research methods of literature reviews; and (4) a full-text paper. The criteria for exclusion were as follow: (1) the study was not published as a full paper, (2) lack of reliable or valid testing and (3) publication more than 10 years. After evaluating studies with relevant titles and abstracts, the researchers identified 10 relevant articles targeting competence and nurse managers. The metodological quality of each study were review. Both of authors (PMS, DP) directly filters the titles, abstracts and complete and relevant articles. Then, the researchers independently review each 5 articles and consensus was reached through discussion.

3. Result

3.1 Study Characteristics

The systematic review involved 10 studies, which were mainly quantitative and conducted in municipal care, hospitals and all healthcare settings. All humanities dimension of nurses in digital era were analysed in all studies. Figure 1 explains the steps according to which databases were searched.

Figure 1. Flow of Data Search



3.2 Study Findings

The findings of this study are summarised in Table 1 in the appendix. Table 1 was extracted from 10 publications printed from 2009 to 2019.

Table 1. Summary of review literature

Author[s]	Title	Research Methodology	Finding the Core quality of nurses in digital era
[5]	A New Mindset for quality and safety: The QSEN competencies redefine Nurses' roles in practice	Qualitative	1. Safety is the watchful eye that prevent errors, and quality measures events and seeks improvements through quality initiatives 2. QSEN includes: patient-centered care, team work and colaboration, evidence-based practice, quality improvements, safety, and informatics
[6]	Distric Nursing in the digital era	Case study	1. Technology can improve safety for the public. 2. Digital technology is not to replace the treatment process but to improve the treatment process. Human aspects, systems, and processes need to be seen as a consideration before the use of technology. 3. Nurses must continue to understand their role in the transformation of technology.
[7]	Caring Science and Human Caring Theory: Transforming Personal and Professional Practices of Nursing and Health Care	Case study	1. Caring for humans is not something that can be sold or bought. 2. Caring is a commitment in the ethics of nursing professionalism to the public. 3. Care relationships and a healing environment are needed by practitioners and patients in a continuous care process.
[3]	Nursing and Implementation of Modern Technology	Literature review	1. One important element in nursing is that nurses have a role in maintaining a balance in various new innovations and humanitarian elements. 2. Communication and human connection is nursing skills and the role of nurses is to be actively involved in the

Author[s]	Title	Research Methodology	Finding the Core quality of nurses in digital era
			process of introducing technology to the patient.
[8]	Defining compassion in the digital health age: protocol for a scoping review	Case study	1. This knowledge synthesis is a critical first step to providing evidence-based guidance on how digital health is to be incorporated into the practice and teaching of compassionate care. 2. Reported compassionate response as defined as: (a) Initial recognition of suffering by an individual (c) Emotional response to this suffering (c) Operative response to this suffering
[9]	Protecting Patient Information In an Electronic Age: A Sacred Trust	Qualitative method	1. Nurses are responsible for adhering to the present privacy laws. 2. Related to the provision of information, nurses are required to be careful and obey the rules set by the employer.
[10]	Empathy and Compassion in the Healthrelated Literature: Disciplinary and Topic Trends and Gaps	Systematic review	Some pragmatic perspectives suggested, there are deficiencies in terms of (a) the overlap between empathy and compassion (b) results that are biased between psychological empathy and compassion (c) there is a significant lack in the relationship between love, language, emotions , disciplines, and topics that are important to people who inform pragmatic understanding
[11]	Successful Implementation of New Technologies in Nursing Care: A Questionnaire Survey of Nurseusers	Quantitative	1. nurses must be active as the first place in understanding technology and its benefits for users and patients and future developments 2. To reduce the ineffectiveness in using technology, technology must be continuously used by nurses in daily practice. 3. Staff nurses may have a major influence on achieving success in the use of technology so it is necessary to involve nurses in the process of determining factors related to the successful of

Author[s]	Title	Research Methodology	Finding the Core quality of nurses in digital era
			technology
[12]	Telenurse's Skills	Qualitative	The qualities of a telehealth nurse can be grouped into 4 categories: (a) Interpersonal communication skills (b) Collaboration skills (c) Clinical assessment skills (d) Technology-related kkills.
[13]	The Effect of Nursing Participation in the Design of a Critical Care Information System: A Case Study in a Chinese Hospital	Qualitative: Case study	1. Digital nursing documentation can significantly improve quality and efficiency. 2. Nurses spent more time on direct patient care after the introduction of the ICIS. 3. there has been significant progress in team formation, communication, increasing individual skills, capacity and skills in intensive care nursing in five years

In this study, nurses have to adapt with all aspect of transformation without losing the main character that is humanities aspect, was formed from caring, cultural sensitivity and ethics-moral value. Each dimension consisted of a nursing core qualities on digital age concerning related explanations.

Caring. This is the soul of the nursing profession and brand of the nursing services. Caring involves a deepest meaning of compassion and empathy. A trully nurses always perform this qualitiy without considering time, person, race, or culture of patient who they serve.

Cultural sensitivity. Nurses has to perform the compassion to all people who they serve without making a discrimintation. Race, nationality, culture and religion are not a consideration for nurses in giving their services. On contrary, that things has to be considered by nurses in choosing the nursing care model for every patient. Finally, the patient are going to feel trully human and be treated properly.

Ethics-moral value. The nursing workforce have to display competence with laws and ethics to protect nursing services and nursing staff and to safely serve patients. The ability to display legal and ethical competence, such as in decision making, is guided by ethical values, ensuring patient and staff rights, understanding the legal aspect of nursing services, maintaining a nursing code of ethics and staying current with nursing and healthcare policies.

4. Discussion

Globalisation and science-tech development are causing huge changes in the world. Nursing services is an integrative part which is not separate from these changing needs. Thus, this field must undergo improvement and innovation so it does not get left behind. Based on that perspective, nursing organisations must change and review their management models to improve the quality of their service. The nurse has played an important role in health services, since this professional is

responsible for managing nursing services and for taking measures that include administration, the delivery of care and teaching–research [14].

Nowadays, nurse need to has the informatic and technology competencies due to development on the digital era. When the nursing workforce perform the caring, it can lead to a development of a quality and safety mindset. It is reflection of the nursing practice which can develops professional matury to continue develop knowledge, constantly maintain patient safety, ensuring the quality improvement, renewal and supporting of the human spirit. The challenging in 4.0 industrial revolution is a large number of nurses in practice little is aware about this disruption era and they have a lack of competencies required for an touching patient' life. Most of them is lack in humanities skill because of this digital world changing. Four leading challenges of integration of new technologies as (1) balancing human element to technology, (2) balancing cost and benefits, (3) training provided technical workforce and ensuring competence, (4) ensuring that the use of technology in accordance with the code of ethics[15].

In nursing, caring is an important element that is used as a moral, theoretical and philosophical foundation. In the last decade a practice model has been developed that pays attention to aspects of caring and healing as the core aspects of professional nursing. Its application has also been carried out along with the many challenges in professional nursing. Nurses in practice are aware of the lack of nurses, the hopelessness of the demands of the system, and the lack of awareness to care for nurse professionals that trigger changes in nursing. On the other hand, it cannot be denied that nurses have challenges which is divided between human concern and the 'calling' that makes them interested in becoming nurses, task-oriented biomedical practices and institutional demands, high workloads, and outdated patterns of practice.[16].

In the transformation era, the main component that nurses and health practitioners must have are competent, compassionate, knowledgabele even in hospital setting or in clinical agencies. Nurses and practitioners must be able to maintain relationships with the public with love, kindness, attention, and meaningful things. This makes the public see that nurses play a role in seeking wholeness and spiritual connections for their wellbeing, interventional medical technology, and human-to-human caring relationship.

Legal-ethics is close with the responsibility of nurses to keep the data privacy of patient. The law guarantees the confidentiality of data and patient privacy so that nurses have a responsibility to safeguard this. However, carrying out this responsibility is not easy in the era of technology where information can be accessed anywhere and anytime. This becomes a challenge to face together. Nurses in practice require confidential information about patients and then must be passed on between nurses as long as it becomes a nursing process. Despite the fact that routine confidential information is shared, nurses have the privilege of accessing this information. This should not be taken for granted, Nurses but must be carried out with responsibility for moral values according to human needs, behavior, and individual feelings in making decisions.

However, nursing staff need support from other health workers when using new technology both in practice in hospitals and the community. This means that the use of new technology needs to be regulated for multidisciplinary health care. In technological transformation, special attention needs to be given to the characteristics of the technology itself. Nurses must recognize their important role as part of the benefits of transforming technology towards multidisciplinary, leading, and using technology in all care settings. Thus, it is important to ensure nurses' understanding of

technology, and its use for each individual in the nursing care process.

However, there are pro and contra about using technology in health services. Smartphones and applications related to health have the potential to improve care, but if not regulated, there will be difficulties in use. It is important to ensure that the technology used is safe, easy to use, reliable, and accurate. In the UK study, it was mentioned that there was a shortage of smartphone use among nurses in the UK. But from day to day there is a rapid development in the provision of health care applications so nurses have many choices about which applications are suitable for use in practice. Therefore, it is necessary to pay attention to aspects of effectiveness, conformity and efficacy in the use of technology before finally the technology is used. On the other hand, there are concerns about the dependence of nurses on the use of technology. Nurses are feared unable to calculate drug dosages, tubal mass index, or early warning scores without applications and smartphones. In addition, technology is also feared to have a detrimental effect on nurse-patient interactions. [17]

Culture is a set of shared mental assumptions that guide the way we think, act, and behave in the workplace. Those who do things in the "proper" way will lead to the success of competencies. Those who chose not to do things in the proper way do not last long with an organization. However, the organizational culture is closely associated with senior managers. Every top manager has different expressions and understandings in influencing the culture of the organization. Leadership competencies influence the motivation and performance of nurses. The important competence that nurse managers must gain is managing ethical and legal issues. The support of manager and all healthcare team give a positive impact for nurses to improve their skill on the digital age. Reinforcing the skills of nurses, especially their ethical competency, could be a solution to reduce moral stress, as Kälvemark-Sporrong et al. declared.

At the end, the 4.0 industrial revolution, the changes is not only what we do but also our identity. This is going to affect our identity and all the problems connected with it: a sense of privacy, understanding of ownership, our behave of consumption, the time to work and relaxing time, and how we arrange and improve our careers, grow our competencies, meet people, and maintain networking. That quote also explains that the 4.0 industrial revolution also affects each individual. One of the biggest individual challenges put forward by emerging technology is privacy. The discussion about vital issues such as the impact on our inner lives of the loss of control over our data will only increase in the coming years. Likewise, the revolution that occurs in biotechnology and artificial intelligence, which redefines what it means to be truly human by pushing back the threshold of life, cognition, health, and current competencies, will support us to redesign and redefine our moral and ethical concern.

5. Conclusion

Primely???, true transformation of health care has to come from a shift in consciousness and intentional actions of the nursing workforce themselves, changing health care from the inside out. On the digital era, nurses has to improve humanities skill as a principle and main commodity of nurses' job which could not exchange with any form of skill for survive on the radical changing caused by technology development. Future studies are suggested to investigate driving factors leading to healthcare transformation in being a fully contributing member of the interprofessional healthcare team on the 4.0 industrial revolution.

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References

[1] C. A. Mather, E. A. Cummings, and F. Gale, "Advancing mobile learning in Australian healthcare environments : nursing profession organisation perspectives and leadership challenges," *BMC Nurs.*, vol. 17, no. 44, pp. 1–13, 2018.
[2] Deloitte, "Industry 4.0. Challenges and solutions for the digital transformation and use of exponential technologies," 2015.
[3] K. Jeleč, S. Sukalić, and A. Friganović, "Nursing and Implementation of Modern Technology," *Signa Vitae*, vol. 12, no. 1, pp. 23–27, 2016.
[4] Ofcom, "Telecoms and Networks," 2011.
[5] G. Sherwood and M. Zomorodi, "A New Mindset for Quality and Safety : The QSEN Competencies Redefine Nurses ' Roles in Practice," *Contin. Nurs. Educ.*, vol. 41, no. 1, pp. 15–22, 2014.
[6] R. Binks, "District nursing in the digital era," *Br. J. Community Nurs.*, vol. 22, no. 10, pp. 478–483, 2017.
[7] J. Watson, "Caring science and human caring theory: Transforming personal and professional practices of nursing and health care," *J. Health Hum. Serv. Adm.*, vol. 31, no. 4, pp. 466–482, 2009.
[8] D. Wiljer *et al.*, "Defining compassion in the digital health age : protocol for a scoping review," *BMJ Open*, vol. 9, no. 5, pp. 1–8, 2019.
[9] P. Kerr, "Protecting Patient Information In an Electronic Age : A Sacred Trust," *Urol. Nurs.*, vol. 29, no. 5, pp. 315–320, 2009.
[10] L. D. Amico, "Empathy and compassion in the health- related literature : disciplinary and topic trends and gaps," *J. Compassionate Heal. Care*, vol. 5, no. 6, pp. 1–10, 2018.
[11] A. J. E. De Veer, M. A. H. Fleuren, N. Bekkema, and A. L. Francke, "Successful implementation of new technologies in nursing care : a questionnaire survey of nurse-users," *BMC Med. Inform. Decis. Mak.*, vol. 11, no. 1, p. 67, 2011.
[12] D. A. N. Orga-dumitriu, "Telenurse's skill," *Public Heal. Manag.*, vol. 2, no. 3, pp. 185–186, 2014.
[13] Y. Qin *et al.*, "The effect of nursing participation in the design of a critical care information system : a case study in a Chinese hospital," *BMC Med. Inform. Decis. Mak.*, vol. 17, no. 165, pp. 1–13, 2017.
[14] P. de O. Furukawa and I. C. K. O. Cunha, "Profile and competencies of nurse managers at accredited hospitals," *Rev. Lat. Am. Enfermagem*, vol. 19, no. 1, pp. 106–114, 2011.
[15] A. . McCracken, "Health Care in a Digital Age," *J. Gerontol. Nurs.*, vol. 42, no. 10, pp. 9–11, 2016.
[16] K. Sitzman, "Evolution of Watson ' s Human Caring Science in the Digital Age," *Int. J. Hum. Caring*, vol. 21, no. 1, pp. 46–53, 2017.
[17] S. Moore, "pros and cons of using apps in clinical practice," *Nurs. Manage.*, vol. 19, no. 6, pp. 14–18, 2012.

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LEGAL PROTECTION FOR NURSES WHO CARRY OUT MEDICAL ACTIONS POST ANESTHESIA

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ABSTRACT

In Indonesia, the government regulated how nurses should carry out their duty which stated in Indonesian Law Act number 38-year 2014. There are many cases where nurse is charged with criminal accusation. In some studies, it was mention that most patients experience sexual hallucinations under the influence of drugs. Thus, the main point of this paper is to question the legal protection for nurses who reportedly committed acts of sexual abuse to patient whom under the influence of anesthesia. This study used a normative juridical approach that is descriptive analysis with the study of literature and regulations relating to legal protection of nurses and attempt to find to what extent of Indonesian law act number 38- year 2014 can protect nurses and resolve legal problems that occur. Used secondary data that was collected thorugh literature study and document study, the collected data were analyzed qualitatively. The study stated that sexual hallucination have been reported since the introduction of Chloroform. Some practitioners have been the victims of allegations resulting from the hallucinogenic effect of these drugs. The results of the study showed that some patients experienced sexual hallucinations and most did not prove to be sexually abused.

Keyword: legal protection, nurses, anesthesia

1. Introduction

Nurses are professionals whose provision concerns carrying out their duties. The profession in Indonesia is regulated in Law No. 38 of 2014 about Nursing Personnel. Therefore there must be legal protection for the nurses when they are carrying out their duties. This study was specifically regarding the medical actions performed by the nurses related to the patients after anesthesia. Gream, in his book entitled “Chloroform”, expressed that in 1849, a woman admitted that she was sexually assaulted after she had given birth. After the investigation, the woman was found to be under the influence of hallucinations after undergoing treatment with an anesthetic; chloroform. A dentist was once accused by a female patient. She felt that her breast was touched during the treatment, and the dentist had used 30mg Midazolam and 10mg Diazepam IV[1]. In 1989, a patient accused a nurse of assault in the dressing room. She was convinced that she was being stripped naked and that the nurse held her breast. It was proven that it was just a hallucination caused by the drug diazepam.

There is a limit to the extent to which Law Number 38 of 2014 concerning Nursing Personnel

can protect nurses and resolve any legal problems that occur. The journal of Balasubramaniam and Park with the title "Sexual Hallucination During and After Sedation and Anesthesia" showed that sexual hallucinations have been reported since the introduction of chloroform. Some practitioners have been the victim of allegations of the resulting hallucinogenic effects of the drugs. There are at least 3 other journals which became our research reference sources.

An example is a case that occurred in Surabaya in 2017 at the National Hospital. A nurse who iwas an anesthetist's assistant was faced with a patient's demands. The patient claimed that he was a victim of sexual abuse by the nurse. The patient had just come out of surgery, meaning that the patient had just become aware of the effects of the anesthetic.

2. Research Methods

This study used a normative juridical approach as according to Sardjono Soekanto. This research was a descriptive analysis with the conducting of a study of the literature and regulations relating to the legal protection of nurses. The study used secondary data collected through literature / document studies. The data that was collected was analyzed qualitatively, which emphasis the depth of the data obtained by the researcher[2].

3. Result and Discussion

3.1. Legal Protection in General

According to Satjipto Rahardjo, the function of law is to protect one's interests by allocating a power to him to act in the context of those interests. The allocation of this activity is carried out in a measurable manner, in the sense that it is determined by its level and depth[3]. Protection is defined as the act of giving a guarantee or security, well-being, and peace from the protector to the protected from all of the dangers or risks that threaten him.

Legal protection is an absolute right for every citizen and it is an obligation that must be fulfilled by the government, considering that Indonesia is known as a legal state. Legal protection, as explained by Philipus M. Hadjon[4],[4]can be divided into 2 types.

a. *Preventive* legal protection implies a form of legal protection whereby the people are given the opportunity to raise objections or opinions before a government decree gets a definitive form which aims to prevent disputes.
b. *Repressive* Legal Protection is a form of legal protection which is more aimed at resolving disputes.

3.2. Definition of the Nurse Profession

According to the Minister of Health Regulation Number: HK.02.02 / Menkes / 1481/2010 concerning Permits and the Implementation of Nursing Practice, Article 1 point 1, a nurse is someone who has passed through nursing education both at home and abroad in accordance with the applicable legislation.

A nurse is someone who plays a role in caring for and maintaining, helping, and protecting someone because of illness, injury and the aging process (Harlley, 1997). According to the Republic of Indonesia Law Number 38 of 2014 concerning Nursing, nursing is the activity of providing care to individuals, families, groups or communities, both in a sick and healthy condition.

Nurses are defined as someone who has passed through nursing education, both at home and abroad, which is recognized by the government in accordance with the provisions of the legislation[5]. According to the International Council of Nurses (1965), nurses are someone who has completed a nursing education program, who is authorized in the country concerned to provide nursing services and who is responsible for improving care, preventing disease, and being in service to patients.

3.3. Nurse's Rights

In terms of international standards, the Indonesian nursing profession still very weak because the International Council of Nurses (ICN) regulations have not been set out to be related to national regulations. The legal protection available to the nurses has not been regulated specifically in international law. The International Council of Nurses' (ICN) code of ethics for nurses regulates the standard ethics profession and yet it still has not regulated preventive or repressive legal protection yet.

Article 36-38 of Law Number 38 of 2014 states that the Nurses' Rights are:

a. Obtain legal protection as long as they are carrying out duties in accordance with the standards of service, professional standards, standard operating procedures and the provision of legislation;
b. Obtain correct, clear and honest information from the Clients and / or their families;
c. Receive compensation for the Nursing Services that have been given;
d. Refuse the wishes of the Client or other parties that are contrary to the code of ethics, service standards, professional standards, standard operating procedures or the provisions of the Laws and Regulations;
e. Obtain work facilities according to the aforementioned standards.

The role of the nurse is actually determined by the conditions faced by the client. Nurses and clients both have goals. A client in certain situations has a purpose. The nurse, in certain situations, has a specific goal. There are several things that underlie the relationship between nurses and clients, including the following:

a. Value
b. Human dignity
c. Development of trust,
d. Measurement of problem solving
e. Collaboration[6]

3.4. Nursing Code of Ethics

Nursing ethics act as a basic reference for nurses when carrying out their profession, both related to the use of nursing technology and their nursing knowledge. Increasing the technological factors an developing the science therein requires evolving nursing principles and ethics. This includes considerations concerning values, human rights and professional responsibilities. A nurse must be able to maintain and appreciate, practice and develop these values through the nursing code of ethics. The pressure point of the principles of the nursing code of ethics is service based on the belief that the nurse will do the right thing that is needed and that will benefit the client and his health[6].

3.5. Some Cases of Hallucinations due to Anesthesia

One of the most damaging allegations that a doctor or nurse can face is one of sexual misconduct involving patients. Most of the information is based on case reports in the medical or legal literature. Gream reported several instances in 1849 where women used obscene language under chloroform anesthesia. As a result, its use was opposed in obstetrics[1].[8] Simpson repudiated these allegations by stating that chloroform had been in use in Edinburgh for 15 months and that he had not heard similar reports. However, he cited a French prostitute who had reported lascivious dreams after inhaling ether during her confinement. Simpson concluded 'but surely it was to say the least very unbecoming that most English women should have sexual dreams (like the French prostitute) when under the influence of chloroform[7]'.

In 1984, a male dental surgeon was charged with sexually assaulting two of his female patients. Both had been sedated with 30mg diazepam and 10mg midazolam intravenously. After they were sedated, the dentist was alone with the patients for long periods during which the alleged assaults occurred. Despite the dentist's defense being based on sexual hallucinations being caused by the drugs, he was convicted of indecent assault[8]. In 1986, a doctor in an emergency department near Ottawa, Canada, was accused of placing his penis in the hands of a patient recovering from an intravenous dose of benzodiazepine[9]. The doctor mentioned that he had been testing her ability to respond to a command by asking her to squeeze two fingers of his hand. He was acquitted at the criminal trial. However, the College of Physicians and Surgeon of Ontario found him guilty of disgraceful and unprofessional conduct and he lost his license to practice. In 1990, a dentist was acquitted of assaulting seven women who had been given diazepam as a sedation[10].The Judge directed the jury to return a verdict of not guilty on the basis of Dundee's finding that 1 in 200 women given large doses of benzodiazepines experience sexual fantasies.

In another case in 1990, a Manchester dentist was investigated by the police following a complaint of sexual misconduct[11]. During the investigation, a further three complaints were discovered. He was prosecuted for allegedly assaulting four women while they were sedated using midazolam. The dentist was convicted on two counts on a majority verdict. In the judge's summary of the evidence, there was no mention of a sedative dose. Following this, there were another 15 reports in the medical and dental literature of sexual hallucinations. Some of these were reports made by patients. None of them were reported to the police nor were they the subject of a formal complaint.

There were reports made by dentists in the medical and dental setting of sexual hallucinations after a Manchester dentist was convicted of sexual assault by two patients. None of the following were reported to the police or formed part of a formal complaint. In the tables below, M= Male and F=Female[11]

Table 1. Observations by dental surgeons

Sex of Patient	Sex of Dentist	Age of Patient	Drug	Observation by Dentist
M	F	20	Diazepam	Masturbation
F	M	Unknown	Diazepam and pentazocine	Grabbed Dentist
F	M	30	Nitrous oxide	Sexual Excitement
M	F	9	Nitrous Oxide and Halothane	Acted like a baby and sexual comments
M	M	48	Diazepam	Masturbation
M	F	25	Diazepam	Masturbation
M	F	30	Diazepam	Masturbation
M	M	20	Midazolam	Masturbation
F	M	22	Midazolam	Masturbation

Table 2. Observation by the patient or relative

Sex of Patient	Sex of Dentist	Age of Patient	Drug	Complaint by the Patient or Relative
F	M	18	Nitrous oxide	Saw dentist naked
F	M	42	Diazepam	Increased sexual appetite
F	M	30	Diazepam	Felt breasts kissed and fondled
F	M	Unknown	Brietal, Nitrous Oxide and halothane	Rape
F	M	18	Brietal and atropine	Sexual dream
F	M	25	General anesthetic	Sexual affair

Most of the serious hallucinations that resulted in an investigation involved women patients and male dentist or anesthetists. However, male patients also have similar, albeit less frequent, hallucinations. Many of the reports of hallucinations have originated from northern European countries with a few from southern Europe, perhaps representing a cultural difference. All hallucinations must be taken seriously. The patient is likely to be distressed. A full explanation of the cause must be offered, along with the reassurance that there was a chaperone present. Despite this, the patient often find this difficult to accept because of the very real nature of the hallucinations. Sexual hallucinations do occur with many of the hypnotic drugs used by anesthetists and others. To the patient, they are real and frightening. They may be reported to the authorities that may then investigate the anesthetists. Even though the events may eventually be shown to be hallucinations, they may be damaging both to the patient and to the doctor and others who are involved. Unfortunately, some doctors use these drugs to sexually assault their patients. This makes it difficult for external authorities to determine exactly what happened [12].

From a number of the examples in the above cases, it is appropriate that where there are similar cases that incur accusations against both the doctors and nurses, they need to be further investigated. It could be that these patients experience hallucinations after the use of certain anesthetic drugs. As with the case at the Surabaya National Hospital, which is currently underway, it is better if it is reviewed regarding the effects of the drug's use on patients.

4. Legal protection for nurses

Legal protection for the nursing profession in Indonesia has actually been contained in several laws and regulations. In the case of a nurse who performs anesthesia on a patient, they can be protected by law if the nurse acts according to his authority and if that authority can be proved normatively.

If the anesthesia nurse then encounters the case of a patient who is likely to experience hallucinations after anesthetic action, then any legal protection that can be done is proof that the anesthetic action performed is in accordance with the authority and procedure, thus proving that the sexual action that the patient has accused the nurse of is not real.

Regarding the authority of nurses in conducting medical actions, Article 63 paragraph (4) of Law Number 36 of 2009 concerning Health explicitly states that:"The implementation of treatment and / or treatment based on medical science and / or nursing science can only be done by health workers who have the expertise and authority for it."

Article 27 paragraph (1) states that:

> "Health workers have the right to get compensation and to obtain legal protection when carrying out their duties in accordance with their profession."

Article 24 paragraph (1) states that:

> "Health workers as referred to in Article 23 must meet the provisions of the code of ethics, professional standards, the rights of the users of health services, minimum service standards and standard operating procedures."

More specifically, the Regulation on Nurse Anesthesia in Indonesia is now regulated in the Minister of Health Regulation No. 18 of 2016 concerning the Permitting and Implementation of Anesthesia Practice Practices (hereinafter abbreviated as "PMK No. 18 of 2016"). In Article 13, the regulation states that anesthetist nurses can receive a mandatory delegation of authority from an anesthesiologist or another doctor in order to assist in the anesthesia service which includes:[13][15]

a. implementation of anesthesia in accordance with the instructions of the anesthesiologist;
b. installation of non-invasive monitoring devices;
c. installing invasive monitoring devices;
d. administration of anesthesia;
e. overcome any difficulties that arise;
f. airway maintenance;
g. installation of mechanical ventilation equipment;
h. installation of nebulization equipment;
i. termination of anesthesia
j. documentation on medical records.

The authority delegated by the doctors to the anesthesia nurses, especially in terms of the installation of medical devices, is sometimes misunderstood by some patients who are under the influence of anesthesia as a sexual act. It is important for the patients to be given the knowledge related to all medical actions involved in their care so as not to cause misunderstandings.

In addition, formal proofing is also important to be done by the nurse to refute the allegations that were brought to him. Article 183 of the Criminal Procedure Code *(KUHAP)* confirms that "the Judge

may not impose a sentence on a person except if with at least two valid evidences he obtains the conviction that a criminal act actually occurred and that the accused is guilty of doing so."

In Article 184 of the Criminal Procedure Code, it sets out the following:

(1) Valid evidence includes:
   a. Witness testimony
   b. Information from experts
   c. Letters
   d. Clues
   e. Testimony of the defendant

(2) Things that are generally known do not need to be proven.

In this case, the anesthesia nurse who performs the medic action in accordance with his authority can at least have two items of evidence to protect himself, namely the Administrator's Permit for Anesthesia and witness information that can be obtained through the doctor who gives them authority and through the other witnesses who may be at the crime scene.

Regarding the Permit for Anesthesia Arrangement Practice, this understanding is regulated in Article 1 number 4 of PMK Number 18 Year 2016, "Anesthesia Regulator Practice License (hereinafter abbreviated as SIPPA) is written evidence granting authority to carry out professional practice of Anesthesia Administrators in Health Service Facilities".

5. Conclusion

Legal protection for the nurses who care for patients who have received anesthesia in the face of cases of patients who are likely to experience hallucinations after anesthesia is a form of repressive legal protection, namely by proving that the anesthetic action performed is in accordance with the authority and procedure. In Law Number 36 of 2009 concerning Health, Article 24 paragraph (1) in junction with Article 27 paragraph (1) explains that nurses who carry out their duties in accordance with the code of ethics, professional standards and standard operating procedures have the right to obtain legal protection when carrying out assignments according to their profession. If there is a claim against them, the nurse who performs the anesthetic action in accordance with their authority must at least have two items of evidence to protect themselves in the form of an Administrator Practice Permit and witness information that can be obtained through the doctor who gives them authority and from other witnesses who may have been at the crime scene.

Universal regulations are needed that can be used to protect the nurses when they are carrying out their duties. The need for rules governing the gender of nurses that should be equated with the gender of the patients. This step is considered to be necessary as part of a preventive effort related to the occurrence of sexual abuse among nurses. There is the need for patients to be accompanied by a guardian after the anesthesia process is carried out. This is so then other people can be witnesses so that when the anesthesia is carried out, there is no abuse of authority on the part of the nurse.

References

[77] GT G 1849 Chloroform in Midwifery *Chloroform in Midwifery* 99–100

[78] Soekanto S 2001 *Penelitian Hukum Normatif (Suatu Tinjauan Singkat)* (jakarta: Rajawali press)

[79] Rahardjo S 2006 *Ilmu Hukum* ed C A Bakti (Bandung)
[80] Hadjon P M 1987 *Perlindungan Hukum Bagi Rakyat di Indonesia* (Surabaya: Bina Ilmu)
[81] Mendri N K and Prayogi A S 2009 *Etika Profesi dan Hukum Keperawatan* (Yogyakarta: Pustaka Baru Press)
[82] Amelia N 2013 *Prinsip Etika Keperawatan* (Yogyakarta: D-MEDIKA)
[83] Simpson J Y 1847 CASES OF THE EMPLOYMENT OF CHLOROFORM IN MIDWIFERY; WITH REMARKS. *Lancet* 5–6
[84] V R and Lock C R 1984 *No Title*
[85] Brahams D 1990 Benzodiazepine sedation and allegation of sexual assault *Lancet* 157
[86] Brahams D 1990 Benzodoazepine sex fantasies, acquittal of dentist *Lancet* 4–5
[87] Fields M 1990 Intravenous Sedation : The risk to the dentist *Br. Dent. J.* 4–5
[88] Balasubramaniam B and Park G R 2003 Sexual hallucinations during and after sedation and anaesthesia *Anaesthesia***58** 549–53
[89] Anestesi P 2016 BERITA NEGARA

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LEGAL RELATIONS BETWEEN A PATIENT AND A DOCTOR TO STANDARD CONTRACT INFORMED CONSENT

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ABSTRACT

A hospital is a place for the implementation of the health services to give the health services performed by the medical practitioners who work in the hospital. To perform the medical, and diagnostic intervention, doctors try as maximally as possible to perform their duty and obligation to cure patients based on their knowledge, ability and competence which they possess. The research was aimed to know how yuridical observation to the forms (standard formats) of medical action agreements was. The research used the normative yuridical analysis method with the law approach (conceptual approach and statute appraoch). The reseach used the primary law material consisting of legislation, official document or treatise in making legislation, and court verdict. The secondary law material consisted of the all publication of the law which was not offical document. It consisted of books, law dictionary, law journals and comments on court verdict. The result of the research could be concluded that in general, the informed consent forms, which were provided, complied main element included in the informed consent. The informed consent format and its application must have agreed with the present legislation.

Keywords: legal relations, standard contract, informed consent

1. Introduction

The rapid progress in medical science and technology, coupled with the increase in consumerism, has changed the paradigm of the existence of health care institutions, which in this case is a hospital. It has changed from a social institution to a socio-economic institution in the sense that an institution must prioritize social norms when carrying out its duties and also at the same time, it must pay attention to the economic norms so then the existence of a hospital can be guaranteed.

The health workers who work in hospitals have direct contact with patients; they are doctors and nurses. In terms of taking medical action, when something that is diagnostic/therapeutic (that determines the type of disease/healing) is done to the patients, the doctors will do their best to carry out their duties and obligations to provide healing assistance to the patients based on their knowledge, abilities and competencies.

The development of science and technology in all fields has influenced the paradigm of thinking of society, especially the relationship between doctors and patients where all this time, the relationship is only a place to express feelings on the basis of mere trust. Now the relationship has turned into a radical relationship. Trust is not a benchmark for the relationship because there are

many cases where the patient is clearly suing and demanding that the doctor must be responsible for his legal rights.

According to Springer, in America and specifically health workers, they are now facing confrontations from the social and legal fields that have never been experienced before. Practitioners of the medical profession, for a variety of causes that lie in history, have not been prepared for this attack. At the same time, the community becomes more critical. Respect for and any expectations placed on the medicine changes throughout the country. The population now generally has hopes more and it is impatient when it comes to listening to the explanations that try to explain why the provision of high quality medical services cannot be provided at a reasonable cost at this time. [1]

This situation has been accommodated by Act 29 2004 about medical practices which, in its explanation, specifically states that in paragraph five, the reduced public trust in doctors and dentists and the rampant lawsuits in today's society are often identified by the failure of healing done by doctors and dentists.[2]

The decisions about the medical care that a person will receive, if any, are to be made in a collaborative manner between the patient and physician.[3] The medical actions performed by a doctor without legal approval are because of uncompleted and incorrect information, as the doctor can be sued in court.

In today's medical world, information is a patient's right because based on that information, the patient can make decisions about a medical act. On the other hand, giving information correctly to the patients is the basic obligation of a doctor carrying out his profession. Besides relating to legal issues, this information is also related to ethics, morals and the norms in society.

Informed consent may not be an obstacle or a barrier to the conduct of a medical action on a patient in a forced or emergency situation. In this case, a doctor can do what is best according to him. In a situation like this, the patient can provide a form of consent called implied consent that is an agreement that is considered to be given by the patient without being stated explicitly, but it can be used to draw conclusions from the attitudes and actions of the patient concerning what is implied in the agreement.

Based on the description of the background above, the problem can be formulated as follows: ‘What is the judicial review of the form (standard format) of hospital medical approval in Indonesia that has fulfilled the legal requirements of the agreement with the Civil Code?’

2. Research Methods

This research was carried out by referring to, using and processing the secondary data and literature review legislation governing health laws in Indonesia, as well as the books and writings of experts relating to the problems that are to be studied.

The type of research used in this writing was legal research. There was no need to use the term normative research because the term ‘legal research’ is always normative. Legal research is carried out to solve the legal issues faced. It needs the ability to identify legal problems, to do legal reasoning, to analyze the problems faced and then to provide solutions to the problems. [4]

3. Discussion

2.1. Juridical Review of the Form (Standard Format) Approval of Medical Action

The informed consent form that is available and provided in a hospital is in the form of a standard agreement whose form and contents have been determined by the hospital. The doctor may not change it. This is done to facilitate and maintain the fulfillment of the standard of informed consent, so it becomes strong evidence when a dispute arises. The doctor cannot change the form that is specified by the hospital.

Specifically, informed consent is of particular concern. In this matter, the patient's right to consent came after the information hit the Indonesian medical world after the appearance of Muchjidin, Sukabumi (1984). What if informed consent is associated with approval for operations? It must be known in advance that the matter of liability (*aanspaakelykheid*) for doctors applies to the general validity of the initial regulation. Civil provisions, among other things, are valid 'regarding engagement' provisions and they are highly related to professional responsibility regarding matters of care and therapeutic agreements.

The civil aspect of informed consent, when associated with Civil Law in the Civil Code / BW Article 1320, contains 4 legal requirements for an agreement, namely that there is an agreement between the parties that is free from coercion, error and fraud. The parties involved are those who are capable of acting. There is also the existence of a certain thing that was promised and a lawful reason that is justified, that is not prohibited by law and that is reasonable to fulfill. [5]

Before the doctor takes a medical action, the doctor is obliged to provide information about the type of illness suffered by the patient and on the medical actions that are to be taken to save the patient. The risks that may arise from the medical treatment related to the patients and their families and the risks may arise from the medical treatment to the patients and their families also tie into it. A fixed procedure for returning permanent and binding medical actions is the patient's approval for the medical action. The acceptance from the patients is stated in the agreement of them taking medical action (informed consent). This medical action approval form has generally been arranged in such a way that the doctor / hospital and the patient fill in the form and an oral explanation is given to the patient and their family.

2.2. Legal Relationship Between the Doctor and Patient

The legal relationship between doctors and patients today is changing. Initially, the position of the patient is not equal to the doctor because the doctor is considered to be the most aware of his patients. In this case, the position of the patient is very passive and dependent on the doctor. But in the development of the relationship between doctors and patients, the pattern has changed, where the patients are now considered to be in an equal position to the doctor. All medical actions performed by a doctor on the patients must have the patient's consent, after the patient has had a sufficient explanation of the disease and the medical treatment. [6]

The position of the relationship between the doctor and the patient, even if has developed, but in general the relationship until now is still paternalistic, where the doctor still has a higher and respectable position as a treatment from patients who are unfavorable or sick. [7]

The changes in the pattern of legal relations between the doctors and patients occur because of several factors which, among others, are[8] that trust is no longer focused on personal doctors but on the ability of health science and technology. Society considers that the doctor's duty is not only to

cure, but also to emphasize care. There is a tendency to state that health is no longer a condition without a disease, but it also refers to physical, mental and social welfare. The increasing number of regulations giving legal protection to the patients is so then the patients know and understand their rights in relation to those of the doctor. The level of community intelligence regarding health is increasing and able to conduct assessments.

According to the principles of applicable law in Indonesia, the relationship between doctors and patients is based on a relationship of balance, justice, benefits, protection and the patient's safety. Based on Act 29 of 2004 concerning medical practices, the provisions of Article 2 explain that "the implementation of medical practice is carried out based on Pancasila and it is based on scientific values, benefits, justice, humanity, balance, protection and patient safety."

The relationship between a doctor and a patient in terms of criminal law is based on the actions taken by the doctor, which is an action that will cause there to be a legal relationship. On one hand, it raises their rights and on the other, it requires the fulfillment of obligations, namely in the form of claims of responsibility due to the medical actions carried out by the doctor, whether done intentionally or whether done with negligence. [9]

The noble aspects of the doctor's duty are as a helper when viewed from a health point of view. In principle, personally, institutionally and professionally, the relationship between the doctors and patients is more than an obligation where everyone needs help.

Based on Hermein Hadiati Koeswadji[10], the relation between a doctor and a patient is one of 2 types. There is the system of paternally vertical relation and contractually horizontal relation. In the vertical relation, the position between the doctors as the givers of health care are not equal to the patients as the users of healthcare. In the system of contractually horizontal relations, the position between the health care users and the health care givers is of an equal position.

2.3. Right and Obligation between Doctors and Patient

Someone's rights and obligations are determined and inherent based on their duties and authority. Duties and authority are not only interpreted in relation to the work environment in an institution, but they can also be interpreted as existing and being attached to a person as a creature created by God.

In simple terms, right is authorized to do and not to do. However, in relation to medical services, the doctor's action involves reasons and measures according to his professional standards to avoid the misuse of their rights (*misbruik van recht*) for doctors. Rights are always paired with obligations so then obligations are often said to be a burden or task that must be carried out. Actually, rights and obligations are the demands of the authority inherent in a person, the demands on which the parties fulfill their achievements and on the other hand, they are for demanding achievements.

The rights owned by the patients as stipulated in Act 29 of 2004 about medical practices, are as follows in Article 52: the right to live, the right to his own body, and the right to die naturally. The right to obtain human medical services is in accordance with the standards of the medical profession, there is the right to obtain an explanation of the diagnosis and therapy from the doctor who treats them, there is the right to reject planned diagnostic and therapeutic procedures, and even to withdraw therapeutic contract, there is the right to obtain an explanation of the medical research that he will participate in and to reject or accept his participation in the medical research. There is also the right to be referred to a specialist if necessary and returned to the doctor who refers him after the

completion of the consultation or treatment to get treatment or a follow up. There is also the right to confidentiality or personal medical records, the right to obtain an explanation of the hospital regulations, the right to relate to one's family, counselor or clergy and others as needed during the hospital treatment and finally, the right to obtain an explanation of the details of the costs of hospitalization, including medication, laboratory examinations, x-ray examinations, ultrasound, CT scan and magnetic imaging, including the cost of the rooms, operating rooms, delivery rooms and the compensation for their medical services.

2.4. The Agreement of Medical Action / Informed Consent

In Indonesia, the progress of "informed consent" in formal jurisdiction is marked by the existence of the Indonesian Physicians Association (IDI) about "Informed Consent" through *SK PB-IDI No.319/PB/ A.4/88*of 1988. This is confirmed again with the Regulation of The Health Minister No. 585 in 1989 about the "approval of medical action or Informed Consent". This does not mean that doctors and health workers in Indonesia do not know and implement "informed consent". Long before that, there had been a habit of carrying out operations where the doctor always asks for written approval from the patients or their family before surgery is carried out.

Literally, being informed can be interpreted as being notified after it has been submitted or after they have been informed. Consent is the agreement given by someone to do something. Thus informed consent is the agreement given by the patient to the medical practitioners after being given an explanation. Informed consent is formulated as an agreement or as the agreement of the patient toward the medical practitioners regarding the medical efforts that can be done to help them, accompanied by information about all of the risks that may occur. [11]

Informed consent starts because of the relationship between the doctors and patients through therapeutic transactions that generate the respective rights and obligations of each party. For both service providers (medical providers) and service recipients (medical receivers), it is binding and must be respected by both parties involved in the therapeutic contract [12].

Informed consent can be defined as follows. Consent refers to approval, while informed refers to being informed, so informed consent refers to an agreement on the basis of information. Another term that is often used is the approval of medical action [13]. According to the Regulation of The Health Minister No 585 in 1989, the approval of medical action is the agreement given by the patient or his family on the basis of an explanation of the medical actions to be taken against the patient.

Referring to informed consent, Komalasari expressed his opinion, namely that[14] "informed consent is a tool used to enable the self-determination of the patients and patient's rights or the information has been fulfilled in the practice of doctors."

The function of informed consent is[15] the promotion of individual autonomy rights, to provide protection from both the patients and subjects, to prevent fraud and coercion to stimulate the medical profession to conduct introspection, to promote rational decisions and to encourage community involvement in advancing economic principles as a social value and conducting supervision in biomedical investigations.

The purpose of informed consent according to [16]is to protect the patients against all medical actions carried out without the patient's knowledge, to provide legal protection for the doctors against unexpected and negative consequences (for example, against the risk of treatment that cannot be

avoided even though the doctors have tried as much as possible and acted very carefully and thoroughly).

The absence of informed consent can lead to the action of malpractice, especially if there is a loss or intervention in reference to the patient's body. Commonly, laws in various countries state that the consequences of the absence of informed consent are in line with negligence. However, in some cases, the absence of informed consent is equivalent to an intentional action, so the degree of thedoctor's error in the context of the action is higher.

Before the doctor takes medical action, the doctor is obliged to provide information about the type of illness suffered by the patient and the medical actions that are to be taken to save the patient's life, including the risks that may arise from the medical action to the patient and his family. The fixed procedure in taking medical action that is permanent and binding is the approval of the patient to take medical action. The acceptance of these patients is set out in the form of an agreement to take medical action (informed consent). The medical action approval form has generally been arranged so that the doctor / hospital and the patient only need to fill in the fields provided for it after an oral explanation has been given to the patient or the patient's family. Because informed consent is an agreement to take medical action, the existence of informed consent is very important for the parties who make the health service agreements. It can thus be seen that the existence of informed consent is very important and necessary in hospitals.

In the implementation of the approval of medical actions according to the Regulation of The Health Minister No. 585 1989 Article 4 Section (3), it mentions that:

In reality in the community, there were many violations of informed consent according to the Regulation of The Health Minister No. 585 1989 Article 4 Section (3). For example, there are no witnesses at the time that the agreement is made or it is someone who is not capable or who must be forced to do the legal action because of a certain matter.

2.5. Informed Consent according to Burgerlijk Wetboek[17]

The informed consent form that is available and provided in the hospital takes the form of a standard agreement in which the form and contents have been made by the hospital; the doctor may not change it. This is done to facilitate the filling in of the form and to keep the standard of informed consent fulfilled. It can thus be strong evidence when a dispute arises. Doctors cannot change the forms set by the hospital.

Although the informed consent form that is available and provided by the hospital is in the form of a standard agreement whose form and content has been determined by the hospital, the implementation of the informed consent must not deviate from Article 1320 BW regarding the legal terms of the agreement.

For the relationship between informed consent and the medical action to be performed by the doctor, it can be said that informed consent is the main component supporting the existence of medical action. The agreement being given voluntarily by the patient by signing an informed consent is one of the subjective conditions for the validity of the agreement, namely “agree to bind themselves”. In this case, the agreement in question is an agreement to conduct medical actions between the doctor and the patient.

Informed consent and Article 1320 BW:

2.5.1. Agreement to those who bound themselves. The signing of an informed consent form is basically the affirmation of an oral agreement that has been done before, namely after the patient gets complete information from the doctor regarding the patient's disease and the medical actions that are to be taken. In the informed consent form provided, there was statement from the patient that the agreement was made with full awareness and without coercion. This shows that there was an agreement between the parties who signed the informed consent.

2.5.2. Able to make an agreement. Informed consent should be signed / approved by the patient or the patient's family. But in general, not all parties mentioned above have fulfilled the capable conditions for carrying out legal actions, in which case the informed consent is included in the act of reaching an agreement. The party who agrees must meet the age required to conduct legal action, namely 21 years old. In practice, there are many who agree that the informed consent individual of focus is a person who is not capable of carrying out legal actions. This is not in accordance with the Regulation of The Health Minister No. 585 1989 concerning Approval of Medical Action Article 8 Section (2) and Keputusan Direktur Pelayan Medik Nomor: HK. 00.06.3.5.1866.

2.5.3. A certain thing. As known from the foregoing description, the object of the agreement is in the form of professional medical actions characterized by giving help. In this case, the doctor gives an achievement in the form of an effort to take medical action to achieve maximum patient recovery. The patients themselves provide achievements in the form of payment and the provision of information about the disease to the doctor. Therefore, it can be concluded that the achievements given by the parties are clear, thus enabling the implementation of the rights and obligations of both parties.

2.5.4. A reason that is lawful. The contents of the medical action agreement are about the agreement of the parties to take medical action to achieve patient recovery. This is not something that is contrary to the Law, public order and morality.

4. Conclusion

Informed Consent is carried out prior to medical action, even though the existing Informed Consent form provided at the Hospital is in the form of a standard agreement whose form and content has been determined by the Hospital. The implementation of the Informed Consent should not deviate from Article 1320 BW regarding the validity of the full agreement. The hospital must carry out the agreement in accordance with the correct procedure that is carried out in agreement with the family members of the patients who are capable of carrying out legal action even though, in an emergency, the hospital must be able to condition the informed consent agreement in accordance with the applicable regulations.

In implementing the informed consent form, one must pay attention to Article 1320 BW, which is the most important as it states that the subject who gives their informed consent must be a capable subject who can carry out legal actions. Although in general the form already meets juridical provisions, there is a need for additional siblings in the format of a signatory status and the information that the intended father / mother is the biological father / mother in order to comply with the provisions of the applicable legislation. In addition, in the form provided, it is necessary to

mention who is entitled to be a witness. The presence of witnesses, one of whom is a nurse or another paramedic from the HHospital, is necessary to strengthen the testimony in the court if a dispute occurs with the patient.

References

[90] Guwandi, J. (1991). *Dokter dan Rumah Sakit*. Jakarta: Balai Penerbit 1-2
[91] Dewan Perwakilan Rakyat RI. (2004). Undang-Undang No 29 Tentang Praktek Kedokteran.
[92] Guwandi, J. (1990). *137 Tanya Jawab Persetujuan Tindakan Medik (Informed Consent)*. Jakarta: Fakultas Kedokteran UI 2
[93] Marzuki, P. M. (2014). *Penelitian Hukum* (9th ed.). Jakarta: Kencana 55
[94] Ameln, F. (1991). *Kapita Selekta Hukum Kedokteran*. Grafikatama Jaya 41
[95] Komalawati, V. (1989). *Hukum dan Etika dalam Praktik Dokter*. Jakarta: Sinar Harapan 77
[96] Muntaha, H. (2017). *Hukum Pidana Malpraktik*. Sinar Grafika 54
[97] Soekanto, S. (1987). *Pengantar Hukum Kesehatan*. Bandung: Remadja Karya 149
[98] Muntaha, H. (2017). *Hukum Pidana Malpraktik*. Bandung: Remadja Karya 57
[99] Koeswadji, H. H. (1998). *Hukum Kedokteran: Studi Tentang Hubungan Hukum dalam mana Dokter Sebagai Salah Satu Pihak*. Bandung: PT Citra Aditya Bakti 46
[100] Triwibowo, C. (2014). *Etika & Hukum Kesehatan*. Yogyakarta: Nuha Medika 71
[101] Muntaha, H. (2017). *Hukum Pidana Malpraktik*. Sinar Grafika 23
[102] Machmud, S. (2008). *Penegakan Hukum Bagi Dokter yang Diduga Melakukan Medikal Malpraktik*. Bandung: Mandar Maju 168
[103] Muntaha, H. (2017). *Hukum Pidana Malpraktik*. Sinar Grafika 25
[104] Guwandi, J. (2003). *Informed Concent dan Informed Refusal*. Fakultas Kedokteran Universitas Indonesia 2
[105] Guwandi, J. (2003). *Informed Concent dan Informed Refusal*. Fakultas Kedokteran Universitas Indonesia 32
[106] Subekti, R., & Tjitrosudibio, R. (2009). *Kitab Undang-Undang Hukum Perdata*. Balai Pustaka

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EFFECT OF TRANSFORMATIONAL LEADERSHIP STYLE ON MOTIVATION, COMMITMENT, SATISFACTORY PERFORMANCE AND DECREASE IN BURNOUT NURSE: A SYSTEMATIC REVIEW

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ABSTRACT

Embodiments of optimal health care quality nursing care is required. Quality nursing care is not far from a good organization, effective leadership. methods with emphasis on leadership style will affect the performance of the staff were underneath. The purpose of this study was to review the effect of transformational leadership on motivation, commitment, satisfactory performance and decrease burnout. For the systematic review a literature out of the 14.954 retrived articles namely Scopus, Science direct, and Proquest. Total of 15 articles was selected between 2016-2018, the keywords used to search the literature; nurse leadership style, motivation, commitment, satisfaction performance, and nurse burnout. The results discuss leadership style where transformational leadership style more positive impact on the performance of nurses, including increased motivation, commitment, innovation, nurse satisfaction and decrease burnout. Six for 15 articles indicate that the influence of transformational leadership style on job satisfaction. Conclusion: In this systematic review indicate that the influence of transformational leadership style on job satisfaction, motivation, nursing management, innovation and decrease burnout in nurses.

Keywords: leadership, transformational leadership style, nursing

1. Introduction

People's demands for quality health services, especially nursing services, will always follow the diversity of the health problems that occur in the community[1]. Professional health services needed to improve public health. In order to realize optimal health care and the nursing service quality required, considering the degree of organization and the methods of effective leadership with a focus on the leadership styles that affect the performance of the subordinates in carrying out their nursing actions needs to be done[2].

The concept of leadership has much to do with the study of different theoretical approaches and dynamic as a development over time. Some of these studies found no leadership style that was implemented in a pure form, but it had instead been modified according to different leadership styles[3], It is intended to create a working environment that encourages the commitment of the staff and the organization of nursing[4].

Transformational leadership was first conceptualized by Burns and then further developed by Bass. The term tends to refer to Bass's transformational leadership theory. According to Bass, there are four characteristicss of transformational leaders. The first characteristic, individualized consideration, suggests that transformational leaders support the development of their subordinate's

skills and that they will assist ther subordinates in achieving the desired outcomes. Such leaders not only offer coaching and advice but they also give the employees attention and treat them as individuals. Second, transformational leadership includes intellectual stimulation, whereby the leaders promote a culture in which the employees will develop their intelligence and rational thinking. Intellectual stimulation, in turn, fosters independent problem-solving by the employees. Inspiration is the third element of transformational leadership. In this regard, the leaders communicate high expectations and encourage the employees to focus their efforts on achieving the established goals. Finally, transformational leaders are regarded as charismatic leaders who offer a vision and mission to their employees. Such leaders will try to instill pride, respect and trust in their employees so then the organization can achieve the required outcomes[5]. The nurses surveyed reported a lower level of AC relative to NC and CC, suggesting that these nurses do not feel a strong sense of belonging or attachment to their organization. Leadership style and psychological empowerment significantly affect commitment levels, with transformational style having a marginal effect [4]. Supervisor support has a dramatic influence on employee job satisfaction compared to the other factors. Supervisor support was one of the job characteristics highly associated with transformational behavior. Supervisor support is a core transformational behavior and it increases the job satisfaction of a nurse [10]. The increased development of transformational leadership behaviors increases the nurses' job satisfaction and thus contributes to the increased retention of nurses [13]. The effective role of transformational leadership helps to improve nursing management and reduce burnout among nurses because this style of leadership enhances creativity and motivation among the nurses [7].

The transformational style has a positive impact on stimulating motivation, assuring job satisfaction and consolidating teamwork among the health workers compared with those who demonstrated transactional skills or laissez-faire styles[6]. Transformational leadership style, which is mostly correlated with satisfaction (Idealized influence attributed) which the staff nurses perceived as respect, caring for others, professional development and appreciation, was rarely practiced by the managers studied [15]. Job satisfaction can be manifested as employee commitment that results from an increased sense of meaningfulness at work and improved accomplishments. Job satisfaction is a valuable indicator that management can use to assess the overall employee development within an organization. Most satisfied employee developments tend to very highly self-confident, which boosts their performance[5].

2. Methods

2.1 Search Strategies, Data Source

The searching of the literature materials for this systematic review was limited to articles in English performed between 2014 until 2018 which was accessible from an Internet search. The databases searched were Scopus, ScienceDirect and Proquest. The sources of the research data were derived from the literature, and were mainly published scientific articles from national and international journals. Seven articles indicated that there was an influence from transformational leadership style on job satisfaction, while two articles were on motivation, two articles were on commitment and one was on the decrease in burnout among nurses. The keywords used to search the literature were "nurse leadership style, motivation, commitment, satisfaction performance, and nurse burnout".

2.2 Inclusion Criteria

An article was included if it met the following criteria: 1) it included the transformational leadership style in nursing; 2) it was an original research; 3) it included nurses as the study subjects and 4) it involved satisfaction, performance, the burnout of nurses and articles published in the years between 2014 and 2018. An article was excluded if it met the following criteria: 1) subjects of the study were not nurses; 2) not a primary study; 3) not about transformational leadership style and 4) no outcomes of interest.

2.3 Design

The systematic review was organized using several stages based on the preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), namely (1) identifying the intervention in the literature, (2) identifying the relevant literature by topic and title, (3) getting the literature in full-text form, and (4) analyzing the results of the various interventions in the literature.

2.4 Data Extraction

The components involved in the extraction of the data include the author, journal, state, objectives and the research questions, theoretical framework, research design, research subjects, methods, instruments, reliability and validity, the analysis of the results of the leadership and whether the results were significant or insignificant. The data was extracted by one of the drafting team and verified by the editorial team.

2.5 Analysis

The data was analyzed using content analysis in two stages. The first phase consisted of dividing the studies into several categories based on their common characteristics. The second stage was to identify the effect of transformational leadership style on motivation, commitment, satisfaction performance and the decrease in burnout in the nurses.

3. Results

3.1 Selection of Studies

The initial search retrieved a total of 633 articles: 214 from ScienceDirect, 215 from Scopus and 204 from Proquest. From these, 288 duplicate articles were removed. Besides the inclusion and exclusion criteria, 68 articles were excluded. The review process for the selection of the articles progressed in stages, including the title review, abstract review, years and a full-text review. We extracted 214 studies according to the title, years published and abstract review and 63 studies from the full-text review. Finally, a total of 12 articles were selected for this study. The retrieval and screening process has been summarized in Figure 1.

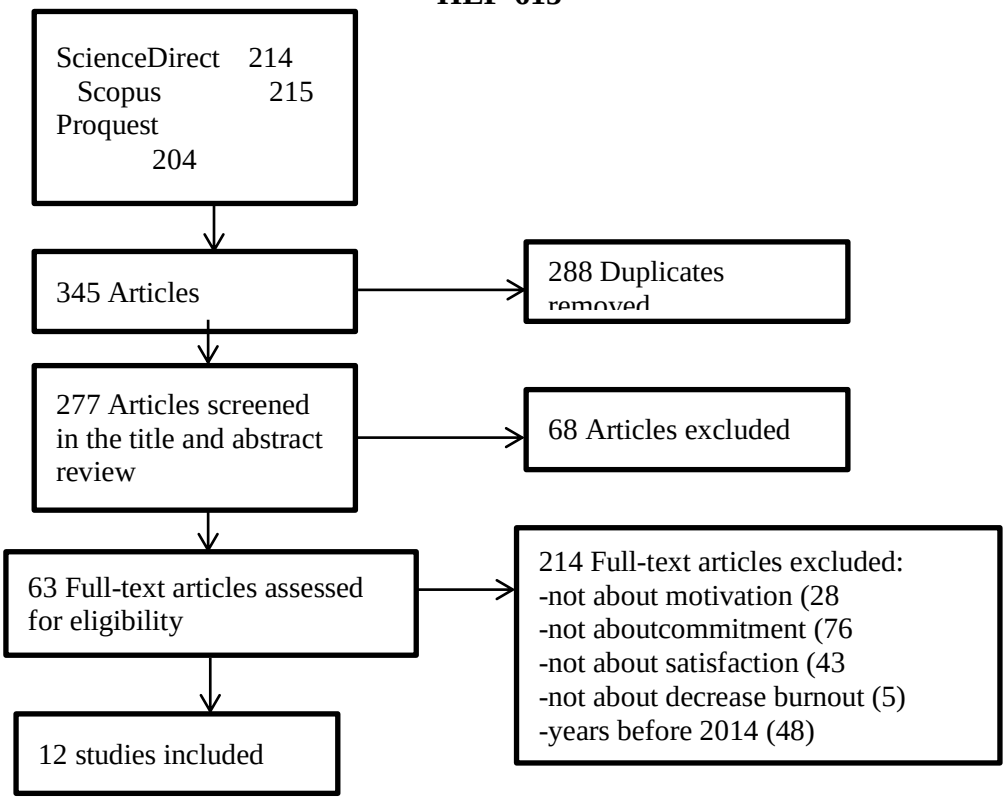

Figure 1. Literature search flow looking at the effect of transformational leadership style on motivation, commitment, satisfaction, performance and a decrease in burnout.

Based on the results, we obtained some 633 articles and then made one last screening as to whether any of the titles in the articles were the same or not. A total of 12 articles were selected. The studies included 7 focused on satisfaction, 2 on motivation, 2 on commitment, and 1 on a decrease in burnout. The role of transformational leadership style in improving nursing management and on reducing burnout among the nurses is because this style of leadership enhances the creativity and motivation among the nurses, thus it can decrease burnout[7]. For this outcome, there is a significant positive relationship between the nursing manager's leadership style and organizational commitment[8]

Table 1. Outcome and results

Author (Yr)/ Country	Method	Outcome
Asiri SA [9](2016)/ Arabia	*Cross-Sectional*	The style of leadership may increase the commitment of the nurses
Jodar G[3] (2016)/ Spain	*Cross-sectional*	Application of transformational style among the nurses improved nurse satisfaction and the desire to try to work better.
Jeon SH[1] (2018)/ Korea	*queasy Experiment*	Ethical leadership can affect trust, fairness, and respect among nursing, the members of the unit, and this can affect the staff nurse's job satisfaction
Lin P[10] (2018)/ Taiwan	*quantitative study Cross-sectional*	Transformational leadership style and organizational commitment can improve the job satisfaction of nurses
Ebrahimzade N [7] (2015)/Iran	*Cross-sectional*	Leadership style that is transformational could further reduce the risk of burnout
Xie Y[11] (2018)/ China	*An empirical study*	Transformational leadership style brings in a direct impact on innovation in a team atmosphere
Boamah SA[12] (2018)/ Canada	*Cross-sectional*	There is a relationship between transformational leadership and management by passive exception (MBEP)
Musinguzi C[6] (2018)/ Uganda	*Cross-sectional*	Transformational style had a positive impact to stimulate motivation and job satisfaction of nurses
Abdelhafiz IM [13](2018)/ Jordania	quantitative, cross-sectional, comparative and correlational	Transformational leadership increases the job satisfaction of the nurses
Paul MA [14](2017)/ Saudia Arabia	*survey*	Transformational leadership is the most dominant leadership style
Choi SL [5](2016)/ Malaysia	*survey*	Transformational leadership style can improve job satisfaction among the staff nurses
Morsiani G [15](2016)/ Italy	*Mixed Methods Study Cross-sectional*	Transformational style had a positive impact on stimulating the motivation and job satisfaction of the convinced nurses

After screening, there were 12 articles obtained in accordance with the inclusion criteria for further review. All 12 studies evaluated 'satisfaction' and most of the studies addressed the positive results. For example, transformational leadership (TRL) had a correlation with organizational commitment which was determined using the Pearson Product-Moment correlation[14]. Transformational leadership increases the nurse's job satisfaction and thus contributes to the increased retention of the nurses[16]. Leadership style and employee empowerment could play an instrument role in promoting organizational commitment.

4. Discussion

Of the twelve journals that have been a part of the systematic review, it can be concluded that an effective transformational leadership style can have a positive impact on job satisfaction,

motivation, nursing management and innovation and it can decrease burnout in the nurses. The nurse manager needs to be improved through behaviors based on greater respect, caring for others, professional development and appreciation [15]. Transformation leadership could serve as a guide for the nurse managers to help them improve their leadership style, and to improve the levels of job satisfaction in the staff nurses[15]. The managerial reliance on the transformational style in the society under study could reduce the degree of burnout in general in addition to emotional exhaustion and depersonalization [13].

Supervisor support plays an important role in that it is more likely to influence the health outcomes of the nurses in terms of job characteristics. Supervisor support was one of the job characteristics highly associated with transformational behavior. Supervisor support is a core transformational behavior and it increases the job satisfaction felt by the nurses [10]. If the above is increased, then the performance of the nurses will also be increased when they are providing nursing care. The relationship between leadership style and the staff perceptions of their empowerment is important for nursing managers and leaders in order to create a working environment that encourages and facilitates a high level of commitment among the nursing staff [4]. Staff motivation, job satisfaction and teamwork were positively correlated with transformational leadership whereas only staff job satisfaction and teamwork were positively correlated with transactional leadership [6]. Transformational leadership is more helpful for building an innovative atmosphere. Leaders with TLS focus on establishing a shared vision, which helps the team members to perceive the support from their leaders, to establish innovation values and to increase their innovation autonomy and degrees of cognitive innovation [10]. Transformational managers use new methods to inspire their employees to ponder over issues, encouraging them to take a part in the future of the organization, to consider their personal differences and to stimulate and foster self-confidence in the employees by entrusting responsibilities to them. Increasing organizational commitment and improving organizational culture can reduce burnout, emotional exhaustion, and depersonalization in the employees.

Transformational leadership can be used as a basic consideration in improving job satisfaction, motivation, nursing management, innovation and decreasing the burnout of nurses. Specifically, this refers to the relationship that TFL has on employee empowerment and organizational commitment, therefore the findings of this systematic review contribute to the exiting literature on the effect of leadership style on nursing practice and outcomes.

5. Conclusion

Leaders with the proper leadership style should be selected in enterprises. A leader should be aware of the impact of their leadership style on their team. Leaders should also pay attention to the incentive role of their charisma. Furthermore, leaders should actively improve their leadership style and make full use of the advantages of transformational leadership style to set examples for their subordinates with their own virtue, to motivate their subordinates with their individual personalities, to show their subordinates humanistic care, and to increase their subordinates' confidence and sense of belonging. Moreover, leaders should motivate their subordinates by combining the vision and goals of their enterprises with their subordinates' needs. The relationship between transformational leadership style and the staff perceptions of their empowerment is important for nursing managers and leaders, as nurse managers have direct impact on the staff nurse’s job satisfaction, which in turn

affects the nurse's intention to leave, the turnover rate, the quality of care and patient outcomes. However, involvement in the decision-making process on its own, although this is definitely an important step forward, is not sufficient. The nurse manager needs to be aware of the virtuous circle that their transformational leadership behaviors can trigger. Therefore, we suggest that this becomes the strategic priority of nursing directors shared by top managers and implemented in a top-down manner to ensure that the process is legitimate, clear and accepted by all.

References

[107] Jeon S H, Park M, Choi K and Kim M K 2018 An ethical leadership program for nursing unit managers *Nurse Educ. Today***62** 30–5

[108] Fang W, Zhang Y, Mei J, Chai X and Fan X 2018 Relationships between optimism, educational environment, career adaptability and career motivation in nursing undergraduates: A cross-sectional study *Nurse Educ. Today***68** 33–9

[109] Jodar G, Gené J, Hito P D, Osaba M A C, Luís J and Val D 2016 Self-perception of leadership styles and behaviour in primary health care *BMC Health Serv. Res.* 1–9

[110] Asiri S A, Rohrer W W, Al-Surimi K, Da'ar O O and Ahmed A 2016 The association of leadership styles and empowerment with nurses' organizational commitment in an acute health care setting: A cross-sectional study *BMC Nurs.***15** 1–10

[111] Choi S L, Goh C F, Adam M B H and Tan O K 2016 Transformational leadership, empowerment, and job satisfaction: The mediating role of employee empowerment *Hum. Resour. Health***14** 1–14

[112] Musinguzi C, Namale L and Kekitiinwa A 2018 The relationship between leadership style and health worker motivation , job satisfaction and teamwork in Uganda 21–32

[113] Ebrahimzade N, Mooghali A, Lankarani K B and Sadati A K 2015 Relationship between nursing managers' leadership styles and nurses' job burnout: A study at Shahid Dr. Faghihi Hospital, Shiraz, Iran *Shiraz E Med. J.***16**

[114] Lotfi Z, Atashzadeh-Shoorideh F, Mohtashami J and Nasiri M 2018 Relationship between ethical leadership and organisational commitment of nurses with perception of patient safety culture *J. Nurs. Manag.* 1–9

[115] Asiri S A, Rohrer W W, Al-surimi K, Da O O and Ahmed A 2016 The association of leadership styles and empowerment with nurses ' organizational commitment in an acute health care setting : a cross-sectional study *BMC Nurs.* 1–10

[116] Lin P, Maclennan S, Hunt N and Cox T 2015 The influences of nursing transformational leadership style on the quality of nurses ' working lives in Taiwan : a cross-sectional quantitative study 1–9

[117] Xie Y, Xue W, Li L, Wang A, Chen Y, Zheng Q, Wang Y and Li X 2018 Leadership style and innovation atmosphere in enterprises: An empirical study *Technol. Forecast. Soc. Change***135** 257–65

[118] Boamah S A 2018 Examining the Factor Structure of the MLQ Transactional and Transformational Leadership Dimensions in Nursing Context

[119] Abdelhafiz I M, Alloubani A M D and Almatari M 2016 Impact of leadership styles adopted by head nurses on job satisfaction: A comparative study between governmental and private hospitals in Jordan *J. Nurs. Manag.***24** 384–92

[120] Paul M A and Roger G 2018 Leadership style and organisational commitment among nursing staff in Saudi Arabia 531–9

[121] Morsiani G, Bagnasco A and Sasso L 2017 How staff nurses perceive the impact of nurse managers' leadership style in terms of job satisfaction: a mixed method study *J. Nurs. Manag.***25** 119–28

[122] Abdelhafiz I M 2016 Impact of leadership styles adopted by head nurses on job satisfaction : a comparative study between governmental and private hospitals in Jordan 384–92

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THE ROLE OF PROFESSIONAL INDEMNITY INSURANCE IN THE NURSING PROFESSION

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ABSTRACT

Professional Indemnity Insurance for the nursing profession provides cover for any legal costs and expenses incurred in their defence, as well as any damages that may be awarded. This is if the nurses are alleged to have provided inadequate services that cause the patients injury. The authority of the nurse in carrying out their professional duties is regulated by the Minister of Health Regulation No. 148/2010. This is so then the nurse has legitimacy when carrying out the practices within their profession. Related to the authority and duty of the nurses, they also have liability that needs to be protected by professional indemnity insurance. This is certainly based on Law Number 40 of 2014 concerning Insurance. The responsibility of the nurse when making a mistake (negligence) in carrying out their duties at the hospital is possible to be transferred to the hospital through insurance coverage. In this case, the hospital acts as the insured and the insurance company acts as the guarantor. The hospital is obliged to pay a premium to the insurance company. The method of this article was normative, which allowed the authors to explore the topic in-depth through two approaches; the conceptual approach and the statute approach. The conclusions of this paper are that first, the nurses as professionals in the field of health are very important to protect throgh professional indemnity insurance. Second, in this case, the hospital acts as the insured. On the other hand, the insurance company is an entity which provides *insurance*. The hospital is obliged to pay an insurance premium to the insurance company as the insurer.

1. Introduction

The nursing profession is a profession that is an integral part of the health services, in hospitals alongside doctors. The nursing profession is currently regulated by Law No. 38 of 2014 concerning Nursing. In Article 3, it is clearly stated that the nursing regulation aims to (1) improve the nursing quality; (2) improve the quality of the nursing services; (3) provide legal protection and legal certainty to the nurses and clients and (4) improve the level of public health.

The position of a nurse in the hospital is as a health worker who serves every patient in the hospital. Nurses have a relationship with the hospital as a legal entity by having a binding legal relationship with the employement agreement agreed upon by the hospital as an employer with the nurses as workers / employees. This work agreement then gave birth to the rights and obligations of those who made it because Article 1330 BW (Burgerlijk Wetboek) states that: "All agreements made legally apply as laws for those who make them". This is where each party has rights and obligations that are agreed upon through a work agreement. It is an employee that possesses the skills, qualifications and abilities needed to contribute to and further the aims of the employer. Both the Employee and Employer accept the terms and conditions set forth within the agreement.

As a professional nurse, the nurses are responsible for the work that they do. The types of activities conducted by the nurses come with the possibility of risks that can harm the patients as the consumers of the health services provided by the hospitals through the medical personnel (doctors / nurses).[1] Nurses as health workers are susceptible to demands for compensation from the patient for medical actions that are independent or for the medical actions that are instructions from the doctor. The hospital as the employer has an interest in the health services provided to the patients. They must also provide protection to every health worker who carries out their work (health services) for his benefit. For this reason, there is a need to transfer the risk by insuring the nurses against the demands for compensation claims.

In this case, the hospital acts as the insured and the insurance company acts as the guarantor. The hospital is obliged to pay a premium to the insurance company as the insurer and the insurance company is obliged to cover the burden of responsibility or risk related to the work of the nurse as a nursing / health worker who works for the benefit of the hospital as the insured. For this reason, in this paper, the writing method used was normative juridical, thus emphasizing the problem of how the role of liability insurance is specific to the nursing profession.

2. Methods

This article conducted a normative analysis of the law as the method of analysis. Doctrinal analyses involve an effort to understand the best balance of rights and obligations under the framework of each party defined by the insurance law perspective. The method of this article was normative, which allows the authors to explore the topic in-depth using two approaches; conceptual and statute. The conclusions of this paper are that first, the nurses, as a professional in the field of health, are very important to protect throgh professional indemnity insurance. Second, in this case, the hospital acts as the insured. On the other hand, the insurance company is an entity which provides *insurance.* The hospital is obliged to pay an insurance premium to the insurance company as insurer. The normative method inspiration was drawn from the moral, legal and political philosophy and its analysis around the questions of what ought to be.[2]

2.1 Literature Review

2.1.1 Definition of Insurance. The definition of insurance is the transfer of the possibility of the risk of an uncertain event (evenement).[3] The risk transfer can be in part or in full to the insurance company with premium payments.

2.1.2 Definition of Indemnity Insurance Nurse Profession. Indemnity insurance claims related to the nurse profession is insurance that aims to protect professionals, in this case nurses, against the legal liability of third parties who suffer from thefinancial losses arising from professional negligence. In carrying out their duties, nurses have the right to:

2.1.2.1 Obtain legal protection as long as they are carrying out duties in accordance with service standards, professional standards, operational standard procedures and statutory provisions.

2.1.2.2 Obtain correct, clear and honest information from the clients or their families.

2.1.2.3 Receive payment for the nursing services that have been provided.

2.1.2.4 Refuse the client's wishes which are contrary to the code of ethics, service standards, professional standards, operational standards of procedures and the provisions of the legislation.[4]

In carrying out their duties, the nurse has the authority to take medical action in a limited manner. If these actions result in a loss for the patient, the nurse can be prosecuted for their actions [5]. The importance of professional insurance for the nurses is to protect them against unwanted events when demands occur related to a third party.

3. Discussion

The Risk Transfer in Professional Indemnity Insurance

Insurance is an effort that can be used to overcome the possibility of accumulating losses due to uncertain events. Through an insurance agreement, there is a possibility that there is a risk of events that can cause losses that threaten the interests of the insured (hospital). These can be transferred to the insurance company. In return, the insured pays an agreed premium. With the existence of insurance, the hospital, which is positioned as the insured, has an interest to feel safe from the threat of loss due to the claim on the part of the patient.

The hospital, as the insured, has certain interests in its business activities (providing health services) to the community as the users of the hospital health services. The intended interest is responsibility due to the actions of the health personnel (nurses) who make mistakes both medical and in nursing that can cause harm to the patients. Interest is one of the principles of the insurance agreement. In an insurance agreement, there must be an interest even though the interest does not have to appear at the beginning of the insurance agreement. The interest must exist at the time even when the event is uncertain.

The transfer of the nurses' responsibilities to the hospital through insurance can be interpreted as a form of legal protection to nurses in carrying out their profession to provide health services to patients. The legal protection of the nurses when carrying out their nursing duties has been regulated in Article 36 of Law No. 38 of 2014 concerning nursing. This explains that the nurses, in carrying out their nursing duties, have the right to:

a. Obtain legal protection as long as they are carrying out their duties in accordance with the service standards, professional standards, operational standard procedures and statutory provisions.
b. Obtain correct, clear and honest information from their clients and/or their families.
c. Receive payment for the nursing services that have been provided.
d. Refuse the client’s wishes if they are contrary to the code of ethics, service standards, professional standards, operational standard procedures and the provisions of the legislation.
e. Obtain work facilities according to certain standards.

Nurses, in carrying out their duties, have the right to obtain legal protection for all claims from the recipients of health services as long as the health services provided by nurses are carried out in accordance with the health service standards, professional standards, standard operating procedures and if they do not conflict with applicable laws and regulations.

If the nurse, at the time of carrying out the task, turns out to be negligent which causes the patient to suffer an injury or to suffer loss so then a lawsuit arises from the patient's family. The hospital is then responsible for their negligence. This can be accompanied by law. The responsibility of the hospital for the negligence of their health personnel, especially the nurses, is strengthened by the provisions of Article 46 of Law No. 44 of 2009 concerning Hospitals which confirms that "the hospital is legally responsible for all losses incurred due to negligence committed by health personnel in the hospital".

The term accountability is a newly developed term meaning to hold someone accountable because their negligence has caused harm to other parties. In the field of health services, the problem of accountability occurs as a result of the legal relationship between the medical personnel (doctors, midwives, nurses) and the service users (patients) as stipulated in the agreement. Liability can be interpreted as a form of nurse participation in making a decision and learning with the decision as a consequence. Nurses have accountability, meaning that if there are parties who sue, the nurse must be prepared and brave enough to face it, especially those related to the activities of their profession. The nurse must be able to explain the activities or actions that they are carrying out.

Professional indemnity insurance is an insurance that protects against claims arising from losses resulting from the actions related to one's profession. Therefore, from the obligations that they bear, it makes a person careful when carrying out actions related to their profession. Professional indemnity insurance is also an insurance product that provides a guarantee of loss due to a particular profession. For example, in this case, paramedics who are legally responsible for paying compensation for losses arising from bodily injury caused by the guaranteed environment during the validity period of the policy.

The purpose of professional indemnity insurance is to protect professionals against legal liabilities when it comes to paying damage to people who suffer financial losses arising from their own professional negligence or from their employees when conducting business. Therefore, in carrying out its noble duties, nurses certainly have a large responsibility for their duties in serving sick patients. Therefore nurses in carrying out their duties must be very careful, not to make mistakes or negligence in serving patients.

In the case of premium payments to the insurance companies in the hospital, this can be done by withdrawing a few percent of the salaries of the health workers working in the hospitals. The premium received by the insurance company will protect the nurses when they are carrying out their duties, so then the nurses as health workers have a sense of security because their interests have been transferred to the insurance companies (guarantor). The provisions regarding the amount of premium that must be paid by the hospital to the insurance company depends on the agreement of both parties and it also depends on the extent of the quality of responsibility that must be borne by the insurer. This is so then the premium delivered by the hospital is in accordance with the guarantor.

The Transfer of the Risk of Nurse Liablity to the Hospital Through Professional Indemnity Insurance

As explained in the article above, the transfer of the nurses's liablity to the hospitals through insurance is a form of legal protection for the nurses when they are carrying out their profession to provide health services to the patients who use the hospital services. If the nurse, in carrying out her duties, turns out to be negligent so as to cause harm to the patient being treated, then of course this will

prompt a lawsuit from the family. This is what can be transferred to the insurance company through professional indemnity insurance[6].

The responsibility and liability of the hospital related to the negligence of the health personnel, especially the nurses, is strengthened by the provision of Article 46 of Law No. 44 of 2009 concerning Hospitals, which confirms that:

"The hospital is legally responsible for all losses caused by the negligence carried out by the health workers in the hospital."

Hospitals can be held responsible for the liability of patients who suffer from losses because the nursing actions are carried out in order to carry out their working relationships. The transfer of the risk of the nurses' responsibilities to the hospital is done through professional accountability insurance.

According to Article 65 of Law Number 36 of 2014 concerning the Health Workers Juncto Article 35 Paragraph 6 of Law Number 38 Year 2014 concerning Juncto Nursing Article 46 of Law Number 44 of 2009 concerning Hospitals, the Hospital is legally responsible for all losses incurred by negligence carried out by health workers in the Hospital. The provisions referred to provide legal constructions that in relation to the aspect of health law, risk liability and the lex specialis of Article 1367 paragraph (3)

The existence of risk indemnity requires the supervision of any credentials, namely that of the doctors who employ nurses in hospitals as health workers as the recipients of mandates. Supervision is one of the reasons for liability for the unlawful acts committed by health workers when carrying out the work.

In the private (civil) law system, there are several principles of liablity, including:

3.2.1 Contractual Liability.

Liability of this type arises because of a broken promise. That is, not carrying out an obligation (achievement) or not fulfilling the rights of another party as a result of the contractual relationship. In relation to the therapeutic relationships, the obligations or achievements that must be carried out by health care providers are in the form of effort, not results. Therefore doctors or other health workers are only liable for the medical efforts that do not meet the standards, or in other words, the medical efforts that can be categorized as civil malpractice.

3.2.2 Liability in Tort

This type of liability is a liability that is not based on the existence of a contractual obligation, but rather, it is based on an act against the law. An understanding against the law is not only limited to acts that are contrary to the law, self-legal obligations or other legal obligations but it is also contrary to good morality and contrary to the accuracy that should be done against others.

3.2.3 Strict Liability

This type of liability is often called a liablity without error (liability whitout fault), considering that someone must be responsible even though they did not make any mistakes; intentional, recklessness or negligence. A liability like this usually applies to products sold or articles of commerce, where the producers must pay compensation for the catastrophe caused by the product that they produce unless the manufacturer has warned against the possibility of such a risk.

3.2.4 Vicarious Liability

There is the principle of transferred liablity and indemnity. Liablity of this type arises due to errors made by the subordinates. In relation to the medical services, the hospital (as an employer) can be liable for the errors made by health workers who work as a subordinate (employee).

In accountable insurance for professional nurses,the hospitals is responsible for losses incurred due to the negligence committed by the nurses as health workers in the hospital [8].There is a transfer of responsibility from the nurse to the hospital when and where the nurse is on duty. Insurance is therefore accountable for the nursing profession using the principle of vicarious liability. The principle of accountability transferred requires that someone be liable for the actions of others, also called imputed liability.

As explained above, the principle of vicarious liability can be used as a means to provide legal protection for the nurses who work in a hospital who make mistakes (negligence) so long as the nursing actions are carried out within the scope of their duties as health workers and that they are not intentional. In other words, this action is a mistake in the form of negligence (default).

The transfer of the nurses' responsibilities to the hospitals through insurance and professional nurse accountability is based on the principle of vicarious liability. This is possible on the basis of contractual freedom. In the case of the transfer of responsibility, the hospital acts as the insured and the insurance company acts as the guarantor. The insured has an obligation to pay a premium based on the agreement of the parties to the insurer to take care of all of the consequences and the burden of responsibility related to the risk of the work of the nurse as a health worker who works for the benefit of the hospital. The hospital as a corporation, based on the Vicarious Liability principle, is responsible for any negligence carried out by the Health Care Provider[9], which in this case is the nurses who work for and on behalf of the hospital. This is so long as these actions have been carried out to the standards that have been regulated by the profession, by the institutions and by the government.

4. Conclusion

Nurses as professionals in the field of health are very important to protect through professional accountability insurance. In this case, the hospital acts as the insured and the insurance company acts as the guarantor. The hospital is obliged to pay a premium to the insurance company. The Importance of Transferring Nurses' Responsibilities to Hospitals through Nurse Professional Accountability Insurance is based on the principle of vicarious liability in order to protect the nurses as the health workers who work in hospitals from the demands from the patients for the medical actions that they have performed.

Among the practice nurses in Indonesia, there are still many who are not protected with professional insurance. Therefore when a third party demands it, they often have to bear the cost on their own. For this reason, the need for the government to provide protection through professional insurance, especially to the nursing profession, is the spearhead when dealing with patients. The government should socialize insurance and professional accountability by requiring each hospital agency to insure both the doctors and nurses working in the hospital with professional indemnity insurance.

References

[1] Asmadi 2005 *Konsep Dasar Keperawatan* (Buku Kedokteran EGC)

[2] Tyler T R 2017 Methodology in Legal Research *Utr. Law Rev.***13** 1
[3] Hodgin R 1998 *Insurance Law* (London Britain: Cavendish Publishing Limited)
[4] Republic of Indonesia 2014 *Article 36 Nursery Act No 38 Year 2014*
[5] Finder 2015 Professional indemnity insurance (PII) for nurses and midwives *Finder*
[6] Express Insurance 2015 Professional Indemnity Insurance *Express Insur.*
[7] Anwar A 2017 Tanggung Gugat Resiko Dalam Aspek Hukum Kesehatan *J. SASI***23** 160
[8] Insurance G 2017 Nurses *Guild Insur.*
[9] Evi S 2015 Pengalihan Tanggung Jawab Perawat Kepada Rumah Sakit Melalui Pertanggungan Asuransi Berdasarkan Prinsip Vicarious Liability *SCIENTICA***II** 96

MMC-841

ORAL HYGIENE BY TOOTH BRUSH, SPONGE AND GAUSE WITH CHLORHEXIDINE 0.2% ON VAP

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ABSTRACT

Vetilator Associated Pneumonia (VAP) is a lung infection that occurs in patients attached to ventilators who are treated in the Intensive Care Unit (ICU). VAP is a cause of increased morbidity and even causes death in patients, thus requiring intervention. In the US the prevalence of VAP accounts for 20-70%, 10% causes death. VAP in the ICU RSUD dr. Soetomo in 2017. Because this infection occurs during intensive care, it causes longer ICU care, causes high disability and financial burden. The causes of VAP pathogens in the study were aerobic Eterobacteriaaceae (25%), staphylococcus aureus (20%).. According to the Central for Association Control (CDC) the incidence of VAP was 39% in 2011. The purpose of this paper illustrates the incidence of VAP in service settings in this case is RSUD dr. Soetomo. This design is a quasi experiment. The population in this study were all adult patients who used ventilators in intensive care. Research shows that VAP can be prevented by oral hygiene (brush, sponge and gause).

Keywords: respirator, VAP, prevention with oral hygiene

1. Introduction

Pneumonia is an inflammatory condition in the lungs caused by bacterial, viral or fungal infection[1]. The descriptor used when the patients have an artificial airway and receive mechanical ventilation is ventilator associated pneumonia (VAP) [1]. VAP is the most common type of nosocomial pneumonia and it is a major cause of morbidity and mortality especially among patients in intensive care units (ICUs)[2].

The rate of occurrence of VAP varies from 10 to 41.7 per 1000 ventilators per day and it is associated with mortality rates ranging from 24% to 76%[2]. Several other studies reported that the occurrence of death ranged from 24% to 50% with potentially higher numbers in the immunocompromised group of patients or when multi-resistant organisms are involved[3].

The most important mechanism in the development of VAP is the ongoing microaspiration of oropharyngeal colonization into the lower respiratory tract. Twenty-four hours after the patient enters the ICU, the normal oropharyngeal flora changes to gram-negative pathogens, which

increases the amount of dental plaque. Plaque is an environment that is suitable for the growth and accumulation of pathogens [4,5]. In addition, the tracheal tube can operate as a conduit for a pathogen from the oral cavity to the lungs. Some studies also show there to be a link between dental plaque colonization and respiratory pathogens[5].

The prevention of VAP requires both clinical and non-clinical interventions to provide implementation and support in the intervention. Several studies have shown that the maintenance of oral hygiene in Indonesian patients under the MV can reduce the level of VAP [6]. Chlorhexidine has become the most commonly used product for oral hygiene and studios have previously validated its efficacy in reducing VAP levels[1,6]. Chlorhexidine gluconate 0,2% mouthwash is an anti-plaque agent with strong antimicrobial activity that is effective at low concentrations while facilitating alignment in the digestive tract[3,7,8]. There are different variations within each studio in terms of the frequency of administration. There are once a day and twice a day most commonly. In addition to the frequency difference, the media or oral hygiene device also varies, such as using toothbrushes, sponges or gauze. The aim of this discussion was to find out the effectiveness of oral hygiene solutions using 0.2% chlorhexidine using toothbrushes, sponges and gauze media with a twice-daily administration on the patients with mechanical ventilation.

2. Methods

Study design

The design of this study was a systematic review with a mixed method study approach (qualitative and quantitative) formulated to review the relevant research studies and with comprehensive analysis. This systematic reporting structure used PRISMA *(Preferred Reporting Items for Systematic Reviews and Meta-Analysis)*

Eligibility criteria

This systematic review applied the inclusion and exclusion criteria that focus on several research study designs and some of them used RCTs (Randomized Control Trial). The journal articles were published in English between January 2010 and January 2019. The search strategy used the PICOS framework to identify the keywords.

Search strategy

The literature search of the professional journal publications was conducted in the following search engines: SCOPUS, SAGE, ScienceDirect, Proquest and Pubmed. The literature review are conducted using “oral hygiene”, “VAP”, “Respirator”, and “prevention” keywords.

Study Quality Assessment

A total of 12 studies were selected and reviewed that met all of the eligibility criteria. The standard protocol used as a guideline for this systematic review method was PRISMA as shown in Figure 1 below. The steps taken included: (1) the removal of duplications, (2) the independent examination of the titles, abstracts and keywords and then deleting irrelevant citations according

to the inclusion criteria, (3) for the titles and abstracts that appeared to meet the inclusion criteria and that were according to the objectives of the systematic review, the next step was to choose a journal with the full text available and (4) the final step was the selection of the articles that had been randomized to reduce the risk of bias. Meta-analytic techniques could not be done adequately because of the heterogeneity in terms of the definition of the research design and the characteristics of the results.

3. Result

- *Study selection*

The search strategy was carried out by generating a total of 1491 citations. These were then screened after removing the duplicates and 491 were found. Following this, 393 existing literature items were deleted because the title and / or abstract did not match the specified eligibility criteria. Finally, 38 complete articles were removed from the second stage of screening and 12 papers were included in the systematic review.

- *Study characteristics*

A total of 12 studies were finally selected for the review. They consisted of (1) a non-randomized pre-test / post-test design, (2) a cross-sectional randomized controlled trial study (3) and (4) an experimental study design.

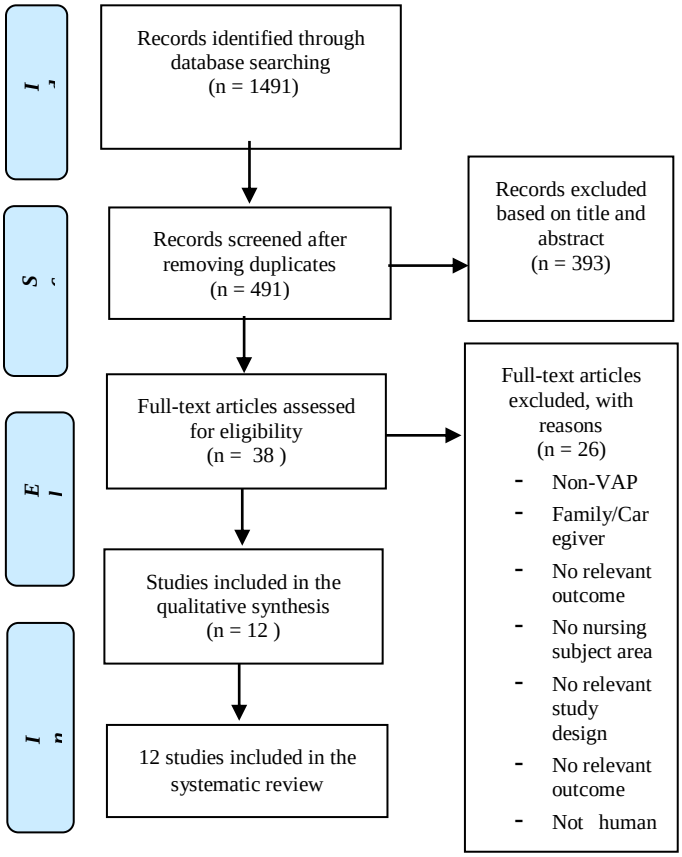

Figure 1. Flow Diagram

- *Result of synthesis*

The patients who underwent oral hygiene with a toothbrush experienced a significant decrease in the duration of mechanical ventilation and a tendency to reduce the incidence of VAP and their length of stay in the ICU, even without significant statistics. Period 2 protocols are easier to implement and they are more effective. The incidence of VAP decreased significantly in period 2. After 24 oral hygiene tests were carried out on 559 patients, VAP occurred, which meant 6.9 average VAP incidences per 1000 days / ventilator. The cost savings to prevent and treat VAP were as much as 6319 euros. In each group, 38.6% of patients developed VAP. The incidence of VAP in the intervention and control groups was 4.8% and 6% respectively. On the third day, there was 14.3% and 20.2% on the fourth day and 29.8% and 47.6% on the fifth day. Microorganisms were isolated from the aspiration of the endotracheal tubes. Enterobacter was found in 14 patients in the experimental group (56%) and in 20 patients in the control group (50%). Acinetobacter was found in 7 patients in the intervention group (28%) and 12 patients in the control group (30%). Klebsiella was found in 4 patients in the intervention group (16%) and 8 patients in the control group (20%).

Discussion

Chlorhexidine is an aromatic salt that has antimicrobial properties. In other words, it kills bacteria and other microorganisms. Chlorhexidin is bacteriostatic for gram-negative germs, yeast, fungi, protozoa, algae and viruses and it is very sensitive to several germ species such as pseudomonas spp. proteus spp, haemophilus spp, diptheroid spp and actinomyces spp.

Oral hygiene that is carried out well can kill bacteria in the mouth, thereby reducing the colonization of the gastrointestinal bacteria that can invade the respiratory tract which can cause VAP. The assessment of VAP events used 5 indicators, namely body temperature, leukocytes, tracheal secretions, oxygenation and a chest radiograph.

The systematic review showed good results with oral hygiene concerning decreasing the incidence of VAP with the optimal application of bandages.

Given that VAP is the most frequently occurring nosocomial infection in the ICU and it is associated with increased morbidity and mortality[9,10], any strategy that has the potential to reduce its incidence should be explored. According to the Centers for Disease Control (CDC), the prevention of VAP requires a multifaceted approach [11]. They further recommend that this approach should include the development and implementation of a comprehensive oral hygiene program. Standardized protocols that include the use of an antiseptic agent can potentially reduce the risk for patients in acute care settings of developing VAP. Thus the CDC supports interventions to improve oral health and the subsequent reduction in the colonization of dental plaque with respiratory pathogens which may result in the development of VAP

Conclusion

A prevention effort to reduce the incidence of VAP in various countries is sought to reduce the

incidence of VAP in hospitals. The intervention in VAP is currently done but there are some obstacles that make the implementation in VAP non-optimal.

Reference

[1] Cutler L R and Sluman P 2014 Reducing ventilator associated pneumonia in adult patients through high standards of oral care : A historical control study *Intensive Crit. Care Nurs.* **30** 61–8

[2] Saensom D, Merchant A T, Ruaisungnoen W and Pitiphat W 2016 Oral health and ventilator-associated pneumonia among critically ill patients : a prospective study 709–14

[3] Berry A M, Davidson P M, Masters J, Rolls K and Ollerton R 2011 International Journal of Nursing Studies Effects of three approaches to standardized oral hygiene to reduce bacterial colonization and ventilator associated pneumonia in mechanically ventilated patients : A randomised control trial *Int. J. Nurs. Stud.* **48** 681–8

[4] Zand F, Zahed L, Mansouri P, Dehghanrad F, Bahrani M and Ghorbani M 2017 PT

[5] Zand F, Zahed L, Mansouri P, Dehghanrad F, Bahrani M and Ghorbani M 2017 The effects of oral rinse with 0.2% and 2% chlorhexidine on oropharyngeal colonization and ventilator associated pneumonia in adults' intensive care units *J. Crit. Care* **40** 318–22

[6] Francisco F, Gavrilko O, Almeida S De, Ricardo E, Alberto T, Luis J and Antonio E 2017 Journal of Global Antimicrobial Resistance Prospective , randomised , controlled study evaluating early modi fi cation of oral microbiota following admission to the intensive care unit and oral hygiene with chlorhexidine *Integr. Med. Res.* **8** 159–63

[7] Turner J A, Franklin G, Fulton-Kehoe D, Egan K, Wickizer T M, Lymp J F, Sheppard L and Kaufman J D 2004 Prediction of chronic disability in work-related musculoskeletal disorders: a prospective, population-based study *BMC Musculoskelet. Disord.* **5** 14

[8] Calvet L, Pereira B and Mourgues C 2016 Comparative study of 2 oral care protocols in intensive care units *AJIC Am. J. Infect. Control*

[9] Koeman M, van der Ven A J A M, Hak E, Joore H C A, Kaasjager K, de Smet A G A, Ramsay G, Dormans T P J, Aarts L P H J, de Bel E E, Hustinx W N M, van der Tweel I, Hoepelman A M and Bonten M J M 2006 Oral decontamination with chlorhexidine reduces the incidence of ventilator-associated pneumonia. *Am. J. Respir. Crit. Care Med.* **173** 1348–55

[10] Fourrier L R and F 2010 Oral Hygiene and Ventilator-Associated Pneumonia *Curr. Respir. Med. Rev.* **6** 65–71

[11] Tablan O C, Anderson L J, Besser R, Bridges C and Hajjeh R 2004 Guidelines for preventing health-care--associated pneumonia, 2003: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee. *MMWR. Recomm. reports Morb. Mortal. Wkly. report. Recomm. reports* **53** 1–36

[12] Fernanda C, Vidal D L, Karla A, Vidal D L, Gildo J, Monteiro D M, Cavalcanti A, Paula A, Henriques T, Oliveira M, Godoy M, Coutinho M, Sobral P D, Vilela C Â, Gomes B, Leandro M A and Montarroyos U 2017 Impact of oral hygiene involving toothbrushing

versus chlorhexidine in the prevention of ventilator-associated pneumonia : a randomized study *BMC Infect. Dis.* 1–9

[13] Bds A K A, Bds M A, Mds S R and Ire F 2014 Does the Presence of Oral Care Guidelines Affect Oral Care Delivery by ICU Nurses ? A Survey of Saudi ICU Nurses . American Journal of Infection Control Does the presence of oral care guidelines affect oral care delivery by intensive care unit nurses ? A survey of Saudi intensive care unit nurses *Am. J. Infect. Control* **42** 921–2

[14] Cuccio L, Cerullo E, Rivet C and Steeves S 2012 An Evidence-Based Oral Care Protocol to Decrease Pneumonia

[15] Premkumar J 2017 Oral decontamination techniques and ventilator-associated pneumonia **26**

[16] Nasiriani K and Torki F 2016 The Effect of Brushing with a Soft Toothbrush and Distilled Water on the Incidence of Ventilator-Associated Pneumonia in the Intensive Care Unit **15** 101–7

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No	Title, Authors, & Time	N	Design	Main Result
1	Impact of oral hygiene involving toothbrushing versus chlorhexidine in the prevention of ventilator- associated pneumonia : a randomized study (Claudia Fernanda de Lacerda Vidal, et all, 2017) [12]	213	Randomized Controlled Trial	Patients who underwent oral hygiene including a toothbrush experienced a significant decrease in the duration of mechanical ventilation and a tendency to reduce the incidence of VAP and their length of stay in the ICU, even without significant statistics.
2	Comparative study of 2 oral care protocols in intensive care units Cohort Study **(**Jérôme Ory PharmD, et all, 2017) [8]	2030	Cohort Study	Period 2 protocols are easier to implement and they are more effective. The incidence of VAP decreased significantly in period 2.
3	Reducing ventilator-associated pneumonia in adult patients through high standards of oral care: A historical control Study. (Lee R. Cutler, Paula Sluman, 2016) [1]	1087	Historical Controlled Study	After 24 oral hygiene tests were carried out, out of the 559 patients, VAP occurred, which meant 6.9 average VAP per 1000 days / ventilator. The cost savings to prevent and treat VAP was as much as 6319 euros.
4	Oral Care and bacteremia risk in mechanically ventilated adults (Deborah J.Jones et all, 2010) [7]	30	Prospective pre-post test	Seventeen percent of patients were positive for pathogenic oral cultures before the first oral hygiene treatment. No patient had positive transient bacteremia in their quantitative blood culture before and after the oral hygiene interventions.
5	Oral health and ventilator-associated pneumonia among critically ill patients: a prospective study. (Saesom, et al, 2016) [2]	162	Prospective cohort study.	There is a strong relationship between poor oral health and an increase in the initial risk of VAP. Oral care can prevent the development of VAP in critically ill patients treated with a mechanical ventilator.
6	Effects of three approaches to standardized oral hygiene to reduce bacterial colonization and ventilator-associated pneumonia in mechanically ventilated patients (Berry et all, 2011) [3]	109	Randomized Controlled Trial	Group B showed a greater tendency to reduce bacterial colonization and there was no significant difference on day 4. The incidence of VAP was evenly distributed in groups B and C (5%) while in Group A it was only 1%. Many studies have advocated the use of oral cleansing to reduce dental plaque colonization as a standard oral hygiene protocol, including the use of toothbrushes as a reduction factor in dental plaque colonization with respiratory pathogens

No	Title, Authors, & Time	N	Design	Main Result
7	Does the presence of oral care guidelines affect oral care delivery by intensive care unit nurses? A survey of Saudi intensive care unit nurses (Ahmed K. Alotaibi et all, 2014) [13]	215	Cross sectional Survey	140 nurses provided mouthwash therapy every hour with chlorhexcidine 0.12%. Manual toothbrushing / 12 hours was reported to be carried out by more than 125 nurses. Only 80 people did subglotic suction. Most nurses (169 people) adhered to the oral care guidelines for patients with mechanical ventilation in the ICU. There were significant differences between the nurses who performed oral care guidelines compared to those who did not use the oral care guidelines
8	The effects of oral rinse with 0.2% and 2% chlorhexidine on oropharyngeal colonization and ventilator associated pneumonia in adults' intensive care units (Zand et al, 2017) [5]	114	Randomized Controlled Trial	There were significant group differences between the experimental group and the control group. In the experimental group, those suffering from VAP totaled 13 people (22.8%) and 44 (77.2%) people did not suffer from VAP. In the control group, those suffering from VAP totaled 3 (5.3%) people and 54 (94.7%) people did not suffer from VAP.
9	An evidence-based oral care protocol to decrease ventilator-associated pneumonia (Lisa Cuccio et al, 2012) [14]		Quasi-experimental pre and post	The incidence of pneumonia decreased from 4.3 to 1.86 per 1000 ventilator days during the assessment, with an estimated cost of 700,000 dollars and up to 798,000 dollars.
10	Oral decontamination techniques and ventilator- associated pneumonia mechanically ventilated patients. (Ranjitha Chacko, 2017) [15]	206	Randomized Controlled Trial	12 patients had VAP; 5 from the experimental group and 7 from the control group. VAP incidence in the participants was only 101 per 1000 ventilator days; it was 8.6 / 1000 ventilator days for the experimental group and 11.6 / 1000 ventilator days for the control group. There were no significant differences in the incidence of VAP between the 2 groups.
11	Prospective, randomized, controlled study evaluating the early modification of oral microbiota following admission to the intensive care unit and oral hygiene with chlorhexcidine (Felipe Francisco Tuon, 2017) [6]	16	Prospective Randomized Controlled Trial	Both groups had the same Charlson comorbidity score. On day 5, all patients had positive culture results for OM and DP. The OM and DP culture results showed a similar prevalence for the MDR bacteria. There was a lower percentage of MRSA infections for the CHX group compared to the placebo group.
12	The effect of brushing with a soft toothbrush and distilled water on the incidence of	168	Randomized Controlled Trial	In each group, 38.6% of patients developed VAP. The incidence of VAP in the intervention and control groups was 4.8% and 6%

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No	Title, Authors, & Time	N	Design	Main Result
	ventilator- associated pneumonia in the intensive care unit (Khadijeh Nasiriani, 2016) [16]			respectively. On the third day it was 14.3% and 20.2% and on the fourth day it was 29.8%. It was 47.6% on the fifth day. Microorganisms were isolated from the aspiration of the endotracheal tubes. Enterobacter was found in 14 patients in the experimental group (56%) and in 20 patients in the control group (50%). Acinetobacter was found in 7 patients in the intervention group (28%) and 12 patients in the control group (30%). Klebsiella was found in 4 patients in the intervention group (16%) and 8 patients in the control group (20%).

EFFECTIVENESS OF BUNDLE CARE TO PREVENTION SURGICAL SITE INFECTION : SYSTEMATIC REVIEW

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ABSTRACT

Care bundles are a strategy that can be used to reduce the risk of surgical site infection (SSI), but individual studies of care bundles report conflicting outcomes. This study assesses the effectiveness of care bundles to reduce SSI among patients undergoing colorectal surgery. The method used in this systematic review consists of 5 stages: (1) identification of instruments in the literature (database search); (2) identification of relevant literature based on title and abstract; (3) inclusion and exclusion criteria; (4) get fulltext literature; (5) grading based on the literature component and analysis of selected instruments. The database used in the search for literature were scopus, Proquest, Sciencedirect, BMC, Iranian Journal, PubMed by limiting the keywords "Surgical Site Infection" AND "Prevention" AND "Bundle care", published year between 2014-2019. Thirteen studies were included in the analysis. From the result of this study it was found that bundle care can reduce surgical site infection. Bundle care which is the most dominant intervention is given in to prevention surgical site infection on patients colorectal surgery.

Keywords: Surgical Site Infection, bundle care, prevention

1. Introduction

Surgical site infections (SSIs) are infections that occur at the incision site following an operation. The current risk of a SSI after any procedure is less than 2%. This rate pales in comparison to the risk of SSIs after colorectal surgery (CRS) which ranges from 15.1 to over 30%. In 2014, the Joint Commission Center for Transforming Health Care in collaboration with the American College of Surgeons (ACS) surveyed seven prominent hospitals centers in the USA including the Mayo Clinic and the Cleveland Clinic and identified a baseline SSI rate after CRS of 15.8%. Each SSI in turn contributes a 3% mortality risk, with 75% of these deaths directly attributable to the SSI. In 2013, our institution implemented a surgical site infection reduction bundle in efforts to reduce surgical site infections among our colon and rectal surgery cohort of patients.

The potential for the use of care bundles was first proposed by the Institute for Healthcare Improvement in 2001 to improve outcomes in critical care [1].With the bundle approach, a minimum of three robust, evidence-based interventions are implemented collectively and

consistently so that there is a possible summation of their effects to reduce complications or adverse events. Utilizing measures from the SCIP guidelines and institutional practices, a bundle of 11 elements were created.

The objective of this study is to evaluate the effects of a surgical site infection reduction bundle on surgical site infection rates. Additionally, we seek to evaluate compliance with the bundle elements and the ease at which a new process can be implemented and adopted within an institution [2]. This study assesses the effectiveness of care bundles to reduce SSI among patients undergoing surgery.

2. Methods

2.1. Protocol

A systematic review was performed in line with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) statement and checklist [3,4].

2.2. Eligibility criteria

Scope literature is the use of interventions in the prevention of surgical site infection in clients undergoing surgery. is the literature is in the English language in order to increase the amount of search results. The inclusion criteria determined in the literature sorting are full text, interventions with bundle care, adult patients undergoing surgery, and cohort and experimental studies.

2.3. Information sources

Five databases were systematically searched (Scopus, Proquest, ScienceDirect, PubMed) from January 2014 to February 2019.

2.4. Search

The search terms used were "surgical site infection" AND "prevention" AND "bundle care".

2.5. Study selection

The protocol standard for selecting research studies is suggested in the PRISMA method for systematic review followed by screening by removing duplicates, then reviewers selecting titles, abstracts, and keywords, then deleting irrelevant quotes according to the selection criteria.

2.6. Data collection process

Articles that meet later criteria are evaluated regarding quality and validity with a focus on sample size, client allocation and needs and bias factors. Data extraction was carried out by one reviewer and examined by the second reviewer.

2.7. Data items

Data extraction is designed using the main criteria of the Greenhalgh framework. The components taken were objectives, research design, population (number of samples, characteristics and

recruitment methods), intervention in the form of bundle care, outcome measures, data collection methods, and results analysis.

3. Result

2.1. Study selection

A total of 37 articles were found using predetermined keywords. After the removal of 2 duplicates, 35 records remained. Twenty-two did not meet the inclusion criteria, including 7 articles which were eliminated due to not being relevant topics, 7 articles were not in English, and 8 articles involved fewer than 20 participants. Thirteen articles were included for data in systematic review. See figure 1.

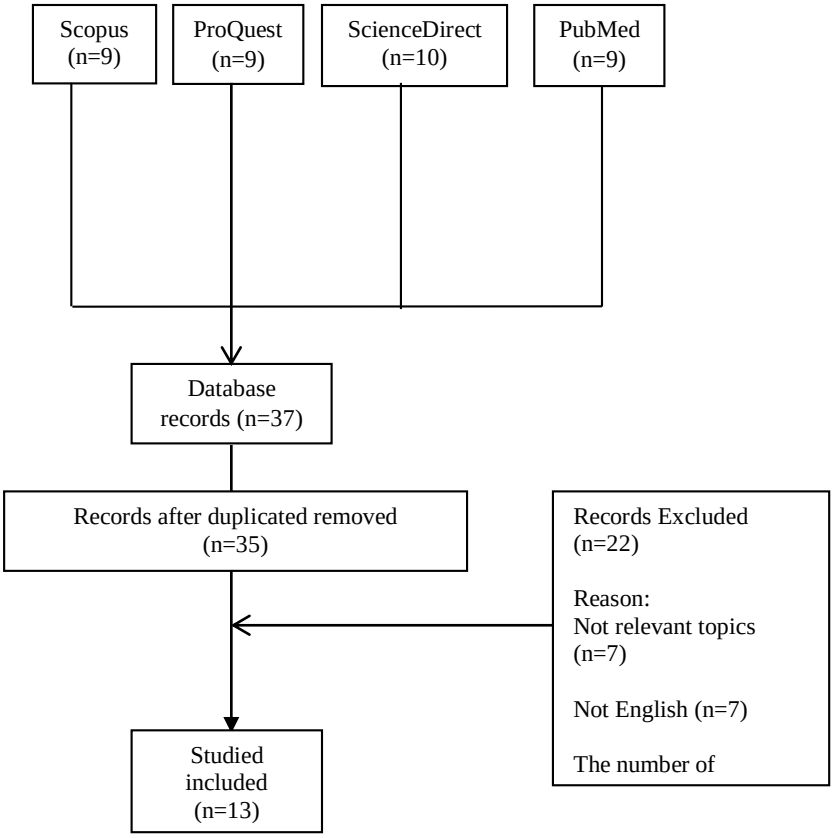

Figure 1. Flow diagram

2.2. Study characteristics

The research was conducted in various countries with various methods. The research method found in the articles are retrospective cohort (n=10), pragmatic study (n=1), and quasi-experimental study (n=1). The most widely used research design was retrospective cohort and the highest number of samples was 1351 respondent. See table 1.

Table 1. Summary of study characteristics

Author/Years	Study Design	Sample	Intervention	Outcomes measures	Result
Tufts *et al.*, (2018)	Cohort	N=424	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	Implementation of a multidisciplinary care bundle was associated with a 61% reduction in SSIs ($p < 0.001$)
Weiser *et al.*, (2018)	Pragmatic study	N= 1828	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	Meaningful reductions in SSI can be achieved by implementing a multidisciplinary care bundle at a hospital-wide level ($p < 0.001$)
Bruce *et al.*, (2018)	retrospective cohort study	N= 875	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	Implementation of an abdominal closure bundle was not associated with a significant reduction in overall SSI rate ($p=0.002$)
Mok *et al.*, (2019)	Retrospective cohort study	N=718	SSI prevention integrative care bundle approach informed by best practice guidelines was implemented in the HFU	Surgical Care Improvement Program (SCIP)	Compared with patients with no SSI, patients with SSI were 4.27 times more likely to be readmitted within 30 days, had 2.47 times longer length of stay, and 2.15 times the inpatient bill size.
Yazici and Bulut, (2018)	quasi-experimental study	N= 128	Sub-parameters of the HAI prevention care bundle	Surgical Care Improvement Program (SCIP)	The infection rates decreased with increased compatibility of the care bundle prepared from evidence-based

Author/Years	Study Design	Sample	Intervention	Outcomes measures	Result
					guidelines (p > 0.05)
Lawrence *et al.*, (2019)	Initial cohort	N = 150	4-part perioperative bundle		4-part bundle decreased SSI rate from 22% to 11% (p=0.012)
Hoang *et al.*, (2019)	Quasi experimental	N= 1351	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	Comparing the group A to group C there was a decrease in total SSI (9.4%e4.7%, p<0.05)
Tanner *et al.*, (2016)	prospective cohort design	N=127	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	The single intervention that showed an associated reduction in SSI was preoperative warming (p=0.032)
Liu *et al.*, (2017)	retrospective review	N=86	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	The difference was statistically significant (P=0.01)
Bert *et al.*, (2017)	retrospective cohort	N=1322	SNICh protocol combined with bundle	Surgical Care Improvement Program (SCIP)	The application of the bundle was not statistically associated to a decrease of the risk of infection
Johnson *et al.*, (2016)	retrospective cohort	N= 635	Multidisciplinary bundle of 13 perioperative Components	Surgical Care Improvement Program (SCIP)	Risk-adjusted odds ratio for surgical site infection decreased from 1.6 (95% confidence interval 1.0–2.6) to 0.6 (0.3–1.1)
Lutfiyya, Parsons and Breen (2012)	retrospective cohort	N=430	Development of the Colorectal Care Bundle	Surgical Care Improvement Program (SCIP)	The absolute decrease of 14.49% is significant (p < 0.0001). The rate of superficial SSI decreased from 15.12% to 3.59% (p < 0.0001).
Itani (2015)	Retrospective study	N=559	Multidisciplinary bundle of 13 perioperative	Surgical Care Improvement Program (SCIP)	Subgroup analysis of the post bundle period,

Author/Years	Study Design	Sample	Intervention	Outcomes measures	Result
			Components		superficial SSI occurrence was associated with a 35.5% increase in variable direct costs ($13 253 vs $9779, P=0.001) and a 71.7% increase in length of stay (7.9 vs 4.6 days, P< .001)

2.3. Summary of studies

3.3.1. Multidisciplinary bundle of 13 perioperative components. Seven A study using Multidisciplinary bundle of 13 perioperative components was 8 studies [6,15,17,18]. This action is carried out by observing 13 steps as listed in table 2.

Table 2. Components of the perioperative bundle

Preoperative	Appropriate oral antibiotic selection Appropriate oral antibiotic administration the night before surgery Mechanical bowel preparation Medical evaluation for elevated hemoglobin A1C Skin cleansing with chlorhexidine the night surgery Surgeon notification of SSI risk using MSK SSI prediction tool
Intraoperative	Antibiotic administration before initial incision Appropriate method of hair removal (electronic clippers or no hair removal) Maintenance of normothermia Intraoperative antibiotic re-dosing Separate surgical closing tray for open procedures
Postoperative	Discontinuation of antibiotics at 24 hours Patient shower on postoperative day 2

SSI prevention integrative care bundle approach informed. SSI prevention integrative care bundle approach informed contain 15 items in one study [8].

Table 3. SSI prevention integrative care bundle approach informed

Preoperative	Optimize modifiable patient risk factors (e.g., diabetes) and Nutrition Prevention of anemia Preoperative skin preparation with chlorhexidine body wash to reduce skin microflora Screening and isolation of surgical hip patients from patients with MRSA
Intraoperative	Antibiotic prophylaxis Maintaining body core temperature: Preventing intraoperative hypothermia Prevention of anemia Intraoperative antibiotic re-dosing Separate surgical closing tray for open procedures
Postoperative	Postoperative fever examination, which includes regular wound inspection Prevent wound contamination Optimize nutrition Prevention of anemia Early mobilization and discharge planning

Sub-parameters of the HAIs prevention care bundle. There is one study that uses Sub-parameters of the HAIs prevention care bundle consisting of several items [9]. Contain of VAP: Bedhead height suitable, no need for aspiration, no need for oral care, cuff pressure suitable, no liquid

accumulation in the ventilator circuits, ventilator circuits are not dirty, peptic ulcer prophylaxis received, deep vein thrombosis prophylaxis received. CLABSI: the need for catheter continues. Central venous catheter's dressing need has been met, dressing has been suitably applied, dressing date available, fluid sets have been replaced. CA-UTI: the need for catheter continues, the urinary bag and catheter are below the bladder level, no withdrawal from the urinary bag, the urinary bag does not touch the floor.

4-part of perioperative bundle. The 4-part perioperative bundle implemented consisted of the following 4 components: double-ring wound protector: 500 mL bacitracin/saline irrigation of incision before skin closure; gown/glove change and sterile instruments for fascial and skin closure; negative-pressure incisional dressing [10].

SNICh protocol combined with bundle. The surgical bundle assessed the appropriateness of 5 items: the infection risk index calculation (it depends on ASA score, the length of operation, and the class of wound contamination), the preoperative shower, the trichotomy, the antibiotic prophylaxis, and the body temperature control.

Development of the colorectal care bundle. There is one study that uses Development of the Colorectal Care Bundle [16]. The step are Preoperative: give patient the SSI patient education sheet, encourage smoking cessation 30 days before surgery, use preoperative antiseptic skin cleansing: with chlorhexidine wipes (night before and morning of surgery), mechanically prepare the colon the day before surgery, administer non-absorbable oral antimicrobial agents (neomycin and metronidazole) the night before surgery, screen diabetic and nondiabetic patients using HbA1C levels. Holding: check blood glucose levels; if >140 mg/dL, start insulin infusion, remove hair with clippers in holding area (SCIP 6), apply forced warm air gown to maintain normothermia. Intraoperative: prescribe appropriate antibiotic (SCIP 1), dose prophylactic antimicrobial agent based on weight, administer prophylactic antimicrobial agents IV on time (SCIP 1), redose prophylactic antibiotic based on duration of operation, use standardized antiseptic agent for skin preparation: chlorhexidine gluconate (chloraprep), use at least 80% fraction of inspired oxygen, ensure double gloving for all scrubbed surgical team members, maintain perioperative normothermia (SCIP 9), aggressively control glucose in all patients; start insulin infusions for any blood glucose level >140 mg/dL, perform pulse lavage of subcutaneous tissues for all open operations using 2 L of saline.

Surgical care improvement program (SCIP). Measurement of surgical site infection is done using SCIP. SCIP is a national quality partnership committed to improving patient safety by driving down postoperative complications. The goal is to reduce 4 types of surgical complications by 25% by 2010, surgical site infections, perioperative heart attack, deep vein thrombosis, postoperative ventilator-associated pneumonia.

4. Discussion

The aim of this systematic review was to review the effectiveness of care bundles to reduce SSI among patients undergoing colorectal surgery. The review revealed the limited available research in this field of study, identifying only thirteen relevant studies.

Based on the article reviewed, it was found that the effectiveness of bundle care was applied to prevent SSI. The overall SSI measurement uses SCIP designed to measure SSI prevention. In all studies focused on patients with adult colorectal surgery. The perioperative components multidisciplinary bundle of 13 model is the most widely used step in this review. There are 8 studies

that use the model. Overall, using multidisciplinary bundle of 13 perioperative components found a significant result, namely the influence of bundle care on prevent SSI. The bundle was associated with a 61% reduction in SSIs ($p < 0.001$) [5]. The development of the Colorectal Care Bundle that was applied found an absolute decrease of 14.49% is significant ($p < 0.0001$). The rate of superficial SSI decreased from 15.12% to 3.59% ($p < 0.0001$) [16]. The 4-part perioperative was found to decrease SSI rate from 22% to 11% ($p=0.012$) [10]. The infection rates decreased with increased compatibility of the Sub-parameters of the HAIs prevention care bundle prepared from evidence-based guidelines ($p > 0.05$) [9]. SSI prevention integrative care bundle approach informed compared with patients with no SSI, patients with SSI were 4.27 times more likely to be readmitted within 30 days, had 2.47 times longer length of stay, and 2.15 times the inpatient bill size [19].

However, in 2 studies it was found that there was no association between the use of bundle care in SSI. Implementation of an abdominal closure bundle was not associated with a significant reduction in overall SSI rate ($p=0.002$) [7]. The use of SNICh protocol is combined with bundle in the application of patients with surgery with the results of bundle was not statistically associated to a decrease of the risk of infection [14].

The use of bundle care can be applied to the surgical service order. This can be applied in the form of a standard operational procedure. In addition, counseling can be done to health workers who work in the operating room so that it can be applied properly.

The article's collected in the systematic review were only 13 pieces with different research locations. Searching for literature that is constrained by language is because there were articles that use languages other than English. Resource constraints in translating English into Indonesian. Detailed discussion is still in the whole range of bundle care used to prevent SSI from colorectal surgery and a meta-analysis has not been conducted so that effective methods for prevent SSI cannot be determined.

5. Conclusions

This systematic review aims to find evidence of the effect or effect of bundle care on prevent SSI. The search for literature is based on relevance and then evaluates the quality of the literature. The findings show that bundle care has an effect on the prevent SSI. Weaknesses of methodology, small sample size, short duration, and challenges related to blinding. So it can be concluded that bundle care is most widely used in colorectal surgery.

References

[1] Tanner J, Kiernan M, Hilliam R, Davey S, Collins E, Wood T, Ball J and Leaper D 2016 Effectiveness of a care bundle to reduce surgical site infections in patients having open colorectal surgery *Ann. R. Coll. Surg. Engl.* **98** 270–4

[2] Hoang S C, Klipfel A A, Roth L A, Vrees M, Schechter S and Shah N 2019 Colon and rectal surgery surgical site infection reduction bundle: To improve is to change *Am. J. Surg.* **217** 40–5

[3] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care

Interventions : Explanation and Elaboration **6**

[4] Moher D, Tetzlaff J, Altman D G, Liberati A and Group P 2009 Preferred reporting items for systematic reviews and meta-analyses : the PRISMA statement **339**

[5] Tufts L S, Jarnagin E D, Flynn J R, Gonen M, Guillem J G, Paty P B, Nash G M, Smith J J, Wei I H, Pappou E, Angelica M I D, Allen P J, Kingham T P, Balachandran V P, Drebin J A, Garcia-aguilar J, Jarnagin W R and Weiser M R 2018 A perioperative multidisciplinary care bundle reduces surgical site infections in patients undergoing synchronous colorectal and liver resection *Int. Hepato-Pancreato-Biliary Assoc.* 1–6

[6] Weiser M R, Gonen M, Usiak S, Pottinger T, Samedy P, Patel D, Seo S, Smith J J, Guillem J G, Temple L, Nash G M, Paty P B, Baldwin-Medsker A, Cheavers C E, Eagan J and Garcia-Aguilar J 2018 Effectiveness of a multidisciplinary patient care bundle for reducing surgical-site infections *Br. J. Surg.* **105** 1680–7

[7] Bruce S F, Carr D N, Burton E R, Sorosky J I, Shahin M S, Naglak M C and Edelson M I 2018 Gynecologic Oncology Implementation of an abdominal closure bundle to reduce surgical site infection in patients on a gynecologic oncology service undergoing exploratory laparotomy *Gynecol. Oncol.* **149** 560–4

[8] Mok W Q, Ullal M J, Su S, Yiap P L, Yu L H, Lim S M M, Ker S Y J and Wang J 2019 An integrative care bundle to prevent surgical site infections among surgical hip patients: A retrospective cohort study *Am. J. Infect. Control* **47** 540–4

[9] Yazici G and Bulut H 2018 Efficacy of a care bundle to prevent multiple infections in the intensive care unit: A quasi-experimental pretest-posttest design study *Appl. Nurs. Res.* **39** 4–10

[10] Lawrence S A, McIntyre C A, Pulvirenti A, Seier K, Chou Y, Gonen M, Balachandran V P, Kingham T P, D'Angelica M I, Drebin J A, Jarnagin W R and Allen P J 2019 Perioperative Bundle to Reduce Surgical Site Infection after Pancreaticoduodenectomy: A Prospective Cohort Study *J. Am. Coll. Surg.* **228** 595–601

[11] Hoang S C, Klipfel A A, Roth L A, Vrees M and Schechter S 2019 The American Journal of Surgery Colon and rectal surgery surgical site infection reduction bundle : To improve is to change *Am. J. Surg.* **217** 40–5

[12] Tanner J, Kiernan M, Hilliam R, Davey S, Collins E, Wood T, Ball J and Leaper D 2016 Effectiveness of a care bundle to reduce surgical site infections in patients having open colorectal surgery *Ann. R. Coll. Surg. Engl.* **98** 270–4

[13] Liu H, Dong X, Yin Y, Chen Z and Zhang J 2017 Reduction of Surgical Site Infections After Cranioplasty With Perioperative Bundle *J. Craniofac. Surg.* **28** 1408–12

[14] Bert F, Giacomelli S, Amprino V, Pieve G, Ceresetti D, Testa M and Zotti C M 2017 The " bundle " approach to reduce the surgical site infection rate 1–6

[15] Johnson M P, Kim S J, Langstraat C L, Jain S, Habermann E B, Wentink J E, Grubbs P L, Nehring S A, Weaver A L, Mcgree M E, Cima R R, Dowdy S C and Bakkum-gamez J N 2016 Using Bundled Interventions to Reduce Surgical Site Infection After Major Gynecologic Cancer Surgery **127** 1135–44

[16] Lutfiyya W, Parsons D and Breen J 2012 A Colorectal " Care Bundle " to Reduce Surgical Site Infections in Colorectal Surgeries : A Single-Center Experience **16** 10–6

[17] Itani K M F 2015 Care Bundles and Prevention of Surgical Site Infection in Colorectal Surgery

JAMA **314** 289

[18] Liu H, Dong Ã X, Yin Ã Y, Chen Z and Zhang J 2017 Reduction of Surgical Site Infections After Cranioplasty With Perioperative Bundle **28** 1408–12

[19] Mbbs J U and Lee D X 2018 An integrative care bundle to prevent surgical site infections among surgical hip patients : A retrospective cohort study Ling Yiap D8X c *AJIC Am. J. Infect. Control* **000**

MMC-644

EARLY ASSESSMENT AND DETECTION WITH CINCINNATI PRE HOSPITAL STROKE SCALE (CPPS) IN PRE HOSPITAL MANAGEMENT IN ACUTE ISCHEMIC STROKE PATIENTS TO INCREASE SURVIVAL RATE

Made Martini[1], I Dewa Ayu Rismayanti[2], Gede Budi Widiarta[3], G. Nur Widya Putra[4], Kadek Yudi Aryawan[5], Putu Agus Ariana[6], Mochamad Heri[7], Ni Nyoman Ari Ratnadi[8]
Sekolah Tinggi Ilmu Kesehatan Buleleng

BACKGROUND Stroke is known as the third leading cause of death in America after heart disease and cancer with an estimated 5 million people per year. In Indonesia stroke is the first cause of death. This happened because of the increase in the prevalence of stroke from 8.3 / 1000 in Riskesdas 2007 to 12.1 / 1000 with respondents> 15 years. One of the causes of increased mortality and disability from ischemic stroke patients include: first aid person or community does not know the initial signs and symptoms of acute stroke and risk factors. This has an impact on the delay, so that patients experience complications such as disability/even disability of death. The speed and accuracy of recognizing the signs and symptoms of acute attacks of ischemic stroke greatly influences the success of treatment.

PURPOSE to analyze and find out as a simple tool in early detection of acute ischemic stroke patients, namely CINCINNATI PRE HOSPITAL STROKE SCALE (CPPS), so that it can be used and used for patients, communities, nurses and EMS teams in providing early relief from acute ischemic stroke patients

METHODS This scientific writing paper used a systematic review design. This papers was taken from a collection of electronic databases several studies published from 2005 to 2018, using key word CCPS, stroke, emergency and pre hospital, articles were collected using Google Scholar, PubMed, Proquest, Ebscho. In the research article there are quantitative and qualitative studies. There were 10 articles in the research collection and selected using the inclusion criteria, namely full text, English, and discussed CPPS in managing stroke at pre hospital.

FINDING CPPS is one of the pre-hospital assessment tools that have high sensitivity that can be used as a simple screening tool for ambulance nurses, the public, stroke patients and EMS teams quickly and early prediction for stroke patients as a consideration for the patient's transport to the hospital immediately, so as to improve the survival rate and quality of life of stroke patients, especially in reducing mortality and morbidity.

CONCLUSIONS AND RECOMMENDATIONS The earlier and faster management of ischemic acute stroke patients will increase the survival rate of stroke patients, patients with acute ischemic stroke have a critical time of less than the first 3 hours of a stroke. Good cooperation between family, patients, community and professional health team, especially in understanding and implementing CPSS, which is recommended as a tool for assessing stroke prediction can reduce stroke mortality and disability patients.

Key Words : **CPPS, pre hospital, stroke, scale**

BACKGROUND

Stroke is the third leading cause of death in the United States, which is after heart disease and cancer with an estimated 5 million people per year. The first and recurring acute stroke events are 700,000 people each year. In Indonesia stroke is the first cause of death. This happened because of the increase in the prevalence of stroke from 8.3 / 1000 in *Riskesdas* 2007 to 12.1 / 1000 with respondents over 15 years. (*Riskesdas*, 2013). There are various risk factors and the causes of the increase in the number of stroke cases among them are the communities or helpers, especially the first helper, who do not know the initial signs and symptoms of acute stroke and risk factors. This has an impact on delay so that patients experience complications such as disability or death. The speed and accuracy of recognizing the signs and symptoms of acute attacks of ischemic stroke greatly influences the success of treatment (Savitz, 2007; Zohrevandi, 2014). In reality the patient's family is often late to bring the patien to the hospital, even more than 12 hours the patient is delivered by the family to get help (Agoes, 2012). According to Goldstein and France (2008), one of the factors that caused delay in ischemic stroke patients entering the emergency room at the pre hospital level included insufficient knowledge about stroke signs and symptoms which was 62.3%. A similar study by Kim et al. (2011) stated that quick or delay of stroke patient enter to hospital depends on patient and family knowledge, distance and transportation. Delaying judgment and diagnosis means delaying the salvage of the brain injury. Remember the principle of time is brain with golden hour means time is the same as saving the brain because every one minute delaying therapy, the patient must pay for it with damage to 1.9 million brain cells (Maggiore, 2012). This situation has not been fully realized by the societies and partly from the health care provider. This statement is seen in several studies conducted by Nicole and Thrift (2005) explaining that only 20-30% of respondents (total respondents: 822) knew about signs and symptoms and risk factors for stroke. Similar research is also explained by Ferris et all (2005); Ravenell, et all, (2015) who states that communities knowledge and awareness about stroke are still very lacking. See table 1. So efforts to increase communities knowledge and awareness about the importance of early detection of acute stroke and risk factors are stated in the recommended pre hospital management by AHA / ASA (2011) which consists of 4 links namely reaction speed and recognizing signs and symptoms stroke, the speed of activating the EMS system, the speed of transporting immediately and early diagnosis and treatment at the hospital. But the fact is there are still many stroke patients who are late to the hospital and only a small percentage use the EMS system (AHA, 2011: 136).

In Indonesia the EMS system has not been implemented as a whole so that health care providers have not been able to quickly assess stroke patients in the pre hospital area, so health education in the community (patients and families) is important especially in recognizing acute stroke signs and symptoms and risk factors for stroke, then immediately activate the emergency ambulance or ask for the closest family help to facilitate patients being admitted to the hospital. Health care providers can direct families as first responders through the Cincinnati Prehospital Stroke Scale (CPSS) assessment method.

This method is very simple, accurate and easy to apply. One study of the ability of nurses to assess the signs and symptoms of acute ischemic stroke by using CPSS states that the ability of nurses to quickly assess the clinical condition of patients before attending education and training shows that the sensitivity level of CPSS is only 61% - 66%. However, after

attending the training, nurses were very easy to identify the condition of neurological disorders in stroke patients, the level of sensitivity of CPSS was 86% -97% (AHA, 2011).

Thus the community and health care providers, family members and EMS staff from the Emergency Department / stroke unit can implement it easily because it only takes less than 1 minute to assess and diagnose the possibility of acute ischemic stroke (AHA, 2011: 136). Saving the penumbra, avoiding secondary insult and controlling risk factors are the objectives of emergency management in acute ischemic stroke patients (Setyopranoto, 2011).

The benefits expected from this paper, theoretically can contribute in efforts to increase success by early detection of signs and symptoms of acute ischemic stroke by using the Lingkati Prehospital Stroke Scale (CPSS) at the pre hospital and intra-hospital levels, The benefits expected from this paper, can theoretically contribute to efforts to increase success by early detection of signs and symptoms of acute ischemic stroke using the Lingkati Prehospital Stroke Scale (CPSS) at the pre hospital and intra-hospital levels, while the practical benefits: increasing early knowledge and alertness patients and the community in general as well as emergency care staff about stroke and management and can be considered as input for improving nursing services for patients with ED in the emergency room (Emergency Installation), ICU (Intensive Care Unit), general care rooms and stroke care units.

RESEARCH METHOD

The method used in this systematic review is internet writing from databases, Google Scholar, Direct Science, PubMed, Proquest and Ebsco, searches are limited to 2005 - 2018 publications, using keywords (keywords), namely CPSS, pre hospital, stroke, scale, can be accessed full text in pdf format. Inclusion criteria are articles that discuss stroke assessment systems by using CPSS tools in the management of stroke patients with non-hemorrhagic stroke, while exclusion criteria are articles that discuss the assessment of pre-hospital hemorrhagic stroke patients who do not use CPSS measuring instruments and journal articles that do not use English. From the search results obtained 1,200 articles discussing stroke in general, after eliminating there are 500 articles in the same, from 500 articles sketched through full text criteria with pdf article format limited to 2005 - 2018 then eliminated 299 articles and obtained 46 articles according to inclusion criteria and exclusion, from 46 articles, 10 articles were able to meet the author's criteria (26 articles discussed hemorrhagic stroke and TIA (trans ischemic attack) and 10 articles found no results related to CPSS. Data from articles that were obtained were then extracted data. This extraction was carried out by analyzing data based on year, title, research method and research results.

Table 1. Summary of article (N = 10)

No	Authors and Year	Title	Research Method	Research Result
1	Jonathan R. Studnek, Andrew Asimes, Jodi Dodds, Doug Swanson, 348-353, 2013	Asseissing The Validity of The Cincinnati Pre Hospital Stroke Scale and The Medic Pre Hospital Assesment	The study used Cohort Retrospective study method, which took data from March 1, 2011 to September 30, 2011, from 416 patients	From the results of this study it was found that the value of study sensitivity by using Med PACS after demonstration

No	Authors and Year	Title	Research Method	Research Result
		for Code Stroke in An Urban Emergency Medical Services	suspected of stroke then 186 data of patients who met the inclusion and exclusion criteria were diagnosed with non-hemorrhagic stroke. This study compared the value of the sensitivity of the assessment of non-hemorrhagic stroke patients in pre-hospital using the Med PACS and CPSS assessment scale.	was 0.742 (95%) with a CI value of 0.672-0.802 while the sensitivity level of the CPSS assessment was 0.790 (95%) CI value was 0.723 - 0.845, so it can be concluded the initial assessment (pre hospital) using CPSS is more significant rather than using Med PACS.
2.	De Luca et all, 2013, 13:53	*The use of Cincinnati prehospital stroke scale during telephone dispatch interview increases the accuracy in identifying stroke and transient ischemic attack symptoms*	To measure sensitivity and positive prediction value (PPV) EMS dispatchers are diagnosed with stroke compared to CPSS Design: cross sectional Multy study Instrument: 21760 cases in which 18231 strokes by dispatchers and 9791 symptoms were confirmed by the results of the scene survey Treatment: nurses identify non-hemorrhagic stroke cases at the time the dispatcher receives a telephone and survey scene. Measuring sensitivity and Positive Prediction value (PPV) EMS dispatchers diagnosed with stroke compared with CPSS With a sample of 38 nurses from Italy who served in the emergency center	Identification using PPV: 34.3% (95% CI 33,7-35,0; 6262/18231). Sensitivity: 64% while CPSS: 56% more often used with a sensitivity of 71%, CPSS sensitivity is better for diagnosis of pre-hospital in cases of non-hemorrhagic stoke so that ambulance nurses must know and conduct stroke patients with CPSS devices
3.	Bray, JE; Martin, J;M; et all. 2005; 20:28-33	*Paramedic Identifi cation of Stroke: Community Validation of the Melbourne Ambulance Stroke Screen*	Objective: Speed up therapeutic access with stroke tools validation between, LAPSS & CPSS with MASS Design: Prospective study	Pre hospital tool analysis: Sensitivity of MASS: CPSS (p = 0.004) = 90%: 95%. MASS: LAPSS (p = 0.003) = 74%: 85% So CPSS is more sensitive in assessing

No	Authors and Year	Title	Research Method	Research Result
			Instrument: LAPSS, CPSS, and MASS format documentation Treatment: nurses filled out the format while at pre hospital care, carried out on 18 nurses for more than 12 months by Australian nurses	strokes of MASS and LAPSS, Strength: CPSS can be used to quickly identify acute stroke by EMS
4.	J. Adam Oostema, MD, John Konen, BS, Todd Chassee, MD, Mojdeh Nasitri, MD, Mathew J. Reeves, PhD.2015	Clinical Predictors of Accurate Pre Hospital Stroke Recognition	The study by using Cohort Study was taken from the EMS and RS records, carried out for 12 months in 441 patients suspected of non-hemorrhagic stroke, initial assessment (pre hospital using CPSS) was transported using EMS hospital (ambulance)	The results showed that of the 441 patients, 371 (84.5%) patients did experience non-hemorrhagic strokes after further examination in the hospital and 70 people (15.9%) patients who did not have a non-hemorrhagic stroke, the initial treatment was done quickly and precisely because earlier detected using CPSS.
5.	Zohrevandi,B; Kasmaiaie, V.M; Asadi,P; Tajik, H; Roodpishi,N.A. 2014.	*Diagnostic Accuracy of Cincinnati Pre-Hospital Stroke Scale/*	Objective: Assess the accuracy of the CPSS reviewed Design: cross sectional retrospective study Instruments: interviews and observations of 3 basic components of CPSS (facial droop, arm limb and abnormal speech). Treatment: each patient referred to the Povusina Rasht-Iran hospital, will be assessed with CPSS as the final assumption. Data was processed with SPSS version 20 using 448 patients	CPSS with a final diagnosis of 0.483 ± 0.055 (p = 0,0001). Sensitivity: 93.19% Specifications: 51.85%. PPV: 89.76% NPV: 62.69%. Positive likelihood ratio: 1.94%. Negative like ratio: 0.135 Strength: CPSS can be used to predict stroke hospital patients as well as acute neurological syndrome in hospital so that CPSS can be diagnosed with stroke care and acute neurology syndrome
6.	Frendll,D.M;Strauss, D.G; Vudenhill, B.K; Goldstein, L.B. 2009	*Lack of Impact of Paramedic Training and Use of the Cincinnati Prehospital Stroke Scale on Stroke Patient*	With the aim of conducting evaluations in the field with CPSS by EMS dispatchers and the time of the scene	Identification with CPSS: stroke accuracy 40.5% vs. 38.9%. Training for nurses about CPSS can

No	Authors and Year	Title	Research Method	Research Result
		Identification and On-Scene Time/ Frendll,D.M;Strauss, D.G; Vudenhill, B.K; Goldstein, L.B. 2009, 40:754-756	survey / final diagnosis in hospitals Performed on 154 patients suspected of stroke, the average age of 16-69 years. Design: retrospective study. Instrument: EMS documentation Treatment: the assessment was carried out before and after training by using CPSS compared to the final diagnosis when the patient is in the hospital. Patients were given 1 hour of education about CPSS. Performed during the transport process to the center of the patient then identified with RS diagnostic data, note the suspected stroke before and after training.	improve skills for the accuracy of stroke / TIA diagnosis
7.	Jieun Jang, Sung Phil Chung, Incheok Park, Je Sung You, Hye Sun Lee, Jong Woo Park, Tae Nyoung Chung, Hyun Soo Chung, Hahn Shick Lee. 2014	The Usefulness of The Kurashiki Pre Hospital Stroke Scale in IdentifyingThrombolytic Candidates In Acute Ischemic Stroke	The study used the Retrospective method by comparing the initial stroke assessment methods of CPSS and NIHSS at the time of the initial stroke until the patient arrived at the hospital and received IV-rtpA and IA-UK therapy, when patients arrived at the RSD assessed by using the data base taken from The Brain Salvage Through Emergency Stroke Therapy (BEST) using the Computerized Physician Order Entry (CPOE) system. Data is taken from September 1, 2010 to September 30, 2010.	The results found that both the CPSS and NIHSS studies were good studies given to hemorrhagic stroke patients before patients received IV-rtpA therapy and IA-UK therapy, where CPSS had a sensitivity value of 69% and a specific value of 63%.
8.	Stephen W. English, MD, Alejandro A. Rabinstein, MD, Jay Mandrekar, PhD dan James P. Klaas, MD, 2018	Rethinking Prehospital Stroke Notification: Assessing Utility of Emergency Medical Services Impression and Cincinnati Prehospital Stroke Scale	Used a retrospective single-center cohort study method in patients suspected of stroke from 2014 to 2015. Data obtained from patients were demographic data and stroke onset, Cincinnati Prehospital Stroke Scale (CPSS) score and using NIHSS, ie tools which is	Of the total patients suspected of stroke 130 people, 96 patients were diagnosed with non-hemorrhagic stroke, the use of preliminary assessment with NIHSS and assessment through face (face)

No	Authors and Year	Title	Research Method	Research Result
			used at the beginning of the assessment in diagnosing a stroke so that treatment can be given early.	assessment, arm (speech) and speech abnormalities (speech abnormalities) in the assessment with CPSS seemed more significant in non-hemorrhagic stroke patients (P <.05). CPSS identified 75% of acute stroke cases, and the NIHSS identified 60% of stroke cases. In the application, the value of CPSS is more accurate and more specific in assessing acute stroke.
9.	Amy S. Hurwitz , MD, Jane H. Brice , MD,, Barbara A. Overby , MSN, & Kelly R. Evenson , PhD, 2009	Directed Use of the Cincinnati Prehospital Stroke Scale by Laypersons	The method used by analyzing 100 patients who called EMS 911 with stroke symptoms by using CPSS review tool, then analyzed whether CPSS was performed correctly in assessing the symptoms of the initial acute stroke event.	Nearly 98% of patients who call EMS know CPSS and when reporting for the assessment of facial weakness sensitivity levels are 74%, and specificity is 94%. For the study of the arm, the sensitivity level is 96% and the specificity is 96% so that CPSS can be accurately identified in the symptoms of acute ischemic stroke.
10.	Jan C. Purru Cke, Christian Hametner, Andreas Engelbrecht, Thomas Bruckner, Erik Popp, Sven Poli 2014	Comparison of Stroke Recognition Stroke Severity Scores For Stroke Detection In A Single Cohort	This study used Prospective Cohort study method, the date of data collection which was November 1, 2007 until August 31, 2010, by using a sample of patients who entered the Emergency Department room with Suspected CNS dissorder, amounting to 689 patient data. This study compared the number of scores and the level of accuracy in the early detection of acute ischemic stroke patients with CPSS measuring devices, FAST (Face Arm Speech Test),	The results showed differences in sensitivity and specificity of data, among others: Sensitivity and CPSS specificity values were 83% (95% CI 76 to 88) and specificity was 69% (64% -73%), FAST sensitivity value was 85% (78% - 90%) and its specificity is 68% (63% - 72%) while LAPSS has a high specificity of 92% but a low sensitivity value of

No	Authors and Year	Title	Research Method	Research Result
			LAPSS (Long Angeles Pre Hospital Stroke Scale).	44%, so CPSS has the highest sensitivity value, CPSS is one accurate detection tool in assessing the initial disorders of acute ischemic stroke patients.

RESULT AND DISSCUSSION

Analysis of 10 articles taken from the inclusion and exclusion criteria was publications from several International Journals from 2005 to 2018, the entire journal discussed the effectiveness of using the initial assessment tool, CPSS (Cicinati Prehospital Stroke Scale). CPSS is an assessment tool at the beginning of an attack that can predict that the patient has a stroke, especially the type of ischemic stroke, these tools emphasize the study of three basic components, namely facial droop, arm drip and abnormal speech. Trained health workers such as EMS will easily assess the condition of stroke patients. Trained communities or health workers can assess the presence of paralysis in the face by asking patients to smile and show their teeth, noting the presence or absence of similarity / symmetry of facial movements. If it is asymmetric the results are abnormal. Next to assess weakness in the upper extremity or hemiparesis ask the patient to lift both arms up with closed eyes for 10 seconds. Note if one hand will appear weak / unable to move then it is categorized as abnormal. The last to assess the ability to speak ask the patient to repeat one word phrase such as: "I cannot teach my old dog with new tricks." If the spoken sentence is unclear and difficult to understand, there is a high probability of abnormal speech ability. The interpretation is that if one of the three abnormal signs is found then the probability of a stroke is 72%. But if all three are found it is likely the patient has a stroke of> 85% (ACLS, 2011).

Stroke is a disease that can cause death and disability, especially if the treatment is late and inappropriate. In acute stroke, especially frequent non-hemorrhagic strokes, people, helpers and health workers have difficulty in recognizing and taking action at the beginning of attacks often late, so an assessment tool is needed that is effective and efficient in recognizing stroke signs and symptoms, especially in ischemic stroke.

The goal of stroke treatment is to minimize injury to the brain and improve patient recovery. AHA (2011) describes a strong and established link between links in an effort to achieve successful treatment of stroke patients, namely the stroke chain of survival. This link explains the strength of the relationship between patients, families, health care providers to recover or save acute ischemic stroke patients through: introduction and reaction to early signs and symptoms of ischemic stroke, activate EMS quickly, transport immediately and inform the patient's condition to the hospital before arriving , rapid diagnosis and therapy at the hospital. But in Indonesia, not all hospitals apply it for various reasons.

There are several studies that say that the use of CPSS is effective and can increase

success, especially in accelerating the initial treatment of stroke patients who experience acute attacks, a study using the Cohort Study is taking EMS and RS records, carried out for 12 months in 441 patients suspected of stroke non hemorrhagic, an initial assessment (pre hospital using CPSS) was carried out by using an EMS hospital (ambulance), the results showed that of 441 patients, 371 (84.5%) patients did experience non-hemorrhagic strokes after examination further in the hospital and 70 people (15.9%) patients not non-hemorrhagic strokes the initial treatment was done quickly and precisely because it was earlier detected using CPSS (Oostema, 2015).

The important thing to do is to make a diagnosis and immediate treatment for patients with acute stroke symptoms and the key to preventing delay is to implement 8 stroke care including: Detection: early detection of signs and symptoms of acute ischemic stroke, Dispatch: Activate more early EMS dispatcher 119, Delivery: fast EMS identification, management and transportation, Door: accuracy of triage to stroke flashlight, Data: rapid triage, evaluation and management in emergency deployment, Decision: confirm stroke diagnosis and treatment immediately, Drug: fibrinolytic therapy through intra-arterial strategy and Dispotition: rapid setting of patients to ICU or stroke units to intensify patient condition monitoring (ACLS, 2011 revised edition of Manual Provider). NINDS explained that the time for the stability of patient care at the hospital depends on the assessment and management of patients at the pre hospital through the algorithm The suspect stroke algorithm (attached).

Perdossi (2011) describes the target time for management of acute ischemic stroke as follows: At the Triage stage: 10 minutes. The actions include: determine the criteria for rtPA therapy, report the stroke team, check the landfill lab (routine blood, PT / INR, PTT, blood chemistry and heart function, then medical care: 25 minutes. Actions include: Give Oxygen, IVFD NaCl, 0.9 %, Check TD, BB, NIHSS, check 12 lead ECG and head CT Scan. CT scan examination of head and lab: 45 minutes. Actions read lab results, CT scan and send results immediately to the stroke unit, and therapy: 60 minutes. The actions are starting from rtPA IV therapy, monitoring for ICH signs such as hypertension, severe headache, vital signs and decreased neurological status, so the time needed is no more than 3 hours (Setyopranoto, 2011).

Early detection in patients with acute attacks greatly affects the success rate of acute stroke patients, early detection is often carried out by ambulance officers or the community / family who find non-hemorrhagic stroke patients in acute attacks, so that a sensitive and effective tool is needed to assess early stroke patients. CPSS is a tool that has a high sensitivity value, in a study with Cross Sectional design using a sample of 38 ambulance officers working in an emergency center, who identified stroke cases with CPSS, then analyzed that CPSS was found to have a higher sensitivity in diagnosing stroke cases. acute ischemic at the onset of the attack, so ambulance nurses need to understand and apply acute stroke assessment with the CPSS assessment tool (De Luca et all, 2013).

There are a number of Prehospital Tools Assessment tools to assess early stroke, including: recommended ones such as CPSS, FAST, MAST, LAPSS to properly screen patients. In a study conducted, the study used the Cohort Retrospective study method, which took data from March 1, 2011 to September 30, 2011, out of 416 patients suspected of stroke then 186 data of patients who met the inclusion and exclusion criteria were diagnosed with non-hemorrhagic stroke. The study compared the sensitivity value of the assessment of non-hemorrhagic stroke patients in pre-hospital using the Med PACS and CPSS assessment scale.

From the results of the study it was found that the value of study sensitivity using Med PACS after demonstration was 0.742 (95%) with a CI value of 0.672-0.802 while the sensitivity level of the CPSS assessment was 0.790 (95%) CI value was 0.723 -0.845, so it can be concluded the initial assessment (pre hospital) using CPSS is more significant than using Med PACS (Studnek, et all, 2013: 348).

In a study by using Prospective Cohort study method, the date of data collection was November 1, 2007 to August 31, 2010, by using a sample of patients who entered the Emergency Department room with Suspected CNS dissorder, amounting to 689 patient data. This study compared the number of scores and the level of accuracy in the early detection of acute ischemic stroke patients with a CPSS measuring device (Prehospital Stroke Scale), FAST (Face Arm Speech Test), LAPSS (Long Angeles Pre Hospital Stroke Scale), the results showed that differences in levels sensitivity and specificity of data include: Sensitivity and CPSS specificity values of 83% (95% CI 76 to 88) and specificity of 69% (64% -73%), FAST sensitivity value is 85% (78% - 90%) and its specificity is 68% (63% - 72%) while LAPSS has a high specificity of 92% but a low sensitivity value of 44%, so that CPSS has the highest sensitivity value, CPSS is an accurate detection tool in assessing early disorders of acute ischemic stroke patients (Purru Cke, et all, 2014).

No less important actions in the management of ischemic stroke are minimizing waiting time, especially in the act of starting rtPA IV therapy, monitoring for ICH signs such as hypertension, severe headaches, vital signs and decreasing neurological status no more than 3 hours, so a stroke assessment tool is needed the initial sensitive and accurate assessment of ischemic stroke, said in a study using the Retrospective method by comparing the initial stroke assessment methods of CPSS and NIHSS at the time of the initial stroke until the patient arrived at the hospital and received IV-rtpA and IA-UK therapy, at when the patient arrived at the emergency room the hospital was assessed using a data base taken from The Brain Salvage Through Emergency Stroke Therapy (BEST) using the Computerized Physician Order Entry (CPOE) system. Data were taken from September 1, 2010 to September 30, 2010, from the results found that both the CPSS and NIHSS studies were good studies given to hemorrhagic stroke patients before patients received IV-rtpA therapy and IA-UK therapy, where CPSS had sensitivity values 69 % and 63% specificity, so it can be said that CPSS has a greater sensitivity value especially in assessing stroke patients with acute attacks before getting fibrinolytic therapy (IV-rtpA and IA-UK) (Jang, et all, 2014).

CONCLUSION AND SUGGESTION

The speed and accuracy of the diagnosis support the speed of fibrinolytic therapy as a special treatment option in patients with acute ischemic stroke who have a critical time in less than the first 3 hours of a stroke. Good cooperation between patients, families and professional health personnel in implementing CPSS as a stroke prediction assessment tool can minimize the injury of widespread brain cells (penumbra) and recovery of stroke patients and improve the quality of life of patients while reducing the incidence and death from stroke.

REFERENCES

Amy S. Hurwitz , MD, Jane H. Brice , MD,, Barbara A. Overby , MSN, & Kelly R. Evenson , PhD. (2009).Directed Use of the Cincinnati Prehospital Stroke Scale by Laypersons.

Journal Prehospital Emergency Care. Jul-Sep;9(3):292-6.

Agoes (2012). Tangani masalah stroke di Indonesia. http://www.yastroki.or.id. Diakses 1 Mei 2015

American Heart Association/AHA (2011) Advanced cardiovascular life support. Amerika: AHA

Emergency Nursing Association, 2013. Sheehys emergency care. St. Louis Missouri: Elsevier

Bray JE, Coughlan K, Barger B, Bladin C. Paramedic diagnosis of stroke examining long-term use of the Melbourne Ambulance Stroke Screen (MASS) in the field. Stroke. 2010;41(7):1363-6.

Bray JE, Coughlan K, Barger B, Bladin C.(2005) Paramedicidentification of stroke : community validation of the Melbourne Ambulnace Stroke screen. Original paper cerebral desease.Monas University: Melboune

De Luca , et all.(2005) Does a pre hospital emergency pathway improve early diagnosisi and reffewral in suspected stroke patient study protocol cluster randomize trial. Agenzia di Sanità Pubblica della Regione Lazio, Via di Santa Costanza, 53, 00198 Roma, Italy

Frendl DM, Strauss DG, Underhill BK, Goldstein LB. Lack of impact of paramedic training and use of the Cincinnati prehospital stroke scale on stroke patient identification and on-scene time. Stroke. 2009;40(3):754-6.

Goldstein P, France, L, 2010. Pre hospital management of acute ischemic stroke: how can we do the Better. Elsevier.

Jauh,Cahir; Saver et all. (2013). Guideline for early management of patientwith acute ischemic stroke. AHA/ASA.

Jieun Jang, Sung Phil Chung, Incheok Park, Je Sung You, Hye Sun Lee, Jong Woo Park, Tae Nyoung Chung, Hyun Soo Chung, Hahn Shick Lee. (2014). The Usefulness of The Kurashiki Pre Hospital Stroke Scale in Identifying Thrombolytic Candidates In Acute Ischemic Stroke : Yonsei Med Journal. 55 (2) 410-416

Kementrian Kesehatan RI. (2013) Riset Kesehatan Daerah

Kim, et all (2011). Stroke awareness decrease pre hospital delay after acute ischemic stroke in Korea

Kothari RU, Pancioli A, Liu T, Brott T, Broderick J. Cincinnati Prehospital Stroke Scale: Reproducibility and Validity. Ann Emerg Med.33(4):373-8.

Maggiore, W.A et all, (2012). *Time is brain in pre hospital stroke treatment.* http://www.jems.com/articles/print/volume-37/issue-6/patient-care/time-brain-prehospital-stroke-treatment.html/diakses, Sabtu 9 Mei 2015

Nicol, M.B; Thrift A.M.(2005) Knowledge of risk factors and warning signs of strok National Stroke Research Institute, Austin Health, Heidelberg Heights, VIC, Australia

Oostema, Konen, Chassee, Nasitri, MD, Mathew J. Reeves. (2015). Clinical Predictors of Accurate Pre Hospital Stroke Recognition. un;46(6):1513-7. doi: 10.1161/STROKEAHA.115.008650. Epub 2015 Apr 28.

PurruCke, Hametner, Engelbrecht, Bruckner, Popp, Poli. (2014). Comparison of Stroke Recognition Stroke Severity Scores For Stroke Detection In A Single Cohort. Journal Neurologi Neurosurgery. Sep;86(9):1021-8. doi: 10.1136/jnnp-2014-309260. Epub 2014 Dec 2.

Ravenell, J et all, (2015). Tailored approach to stroke health education (TASHE)n: study protocol for randomizise controlled trial. Study protocol. Department of neurology,ColumbiaUniversitas medical Center

Setyopranoto, I (2011). Stroke: gejala dan penatalaksanannya. Yokyakarta:FK UGM

Savitz SI, Caplan LR, Edlow JA. Pitfalls in the diagnosis of cerebellar infarction. Acad Emerg Med.(2007);14(1):63-8.

Stephen W. English, MD, Alejandro A. Rabinstein, MD, Jay Mandrekar, PhD dan James P. Klaas, MD. (2018). Rethinking Prehospital Stroke Notification: Assessing Utility of Emergency Medical Services Impression and Cincinnati Prehospital Stroke Scale. Journal Stroke Cerebrovaskular Apr;27(4):919-925. doi: 10.1016/j.jstrokecerebrovasdis.2017.10.036. Epub 2017 Dec 6

Studnek JR, Asimos A, Dodds J, Swanson D. Assessing the validity of the Cincinnati Prehospital Stroke Scale and the Medic Prehospital Assessment for Code Stroke in an urban emergency medical services agency. Prehosp Emerg Care. 2013;17(3):348-53.

Yerpude, N.P; Jogdand, k.S.(2010) A study awarnes of risk factor and warning symton of stroke in general population of Andra prades, South India.Copyright 2010 BioMedSciDirect Publications IJBMR -ISSN: 0976:6685. All rights reserved

Zohrevandi Behzad , Vahid Monsef Kasmaie, Payman Asadi, Hosna Tajic, Nastaran Azizzade Roodpishi , 2014. Diagnosis accuracy of Cincinati pre Hospital Stroke Scale. Original research. Guilan Road Trauma Research Center, Guilan University of Medical Sciences, Rasht, Iran

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EFFECT OF DIAPHRAGM BREATHING EXERCISE COMBINED WITH HAND HELD FAN TO RESPIRATORY RATE AND PEAK EXPIRATORY FLOW RATE IN CLIENTS WITH COPD

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ABSTRACT

The increase of respiratory rate and decrease of peak expiratory flow rate in COPD are a major problem. These things need intervention that aims to as complish these problems. This research had purpose to know the effect of diaphragm breathing exercise combined with hand held fan against respiratory rate (RR) and peak expiratory flow rate (PEFR) in clients with COPD. This research type was quasi experiment with pre-test and post-test with control group design. 46 respondents of sample selected by consecutive sampling, 23 respondents as treatment group and 23 respondents as control group. The independent variable in this study was the diaphragm breathing exercise combined with hand held fan. The dependent variable were RR, and PEFR. Variable data collected by using a RR using observation sheets, and PEFR using measuring a peak flow meter instrument. The statistical test was used t-Test (Independent t-test and paired t-Test with significance α=0.05. The results showed that diaphragm breathing exercise combined with hand held fan was to improved RR with ρ=0.000, and PEFR with ρ=0.000. Diaphragm breathing exercise combined with hand held fan improve of RR and PEFR in COPD clients, because combined two intervention was increased of diaphragm muscle is muscle of breathing and could stimulates sympathetic and trigeminal nerve in COPD clients.

Keywords: diaphragm breathing exercise, hand held fan, respiratory rate, peak expiratory flow rate, chronic obstruction pulmonary disease

1. INTRODUCTION

Increased respiratory rate and decrease peak expiratory rates are major problem in COPD (Yatun et al., 2016). Chronic obstructive pulmonary disease (COPD) is respiratory disorder characterized by progressive airflow limitations due to blockage of the airways, since the blockage is peripheral, so the volume of air can be trapped in the lungs called hyperinflation (Borge et al 2014). The sign of airflow limitation is a decrease in FEV_1/ FVC ratio. The decrease in FEV_1 is a typical sign of COPD clients. PEFR was used peak flow meter and equal to expired volumes for 1 second (FEV_1) (Yatun et al., 2016).

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) describes COPD as the 3rd cause of death by 2020, about 3 million deaths caused by COPD in 2012, an estimated 6% of all deaths worldwide that year. COPD as the fifth leading cause of death in Indonesia, an estimated 4.8 million clients are exposed to COPD. The prevalence of COPD from RISKESDAS 2013 is 3.7%

(Ministry et al., 2013). In East Java the problem of COPD was 3.6%. Data of COPD in Jombang Hospital in 2014 is 876 clients, in 2015 as many as 1567 clients and in 2016 as many as 2046 clients. Data from January to September of 2017 were 1478 and COPD became the second most common lung disease after TB disease (Medical Record of Jombang Hospital 2017).

Data of examination of peak expiratory flow of Paru Jember Hospital conducted on 21 people in February 2014 (Novarin et al 2015), found that 90,47% of them had severe obstruction with peak expiratory flow value 50-300 L/m, while 9, The remaining 53% had moderate obstruction with an exposure peak flow range of 300-600 L/m. During this time the client only consume pharmacological therapy prescribed by the doctor.

COPD that is not immediately treated will experience respiratory failure and further deaths occur. This is due to a decrease in respiratory muscle strength so that recoil and compliance pulmonary decreases. This decrease can cause progressive airflow disruption, resulting in perfusion disorders that may develop into arterial hypoxemia. The spirometry examination results will result in a decrease in force expiration volume (FEV) and an abnormal FEV/ FVC ratio, and a decrease in peak expiratory flow (APE) or also called Peak Expiratory Flow Rate (PEFR) (Lemonere & Burke, 2000 in Ritianingsing, 2008).

RR and peak expiratory rate the loware a clinical manifestation of COPD (Yatun et al., 2016). If an infection develops, shortness of breath will increase, sometimes accompanied by signs of right heart failure, gradually a rise the persistent pulmonary corpus. COPD clients will experience a decrease in pulmonary functional capacity, the main problem being complained of is shortness of breath during activity. Decreased pulmonary functional capacity in COPD clients is not only a result of airway obstruction but also a result of peripheral muscle weakness caused by hypoxia, hypercapnia, inflammation and chronic malnutrition. The condition of decreased PEFR in COPD clients shows a decline in the function of basic human needs. An intervention is needed that aims to alleviate the needs that the client needs and help deal with the difficulties.

One of the nursing theory's references in nursing intervention is Roy's adaptation theory. Roy explained that an adaptation process includes input (in the form of stimulus), process, effector, and outcome (Alligood, 2014). Diaphragm breathing exercise combined with hand held fan can be recommended as a nursing intervention and used as an input (stimulus) in the adaptation process to decrease the perception of dyspnea. This breathing exercise diaphragm is one of the breathing techniques, which aims to increased diaphragm excursion and could increased muscle strength of the diaphragm which is the major muscle of breathing (Cahalin et al 2002 in Morrow et al., 2012). Combined with hand held fan can stimulate the trigeminal nerve that can be maximized then the client can take a deeper and more effective breath so as to maintain lung expansion (Luh et al., 2017). The combined of interventions is expected to shape adaptive behavior in COPD clients to improve RR and increased PEFR score.

Based on evidence-based practice research conducted by Yamaguti et al. (2012), diaphragm breathing exercise can increase abdominal movement during natural respiration, thereby increasing the functional capacity. diaphragm breathing exercise can increase the strength of the diaphragm muscles which are the major muscles of the breathing and act as the bottom edge of the thorac. Diaphragmatic contractions pull the muscles downward, increasing the chest space and actively developing the lung (Black & Hawks 2014). Another study by Wong et al. (2016) on the effect of Electric Fan on dyspnea in Chinese on clients of end-stage cancer shows that cold air from the fan

can reduce dyspnea and can be used as a non-pharmacological treatment. But it is not enough to conclude that the effect of diaphragm breathing exercise in combined with hand held fan can increase RR and PEFR in COPD clients.

The purpose of this study was to prove the effect of diaphragm breathing exercise combined with hand held fan to improve of RR and PEFR in COPD clients. It is expected to facilitate the provision of nursing interventions in improve of RR and increasing PEFR in COPD clients as well as other possible cases of this therapy.

2. METHODs

2.1 Study Design

This research is quasi-experimental with pre-test and post-test with control group design.

2.2 Sampling

The population is the client COPD outpatients in hospitals Jombang. 46 respondents of sample selected by consecutive sampling, 23 respondents as treatment group and 23 respondents as control group.

Consecutive sampling is the selection of samples by determining the subjects that meet the criteria of research entered into the study until a certain time, so that the number of clients required is met (Nursalam, 2016).

(1) Aged 40-75 years, (2) Client COPD diagnosed by Lung Specialist, (3) Client with COPD criteria GOLD II ($50\% \leq FEV_1<80\%$) and GOLD III (value $30\% \leq FEV_1<50\%$), (4) Client has literacy, (5) Client has good hearing, (6) Client understands command. While the exclusion criteria of this study were: (1) Unstable and exacerbated COPD clients, (2) Clients suffering from other diseases, such as cardiopulmonary, musculoskeletal and mental disorders, (3) Clients who are not cooperative, (4) Respondents experiencing acute exacerbations with productive cough or purulent cough may aggravate shortness of breath, (5) Respondent refuses to visit next, (6) Respondent dies before *post test.*

2.3 Procedure

The study protocol was approved by the research ethics commission of the University of Airlangga Surabaya Indonesia.

The study implementation was started by determining the affordable population according to the inclusion criteria then calculated using the formula of large continuous data samples to obtain the sample size according to the needs of the researcher. Respondents were given first explanation of the purpose of the research and signed the informed consent as willingness to be the respondent. Divide the respondents into groups of treatment/ intervention and control groups by lottery. Respondents in the intervention group and control group performed perceptual measurements of RR and Peak Expiratory Flow Rate (PEFR) first. In the control group treated according to therapy or treatment in Poli Paru Jombang Hospital. The intervention group conducted a meeting at the client's home by showing the video and giving the therapy training diaphragm breathing exercise combined of hand held fan for 3 times a week: breathing exercises by asking respondents to take a half-sitting position and left hand position above the rectus abdominal muscle (bone anterior ribs), then the right hand holds a portable face fan with a distance of 10-15 cm from the face, then breathes air through

the nose with the shoulder position maintained/ not lifted up and removes the air through the mouth in a way with a longer extension of exhale done with duration of time 25 minutes 3 times a week (done once in 2 days) for 4 weeks. In the fourth week the researchers conducted post-test measurements of RR and PEFR in the intervention and control group. Data obtained, analyzed using statistic.

Research Instrument

Peak Expiratory Flow Meter was to measure peak expiratory flow rate and baseline vital sign (respiratory rate) were recorded. While participant characteristic is the basic data obtained directly from the patient through the demographic data questionnaire.

2.4 Data Analysis

Descriptive analysis is done to get description of respondent's characteristic. The results of the analysis of the frequency distribution, percentage in each variable.

The inferential analysis used in this study was for ratio data if the data were normally distributed and homogeneous, using Independent t-Test and Paired t-Test.

3. RESULT

3.1 Participant Characteristics

Tables 1 Data distribution participant characteristic of control and intervention group (N=46)

Karakteristik		Perlakuan		Kontrol		TOTAL	
		N	%	N	%	n	%
Gender	Man	18	78,3	18	78,3	36	78,3
	Woman	5	21,7	5	21,7	10	21,7
Total		23	100	23	100	46	100
Age	40-60 old	12	52,2	8	34,8	20	43,5
	>60 old	11	47,8	15	65,2	26	56,5
Total		23	100	23	100	46	100
Education	Basic	21	91,3	22	95,7	43	93,5
	Middle	0	0	0	0	0	0
	Higher	2	8,7	1	4,3	3	6,5
Total		23		23	100	46	100
Work	PNS	2	8,7	2	8.7	4	8,7
	Buruh pabrik	2	8,7	3	13	5	10,9
	Petani	15	65,2	14	60,9	29	63
	Seller	2	8,7	3	13	5	10,9
	Tidak bekerja	2	8,7	1	4,3	3	6,5
Total		23	100	23	100	46	100
Smoking history	No	5	21,7	5	21,7	10	21,7
	Yes	18	78,3	18	78,3	36	78,3
Total		23	100	23	100	46	100
Long sick	1-3 years	11	47,8	14	60,9	25	54,3
	4-6 years	9	39,1	8	34,8	17	37
	7-9 years	3	13	1	4,3	4	8,7
Total		23	100	23	100	46	100
Body	Thin	9	39,	7	30,	16	34,

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Karakteristik		Perlakuan		Kontrol		TOTAL	
		N	%	N	%	n	%
Mass Index	Normal	14	1 60,9	16	4 69,6	30	8 65,2
	Fat	0	0	0	0	0	0
	Obesity	0	0	0	0	0	0
Total		23	100	23	100	46	100

Table 1 shows that most of the respondents of the treatment group and control group were male (18 persons (78.3%). In the treatment group half of respondents aged 40-60 years, ie as many as 12 people (52.2%), while the control group most of the respondents aged over 60 as many as 15 people (65.2%).

The education level of most of the treatment group respondents were 21 people (91.3%) and control group as many as 22 people (95.7%) with elementary school education. At work most of the respondents of the treatment group as much as 15 people (65.2%) and the control group as many as 14 people (60.9%) have a farmer job.

In smoking history most of the respondents both in the treatment group and the control group had smoking history, that is as many as 18 people (78.3%). In the long sick, most of the treatment group respondents were 11 people (47.8%) and the control group as many as 14 people (60.9%) suffered from COPD pain for 1-3 years. Body mass index (BMI) data were mostly 14 respondents (60,9%) and control group 16 people (69,6%) had normal body mass index

3.2 Data Distribution of research variable before the intervention

Tables 2 Data distribution of variable such as Respiratory Rate and Peak Expiratory Flow Rate control and intervention group before the intervention

Variable	Control (n=23)	Intervention (n=23)
Respiratory Rate	24,17±1,486 Mean±SD	24,17±1,669 Mean±SD
PEFR	210,43±38,551 Mean±SD	203,91±34,077 Mean±SD

Table 2 shows the control group before the intervention had the mean respiratory rate was 24.17 (SD 1.486) and peak expiratory flow rate, ie, 210.43 (SD 38.551).

Treatment groups prior to intervention had the mean respiratory rate was 24.17 (SD 1.486) and peak expiratory flow rate, ie, 210.43 (SD 38.551).

In conclusion there was no difference in perception value of respiratory rate, and peak expiratory flow rate before intervention diaphragm breathing exercise combined with hand held fan between control group and treatment group.

3.3 Data Distribution of research variable after the intervention

Tables 3 Data distribution of variable such as Respiratory Rate and Peak Expiratory Flow Rate control and intervention group after the intervention

PAT-535		
Variable	**Control (n=23)**	**Intervention (n=23)**
Respiratory Rate	23,65±1,229 Mean±SD	20,91±1,229 Mean±SD
PEFR	218,70±36,470 Mean±SD	260,87±33,563 Mean±SD

Table 3 shows the control group after the intervention had the mean of respiratory rate is 23,65 (SD 1,229) and peak expiratory flow rate is 218,70 (SD 36,470).

Treatment group before intervention had the mean value of respiratory rate was 20.91 (SD 1.229) and peak expiratory flow rate is 260.87 (SD 33.563).

In conclusion there are differences in respiratory rate, and peak expiratory flow rate after intervention diaphragm breathing exercise combined with hand held fan between control group and treatment group.

3.4 Analisys Respiratory Rate of COPD Clients

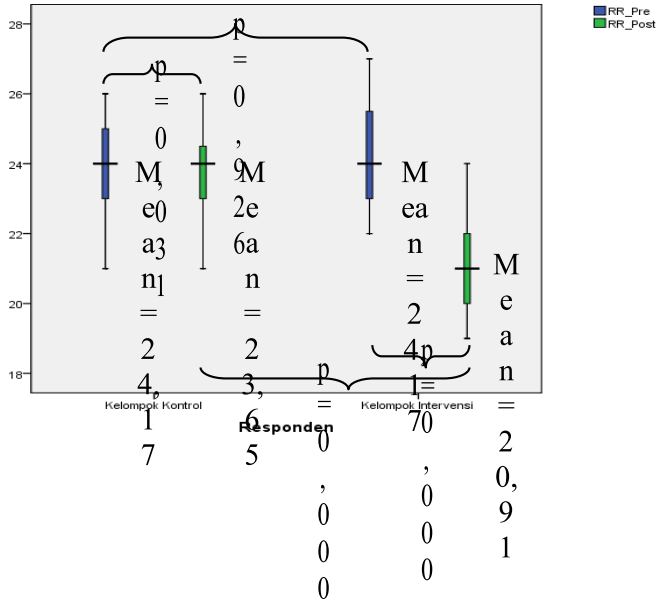

Figure 1 Test Results Independent t-Test and Paired t-Test Respiratory Rate

Based on figure 1 it is known that the Independent t-Test post-test statistic shows that p = 0,000 means that there is a difference of respiratory rate between the treatment group and the control group after the intervention is given.

The results of paired t test in the treatment group p value = 0.000, and the control group value p = 0.031 which means there is a significant difference respiratory rate before and after intervention.

3.5 Analisys Peak Expiratory Flow Rate of COPD Clients

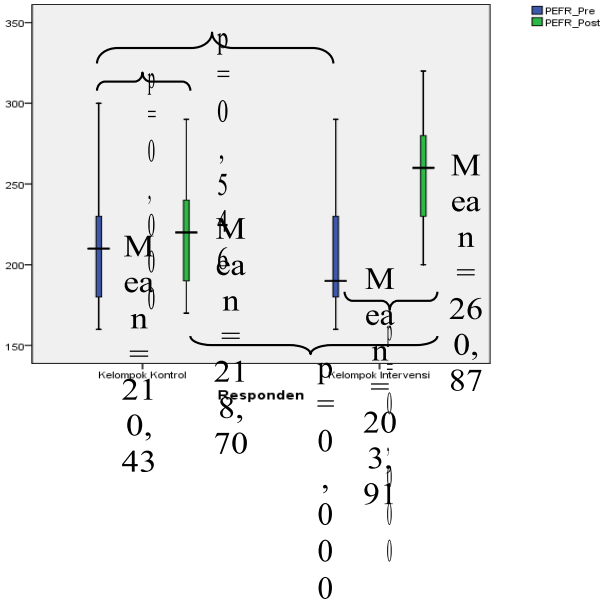

Figure 2 Test Results Independent t-Test and Paired t-Test Peak Expiratory Flow Rate

Based on figure 2 it is known that the test result of the Independent t-Test post-test indicates that p = 0,000 means that there is a difference of peak expiratory flow rate between the treatment group and the control group after the intervention is given.

The result of paired t test in the control group and the group of p value = 0,000 which means there is significant difference to the peak expiratory flow rate before and after the intervention.

4. DISCUSSION

4.1 Diaphragm Breathing Exercise Combined with Hand held fan to Respiratory Rate

The results showed that there was an influence ofintervention diaphragm breathing exercise combined with hand held fan on the improvement of respiratory rate. The results of this study are in line with research conducted by Pangestuti, et al in 2015 under the title The Effect of Diaphragmatic Breathing Exercise on Respiration Function (RR and PEFR) in Elderly at UPT PSLU Jember Regency. The study shows that there is significant diaphragmatic breathing exercise effect on Respiration Function (RR and PEFR). This breathing exercise diaphragm is one breathing technique, which aims to reduce dypsnea by increasing the diaphragm excursion and can increase the muscle strength of the diaphragm which is the major muscle of the breathing (Cahalin et al 2002 in Morrow et al., 2012). If the diaphragm muscle work can be maximized then the client can take a deeper and more effective breath so as to maintain lung expansion (Luh et al., 2017). It may increase tidal volume and reduce the symptoms of Air Trapping or air trapped in the alveoli, reduce hyperinflation, thus increasing ventilation and perfusion, and improving the respiratory rate.

In addition, the flow of cold air that affects the cold temperature receptors in the face, especially the trigeminal nerve that runs under the skin in the nose and mouth. This trigeminal nerve

can activate the muscles, one of which is anterior abdominal muscle digastrics (Booth et al., 2016). The anterior abdominal muscles of digastrics are related to the diaphragm muscles, which are the major muscles of the breathing and act as the lower edge of the thorac. Diaphragmatic contractions pull the muscles downward, increasing the chest space and actively developing the lung (Black & Hawks 2014).

4.2 Diaphragm Breathing Exercise Combined with Hand held fan to Peak Expiratory Flow Rate

Diaphragm breathing exercise combined with hand held fan that is done 3 times a week within 4 weeks with duration of 25 minutes each workout can have an impact on the increase in peak expiratory flow rate or referred to as peak expiratory flow. Light activity performed routinely in longer duration, more than 15 minutes will be able to stimulate the sympathetic nerves in the adrenal medulla that stimulates the endocrine glands to release epinephrine and norepinephrine. Norepinefrin will bind to the receptor α and $ß_2$. Sympathetic activity, epinephrine binds to $ß_2$ in heart and skeletal muscle strengthening mechanism of vasodilator locally in the tissues of the lung, so it will happen bronchodilation so that the air and out will go more smoothly and the value of the peak flow expiratory (APE) will increase (Novarin et al., 2015).

5. CONCLUSION

Intervention diaphragm breathing exercise combined with hand held fan affects the decrease of dyspnea perception, improvement respiratory rate and increase peak expiratory flow rate of respondents with COPD in Poli Paru RSUD Jombang. Further research required a study of diaphragm breathing exercise combined with hand held fan of COPD clients by using standardized handheld fans and lungspirometry testas one of the research variables.

REFERENCES

[1] Agustin H & Yunus F. (2008). *Proses Metabolisme pada Penyakit Paru Obstruktrif Kronik (PPOK)*. Jakarta: Departemen Pulmonologi dan Ilmu Kedokteran Respirasi FKUI – SMF – Paru, RS Persahabatan

[2] Alaparthi, G. K., Augustine, A. J., Anand, R., & Mahale, A. (2016). Comparison of Diaphragmatic Breathing Exercise, Volume and Flow Incentive Spirometry, on Diaphragm Excursion and Pulmonary Function in Patients Undergoing Laparoscopic Surgery : A Randomized Controlled Trial. *Minimally Invasive Surgery (Hindawi Publishing Corporation)*, *2016*. Retrieved from http://dx.doi.org/10.1155/2016/1967532

[3] Alligood, M. R. (2014). *Nursing theorists and their work*. (M. R. Alligod, Ed.) (8th ed.). United States of America: Elsevier Inc./ Mosby.

[4] Anand, A., Narwal, R., & Sindhwani, G. (2016). Accessory Inspiratory Muscles Energy Technique effect on Pulmonary Function in COPD Subjects. *Indian Journal of Physiotherapy & Occupational Therapy*, *7*(3), 192–198. https://doi.org/10.5958/j.0973-5674.7.3.091

[5] Anzueto, A., & Miravitlles, M. (2017). Pathophysiology of dyspnea in COPD. *Postgraduate*

Medicine, *0*(0). https://doi.org/10.1080/00325481.2017.1301190

[6] Badan Penelitian dan Pengembangan Kesehatan. (2013). "Riset Kesehatan Dasar (RISKESDAS) 2013." *Laporan Nasional 2013*: 1–384.

[7] Black, J.M. & Hawks, J.H. (2014). Keperawatan Medikal Bedah: Manajemen Klinis untuk Hasil yang Diharapkan 8th ed., Elsevier Singapuore.

[8] Booth, S., Galbraith, S., Ryan, R., Parker, R. A., & Johnson, M. (2016). The importance of the feasibility study : Lessons from a study of the hand-held fan used to relieve dyspnea in people who are breathless at rest. *Palliative Medicine*, *30*(5, 504–509. https://doi.org/10.1177/0269216315607180

[9] Borge, C. R., Hagen, K. B., Mengshoel, A. M., Omenaas, E., Moum, T., & Wahl, A. K. (2014). Effects of controlled breathing exercises and respiratory muscle training in people with chronic obstructive pulmonary disease: results from evaluating the quality of evidence in systematic reviews. *BMC Pulmonary Medicine*. https://doi.org/10.1186/1471-2466-14-184

[10] Brunner, & Suddarth's. (2013). *Text book of Medical Surgical Nursing*. England: Williams & Wilkins

[11] Decramer, M., Janssens, W., & Miravitlles, M. (2012). Chronic Obstructive Pulmonary Disease. *The Lancet*, *379*(9823), 1341–1351. https://doi.org/10.1016/S0140-6736(11)60968-9

[12] Fajrin O,Indra Y,Laude B. (2015). Gambaran Status Gizi dan Fungsi Paru Pada Pasien Penyakit Paru Obstruktif Kronik Stabil Di Poli Paru RSUD Arifin Achmad. Riau.Jom FK.Vol.2,No. 2

[13] Fishwick, D., Sen, D., Barber, C., Bradshaw, L., Robinson, E., Sumner, J. (2015). Occupational Chronic Obstructive Pulmonary Disease: a standard of care, Occupational Medicine: 270–282

[14] Galbraith, S., Fagan, P., Dip, G., Mcsp, P., Perkins, P., Hons, M. A., … Ethics, M. A. (2010). Does the Use of a Handheld Fan Improve Chronic Dyspnea? A Randomized, Controlled, Crossover Trial. *Journal of Pain and Symptom Management*, *39*(5), 831–838. https://doi.org/10.1016/j.jpainsymman.2009.09.024

[15] GOLD. (2017). *Global Initiative for Chronic Obstructive Lung A Guide for Health Care Professionals*. (R. Hadfield, Ed.) (2017th ed.).

[16] Hafiizh Edwin Muhammad, Marsuki Nur, Herawati Isnaini. (2013). Pengaruh *Pursed-Lip Breathing* terhadap Penurunan *Respiratory Rate* (RR) dan Peningkatan *Pulse Oxygen Saturation* (SPO2) Pada Penderita PPOK. Skripsi. Universitas Muhammadiyah Surakarta

[17] Jones, P. W., Vogelmeier, C., Vestbo, J., Hurd, S. S., Agustı, A. G., Anzueto, A., … Martinez, F. J. (2013). Pulmonary Perspective Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease GOLD Executive Summary. *American Journal Of Respiratory And Critical Care Medicine*, *187*(4), 347–365. https://doi.org/10.1164/rccm.201204-0596PP

[18] Kescia, D., Peixoto, A., Marizeiro, D. F., Carolina, A., Florêncio, L., Teles, M. D., … Campos, N. G. (2016). Manual therapy in diaphragm muscle : effect on respiratory muscle

strength and chest mobility. *Manual Therapy, Posturology & Rehabilitation Journal*, (November), 1–6.

[19] Kim, E., & Lee, H. (2013). The Effects of Deep Abdominal Muscle Strengthening Exercises on Respiratory Function and Lumbar Stability. *J. Phys. Ther. Sci.*, *25*, 663–665.

[20] Lee, H.-Y., Cheon, S.-H., & Yong, M.-S. (2017). Effect of diaphragm breathing exercise applied on the basis of overload principle. *The Journal of Physical Therapy Science*, *29*, 1054–1056.

[21] Luckett, T., Phillips, J., Johnson, M. J., Farquhar, M., Swan, F., Assen, T., … Booth, S. (2017). Contributions of a hand-held fan to self-management of chronic breathlessness. *European Respiratory Journal*, 1–10. https://doi.org/10.1183/13993003.00262-2017

[22] Mahawati, E., Husodo, A. H., Astuti, I., Sarto,. (2017). Pengaruh Teknik Aplikasi Pestisida terhadap Derajat Keparahan Penyakit Paru Obstruktif Kronis (PPOK) pada Petani, Jurnal Kesehatan Lingkungan Indonesia:2017:37–45

[23] Morrow, B., Brink, J., Grace, S., Pritchard, L., & Smith, A. L. (2012). The effect of positioning and diaphragmatic breathing exercises on respiratory muscle activity in people with chronic obstructive pulmonary disease. *South African Journal of Physiotherapy*, 1–6. Retrieved from http://www.sajp.co.za

[24] Novarin, C. (2013). Pengaruh Progressive Muscle Relaxation Terhadap Arus Puncak Ekspirasi pada Pasien Asma Bronkial di Poli B Rumah Sakit Paru Jember. Skripsi. Jember : Program Studi Ilmu Keperawatan Jember.

[25] Nursalam. (2016). *Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis*. (P. P. Lestari, Ed.) (4th ed.). Jakarta: Salemba Medika.

[26] Oemiati, R. (2013). Kajian Epidemiologis Penyakit Paru Obstruktif Kronik (PPOK). [serial online]. http://download.portalgaruda.org/article.php?article=87006&val=4883. (18 April 2018)

[27] Pangestuti, S.D., Murtaqib & Widayati, N. (2015). The Effect of Diaphragmatic Breathing Exercise on Respiration Function (RR and PEFR) in Elderly at UPT PSLU Jember Regency. e-Jurnal Pustaka Kesehatan, 3(1), pp.74–81.

[28] PDPI. (2011). *Pedoman Diagnosis dan Penatalaksanaan di Indonesia*.

[29] Peterson, S. J., & Bredow, T. S. (2013). *Middle Range Theories : Application to Nursing Research*. (J. Clay, Ed.) (3rd Editio). China: Stegman, Julie K.

[30] Potter, P., Perry, A., Stockert, P., & Hall, A. (2016). *Fundamentals of Nursing* (9th ed.). St. Louis: Elsevier/Mosby.

[31] Rattes, C., & Ribeiro, L. (2015). The Manual Diaphragm Release Technique improves diaphragmatic mobility , inspiratory capacity and exercise capacity in people with chronic obstructive pulmonary disease : a randomised trial. *Journal of Physiotherapy*, *61*, 182–189. https://doi.org/10.1016/j.jphys.2015.08.009

[32] Ritianingsih, N. (2008). *Pengaruh Posisi Duduk High Fowler Dan Orthopneic Terhadap Fungsi Ventilasi Paru Pada Asuhan Keperawatan Pasien PPOK Di RS Paru DR. M. Goenawan Partowidigdo Bogor*. *Universitas Indonesia, Jakarta*.

[33] Rocha, F. R., Karla, A., Brüggemann, V., Francisco, D. D. S., Medeiros, C. S. De, Rosal, D., & Paulin, E. (2017). Diaphragmatic mobility: relationship with lung function, respiratory muscle strength, dyspnea, and physical activity in daily life in patients with

COPD. *JBP*, *43*(1), 32–37. https://doi.org/http://dx.doi.org/10.1590/S1806-37562016000000097

[34] Seo, K., Park, S. H., & Park, K. (2015). Effects of diaphragm respiration exercise on pulmonary function of male smokers in their twenties. *Journal Physical Therapy Science*, *27*(No. 7), 2313–2315.

[35] Shimray, A., Singh, W., & Ningshen, K. (2014). Association Body Mass Index and Spirometric Lung Function in Chronic Obstructive Pulmonary Disease (COPD) Patients Attending RIMS Hospital, Manipur. *Journal of Medical Society*, 28(3), p.157. Available at: http://www.jmedsoc.org/text.asp?2014/28/3/157/148498.

[36] Smith, T., Cho, J.-G., Robert, M., & Wheatlry, J. (2016). Hand held fans for dyspnoea relief in COPD: Physical properties and patient perceptions. *European Respiratory Journal*, *48*. https://doi.org/10.1183/13993003.congress-2016.PA719

[37] Sugiyono. (2015). *Metode Penelitian Kuantitatif Kualitatif*. Aflabeta, Bandung.

[38] Suprayitno, E., Khoiriyati, A., & Hidayati, T. (2017). Gambaran Efikasi Diri Dan Peak Expiratory Flow Rate Pasien Penyakit Paru Obstruksi Kronis (PPOK). *Media Ilmu Kesehatan*, *6*(1), 38–45.

[39] Valenza, M. C., Jose, F., Cabrera-martos, I., Torres-sa, I., & Valenza-demet, G. (2015). Effects of a diaphragm stretching technique on pulmonary function in healthy participants : A randomized-controlled trial. *International Journal of Osteopathic Medicine*, 5–12. https://doi.org/10.1016/j.ijosm.2014.08.001

[40] Victor, K & Gerard, J. (2012). Chronic Bronchitis and Chronic Obstructive Pulmonary Disease. [Serial Online]. http://www.atsjournals.org/doi/pdf/10.1164/rccm.201210-1843CI. (18 April 2018)

[41] Wong, S. L., Leong, S. M., Chan, C. M., Kan, S. P., Wai, H., Cheng, B., & Uk, M. (2016). The Effect of Using an Electric Fan on Dyspnea in Chinese Patients With Terminal Cancer: A Randomized Controlled Trial. *American Journal of Hospice & Palliative Medicine*, 1–5. https://doi.org/10.1177/1049909115615127

[42] Xu, J., He, S., Han, Y., Pan, J., & Cao, L. (2017). Effects of modified pulmonary rehabilitation on patients with moderate to severe chronic obstructive pulmonary disease : A randomized controlled trail. *International Journal of Nursing Sciences*, *4*(3), 219–224. https://doi.org/10.1016/j.ijnss.2017.06.011

[43] Yadav, S. G., Sule, K., Palekar, T. J., & Yadav, S. G. (2017). Effect of Ice and Airflow Stimulation Versus Controlled Breathing Exercise to Reduce Dyspnea in Patients With Obstructive Lung Disease. *International Journal of Scientific Research And Education*, *5*(5), 6484–6490. https://doi.org/http://dx.doi.org/10.18535/ijsre/v5i05.20

[44] Yamaguti, W. P., Claudino, R. C., Neto, A. P., Chammas, M. C., Gomes, A. C., Salge, J. M., … Ap, N. (2012). Diaphragmatic Breathing Training Program Improves Abdominal Motion During Natural Breathing in Patients With Chronic Obstructive Pulmonary Disease : A Randomized Controlled Trial. *Archives of Physical Medicine and Rehabilitation*, *93*(4), 571–577. https://doi.org/10.1016/j.apmr.2011.11.026

PAT-562

PSIDIUM GUAJAVA, L. LEAVES AS MEDICINAL PLANT TO REDUCE FEVER: SYSTEMATIC REVIEW

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ABSTRACT

Fever is one of the most dominant clinical manifestations of inflammation that requires immediate treatment. Fever causes dehydration, seizures to impaired consciousness, so the need for traditional medicine is greatly increased among the community. Psidium guajava leaf is a medicinal plant that can be used as a complementary therapy. The purpose of this systematic review is to collect evidence based on previous research on Psidium guajava leaves used to reduce fever. Literature search uses keywords such as "Psidium guajava leaf" AND "medicinal" AND "plant" AND "fever" through several electronic databases such as Scopus, ProQuest, and Science Direct. The initial search took 264 potentially relevant studies, and 6 studies were selected to be reviewed according to inclusion criteria such as guava leaves from Mytaceae family, guava leaves to reduce fever and articles taken from 2014 to 2019. The results showed that Psidium guajava leaves has been used to treat fever. It is known that the phytochemical test results on guava leaf extract contain ingredients that can help to reduce fever. Further research is needed on the compunds, dosages and effects of Psidium guajava leaves. Health workers need to consider Psidium guajava leaves as medicinal plants to reduce fever.

Keywords: Psidium Guajava, fever, systematic review

1. INTRODUCTION

The use of traditional medicine has been around for a long time and the sources of traditional medicine are easily accessible and reachable throughout the world[2]. Traditional medicine is of high value and globally around 85% of plants contribute to traditional medicine in primary health care[8].Traditional treatments using guava leaves show interesting results in the health filed. The use of medicinal plants plays an important role in disease and it is highly developed. Trends in the knowledge of traditional medicine have become of interest in ethnomedical knowledge research and development[7].

The Psidiumguajava Linn (*Myrtaceae* family) is a tropical plant that is characterized as an antimicrobial drug with anticancer activities, adding value to the guava plants. Additional benefits are that it is relatively inexpensive, accessible and that it can adapt to a variety of different soil and climatic conditions. One clinical manifestation that can be cured with this plant is fever. It is known that guava plants, especially the leaves, have anti-inflammatory and antipyretic activity[2]. Although modern health care is available, traditional medicine can be indicated[8].

Psidiumguajava leaves from the *Myrtaceae* family have a medicinal effect and they are included in the complementary therapies that are needed by society. It is very important for nurses

and health workers to know that complementary treatments involving plants have been developed. Based on this thought, it is important to study the use of guava leaves as used by the community as a traditional medicine to reduce fever through a systematic review of the literature.

2. RESEARCH METHODS

The systematic search of the literature collected articles about traditional medicine involving guava leaves related to fever. The species focused on in the search was *Psidiumguajava* of the *Myrtaceae* family. Articles were quoted from 2014 to 2019. The keywords used were "*Psidiumguajava leaf*" AND "*medicinal*" AND "*plant*" AND "*fever*". The combination word was with the species "P", and then we filtered the articles according to the topic of the use of guava leaves containing the *Myrtaceae* family. This was further evaluated using the PRISMA flow model.

The eligibility criteria for this systematic review included all instruments in the form of interviews that investigated the use of guava leaves as a traditional treatment to reduce fever. In a previous review, guava leaves were complementary therapies and thus have been included in this study. This systematic review does not have any gender restriction. The procedure of the use and components of the guava leaves have been included in this systematic review.

3. RESULTS

As many as 264 articles were found from within 4 databases: 34 articles from Scopus, 14 articles from PubMed, 87 articles from ProQuest, and 129 articles from ScienceDirect (Figure 1). Some of the articles were filtered by the abstract according to the inclusion criteria. Articles were then eliminated to get 6 articles which included the topic of focus. Although its use is still small, other types of plant species are used but guava leaves have been used to reduce fever commonly. The methodological aspects of the 6 articles have been arranged in Table 1 and we have documented the use of guava leaves in Table 2.

Figure 1. The selection process of the articles included in the review using a PRISMA 2009 Flow Diagram

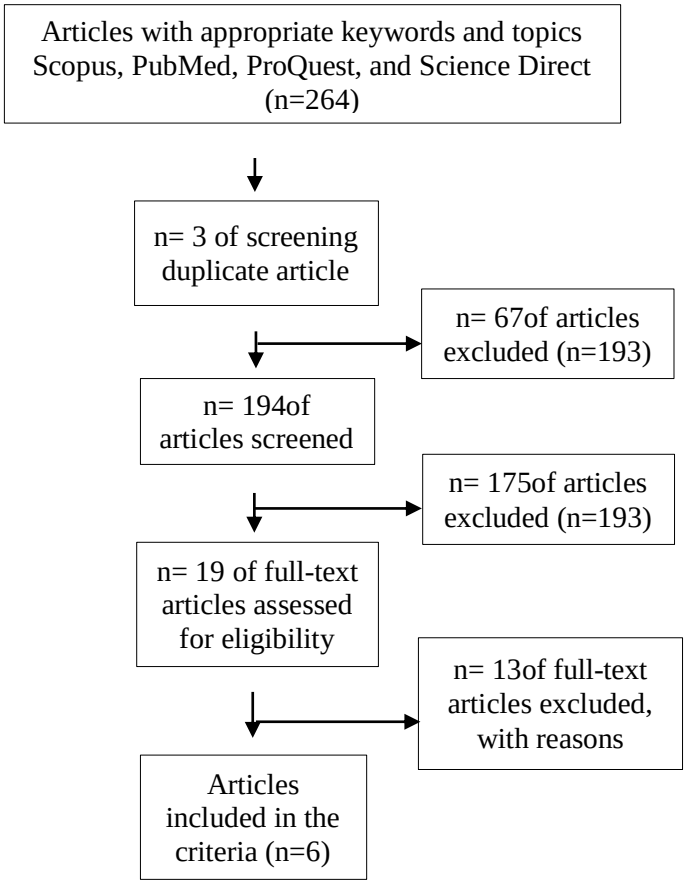

Table 1.*Psidiumguajava* leaf used within the documented articles (n= 6)

Authors (year)	Type of study	Sample (n)	Method	Procedure of use	Medicinal uses
Raj *et al* (2018)	Ethnomedicinal surveys	400 respondents	- Pre- and post-interviews - Respondents identified plants in the herbarium sheet	-	Fever, diarrhea, stomach ache, cough, laxative, dysentery, irregular menstruation and malaria (earlier studies)
Odoh*et al* (2018)	Ethnobotanical survey	213 respondents	- Interviews using a semi-structured questionnaire	DE	Symptoms of malaria such as fever, chills, headache, vomiting or discomfort
Umair *et al* (2017)	Ethnomedicinal studies	201 informants	- Semi-structured interviews and group discussion	IN; DE; E	Diarrhea, diabetes, diuretic, carminative and vermigue, toothache, fever, flu, cough
Daswani *et al* (2017)	Literature survey	*Psidiumguajava leaf*	- Electronics database of Pubmed, Science Direct, and Google Scholar	-	Fever
Morais *et al* (2016)	Systematic literature	*Psidiumguajava leaf*	- Electronics database of Pubmed, Web of Science, and Scopus	IN; DE	Symptoms of stomach pain, flatulence, fever, and diarrhea due to the padaagenpenyebabseperti protozoa.
Verma (2014)	Ethnobotanical study	Farmer in District of Bundelkhand	- Questionnaire survey - Participatory observation - Filed trip	DE	Fever

DE= Decoction; IN= Infusion; E= Extract.

Table 2.PICO analysis

Title (Authors)	Population Design	Intervention	Outcomes
Indigenous uses of ethnomedicinal plants among forest-dependent communities of Northern Bengal, India (Raj *et al*., 2018)	Population: - 400 respondents - Respondents over 30 years - Who have knowledge of traditional medicine Design: Ethnomedicinal survey	- Pre-and post-test interviews - Respondents identified plants on the herbarium sheet installed	- 140 species of medicinal plants used - *Psidiumguajava*, L (*myrtaceae family*) - Used to treat dysentery and abdominal pain but in previous studies, guava leaves were used to treat cold and cough, fever (humans and animals), indigestion, toothache and joint pain
An ethnobotanical survey of indigenous medicinal in Hafizabad district, Punjab-Pakistan (Umair *et al*., 2017)	Population: - 201 informants - Traditional physician - Male (n= 175), female (n= 26) Design: Ethnomedicinal study	Semi-structured interviews conservations	- 85 species of medicinal plants used - *Psidiumguajava*, L (*myrtaceae family*) - Decoction of guava leaves is used to treat diarrhea, diabetes, diuretics, karminative vermigue, toothache, fever, flu and cough
Medicinal plants used by the people of Nsukka Local Government Area, south-eastern Nigeria for the treatment of malaria: An ethnobotanical survey (Odoh *et al*., 2018)	Population: - 213 respondents - Age 21-60 tahun - Female (n= 126), male (n= 87) Design: Ethnobotannical survey	Interviews using a semi-structured questionnaire	- 50 species of medicinal plants used - *Psidiumguajava*, L (*myrtaceae family*) (8,5%) - Used to treat symptoms of malaria such as fever, chills, headache, vomiting or discomfort
*Psidiumguajava*L., *from ethnobiology to scientific evaluation:*	Population: *Psidiumguajava leaf* Design:	Searches were done in scientific disclosure databases such as Pubmed, Web of	- *Psidiumguajava*, L (*myrtaceae family*) - Used to treat symptoms of stomach pain, flatulence, fever, and

Elucidating bioactivity against pathogenic microorganisms survey (Morais*et al*., 2016)	Systematic literature	Science and Scopus.	diarrhea in causative agents such as protozoa - Guava leaves are used by means of infusion or decoction
An ethnobotanical study of plants used for the treatment of livestock diseases in the Tikamgarh District of Bundelkhand, Central India (Verma, 2014)	Population: - Old farmers who are experienced traditional shamans - Farmers who know about medicinal plants Design: Ethnobotanical study	- Survey questionnaire - Participatory observation - Field trip	- 41 species of medicinal plants used - *Psidiumguajava*, L (family: *Myrtaceae*) - Used to cure fever (1 liter of decoction of fresh guava leaves for 2 times a day)
Psidiumguajava: A Single Plant for Multiple Health Problems of Rural Indian Population (Daswani *et al*., 2017)	Population: Investigating the medicinal properties of guava products in the 1940s Design: Literature survey	Electronic databases such as Pubmed, Science Direct and Google Scholar.	- *Psidiumguajava*, L (family: *Myrtaceae*) - Laboratory test: Flavonoid (Quercetin) - Used to cure gastrointestinal infections, oral/dental infections, diabetes, cardio disease, cancer, malnutrition, pain, fever, liver and kidney problems

4. DISCUSSION

A total of 6 articles used a survey design and the existing literature. The samples and variables from the articles varied, while the interventions used more interviews. From the entirety of the articles, it shows that besides helping to cure some of the symptoms of the disease, guava leaves can help to reduce fever. Regarding the use of guava leaves, the dosage has not been explained according to age or weight. Two articles did not mention how to use guava leaves, but some articles mentioned that the guava leaves are boiled or infused.

The data shows that the community uses guava leaves to reduce fever and other health problems. People in Nsukka, Nigeria, use a decoction of guava leaves for malaria complaints such as fever, chills, headache, vomiting or discomfort. Guava leaves are also combined with other leaves[6]. The interviews were conducted pre- and post-test on 400 respondents who were knowledgeable about traditional medicine. The respondents identified the plants in the herbarium sheet installed as guava leaves (*Myrtaceae*) out of 140 species of medicinal plants used to treat

dysentery and abdominal pain. In previous studies, guava leaves were used to treat cough, fever, indigestion, toothache, and joint pain[7]. Two hundred and one traditional physician informants in the Hafizabad District of Pakistan were interviewed and group discussions were focused on guava leaves (*Myrtaceae* of 85 species of medicinal plants), which the group said were used to treat diarrhea, diabetes, diuretics, carminative vermigue, toothache, fever, common cold and cough[8]. Guava leaves are used to cure a fever by drinking 1 liter of decoction of fresh leaves every day until recovery[9].

In general, guava plants have compounds such as tannins, phenols, flavonoids, saponins, carbohydrates, alkaloids, sterols, terpenoids, and phenolic compounds. In particular, guava leaves have antimicrobial compounds such as 1,2-Benzenedicarboxylic acid, dibut, Alpha-bisabolol, 1,2-Benzenedicarboxylic acid, buty, hexadeca-2,6,10,14-tetraen, caryophyllene, germacrene, quercetin , quercetin 3-O-α-L-arabinofuranoside, quercetin-3-O-β-D-arabinopyraside, quercetin and quercetin-3-O-arabinoside, 11-hydroxy-35- tricont-pentatriacontanoate, hexaeicosan-16-ol, tricosan-17-ene-5-ol, nonacosan-23-ene-3-ol, lupeol, betulinic acid and antileishman activity (Nerolidol)[5]. Flavonoid compounds in the guava leaves have been found through phytochemical tests. Guava leaves are used to cure gastrointestinal infections, oral/dental infections, diabetes, cardio disease, cancer, malnutrition, pain, fever, liver and kidney problems[2].

Traditional medicine is becoming increasingly advanced because it is very economical, easy to obtain, has minimal side effects and has a good effect through decoction, infusion or extraction. *Psidiumguajava* leaves can be regarded as alternative traditional medicinal plants. *Psidiumguajava* leaves have a component that has turned out to have good benefits for health problems. For some of the compounds and according to one article, there is no confirmed appropriate dose. Some parts, effects and guava extracts have been tested as toxic, so guava leaves are safe to use as a part of traditional medicine.

5. Conclusion

Six articles revealed that out of various species, *Psidiumguajava* is a medicinal plant used by the community to reduce fever despite the availability of modern health care services. This finding provides basic data for further research on the compounds, dosage and effect of guava leaves. Health workers need to consider the guava leaf as a medicinal plant to reduce fever.

References

Beverly C D and Sudarsanam G 2011 Ethnomedicinal plant knowledge and practice of people of Javadhu hills in Tamilnadu *Asian Pacific Journal of Tropical Biomedicine* Elsevier pp. 79-81.

Daswani P G, Gholkar M S and Birdi T J 2017 Psidium guajava: A Single Plant for Multiple Health Problems of Rural Indian Population *Pharmacognosy Review* **11(22)** pp. 154–157. doi: 10.4103/phrev.phrev

Gaire B P and Subedi L 2011 Medicinal Plant Diversity and their Pharmacological Aspects of Nepal Himalayas *Pharmacognosy Journal* pp. 6-17. doi: 10.5530/pj.2011.25.2

Laily N, Kusumaningtyas R W, Sukarti I, and Rini M R D K 2015 The Potency of Guava *Psidium guajava* (L.) Leaves as a Functional Immunostimulatory Ingredient *Procedia Chemistry*

Elsevier, **14** (2015) pp. 301-307. doi: 10.1016/j.proche.2015.03.042

Morais-Braga M F B, Carneoroa J N P, Machadoa A J T, dos Santosa A T L, Salesb D L, Limab L F, Figueredoc F G, and Countinhob H D M *Psidium guajava* L., from ethnobiology against pathogenic microorganisms *Journal of Ethnopharmacology* Elsevier, 194(December 2015) pp. 1140-1152. doi: 10,1016/j.jep.2016.11.017

Odoh U E, Uzor P F, Eze C L, Akunne T C, Onyegbulam C M and Osadebe P O Medicinal plants used by the people of Nsukka Local Government Area, south-eastern Nigeria for the treatment of malaria: An ethnobotanical survey *Journal of Ethnopharmacology* Elsevier Ireland Ltd, 218(February), pp. 1-15 doi: 10.1016/j.jep.2018.02.034

Raj A J, Biswakarma S, Pala N A, Shukla G, Kumar M, Chakravarty S and Bussmann R W 2018 Indigenous uses of ethnomedicinal plants among forest-dependent communities of *Journal of Ethnobiology and Ethnomedicine*pp. 1-28 doi: 10.1186/s13002-018-0208-9

Umair M, Altaf M and Abbasi A M 2011 Traditional plant used medicinal purposes by local communities around the Northern sector of Kibale National Park, Uganda *Journal od Ethnopharmacology* Elsevier Ireland Ltd**136(1)** pp.236-245 doi: 10.1016/j/jep.2011.04.044

Verma R K, 2014 An ethnobotanical study of plants used for the treatment of livestock diseases in Tikamgarh District of Bundelkhand, Central India *Asian Pacific Journal of Tropical Biomedicine* Hainan Medical University **4(Suppl 1)** pp. S460–S467 doi: 10.12980/APJTB.4.2014C1067

PAT-686

THE EFFECT OF GINGER ON NAUSEA VOMITING, ANOREXIA, QUALITY OF LIFE IN CANCER PATIENTS POST CHEMOTHERAPY: A SYSTEMATIC REVIEW

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ABSTRACT

Chemotapeutic Induced Nausea and Vomiting (CINV) is a term used to describe the incidence of nausea vomiting in post chemotherapy patient. Nausea Vomiting is the most common side effect felt by cancer patients after chemotherapy. Nausea vomiting is a strong contraction of the abdominal muscles which causes the stomach contents to be pushed out through the mouth. Nausea vomiting causes disturbances in the immune system, quality of life of patients. Aromatherapy ginger is a natural herb that has been used for years as an antiemetic, appetite, and quality of life for patients. But the most effective methods among these are still questionable. This study aims to identify interventions that effectively reduce nausea and vomiting using complementary ginger therapy. This study aimed to determine the effectiveness of ginger in chemotherapy-induced nausea and vomiting with systematic reviews and following the guidelines of the PRISMA statement. Scopus, PubMed, and Science Direct databases from 2014-2018. Articles identified using search terms or keywords for ginger, vomiting nausea, appetite, quality of life, cancer, chemotherapy. All studies included access-based, randomized controlled trials, case-control studies and Randomized. 15 of the 1531 papers were included. Additional randomized control trial design studies are needed to strengthen the findings.

Keywords: Ginger, nausea vomiting, anorexia, quality of life, cancer, chemotherapy

1. Introduction

One therapy for cancer patients is chemotherapy. Chemotherapy Induction of Nausea and Vomiting (CINV) is a term used to evaluate the incidence of nausea in patients after chemotherapy [1]. Nausea and vomiting is due to strong abdominal muscle contractions that causes the stomach contents to be pushed out through the mouth [2]. Nausea can also cause interference with the immune system, impair cognitive function, cause social problems, result in someone being unable to fulfill their social responsibilities and cause physical disorders[3].

According to Globocan's data, the International Cancer Research Agency (IARC) in 2012 stated that cancer was the cause of death of around 8.2 million people. There were 14.067.894 new cancer cases and 8.201.575 cancer deaths worldwide. The biggest cause of cancer deaths every year is by lung, liver, stomach, colorectal and breast cancer. The number of cancer patients is expected to increase every year, and it is estimated to reach 23.6 million new cases per year in 2030 [3]. It is a

disease that has become a public health problem in the world and in Indonesia. Every year, 12 million people worldwide suffer from cancer and 7.6 million of them die [4].

Several studies have shown non-pharmacological and pharmacological interventions to reduce nausea and vomiting in chemotherapy patients. Pharmacological therapy consisting of 5-HT3 receptor antagonists has been widely used and it is the first choice for the treatment of nausea and vomiting. Regardless of its effectiveness, the patients still feel nausea [4]. The side effects of the drugs used in chemotherapy can stimulate the center of the Cemoreceptor Trigger Zone (CTZ) [3]. The intensity of the negative effects can prolong the chemotherapy schedule and non-pharmacological therapy can be a form of self-care. Providing comfort to the clients by reducing or eliminating nausea is important in care to control nausea and to increase the appetite and quality of life of chemotherapy clients [3]. The systematic review of doxorubicin-based chemotherapy reviewed the therapies that can be done after chemotherapy, but there is no literature review that discusses the effectiveness and therapy as a whole when undertaken to reduce the nausea from chemotherapy, so then the medical personnel can compare their respective therapies [5]. The aim of a systematic review of ginger is that it is a complementary therapy that is safely used in the treatment of nausea and vomiting, anorexia, appetite and fatigue to improve the quality of life of chemotherapy patients [6].

2. Material and Methods

Using electronic databases, namely Scopus, PubMed and ScienceDirect, the searches were done with ginger and “nausea and vomiting”, “appetite”, “quality of life”, “cancer” and chemotherapy as the main keywords. From this search, only papers including human models published in English were considered. In the second step, "Chemotherapy", "nausea", "vomiting", "ginger" were added to the same keywords as before. Randomized controlled trials (RCT), case-controls and randomized studies were included. This systematic review used PRISMA, which consists of a literature search strategy, inclusion and exclusion criteria, research design (RCT consists of 11 articles, CC consists of 2 articles, C consists of 2 articles), population (Gender, age, frequency of chemotherapy), clinical outcome interventions and the study selection.

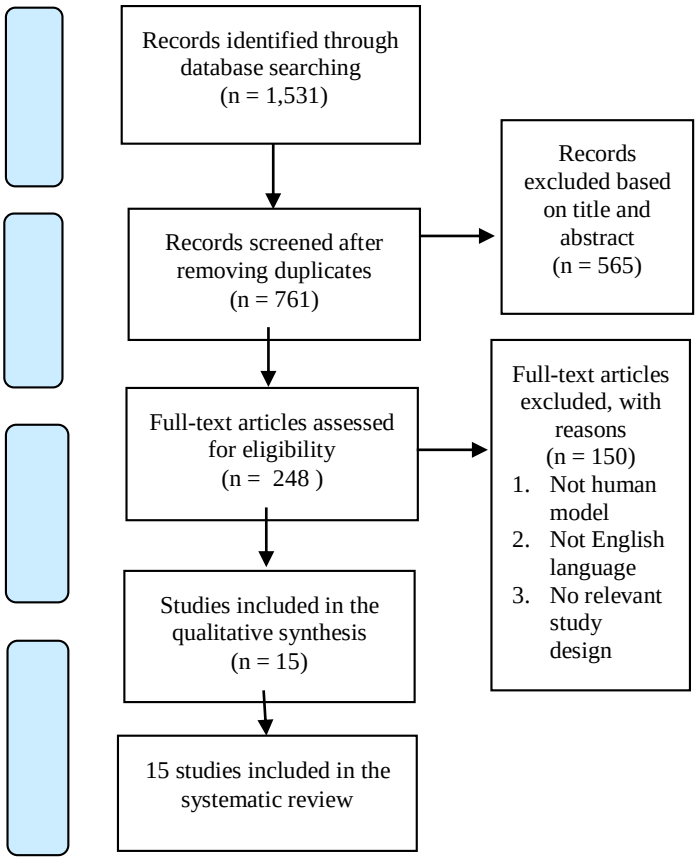

Figure 1 Flow Diagram

3. Results

3.1 Literature search and study selection

A total of 1,531 articles were found using the selected keywords.

3.2 Study characteristics

The total number of respondents in the literature was 892 respondents, in the range of 34 - 150 respondents per study. The respondents were aged between 18-80 years old. The PICOT table shows the characteristics and interventions carried out in 15 research articles about the effects of ginger treatment, according to [6], [7][8], [9].[10], [11], [12], [13], [14]. In total, 13 out of 15 articles discussed the effect of ginger extract treatment on nausea and vomiting, quality of life and appetite in cancer patients after chemotherapy. This consisted of encapsulated ginger, which contains powdered ginger root (167 mg or 400 mg), powdered and dry ginger powder (300 mg or 500 mg), 6-gingerol capsules containing ginger extract, referred to as 6- gingerol 5 mg (1.4 % b / b ginger extract) and ginger tablets (800 mg). The liquid extract from ginger (0.25 g) contained gingerol, zingerone and shogaol. The participants receive 500 mg of powdered ginger, mixed with a spoonful of yogurt to facilitate swallowing. Two articles discussed the effect of ginger essential oil on nausea and vomiting, quality of life and appetite in cancer patients after chemotherapy, as according to [2], [15].

The patients receive 5 days of aromatherapy treatment using ginger essential oil. All of the participants received standard nausea and vomiting prevention drugs (5-HT3).

3.2 Results of the individual studies

Eleven articles mentioned that the effects of ginger are significant on nausea and vomiting, anorexia, appetite, fatigue and quality of life [15], [2], [11], [6][14], [13],[12], [9]. These eight articles state that using ginger twice a day can reduce the severity of nausea and vomiting. Dome also argue that giving the aroma of ginger can reduce the frequency of acute vomiting and some further argue that using oral ginger can also reduce the severity of nausea and vomiting in chemotherapy patients. In addition, it can eliminate anorexia and increase the appetite of patients after chemotherapy. [7][10], [8]. Four articles stated that ginger is safe so it is recommended for patients after chemotherapy. Ginger extract can be consumed by patients to increase their appetite and reduce patient fatigue. Ginger is also high in antioxidants so extra ginger is very useful for improving overall quality of life.

4. Discussion

Some of the existing research has examined the effect of ginger on control CINV gives different results, but the vast majority of researchers have stated that ginger can decrease the frequency, intensity and severity of nausea and vomiting that is due to chemotherapy [15], [2], [11], [6][14], [13]. The studies state that there is no significant difference between the groups given ginger and a placebo in lowering nausea vomiting of chemotherapy [12], [9]. There are several things that can affect the results of the research-related effectiveness of ginger against nausea and vomiting including the characteristics of the respondents, the regimen of chemotherapy, the use of antiemetics, the preparation of capsules of ginger, the ginger dose given, and the length of the granting of ginger [7],[8].

This systematic review investigated the effectiveness of the use of ginger against complex nausea, vomiting, appetite and quality of life in cancer patients after chemotherapy. The study used a heterogeneous research design. Health professionals need to have the ability and knowledge to provide a professional intervention. Nausea and vomiting is the final stage of action by the health workers on clients that can increase discomfort during chemotherapy. Comfort is a necessity in various diseases for the sake of health (Siefert, 2002). Nausea and vomiting in patients after chemotherapy is a common symptom that can weaken them and it can also cause delayed dehydration, an electrolyte imbalance, weight loss and anorexia. Anorexia is the frequent loss of appetite that is experienced by patients with cancer but often ignored. In advanced cancer, anorexia is the fourth most common symptom after nausea, vomiting, pain, and fatigue [11].

Complementary therapy can be used as support therapy for cancer patients who undergo chemotherapy. One of the herbs that can be used is ginger (Zingiberofficinale) [14]. Ginger is one herb that has been used for years, especially as an antiemetic [10]. It is one of the cornerstones of modern antiemetic therapies such as ondansetron and granisetron. Several studies have shown that ginger is effective at increasing comfort, controlling emotions and reducing nausea, vomiting, anorexia, motion sickness and seasickness post-surgery and during pregnancy [7].

Ginger Aroma Essential oil (EO) is a non-pharmacological supplementary therapeutic method with no adverse side effects. It is used to prevent and reduce nausea and vomiting. Ginger aromatherapy can also block serotonin in the neurotransmitters synthesized in the central system in

the emlerochromophin cells that can give off the feeling of being comfortable. This can be used to overcome nausea and reduce anorexia [2].

Interventions related to complementary therapy are appropriate and efficient at suppressing nausea and vomiting, and increasing appetite while overall improving the quality of life of the patients. Ginger is one of the plants that is effective as an antiemetic which can shorten the chemotherapy period in cancer patients. Based on the article above, the researchers recommend complementary treatment using ginger to suppress nausea and vomiting, to increase appetite, and to increase the quality of life of cancer patients after chemotherapy. Studies with RCT designs are needed to strengthen the results of this systematic review.

The side effects of chemotherapy in the form of nausea and vomiting can lead to heavy stress on the patient. This stimulates the enterochromaffin cells and chemotherapy agents in the digestive tract, causing them to release serotonin receptor triggers. The receptor activation triggers a vagal afferent pathway which activates the vomiting center and causes the response of throwing up. The potential of the emetic chemotherapy agent itself is the main stimulus against the nausea and vomiting caused by chemotherapy (Chemotherapy Induced Nausea and Vomitting/CINV)[9].

5. Conclusion

This systematic review indicates that ginger supplements have the potential to effectively suppress vomiting and nausea, and that it can also increase appetite, reduce fatigue, reduce anorexia and improve the quality of life of cancer patients post-chemotherapy. This review explains that a systematic ginger intervention has the potential to be used as an effective therapy for nausea and vomiting. The urgency of using ginger as a therapy requires further investigation, but it is safe and can be well tolerated by participants as a modality for non-pharmacological therapy.

References

[1] Marx W, Kiss N, McCarthy A L, McKavanagh D and Isenring L 2016 Chemotherapy-Induced Nausea and Vomiting: A Narrative Review to Inform Dietetics Practice *J. Acad. Nutr. Diet.***116** 819–27

[2] Salihah N, Mazlan N and Lua P L 2016 The effectiveness of inhaled ginger essential oil in improving dietary intake in breast-cancer patients experiencing chemotherapy-induced nausea and vomiting *Focus Altern. Complement. Ther.***21** 8–16

[3] Douillard J Y, Siena S, Cassidy J, Tabernero J, Burkes R, Barugel M, Humblet Y, Bodoky G and Cunningham D 2014 Final results from PRIME: randomized phase III study of panitumumab with FOLFOX4 for first-line treatment of metastatic colorectal cancer *Ann. Oncol. J. L. Canon K. S. Oliner***25** 1346–55

[4] Chase D M, Wong S-F, Wenzel L B and Monk B J 2018 *Palliative Care and Quality of Life* vol 172, ed P J DiSaia, W T Creasman, R S Mannel, D S McMeekin and D G Mutch (Elsevier Inc.)

[5] Marx W M, Teleni L, McCarthy A L, Vitetta L, McKavanagh D, Thomson D and Isenring E 2013 Ginger (Zingiber officinale) and chemotherapy-induced nausea and vomiting: A systematic literature review *Nutr. Rev.***71** 245–54

[6] Shokri F, Gharebaghi P M, Esfahani A, Sayyah-Melli M, Shobeiri M J, Ouladsahebmadarek

E and Ghojazadeh M 2017 Comparison of the complications of platinum-based adjuvant chemotherapy with and without ginger in a pilot study on ovarian cancer patients *Int. J. Women's Heal. Reprod. Sci.***5** 324–31

[7] Marx W, McCarthy A L, Ried K, McKavanagh D, Vitetta L, Sali A, Lohning A and Isenring E 2017 The effect of a standardized ginger extract on chemotherapy-induced nausea-related quality of life in patients undergoing moderately or highly emetogenic chemotherapy: A double blind, randomized, placebo controlled trial *Nutrients***9**

[8] Konmun J, Danwilai K, Ngamphaiboon N, Sripanidkulchai B, Sookprasert A and Subongkot S 2017 A phase II randomized double-blind placebo-controlled study of 6-gingerol as an anti-emetic in solid tumor patients receiving moderately to highly emetogenic chemotherapy *Med. Oncol.***34**

[9] Thamlikitkul L, Srimuninnimit V, Akewanlop C, Ithimakin S, Techawathanawanna S, Korphaisarn K, Chantharasamee J, Danchaivijitr P and Soparattanapaisarn N 2017 Efficacy of ginger for prophylaxis of chemotherapy-induced nausea and vomiting in breast cancer patients receiving adriamycin–cyclophosphamide regimen: a randomized, double-blind, placebo-controlled, crossover study *Support. Care Cancer***25** 459–64

[10] Danwilai K, Konmun J, Sripanidkulchai B O and Subongkot S 2017 Antioxidant activity of ginger extract as a daily supplement in cancer patients receiving adjuvant chemotherapy: A pilot study *Cancer Manag. Res.***9** 11–8

[11] Bossi P, Cortinovis D, Fatigoni S, Cossu Rocca M, Fabi A, Seminara P, Ripamonti C, Alfieri S, Granata R, Bergamini C, Agustoni F, Bidoli P, Nolè F, Pessi M A, Macchi F, Michellini L, Montanaro F and Roila F 2017 A randomized, double-blind, placebo-controlled, multicenter study of a ginger extract in the management of chemotherapy-induced nausea and vomiting (CINV) in patients receiving high-dose cisplatin *Ann. Oncol.***28** 2547–51

[12] Ansari M, Porouhan P, Mohammadianpanah M, Omidvari S, Mosalaei A, Ahmadloo N, Nasrollahi H and Hamedi S H 2016 Efficacy of Ginger in Control of Chemotherapy Induced Nausea and Vomiting in Breast Cancer Patients Receiving Doxorubicin-Based Chemotherapy. *Asian Pac. J. Cancer Prev.***17** 3877–80

[13] Sanaati F, Najafi S, Kashaninia Z and Sadeghi M 2016 Effect of ginger and chamomile on nausea and vomiting caused by chemotherapy in Iranian women with breast cancer *Asian Pacific J. Cancer Prev.***17** 4127–31

[14] Arslan M and Ozdemir L 2015 Oral Intake of ginger for chemotherapy-induced nausea and vomiting among women with breast cancer *Clin. J. Oncol. Nurs.***19** E92–7

[15] Lua P L, Salihah N and Mazlan N 2015 Effects of inhaled ginger aromatherapy on chemotherapy-induced nausea and vomiting and health-related quality of life in women with breast cancer *Complement. Ther. Med. VO - 23* 396

[16] Marx W, Isenring E A and Lohning A E 2017 Determination of the concentration of major active anti-emetic constituents within commercial ginger food products and dietary supplements *Eur. J. Integr. Med.***10** 19–24

[17] Marx W, Mccarthy A L, Ried K, Mckavanagh D, Vitetta L, Sali A, Lohning A and Isenring E 2017 The Effect of a Standardized Ginger Extract on Life in Patients Undergoing Moderately or Highly

[18] Marx W, Mccarthy A L, Ried K, Vitetta L, Mckavanagh D and Thomson D 2014 Can ginger

ameliorate chemotherapy-induced nausea ? Protocol of a randomized double blind , placebo-controlled trial 1–11

[19] Ohnishi S and Takeda H 2015 Herbal medicines for the treatment of cancer chemotherapy-induced side effects *Front. Pharmacol.***6**

Appendix

Table 1. Studies that formed the basis of making the systematic review

No.	Title, References	Variable, Sample, Treatment	Study Design	Results
1	Comparison of the Complications of Platinum-Based Adjuvant Chemotherapy With and Without Ginger in a Pilot Study on Ovarian Cancer Patients (Shokri et al., 2017) Received 5 February 2016. Accepted 24 September 2016. Available online 25 October 2016 Women's Reproductive Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran	Variables: Cancer Chemotherapy Ginger Sample: N = 49 Treatment: Platinum Based Adjuvant	Case control	Poor outcome including serum CA125>35, metastasis, recurrence or death was documented more commonly in the control group (69% versus 40%). Metastasis frequency was confirmed by a computerized tomography (CT) scan 6 months after treatment and this was significantly lower in the case group (P = 0.04). There was no significant difference regarding mortality and disease free survival during the one year follow-up after treatment between the 2 groups (P = 0.55). Chemotherapy complications such as nausea, vomiting, weight loss, and peripheral neuropathy were detected in the case group less often than in the control group but the difference was not significant.
2.	The effect of a standardized ginger extract on chemotherapy-induced nausea-related quality of life in patients undergoing moderately or highly emetogenic chemotherapy: A double blind, randomized, placebo controlled trial (McCarthy et al., 2017) Received: 30 June 2017. Accepted: 8 August 2017. Published: 12 August 2017	Variables: Cancer Chemotherapy Ginger Induced Nausea Qualiti of life Sample: N = 40 Treatment: Ginger extract	Randomized Control Trial	Adjuvant ginger supplement placebo in chemotherapy induced better in terms of nausea and quality of life than additions.
3	A phase II randomized double-blind placebo-controlled study of 6-gingerol as an anti-emetic in solid tumor patients receiving moderately to highly emetogenic chemotherapy. (Konmun et al., 2017) Received: 7 March 2017. Accepted: 22 March 2017. Published online: 27 March 2017 Springer Science + Business Media New York, 2017	Variables: cancer Chemotherapy ginger CINV Quality of life appetite Sample: N = 80 Treatment: Ginger placebo	Randomized Control Trial	The difference for the mean of the appetite score was significant (P = 0.001) and more noticeable over time. The mean FACT-G score indicating quality of life was significantly higher (86.21) in the 6-gingerol group at 64 days compared with that of the placebo group (72.36) (P\0.001). No toxicity related to 6-gingerol was observed. Patients treated with 6-gingerol reported significantly less grade 3 fatigue (2 vs. 20%; P = 0.020). 6 - Gingerol significantly improved overall CR rate in CINV, appetite and quality of life in

Table 1. Studies that formed the basis of making the systematic review

No.	Title, References	Variable, Sample, Treatment	Study Design	Results
				cancer patientsreceiving adjuvant chemotherapy. A phase III randomized study of 6-gingerol is warranted to confirm these results.
4	Efficacy of ginger for the prophylaxis of chemotherapy-induced nausea and vomiting in breast cancer patients receiving adriamycin–cyclophosphamide regimen: a randomized, double-blind, placebo-controlled, crossover study (Thamlikitkul et al., 2017) Received: 19 April 2016. Accepted: 19 September 2016. Published online: 6 October 2016	Variables: Ginger cancer Chemotherapy Nausea Vomiting Sample: N = 34 Treatment: Ginger placebo	Randomized Control Trial	There were significant differences between ginger and the placebo in terms of vomiting incidence and severity, rescue medication use, chemotherapy compliance, and adverse events.
5	Determination of the concentration of major active anti-emetic constituents within commercial ginger food products and dietary supplements (Isenring et al., 2017) Received 6 December 2016. Received in revised form 31 January 2017. Accepted 1 February 2017	Variables: Antiemetic Ginger Treatment: Zingiber officinale		Of the twenty commercially available ginger products, those with the highest content were most effective. The ingredients of both the active and antiemetic substances are standard ginger extract and supplements.
6	Antioxidant activity of ginger extract as a daily supplement in cancer patients receiving adjuvant chemotherapy: A pilot study (Danwilai, Konmun, Sripanidkulchai, & Subongkot, 2017)	Variables: Chemotherapy Cancer Ginger Sample: N = 43 respondents Treatment: Ginger extract	Randomized Control Trial	Daily ginger supplements starting three days before chemotherapy have been shown to significantly increase antioxidant activity and reduce the levels of oxidative markers in patients who receive moderate to high emetogenic potential chemotherapy compared with the placebo.
7	A randomized, double-blind, placebo-controlled, multicenter study of a ginger extract in the management of chemotherapy-induced nausea and vomiting (CINV) in patients receiving high-dose cisplatin (Bossi et al., 2017)	Variables: CINV Ginger Sample: N = 121 respondents Treatment : Ginger extract	Randomized Control Trial	The benefit of ginger over the placebo in the Functional Living Index Emesis nausea score showed that there were differences identified for both females (P¼0.048) and HNC patients (P¼0.038).
8	The effectiveness of inhaled ginger essential oil in improving the dietary intake in breast-cancer patients experiencing chemotherapy-induced nausea and vomiting (Salihah et al., 2016)	Variables: CINV Cancer Ginger Sample: N = 60 Treatment:	Randomized Control Trial	A significant increase in energy intake was also observed over time [F (2.57) = 54.21, P <0.001], reaching almost 90% of the energy needs 5 days after chemotherapy. Inhaled aromatherapy using EO ginger was considered to be a little more beneficial than ginger FO (63.3% vs. 61.6%). Delivered

Table 1. Studies that formed the basis of making the systematic review

No.	Title, References	Variable, Sample, Treatment	Study Design	Results
		Inhaled ginger essential oil		through necklaces, which is a treatment method considered appropriate for the women who participated.
9	Efficacy of ginger in the control of chemotherapy induced nausea and vomiting in breast cancer patients receiving doxorubicin-based chemotherapy (Ansari et al., 2016)	Variables Chemotherapy CINV Cancer Ginger Sample: N = 150	Randomly selected in to 2 groups	In those patients who received the AC regimen, vomiting was less severe (0.64 ± 0.87) comparing to those who received the placebo (1.13±1.12), which was statistically significant (p-Value <0.05). Further and larger studies are needed to draw conclusions.
10	Effect of Ginger and Chamomile on Nausea and Vomiting Caused by Chemotherapy in Iranian Women with Breast Cancer (Sanaati, Najafi, Kashaninia, & Sadeghi, 2016)	Variables: Chemotherapy CINV Cancer Sample: N= 65 Treatment : Ginger and chamomile	Randomized, double-blind and clinical trial study	Ginger and chamomile were both significantly effective at reducing the frequency of vomiting, with there being no significant difference between the ginger and chamomile groups. Moreover, unlike the chamomile, ginger significantly impacted on the frequency of nausea.
11	Effects of inhaled ginger aromatherapy on chemotherapy-induced nausea and vomiting and health-related quality of life in women with breast cancer (Lua et al., 2015) Malaysia Received 18 September 2014; received in revised form 31 December 2014; accepted 27 March 2015. Available online 21 April 2015. Saromatherapy	Variables: CINV HRQoL Cancer Treatment: Inhaled ginger aromatherapy Sample: N = 60	Randomized cross-over study	A statistically significant change from the baseline for global health status (P < 0.001) was detected after ginger essential oil inhalation. A clinically relevant 10 point improvement was found in role functioning (P = 0.002) and appetite loss (P < 0.001), which were also documented while the patients were on ginger essential oil.
12	Oral intake of ginger for chemotherapy-induced nausea and vomiting among women with breast cancer (Arslan & Ozdemir, 2015) Submitted August 2014. Revision submitted November 2014. Accepted for publication December 14, 2014	Variables: CINV Cancer Sample: N = 60 Treatment: Oral intake ginger	Randomized, controlled trial	The researchers analyzed the five-day mean score of nausea severity and the number of vomiting and retching episodes. Based on this comparison, the nausea severity and the number of vomiting episodes were significantly lower in the intervention group than in the control group (p > 0.05).
13	The Effect of a Standardized Ginger Extract on Chemotherapy-Induced Nausea-Related Quality of Life in Patients Undergoing Moderately or Highly Emetogenic Chemotherapy: A Double Blind, Randomized, Placebo Controlled Trial. (Marx et al., 2017)	Variables: Nausea and vomiting Quality of life Cancer Chemotherapy Sample: N =51 Treatment Ginger extract	Double-blind, randomized placebo-controlled trial	Ginger is effective for reducing nausea and vomiting due to chemotherapy. There were no significant result in Cycle 2. In Cycle 3, global QoL (p = 0.040) and fatigue (p = 0.013) were significantly better in the intervention group compared with placebo

Table 1. Studies that formed the basis of making the systematic review

No.	Title, References	Variable, Sample, Treatment	Study Design	Results
14	Can ginger ameliorate chemotherapy-induced nausea? Protocol of a randomized double-blind, placebo-controlled trial. (Marx et al., 2014)	Variables: Ginger CINV Sample: N = 146 Treatment: The placebo capsule contains 300 mg of inactive / reacting material.	Double-blinded randomized-controlled trial	Ginger effectively reduced the nausea and vomiting that was due to chemotherapy.
15	Additive effect of rikkunshito, an herbal medicine, on chemotherapy-induced nausea, vomiting, and anorexia in uterine cervical or corpus cancer patients treated with cisplatin and paclitaxel: results of a randomized phase II study (JORTC KMP-02) (Ohnishi & Takeda, 2015) Received: Dec 21, 2016 Revised: Mar 6, 2017 Accepted: Mar 6, 2017	Variables: CINV anorexia cancer Sample: N = 54 Treatment: Rikkunshito Herbal medicine	Randomized Control Trial	Rikkunshito provided additive effects for the prevention of CINV and anorexia.

PAT-688

THE EFFECTIVENESS OF YOGA PRANAYAMA ON FORCED EXPIRATORY VOLUME IN 1 SECOND (FEV1) AND CONTROL ASTHMA: A SYSTEMATIC REVIEW

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ABSTRACT

Asthma prevalence increases sharply and currently asthma is known as the most frequent cause of disability, it requires a lot of costs and preventable diseases with death and One non-pharmacological therapy that can increase the forced expiratory volume in 1 second (FEV1) and asthma control is practice yoga pranayama. Yoga is called a "low impact" sport that can be adapted to the abilities of its practitioners so that it is suitable for anyone. This systematic review is to find out the effectiveness of yoga pranayama on the treatment of non- pharmacological asthma in increasing the forced FEV1 and asthma control. Electronic search comes from the Scopus, Medline, Ebsco, and Pubmed databases. The keyword used are "yoga pranayama", FEV1". And "asthma control" with the limitation of article search starting in 2012 until 2018. Literature search found 124 citations, then after review there were only 15 quotes that met the inclucion criteria. Yoga pranayama exercises given to asthmatic patients to see changes in levels FEV1, and PEFR levels for 12 weeks the results obtained were a significant change ($P<0.001$) in pulmonary ventilation. A brief study of yoga practice improves parameters for pulmonary function, increases FEV1 and controlled asthma.

Keywords: asthma, yoga pranayama, FEV1, control asthma

1. Introduction

Asthma is a chronic inflammatory disease characterized by episodic wheezing, coughing and tightness in the chest due to blockage of the large airways. In general, patients can be treated effectively using the drugs that are currently available. However, most people with asthma often relapse or, where it is uncontrolled, this makes it a treatment challenge for the health services. Decreased FEV_1 is a typical characteristic of asthma patients. Nowadays, asthma has become a public health problem in various countries. Asthma can be mild as well as severe [1],[2]

According to the World Health Organization [2], asthma sufferers total 235 million people. The death rate due to asthma in Indonesia reached 24,773 people or around 1.77% of the total population. This data also put Indonesia in the 19th position in the world regarding deaths from asthma according to the Global Initiative For Asthma [3]. Every year there are around 180,000 deaths worldwide and asthma has become a serious disease in recent years [4]. Research has revealed that there is a decrease in lung function in individuals with permanent asthma or in those with a history

of asthma in children and young adults. Chronic airway inflammation can cause a decline in the long-term pulmonary function in asthma patients [5].

The management of asthma is focused on reducing the symptoms, preventing recurrence and decreasing the corticosteroid consumption [3],[6]. Asthma control can be monitored using a specific measuring instrument, namely the Asthma Control Test. The Asthma Control Test is a method of evaluation done by assessing the final score obtained from the answers to the questions raised by the asthma patients. The results of the score are classified into 3 categories, which are fully controlled, partially controlled and uncontrolled. These results are expected to help asthmatics to determine the need to consult a health worker or be able to do self-care at home [7],[8].

The assessment of the severity of the disorder can be assessed by a pulmonary physiology test, namely by examining the peak flow of forced expiration. The APE value can be obtained through a simpler examination using a Peak Expiratory Flow Meter (PEF meter). The first second forced expiratory volume (VEV_1) and forced vital capacity (FVC) measurements are performed with forced expiratory maneuvers through standard procedures. The examination is very dependent on the patient's ability to understand the clear and cooperative instructions. To get an accurate value, the highest value is taken from 2 - 3 values that are reproducible and acceptable. The pulmonary function test results in asthma patients mean that their airway obstruction can be known if the ratio of FEV_1 (forced expiratory volume in 1 second) or forced vital capacity (FVC) <75% or $_{VEV}1$ <80% predictive value [9],[10].

The management of asthma aims to improve the quality of life of the patient better by making their asthma status that of controlled asthma. Uncontrolled asthma is caused by several components, including smoking habits, the incorrect use of corticosteroid drugs, genetics, inappropriate treatment and a lack of knowledge about asthma. The forms of management that can be done to avoid a worsening condition in asthma patients is to improve ventilation, to strengthen their breathing muscles and to prevent complications from occurring so then it can increase the forced expiratory volume in 1 second (FEV_1). Pulmonary rehabilitation will get very optimal results if it is done early. One possible form of pulmonary rehabilitation in asthma patients is through yoga pranayama breathing exercises. Exercise Pranayama is a breathing exercise with the technique of breathing slowly and deeply using the diaphragm muscles, allowing the abdomen to rise slowly and the chest to fully expand. Yoga is a method of physical and mental training for all ages. Yoga provides relaxation to the body, improves blood circulation and controls breathing. Yoga is very good for people with asthma [11],[12]. Yoga has beneficial effects for chronic asthma sufferers such as reducing the need for asthma medication, increasing the exercise capacity, increasing the FEV_1 asthma functionality and controlling their capacity [13],[15].

2. Methods

The method used for writing this article was a systematic review, beginning with the selection of the topic and then determining the keywords using English. They were put through the Scopus, Medline, Ebsco, and Pubmed databases. The keywords used for searching for articles were "Yoga pranayama", "FEV_1" and "control asthma". In the literature search, 124 articles were obtained. The articles were published starting in 2010 and going up to 2018. The search was narrowed again from 2011 to 2018. As many as 15 articles that were considered to be relevant were evaluated using the Problem, Intervention, Comparison and Outcome (PICO) method. The inclusion criteria in this

systematic review included the age of the respondents being between 6-65 years and those who have been diagnosed with asthma. The total number of subjects used in this systematic review was 2,583 respondents.

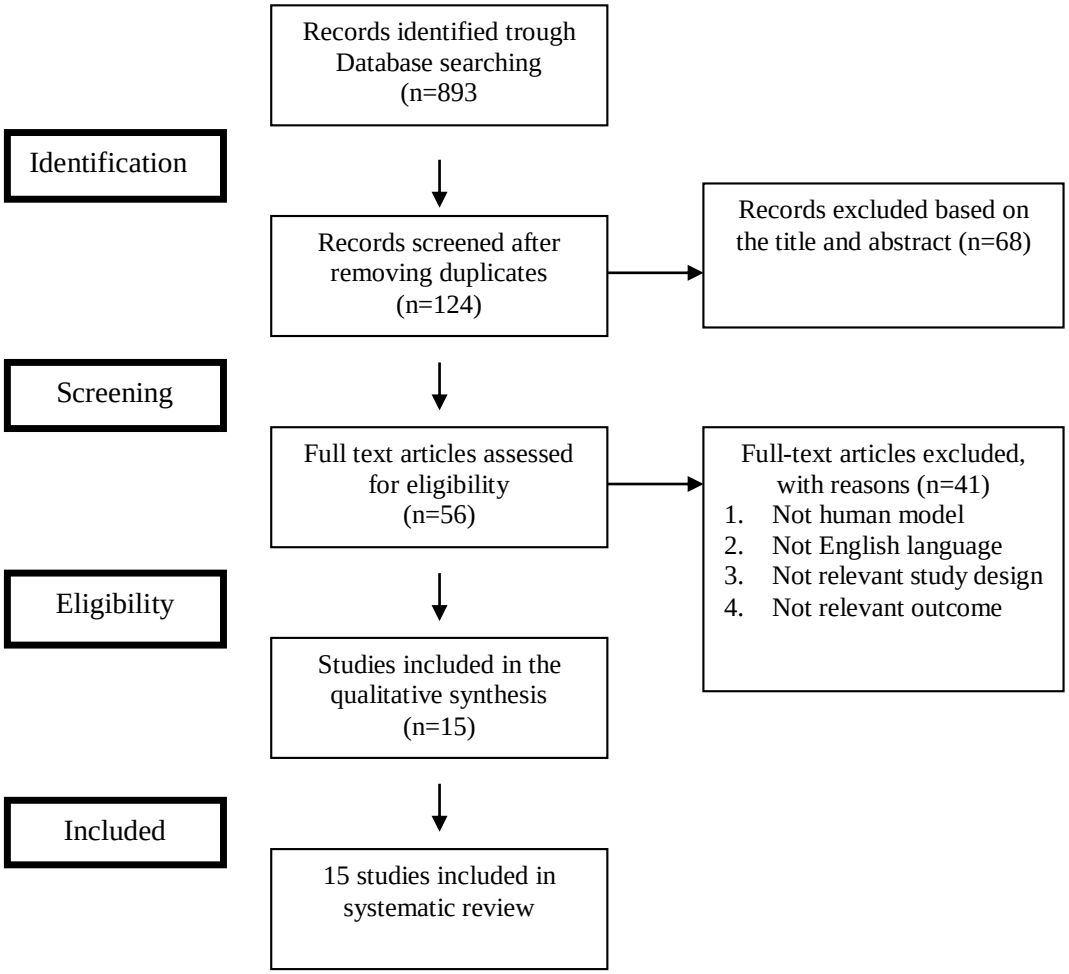

Figure 1. Flow Diagram

3. Results

3.1 Literature search and study selection

From the search results and by using the specified keywords, the researcher found 893 articles and then conducted screening by looking at the title and abstract. The search first obtained 56 journals. Lastly, there were 15 journals that meet the inclusion criteria study characteristics.

*3.1.1 Population.*The total respondents in the selected literature were 2,583 with an age range of 6 - 65 years old.

3.1.2 Intervention characteristic. In this systematic review, 15 journals were reviewed. The journal shows the characteristics of subjects who can take yoga practice are subjects with stable asthma, do not suffer from respiratory complications other than asthma, are able to communicate well, do not have upper extremity disorders and interventions carried out in the study are complementary therapy to support pharmacological therapy which is doing yoga

pranayama exercises in asthma patients. By doing yoga exercises, regular pranayama has been shown to be significant in terms of improving lung function, increasing diffusion capacity, decreasing the amount of stress due to tightness and increasing the Forced Vital Capacity (FVC). Forced Expiratory Volume in 1 second (FEV_1), the Peak expiratory Forced Rate (PEFR), and asthma control so can improve the quality of life of asthma patients. Cardiorespiratory performance after practicing yoga can increase lung capacity and improve lung ventilation function so then there is a good exchange between O2 and CO2 after breathing exercises.

3.2 Result of Individual Studies

The research conducted on asthma patients showed significant results statistically for all pulmonary function parameters. Yoga pranayama given to yoga groups for 6 weeks of practice showed a significant increase in Forced Expiratory Volume in one second (FEV_1) and PEFR was looked at in relation to the lung function tests of asthmatics who had performed yoga pranayama [4],[16]. The effect of yoga pranayama showed a significant increase in FEV_1 ($t = 4.38$ so $P < 0.05$). In the PEFR ($t = 4.03$ to $P < 0.05$) of the pulmonary function tests, all of the patients showed an improvement in their quality of life as analyzed by the Wilcoxon test. There was no significant increase in FEV_1 and PEFR between men and women, nor were there significant differences in FEV_1 and PEFR in terms of increasing in age from 50 and less than 50 years [4].

Yoga pranayama exercises, which consist of slow pranayama techniques and fast pranayama for 12 weeks, can be used to evaluate lung function. The results obtained in the group that carried out slow pranayama for 30 minutes every day had a significant increase in FVC, FEV_1, PEFR, PEF, and MVV [$P < 0.05$] while in the group that conducted fast pranayama for 30 minutes every day, there was a significant increase in the value of FEV_1/FVC, PEFR and PEF 9 ($P < 0.05$). Yoga pranayama is also effective at reducing the fatigue that is the result of undergoing radiation therapy. In this study, yoga pranayama was carried out for 8 minutes in both the morning and evening for 6 weeks [17],[18]

Yoga pranayama breathing exercises are given to bronchial asthma patients to see if there are changes in their respiratory rate (RR), breath holding time [BHT] and PFT (FVC, FEV_1, FEV_1%, and PEFR) for 12 weeks. The results obtained showed that there were significant changes ($P < 0.001$) in pulmonary ventilation after the practicing of yoga pranayama by the asthma patients. Yoga pranayama exercises carried out for 12 weeks with a duration of 20 minutes 2 times a day also showed a significant reduction in symptoms and an increase in FEV_1 and PEFR in the intervention group ($P < 0.001$) compared to the control group [19],[20]

The goal of asthma control is to reduce the frequency of asthma attacks, to improve the inflammation of the respiratory tract, to increase physical activity and lung function and also to improve quality of life, which is an important component in the management of asthma [21],[27]. Yoga exercises given for 2 months to asthma patients have shown a statistically significant increase ($P < 0.001$) in forced vital capacity (FVC), forced expiratory volume in 1 second (FEV_1) and peak expiratory flow rate (PEFR) [14],[21].

4. Discussion

In general, all of the journals that have been reviewed provided results indicating that yoga pranayama is very effective for increasing forced expiratory volume in 1 second (FEV_1) and asthma control. This systematic review included 15 cases of yoga pranayama given to asthma patients. Cardiorespiratory performance after practicing yoga can increase the lung capacity and improve the lung ventilation function so that there is a good exchange between O2 and CO2 after the breathing exercises. The delivery of oxygen to the muscles and increased oxygen delivery to the tissues can reduce the reflex response to hypoxia [22]. Pranayama breathing and yoga posture stretching are used to increase breathing stamina, increase the strength of the chest muscles, relax the lungs, increase energy and calm the body [10].

Research shows that various exercises such as upper limb exercises, Tai Chi and yoga can improve FEV_1, PEFR, and asthma control. Yoga has been included as a recommended component of training for pulmonary rehabilitation programs and in addition to physical therapy treatment in rehabilitation programs. It has been shown to improve mind and body coordination. Yoga is called a low impact sport because it can be adjusted to the needs and abilities of its practitioners, so it is suitable for anyone including asthmatics through asanas (yoga postures) and pranayama (breathing techniques) [23],[25].

Appropriate asthma management includes making the lung function close to normal, preventing recurrence, controlling it regularly and improving fitness by doing the physical exercises that have been recommended. Yoga pranayama exercises are exercises that concentrate more on breathing so then they can be applied to asthmatic patients. Yoga pranayama is useful for maximizing the oxygen intake and improving blood circulation [18], [26].

Regular yoga practice can improve the quality of life of patients and it can improve their lung function. Yoga is also effective in the management of asthma and many scientific studies are needed in this field to utilize yoga [15],[27]. Yoga pranayama performed twice a week for 12 weeks can increase forced vital capacity and FEV_1 and it can also stimulate oxygen in the blood and increase the glycolytic capacity in adults [28–30].

Yoga can also be practiced as adjuvant therapy by performing standard asthma medical treatment to get better results. Yoga is one of the interventions that can support pharmacological therapy because it is effective at improving pulmonary function, increasing the volume of expiration and controlling asthma [14],[16],[29]. Yoga pranayama breathing exercises can also be useful in children with chronic asthma that is mild, moderate and uncontrolled but not severe and acute asthma sufferers [8],[31].

5. Conclusion

Based on the results of the analysis of all of the journals in this systematic review, it shows that there are significant results and that yoga pranayama exercises can affect FEV_1, PEFR, the FVC values, and decrease the frequency of asthma recurrence. This means that the asthma control gets better. Short-term studies on yoga practice have found significant results related to increased lung function parameters, increased diffusion capacity, reduced stress levels due to asthma and improved quality of life. Yoga training in asthma patients has been reported to improve lung function compared to

conventional therapy.

References

[1] Wener RRL, Bel EH. Severe refractory asthma: An update. Eur Respir Rev. 2013;22(129):227–35.

[2] GINA. Global Strategy for Asthma Management and Prevention. 2018.

[3] WHO. WHO | Bronchial asthma [Internet]. WHO. World Health Organization; 2018 [cited 2018 Nov 3]. Available from: http://www.who.int/mediacentre/factsheets/fs206/en/

[4] Parmar J, Nagarwala R. Effects of Pranayama on Bronchial Asthma. Int J Physiol. 2014;2(1):96.

[5] Chen Y, Rennie DC, Pahwa P, Dosman JA. Pulmonary function in adults with recent and former asthma and the role of sex and atopy. BMC Pulm Med. 2012;12.

[6] Quirt J, Hildebrand KJ, Mazza J, Noya F, Kim H. Asthma. Allergy, Asthma Clin Immunol [Internet]. 2018;14(S2):50. Available from: https://aacijournal.biomedcentral.com/articles/10.1186/s13223-018-0279-0

[7] duRivage N, Ross M, Mayne SL, Suh A, Weng D, Grundmeier RW, et al. Asthma Control Test. Clin Pediatr (Phila) [Internet]. 2017;56(4):341–7. Available from: http://journals.sagepub.com/doi/10.1177/0009922816675013

[8] Sankar J, Das RR. Asthma – A Disease of How We Breathe: Role of Breathing Exercises and Pranayam. Indian J Pediatr. 2017;1–6.

[9] Adeniyi BO, Erhabor GE. The peak flow meter and its use in clinical practice. African J Respir Med. 2011;5–8.

[10] Singh S, Soni R, Singh KP, Tandon OP. Effect of yoga practices on pulmonary function tests including transfer factor of lung for carbon monoxide (TLCO) in asthma patients. Indian J Physiol Pharmacol. 2012;56(1):63–8.

[11] Kristina Zaičenkovienė1 AS, , Roma Aleksandravičienė1 2, Stasiulevičienė1 L, Lithuanian. Yoga Practice Has Minor Influence On. 2013;i(1):97–101.

[12] José A, Holland AE, Oliveira CS d., Selman JPR, Castro RAS d., Athanazio RA, et al. Does home-based pulmonary rehabilitation improve functional capacity, peripheral muscle strength and quality of life in patients with bronchiectasis compared to standard care? Brazilian J Phys Ther [Internet]. 2017;21(6):473–80. Available from: http://dx.doi.org/10.1016/j.bjpt.2017.06.021

[13] Cebrià I Iranzo MDÀ, Arnall DA, Camacho CI, Tomás JM. Effects of inspiratory muscle training and yoga breathing exercises on respiratory muscle function in institutionalized frail older adults: A randomized controlled trial. J Geriatr Phys Ther. 2014;37(2):65–75.

[14] Agnihotri S, Kant S, Mishra SK, Singh R. Efficacy of yoga in mild to moderate persistent chronic bronchial asthma. Indian J Tradit Knowl. 2016;15(2):337–40.

[15] Agnihotri S, Kant S, Kumar S, Mishra R, Mishra S. The assessment of effects of yoga on pulmonary functions in asthmatic patients: A randomized controlled study. J Med Soc [Internet]. 2016;30(2):98. Available from: http://www.jmedsoc.org/text.asp?2016/30/2/98/182909

[16] Shyam Karthik P, Chandrasekhar M, Ambareesha K, Nikhil C. Effect of pranayama and suryanamaskar on pulmonary functions in medical students. J Clin Diagnostic Res.

2014;8(12):BC04-BC06.

[17] Sahat CS, Irawaty D, Hastono SP. Peningkatan Kekuatan Otot Pernapasan dan Fungsi Paru Melalui Senam Asma Pada Pasien Asma. J Keperawatan Indones [Internet]. 2011;14(2):101–6. Available from: http://jki.ui.ac.id/index.php/jki/article/viewFile/316/475

[18] Thangavel D, Gaur GS, Sharma VK, Bhavanani AB, Rajajeyakumar M, Syam Sunder A. Effect of slow and fast pranayama training on handgrip strength and endurance in healthy volunteers. J Clin Diagnostic Res. 2014;8(5):1–4.

[19] Ruprai RK, Kamble P, Kurwale M. Effect of yoga training on breathing rate and lung functions in patients of bronchial asthma. Int J Recent Trends Sci Technol. 2013;5(3):127–9.

[20] Saxena T, Saxena M. The effect of various breathing exercises (pranayama) in patients with bronchial asthma of mild to moderate severity. Int J Yoga. 2009;2(1):22.

[21] Raina M, Singh K. The Ashtanga Yoga Hindi Scale: An Assessment Tool Based on Eastern Philosophy of Yoga. J Relig Health. 2018;57(1):12–25.

[22] Akhtar P, Yardi S, Akhtar M. Effects of yoga on functional capacity and well being. Int J Yoga. 2013;6(1):76.

[23] Cramer H, Lauche R, Dobos G. Characteristics of randomized controlled trials of yoga. BMC Complement Altern Med. 2014;

[24] Cramer H, Krucoff C, Dobos G. Adverse Events Associated with Yoga: A Systematic Review of Published Case Reports and Case Series. PLoS One. 2013;8(10).

[25] Liu X-C, Pan L, Hu Q, Dong W-P, Yan J-H, Dong L. Effects of yoga training in patients with chronic obstructive pulmonary disease: a systematic review and meta-analysis. J Thorac Dis [Internet]. 2014;6(6):795–802. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4073384&tool=pmcentrez&rendertype=abstract

[26] Ambareesha Kondam1, Chandrasekhar M.1, Purushothaman G.1 , Qairunnisa S.1 , Vijay Kumar A. N.2 SVP. A study to evaluate the effect of vital capacity (vc), forced vital capacity (fvc) and peak expiratory flow rate (pefr) in subjects practicing pranayama ijcrr. IJCRR. 2012;04(Vc):154–8.

[27] Bidwell AJ, Yazel B, Davin D, Fairchild TJ, Kanaley JA. Yoga Training Improves Quality of Life in Women with Asthma. J Altern Complement Med [Internet]. 2012;18(8):749–55. Available from: http://online.liebertpub.com/doi/abs/10.1089/acm.2011.0079

[28] Abel AN, Lloyd LK, Williams JS. The effects of regular yoga practice on pulmonary function in healthy individuals: a literature review. J Altern Complement Med. 2013;19(3):185–90.

[29] William Fernando Benavides-Pinzón JLT. Effects of yoga (pranayama) on lung function and lactate kinetics in sedentary adults at intermediate altitude. 2017;65(3):467–72.

[30] Drescher U, Schefter T, Koschate J, Schiffer T, Brixius K, Schneider S, et al. Oxygen uptake kinetics following six weeks of interval and continuous endurance exercise training − An explorative pilot study. Respir Physiol Neurobiol. 2018;247(September 2017):156–66.

[31] Ray US, Pathak A, Tomer OS. Hatha yoga practices: Energy expenditure, respiratory changes and intensity of exercise. Evidence-based Complement Altern Med. 2011;2011.

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NURSE ROLE TO GET SATISFACTION ENDOSCOPY: A SYSTEMATIC REVIEW

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ABSTRACT

Endoscopy is a procedure for a known gastrointestinal problem. It could stimulate a negative effect on patients. Nurse endoscopist had roles to increase readiness and patient tolerant in order to grow up patient's satisfaction. Patient's ability to adapt is importantly required to support the procedure. This review to identify the role of nurse that can improve patients' satisfaction. The authors found 1800 article in accordance with the relevant literature in various data using the keywords "endoscopy, satisfaction, nurse, role". Data based on SCOPUS, Springer, Science Direct, Proquest. The criteria consisted of articles found, five years limit journal (2013-2018) and selected 17 articles that suitable with criteria. Nurse endoscopist role to get satisfaction were: 1) giving information with effective communication that planned, structured, and always improved by media or face to face; 2) easing negative feedback as hypnosis, yoga aromatherapy, etc ; 3)improve nurse attitude (respect, empathy, assertive and trusted); 4) comprehensive discharge planning. All of the purposes could be implemented for improving patients satisfaction with individually tailored to the patient's needs. When nurse doing there is a role, it can make satisfaction for all, could properly diagnosis and treatment, exactly and successful, and also decrease anxiety, pain and stabilize hemodynamically.

Keywords: endoscopy, satisfaction, nurse, role

1. Introduction

The endoscopy procedure often has a negative impact on the patient. Endoscopy can cause anxiety, nervousness and pain related to the procedure [1] [2]. More often, the patients are afraid of the preparations, procedure, environment and outcome [1]. The fear of a negative experience felt by the patient is a serious problem as the high negative feeling of the patient can cause the diagnostic process or therapy to be incomplete, with severe pain related to the difficulty of following through with the endoscopy procedure [3].

The patients need detailed information regarding the benefits, any unpleasant conditions and other things related to the endoscopic procedure [4]. When the patient understands clearly everything about the procedure and how the procedure is done, then the patient will be better prepared to face it. When the patient is ready to face the procedure, the patient will follow all of the instructions given by the nurse and doctor during the procedure. The procedure can therefore go well and the patient's satisfaction will increase [5] [6].

Nurses who have the appropriate competence will support the patient in adapting to the procedure [7]. The patient's adaptation capability will lead to satisfaction, especially for the patients and all of the healthcare personnel associated with the endoscopic procedure [8] [9].

The purpose of this systematic review is to summarize the nurse's competence and how it can improve patient satisfaction by synthesizing the previous studies. We hope that this systematic review can be used as information for the nurses and especially endoscopy nurse, the endoscopist and clinical research as a whole.

2. Methods

The systematic goal was developed based on the PICO (Patient, Intervention, Comparison, and Outcome) framework model [10]. This systematic review was performed in line with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) statement and checklist [11]. The research methods used include qualitative and quantitative fieldwork, a prospective randomized control design, a double blind clinical trial, a questionnaire-based survey, a randomized control trial, an investigative survey, an initial study, a cross-sectional study, a quasi-experiment, a prospective survey and an anonymous survey

2.1 Search strategy and data sources

The systematic search of the PICO baseline electronic data framework was carried out according to the PICO framework. The first step was to search the SCOPUS, PROQUEST, Springer Link, and Science Direct databases to identify the key articles and to identify the keywords by adjusting the key concepts of 1. Procedure endoscopy, 2. Nurse competence and 3. Patient Satisfaction. Our keywords were used to search for quotes and full articles including the title, abstract, full text and reference information. The second step was translating the keywords into English to find the relevant articles in the selected electronic databases. The third step was to filter using the PICO framework to determine which articles passed for further review according to the topic. The search strategies were limited to the last 10 years between 2008 and –2018.

2.2 Inclusion criteria

This systematic review established inclusion criteria that focused on quantitative studies, qualitative studies and mixed method studies. A feasibility study was used to describe the various types of nurse competence that can be used to improve the satisfaction of the endoscopy patients with the language eligibility criteria focused on minimal abstracts using English. The year of publication was limited to the last 10 years from 2008 - 2018. Further criteria for the inclusion group were studies with adult endoscopy patients (>12 years) and all types of endoscopy procedure (EGD or colonoscopy).

2.3 Exclusion criteria

Non-English, reviews and non-research articles.

2.4 Screening

The protocol standard for selecting the research studies is suggested in the PRISMA method for systematic review. This is followed by screening by removing the duplicates before three reviewers select the titles, abstracts, and keywords before deleting irrelevant quotes according to the selection criteria. The reviewers noted the reasons for choosing such research studies including the selection of the inclusion data. The selection of the research studies was recorded by two reviewers and then they were compared to one another to be adjusted for feasibility according to the criteria set. Secondly, to minimize the risk of there being an incorrect study entry in the stage of selection, there were several research studies that can be applied after a review by one or two reviewers. This is to allow them to be included in the next review stage. The full text of the articles was obtained if the title and abstract meet the inclusion criteria or if the feasibility study was clearly resolved by a joint discussion between the reviewers.

2.5 Data extraction

The following data was extracted: author, year, journal, country, setting of the study, aim of study, research questions, type of study, sampling methods, key findings or if there were relevant secondary outcomes. Two authors (RI and ADA) were involved in the data extraction and after organizing the results into a table, the findings were discussed and reviewed again.

2.6 Quality assessment

The assessment of the quality of the articles to be reviewed used the quantitative study tool the Critical Appraisal Skills Program (CASP). There were 10 different questions that considered the results of the quantitative studies, the validity of their studies and the use of the results [12]. CASP is a tool for evaluating the quality and utility of research reports [13]. The 10 questions in CASP are answered by selecting "yes", "no" or "not now" for each question. The allocation of the scores on a scale of 10 for each article reviewed was based on how many "yes" answers there were. A score for yes above 7 or more refers to the quality of the article being very good. The purpose of the quality assessment was not to distinguish between the different levels of quality but to work as a part of a systematic process to provide a high-quality review based on the existing topics.

2.7 Analysis

Due to the methodological diversity of the studies included and the limited number of studies specifically addressing the objectives set for this review, descriptive synthesis was considered to be the most appropriate analytical method.

3. Results

3.1 Study result

The search strategy was carried out by generating a total of 1800 citations, of which the authors deleted 1679 during the first screening because the title and / or abstract did not match the specified eligibility criteria, the year published journal, where it was not original research, where the endoscopy was conducted on children and other gastrointestinal endoscopy methods. In total, 103 full articles came from the second stage of screening and 24 of the articles obtained were

retained for review. Following this, 8 additional articles were obtained from the reference screening stage and thus the last session included 16 articles on the interventions used to improve the endoscopy patients' satisfaction (see Figure 1)

3.2 Study Characteristics

3.2.1 Types of study. Two studies employed a fieldwork study, which is a method using inductive reasoning that emphasizes the generation of theory based on the observations of patterns in terms of the qualitative data. Three studies used RCT, two studies used prospective and RCT, two study were cross-sectional, an initial study, prospective, prospective and RCT, one survey was an investigation and two studies were quasi-experimental involving a clinical trial and an anonymous survey.

3.2.2 Types of participant. The number of samples in this study varied. For quantitative research, the number of patients ranged from 52 – 1800. For qualitative research, the number of patients was 8. This study showed that the patients were undergoing either an upper or lower endoscopy. Most of the studies showed that the patient's required information from the nurse and that it had to be clear. They also needed the nursing intervention to decrease their negative feelings. Most of the studies, up to 87,5% (14 from 16 studies), explained that the patient needed the nurse to have competence in terms of their communication.

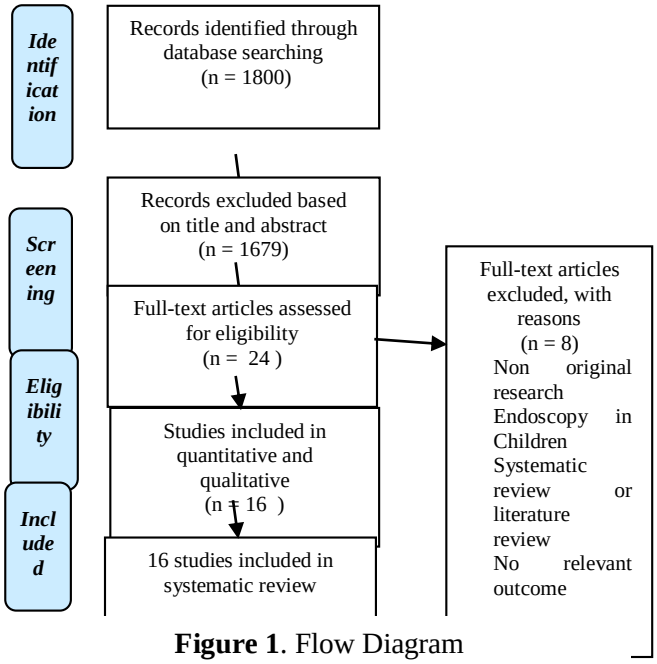

Figure 1. Flow Diagram

3.3 Summary of studies

The literature search identified 16 journals that described the competence of the endoscopy nurses required to improve the patients' endoscopy satisfaction. From the articles, four retrieved five categories concerning nurse competence that should be applied to improve patient endoscopy satisfaction, namely: 1) providing education; 2) comforting their negative reactions; 3) accompanying the patients with a caring attitude and 4) their skills.

3.3.1 Providing Education. Eight out of the 16 articles were reviewed in this context Patients who undergo endoscopy actions often don't have much knowledge about the endoscopy or the procedure itself. The nurse must have competence to provide education to the patient. Effective communication becomes an important prerequisite for improving the patient service in a manner that is safe and satisfactory [5].

Nurses as health workers who have the time to interact with the patient the longest have the opportunity to use their time to provide a thorough education to the patient of their condition [14] [15]. Endoscopy nurses need to have an effective amount of time with the patients in order to discuss about the purpose and benefits, in addition to any unpleasant things and how to handle them, tailored to the needs of the individual patients [8].

The information provided and any related actions can be done directly or with the use of different forms of media. Structured information can be organized in a form which facilitates the nurses and which improves their ability to communicate, to decrease anxiety and to improve patient satisfaction [6] [16]. In addition to this, the information can also be arranged in the form of CD-ROMs, videos and other media information compiled programmatically and structured to decrease anxiety as well as increasing customer satisfaction. This includes the readiness to perform other procedures [17–19].

The information provided is not only related to the preparation of the procedures, but it also include things that may occur during the endoscopy such as possible delays, an extension of the waiting time, the possibility of sedation to be provided, as well as the possible results and other related actions by adjusting to the conditions and needs of the patient.

3.3.2 Comforting their Negative Reactions

For 10 out of the 16 articles reviewed, the endoscopy procedure stimulated the occurrence of nervousness and anxiety. A high level of anxiety experienced by the patients before an endoscopy will lower the patient's tolerance [2]. Endoscopy nurses need to have competence to help the patients to manage their anxiety, pain and negative reactions. An endoscopy is often done without the use of sedation, Also in Indonesia, there is the concern that the actions that are carried out should be done relatively quickly, safely and in a cost-efficient manner, lowering the side effects due to the use of sedation [20] [21]. From the few studies mentioned, some states do not offer sedation for the patients who are to undergo an endoscopy action due to the increased costs. In addition to the reason of cost, the use of sedation involves risks: the suppression of the circulation, respiratory depression, recovery time and amnesia of the anterograde type [22].

Nurses can conduct interventions to help the patients to comfort their negative reactions caused by the procedure such as behavioral relaxation techniques, breathing deeply, hypnosis and they can also provide distractions through audiovisual media [18,21,23,24]. An alternative nursing intervention is to provide aromatherapy or yoga.

Comforting the negative reactions that are felt by the patient also can be done by facilitating psychological preparation, in the form of an intervention to control the information, cognition and behavior of the patients given before the action since doing so before the procedure means that the patient will be able to adapt and ready to face the action. This may be combined with the

above mentioned alternative therapies [1] [25]. Previous studies showed that the intervention can reduce anxiety, increase the patient's tolerance and readiness as well as improve the satisfaction of the patients which will have an impact on the success of the diagnosis and treatment.

3.3.3 Accompany patient with caring attitude

In 8 of the 16 articles reviewed, how the endoscopy patients feel satisfaction is heavily influenced by the attitude and intervention given by the nurses. The patients will be satisfied when the nurse has time to share their stories and to provide the information needed by the patient, which is meant here to refer not to how much time is spent together with the patient but instead how the time is spent [8].

The attitude of the nurses and their sensitivity related to empathizing with the patient's condition will result in positive feedback, such as when describing the information required by the preparatory actions related to the patients. Their responsiveness will help the patients to cope with their perceived anxiety. These conditions will enhance the readiness of the patient in terms of receiving the procedure, including the instructions as preparation against any wayward actions, facilitating less discomfort with the procedure [4]. There is also how the nurse accompanied the patient during the procedure.

3.3.4 Skills. Twelve articles were reviewed. Most of the patients felt anxiety related to the procedure and the results found likewise [4]. The results of a survey on increased patient satisfaction demonstrated that there are five areas that cause negative feedback. One is the ability of the department to deliver post-procedure advice consistently to all patients. The endoscopy nurse must have the skills needed to make sure that the patient be able to do the procedure properly. Therefore, the nurse’s presentation of the endoscopy should comprehensively provide an explanation about everything related to the outcome of the procedure [7].

4. Discussion

The results of the review demonstrate that the nurse’s competence related to improving patient satisfaction is through communication. Effective communication built between the nurses and patients will give rise to trust in the other. The confidence of the patient will improve their readiness and skill of adaptation related to receiving the endoscopy.

Communication can be done, when nurse have a good skills, caring attitude, knowledge to accompanying patient during procedure. If nurse can do that properly, patient also can receive all of procedure. The patient can sure that the procedure is more useful than having negative feelings.

The satisfaction felt by the patient means that the patients are sure and believe in the endoscopy. The endoscopy nurse must provide proper advocacy with the attitude of the nurses being one of someone who can demonstrate empathy, assertiveness and a therapeutic manner. Endoscopy nurses have a role which is important from the point of first meeting with the patient. For the first time, the patient sensed that he was cared for by the nurses and since that time, the patient felt satisfaction. The endoscopy nurse's attitude and ability to be a good listener is also needed [2] [6].

The nurse's competence is not only limited to the aspect of information and attitude, but it

also includes an increase in the ability of the nurses to provide interventions that can help the patients to lower the negative effects (anxiety, nervousness, pain etc) that are perceived by the patients. The interventions may include health education, videos, audiovisual information, psychological preparation, hypnosis, aromatherapy, yoga and more. It is expected that when giving the intervention, it will help the patient to adapt to the process of preparation and it will help the endoscopy patients to receive the results of the procedure, as well as to be obedient when executing the therapy [1,17,25–27]. It is also important to note that the nurses should always pay attention and adjust the interventions conducted with the patients according to their needs on an individual basis [16].

This review is limited. Considering the studies related to the initial search, an extensive search strategy can be implemented. All of the results of this systematic review are based on the findings of a study of the secondary data that has been included. The studies explored were not taken in detail so there is a possibility that this aspect that has not been touched upon. This study focuses on the context of the nurses' competence to achieve and improve on the satisfaction of the patients undergoing endoscopic actions that may limit the data retrieved. However, the systematic review was designed to obtain data in the context of the nurse's competence in terms of achieving and improving on patient satisfaction related to the endoscopy procedure. There are limitations associated with this systematic review. The journals taken in this systematic review are only related to the nurse's competence related to improving patient satisfaction. The sample in this study consisting of patients aged > 12 years or adult TB patients. The interventions discussed are for endoscopy patients in general (upper and lower) and not based on procedure (gastroscopy or colonoscopy). Therefore, specific interventions for each category and the discussion of the nurse's competence that increases readiness and satisfaction that is directly related to procedure success are important areas for further study.

5. Conclusion

The results showed that the nurse's competence in relation to the endoscopy procedure can improve patient satisfaction, which is in terms of providing education, comforting their negative reactions, accompanying the patient with a caring attitude and having good skills. The main thing is communication. The results of this systematic review showed that nursing competence for the patients receiving an endoscopy is needed to improve patient satisfaction. The procedure will be more effective and provide benefits for all if the nurses fulfill their role properly as part of a good team and not as a single worker.

References

[1] Boustani H, Pakseresht S, Haghdoust M, Qanbari S and Mehregan-nasab H 2017 Effect of psychological preparation on anxiety level before colo- noscopy in outpatients referred to Golestan Hospital in Ahvaz **12** 235–9

[2] Pontone S, Tonda M, Brighi M, Florio M, Pironi D and Pontone P 2015 Does Anxiety or

Waiting Time Influence Patients ' Tolerance of Upper Endoscopy ? **21** 111–6

[3] Xiaolian J, Xiaolin L and Lan Z H 2015 Effects of Visual and Audiovisual Distraction on Pain and Anxiety Among Patients Undergoing Colonoscopy **38** 55–61

[4] Shafer L A, Walker J R, Waldman C, Bernstein C Y V M C N and Park L H J 2018 Factors Associated with Anxiety About Colonoscopy : The Preparation , the Procedure , and the Anticipated Findings *Dig. Dis. Sci.*

[5] Griffiths B 2015 Enhanced Communication Performance Improvement and Patient Satisfaction in an Endoscopy/Ambulatory Surgery Unit 194–200

[6] Toomey D P, Corrigan G, Singh C, Nessim G and Balfe P 2015 Effective communication enhances the patients ' endoscopy experience

[7] Gallaher A J and Parisinos C 2015 Endoscopy patient satisfaction survey : improving the patient experience **2** 2015

[8] Bundgaard K, Sørensen E E and Delmar C 2016 TIME - MAKING THE BEST OF IT ! A Fieldwork Study Outlining Time in Endoscopy Facilities for Short- Term Stay 15–25

[9] Rn K B, Brian K, Msce N, Sørensen E E and Rn C D 2014 The best way possible ! A fieldwork study outlining expectations and needs for nursing of patients in endoscopy facilities for short-term stay 164–72

[10] Xiaoli Huang., Jimmy Lin. D D-F 2006 Evaluation of PICO as a Knowledge Representation for Clinical Questions *AMIA 2006 Symposium Proceedings* pp 359–63

[11] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration *PLoS Med* **6** e1000100

[12] Critical Appraisal Skills Programme 2018 CASP Qualitative Checklist

[13] Persis Katrak., Andrea E Bialocerkowsk.i, Nicola Massy-Westropp. V S K and K A G 2004 A systematic review of the content of critical appraisal tools *BMC Med. Res. Methodol.* **11** 1–11

[14] Chapman W and Cooper B 2009 Exploring the nurse endoscopist role : A qualitative approach **18**

[15] Griffiths B 2015 Enhanced Communication Performance Improvement and Patient Satisfaction in an Endoscopy/Ambulatory Surgery Unit *Gastroenterol. Nurs.* **38** 194–200

[16] Mitchell M 2016 Day surgery nurses ' selection of patient preoperative information 1–13

[17] Arabul M, Kandemir A, Celik M, Torun S, Beyazit Y, Alper E and Camci M 2013 Impact of video information before unsedated upper gastrointestinal endoscopy on patient satisfaction and anxiety : a prospective randomized trial **8**

[18] Hsueh F, Chen C, Sun C, Chou Y, Hsiao S and Yang T 2016 A Study on the Effects of a Health Education Intervention on Anxiety and Pain During Colonoscopy Procedures **24** 181–9

[19] Maguire D, Walsh J C and Little C L 2004 The effect of information and behavioural training on endoscopy patients ' clinical outcomes **54** 61–5

[20] Toulasik A 2013 Gambaran Tingkat Kecemasan Pasien yang Akan Menjalani Prosedur Endoskopi Saluran Cerna di Rumah Sakit Pusat Angkatan Darat Gatot Soebroto Jakarta

[21] Izanloo A, Fathi M, Izanloo S, Vosooghinia H, Hashemian A, Sadrzadeh S M and Ghaffarzadehgan K 2015 Efficacy of Conversational Hypnosis and Propofol in Reducing Adverse Effects of Endoscopy **5**

[22] Drouet N and Chedeau G 2017 Journal of Clinical Anesthesia Hypnopraxia , a new hypnotic technique for hypnoanesthesia ☆ *J. Clin. Anesth.* **37** 14–6

[23] Lee J-Y, Anhn M-W, Kim E-T, Kim D-H, Kweon H-J, Cho D-Y and Yoon H M 2012 The effect of preparatory education program on discomfort and retching of examinees during upper gastrointestinal endoscopy *Korean J. Fam. Med.* **33** 219–28

[24] Te S, Barth J, Maichrowitz S, Beelmann A, Strauss B and Rosendahl J 2013 Clinical Psychology Review Ef fi cacy of hypnosis in adults undergoing surgery or medical procedures : A meta-analysis of randomized controlled trials **33** 623–36

[25] Behrouzian F, Sadrizadeh N, Nematpour S and Seyedian S S 2017 The Effect of Psychological Preparation on the Level of Anxiety before Upper Gastrointestinal Endoscopy

[26] Hozumi H, Hasegawa S, Tsunenari T, Sanpei N, Arashina Y, Takahashi K, Konnno A, Chida E and Tomimatsu S 2017 Complementary Therapies in Medicine Aromatherapies using Osmanthus fragrans oil and grapefruit oil are e ff ective complementary treatments for anxious patients undergoing colonoscopy : A randomized controlled study *Complement. Ther. Med.* **34** 165–9

[27] Li L, Shu W, Li Z and Liu Q 2019 Pain Management Nursing Using Yoga Nidra Recordings for Pain Management in Patients Undergoing Colonoscopy *Pain Manag. Nurs.* **20** 39–46

Appendix

Table 1. Journal Analysis Table

No	Title, Authors, & Time	N	Design	Main Result
1	Impact of video information before unsedated upper gastrointestinal endoscopy patient satisfaction and anxiety : a Propective Randomized Trial [17]	440	*Prospective Randomized trial*	Information that is given by video could help the patient to reduce their anxiety, improve their satisfaction and make the patient ready to undergo other procedures.
2	The best way possible ! A fieldwork study outlining expectations and needs for nursing of patients in endoscopy facilities for short-term stay (Rn, Brian, Msce, Sørensen, & Rn, 2014)	8 patients 4 nurse	*A fieldwork study*	Part of nursing related to endoscopy patients is easing the patients' feeling of nervousness and anxiety (there are three individual strategies in this study: getting it over with, the meaning of the words and taking precautions) and also to maintain an element of control. So to be successful, the nurses need to get to know the patient's individual way of managing their needs.
3	Enhanced Communication Performance Improvement and Patient Satisfaction in an Endoscopy/Ambulatory Surgery Unit (Griffiths, 2015)	1800	Initial study	Delivering safe patient care can be enhanced only by improving the effectiveness of the communication among care givers. Nurses that have more time to interact must use this to communicate and educate patients in whatever time frame is available
4	Endoscopy patient satisfaction survey : improving the patient experience [7]	52	Questionnaire-based survey	Areas of strength with predominantly positive feedback included the pre-procedure information given, the consent process, the help of the receptionists and the environment of the unit itself. There were five main areas that received negative feedback: 1) the ease with which appointments can be made; 2) the process of following directions to the department on the day of the procedure; 3) the unexpected waiting times; 4) the amount of sedation given; 5) the ability of the department to deliver post-procedure advice consistently to all patients. This study proposed the following: 1) interpreters should be available to help the patients from ethnic minorities to make and keep their appointments; 2) patients should be given maps before their appointment detailing directions to the department clearly; 3) details should be imparted to all patients with

				respect to likely waiting times and possible delays (including median waiting time based on previous month's data); 4) endoscopists should attend a formal training course in sedation with protocols readily available in the department; and 5) it should be ensured that the patients do not leave the department without the appropriate advice being given.
5	Effective communication enhances the patients endoscopy experience (Toomey, Corrigan, Singh, Nessim, & Balfe, 2015)	71 when survey and 60 after survey	A Prospective Survey	Structured information leaflets and improved staff communication skills reduce anxiety and enhanced the patients' experiences.
6	Efficacy of Conversational Hypnosis and Propofol in Reducing Adverse Effects of Endoscopy (Izanloo et al., 2015)	140	Randomize Control Trial	The results suggested that a conversational hypnosis technique could reduce anxiety as well as the sedation process in a procedure such as an endoscopy
7	Effects of Visual and Audiovisual Distraction on Pain and Anxiety Among Patients Undergoing Colonoscopy [3]	180	A prospective, randomized, controlled design	The reduction of the anxiety level was greater in the two intervention groups, although significant differences were not found. Several reasons may explain why the visual and audio-visual distractions did not significantly reduce the levels of anxiety. First, greater anxiety may be produced by the concern about the pathological findings of the examination than by the endoscopy procedure itself. Second, watching a DVD play is interesting and engaging.
8	Does Anxiety or Waiting Time Influence Patients' Tolerance of Upper Endoscopy ? (Pontone et al., 2015)	105	Cross-sectional study	According this study, waiting time does not have a significant impact on the perception of pain and discomfort related to the endoscopic procedure. On the other hand, high pre-procedural levels of anxiety were associated with a low tolerance.
9	TIME - MAKING THE BEST OF IT ! A Fieldwork Study Outlining Time in Endoscopy Facilities for Short- Term Stay (Bundgaard et al., 2016)	9	Fieldwork study	The study underlines the possibility of combining the health care systems, patients and the nurses' perspectives on and their expectations of how to spend the nursing time in endoscopy settings. In successful patient pathways, the nurses maximize the patient outcome, support the goals of the healthcare organizations, are reliable, assure, tangible, empathic and responsive and are individually tailored to the patient's needs. The study contributes by underlining the importance of discussing not how to

				get more time in the context of clinical practice but instead how to spend the time in the best way possible.
10	Day surgery nurses ' selection of patient preoperative information (Mitchell, 2016)	137	A survey investigation	Nurses working with competing demands and frequent interruptions prioritized patient safety information. Although they were providing technical details during the time-limited encounters, efforts were made to individualize the provisions. A more formal plan of verbal information provision could help to ease the nurses' cognitive workload and enhance patient satisfaction
11	A Study on the Effects of a Health Education Intervention on Anxiety and Pain During Colonoscopy Procedures (Hsueh et al., 2016)	213	A quasi-experimental design	This study found that using a multimedia health informatics CD-ROM to provide information on the colonoscopy procedure effectively reduced the examination-related anxiety and pain of patients.
12	The Effect of Psychological Preparation on the Level of Anxiety before Upper Gastrointestinal Endoscopy[25]	98	A clinical trial	Psychological preparation was effective at reducing the pain of the endoscopy patients and it can be considered as an efficient method for decreasing anxiety.
13	Effect of psychological preparation on anxiety level before colonoscopy in outpatients referred to Golestan Hospital in Ahvaz (Boustani, Pakseresht, Haghdoust, Qanbari, & Mehregan-nasab, 2017)	80	A double blind clinical trial	In this study, traits and the state of the patient's anxiety levels after a psychological preparation showed a statistically significant reduction. This indicates the effectiveness of the intervention programs used to reduce anxiety before a colonoscopy.
14	Complementary Therapies in Medicine Aromatherapies using Osmanthus fragrans oil and grapefruit oil are effective complementary treatments for anxious patients undergoing colonoscopy : A randomized controlled study [26]	362	A randomized controlled study	Aromatherapy using Osmanthus fragrans oil and grapefruit oil are effective complementary treatments for anxious patients undergoing a colonoscopy.
15	Factors Associated with Anxiety About Colonoscopy : The Preparation , the Procedure , and the Anticipated Findings [4]	1316	An anonymous survey	Fewer people had high anxiety about preparation than about the procedure and findings of the procedure. There are unique predictors of anxiety about each colonoscopy aspect. Understanding the nuanced differences in aspects of anxiety may help to design strategies to reduce anxiety, leading to improved acceptance of the procedure, compliance with preparation instructions, and less discomfort with

				the procedure.
16	Pain Management Nursing Using Yoga Nidra Recordings for Pain Management in Patients Undergoing Colonoscopy (Li, Shu, Li, & Liu, 2019)	144	Quasi-experimental	Both the yoga nidra recording and the relaxation music helped to reduce the pain that the participants undergoing a colonoscopy experienced. The yoga nidra recording was the most successful intervention among the three groups.

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THE EFFECT BRAIN GYM TO FINE MOTOR DEVELOPMENT ON PRE SCHOOL CHILDREN

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ABSTRACT

Pre-school is a golden period in the development process. It consist of cognitive, physical, motoric, and psychosocial aspects of a child developing optimally. One of the developmental parameters is fine motor, its related to physical skills that involve the muscles of the fingertips and eye-hand coordination. The aim was to analyse the effect of brain gymn to improve fine motoric design. The design was a one-group pre-experimental with pre-posttest. The population was all students pre school in Sentul Jombang, East Java. Total sample were 33 respondents which matched the inclusion and exclusion criteria. The data collected by questionnaire sheets were adopted from instrument for assessing child development, namely KPSP. Intervention was given by brain exercise were carried out 3 times a week for 2 months then analyzed using Wilcoxon with a significance value of $\alpha = 0.05$. The results showed that brain exercise in pre-school children was able to improve fine motor skills ($p = 0.000$). Brain gym is one of the effective ways to improve fine motor skills in children because being able to facilitate blood flow and oxygen to the brain also helps overall brain development. Therefore, brain gym is highly recommended for pre-school children.

Keywords: brain gym, motor development, pre-school

1. Introduction

Early Childhood Education (PAUD) is a coaching effort aimed at children from birth up to the age of six years which is carried out through the provision of educational stimuli to help their growth and physical and spiritual development so then the children have a sense of readiness upon entering further education[1]. One form of development that must be achieved by the children is fine motor skills, because fine motorics is an important aspect of development, especially for those 4-6 years of age[2].

The WHO (World Health Organization) reported that 5-25% of pre-school children suffer from minor brain dysfunction, including fine motor development disorders[3]. According to the Indonesian Ministry of Health, 0.4 million (16%) toddlers in Indonesia experience fine and rough motor development disorders, hearing loss, poor intelligence and late speech[4]. Based on the data from the Level I Health Service of East Java Province 2008 for the detection of under-five growth in East Java, it was set at 80% but coverage was examined from 40 to 59%. Those who experienced non-optimal development was 0.14% [5]. Children need to be given new stimulation that is fun; with stimulation, the child will be more enthusiastic when practicing to improve their fine motor skills. According to brain gymnastics experts such as Dennison[6], brain exercises are a series of simple movements that are fun and that can help the development of the brain as a whole. It includes the coordination of eyes, ears, hands and all of the body. Thus, providing a stimulus that improves

the fine motor skills helps to develop eye-hand coordination. This study aims to determine the effect of applying the brain gym method on fine motor skills in pre-school children. The benefit of this research is to contribute to the development of the science and services of early childhood education, especially the knowledge related to gross motor skills. This study provides a recommendation of the brain gym method to optimize the fine motor skills in pre-school children.

2. Methods

This study aimed to determine the effect of brain gymnastics on fine motor development in pre-school age children. The research method used a pre-experimental design with a one group pretest and post-test design. Through the use of the design of this study, there were only experimental groups involved. The population in this study consisted of all pre-school children in PAUD village, Tembelang Jombang, East Java. The sample in this study consisted of 33 respondents, all of who were pre-school age children. The sampling technique used in this study was Total Sampling, which is in accordance with the criteria of inclusion that the children were in good health, cooperative and both men and women.

The time of the study was from the beginning of September to the end of October 2017. The time taken for the research was 2 months with the frequency of exercise being 3 times a week. The data was collected through a questionnaire sheets adopted from KPSP[7]. The statistic tests used in this study were non-parametric statistical test and the Wilcoxon Rank Test. Stikes Pemkab Jombang published the ethics recommendation for this research. The training activities consisted of 3 main parts. First, there was a 5 minute warm up session to familiarize the body organs with the movements of the exercise as well as to see if there was an increased body temperature. Second was the core established training program, namely brain gymnastics. Before doing the core training, the trainer gave directions. Beyond therapy and practice, the subject was recommended to carry out their daily activities as usual for 10 minutes. Third was cooling down, which was done during the function to restore the body's condition to its original state when doing the exercise and at the end of the exercise, an evaluation of the results of the exercise was held. The post-test as done after getting the treatment from the researchers in order to find out the results of the training achieved by the sample after receiving treatment with brain gym.

3. Result

Table 1. Frequency and percentage distribution of the respondent's demographic details

Demographic data	Categories	f	%
Age	2,5 – 3,4 year	18	55
	3,5 – 4,4 year	15	45
BAB 1	Total	33	100
Sex	Women	17	52
BAB 2	Man	16	48
BAB 3	Total	33	100

Based on Table 1, it is known that most of the respondents were aged between 2.5 - 3.4 years, totaling 20 respondents (60%). Based on Table 2, it is known that more than half of the 17 (52%) respondents were female.

Table 2. Brain gym before and after treatment

Fine motor development	Before		After	
	f	%	f	%
Well	2	6	29	88
Enough	24	73	4	12
Less	7	21	0	0
Total	33	100	33	100

Based on Table 3, it was found that more than half of the 24 respondents (73%) had sufficient fine motor skills before the brain exercises were conducted. More than half of the 29 respondents (88%) had good fine motor skills after the brain exercise at PAUD Tembelang Jombang, East Java.

This study used the Wilcoxon Rank Test to determine the effect of brain gymnastics on the improvement of fine motor skills in the pre-school age children. The significance level (α) was less than 0.05. The Wilcoxon Rank Test results obtained a p value = (0,000) <(0,050), so H1 was accepted. This means that there was an effect of brain gymnastics on increasing the fine motorics in pre-school age children.

4. Discussion

The results of the previous studies on brain gym most have shown it to have an effect on the sufficient fine motor skills of pre-school age children. Pre-school age children who have fine motorics know that the average child is still not able to move well. This is because the brain exercise has never been applied to support and hone the children's fine motor skills. According to Dennison [6], the factors that accelerate or slow down fine motor development include genetics and health. The complicating factors are the birth process, nutrition and stimulation.

The sex factor showed that 53.3% of the children were female. Because girls tend to be ashamed and afraid of strangers, the children did not do the fine motor movements as directed by the researchers. According to El-idhami[8], they explained that girls have a subtle motor development that is slower than boys. This is because girls have a more shy and fearful nature so they do not easily become close to someone new to them.

The results of the study after being given brain gymnastics were that there were fine motor skills across the sample of pre-school age children. The children who had good fine motor skills were those who had been given the intervention or stimulation via the brain gymnastics method for 15 minutes 3 times a week for 2 months while at school. The benefits of brain gymnastics for pre-school children is that they increase children's concentration while learning, improve their memory, increase the children's confidence when playing with their friends and this makes the children think faster. This is so then they can do the fine motor movements properly using their fingers[9]. Brain movements using the hands and feet accompanied by music can increase the children's enthusiasm to start lessons and to practice their physical abilities such as writing and drawing. This can improve their hand movements perfectly [10].

From the results of the analysis obtained by Hasih, there is an influence from brain gymnastics on the improvement of fine motor skills of the pre-school age children in Sentul Village PAUD Tembelang Jombang. The results of the study show that doing brain exercises can improve the children's fine motor skills better. Brain gym is a series of exercises based on simple body movements. Motion exercises stimulate the left and right brain (lateral dimensions), relaxing the

front and back of the brain (dimensions, focus), and stimulating the midbrain (limbic) and part of the cerebrum (concentration) which increases the child's ability to perform fine motor skills such as writing and drawing [10].

5. Conclusion

Brain exercises given to pre-school children are effective as an intervention to improve fine motor skills in PAUD, Tembelang, Jombang, East Java, Indonesia. Brain gym interventions can be a reference for improving the fine motor skills in pre-school age children.

References

[1] Sujiono Y N 2009 *Konsep Dasar Pendidikan Anak Usia Dini* (Jakarta: PT.Indeks)
[2] Adriana D 2011 *Tumbuh Kembang & Terapi Bermain Pada Anak* (Jakarta: Salemba Medika)
[3] Djokosetio S L 2007 *PERKEMBANGAN OTAK DAN KESULITAN BELAJAR PADA ANAK* (Jakarta: Universitas Indonesia)
[4] Depkes 2006 *Pedoman Pelaksanaan Stimulasi Deteksi dan Intervensi Dini Tumbuh Kembang Anak di Tingkat Pelayanan Kesehatan Dasar*
[5] Prihastuti 2009 Pengaruh Brain Gym Terhadap Peningkatan Kecakapan Berhitung Siswa Sekolah Dasar *J. Cakrawala Pendidik.***1**
[6] Dennison P E 2010 *Brain Gym: Teacher's Edition* (Hearts At Play, Incorporated)
[7] Dhamayanti M 2006 Kuesioner Praskrining Perkembangan (KPSP) Anak *Sari Pediatr*.**8**
[8] El-Idhami D *Psikologi Perkembangan* (Jakarta: Rosdakarya)
[9] Putranto P L 2009 *Pengaruh senam otak terhadap fungsi memori jangka pendek anak dari keluarga status ekonomi rendah* (Semarang: Diponegoro University)
[10] Dennison P E 2006 Brain gym and me

PAT-761

HOT HERBAL COMPRESS TO RELIEVING ENGORGED BREAST IN LACTATION PERIOD

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ABSTRACT

Breast engorgement affects during lactation discomfort. These problems are experienced by more than two-thirds of the lactation period. Unfortunately, there are limit methods of care for the engorged breastfeeding woman. This paper proposes a method for breast engorgement management to mitigate or preclude breast infection in the mother during the lactation period. The present study was conducted to determine the effect of hot herbal compress on relieving breast engorgement in lactating women. Participants included 20 women with breast engorgement divided into intervention and control groups, with participants in both groups being applied routine interventions and the intervention group was also applied a hot herbal compress. Both groups received these treatments 6 times for 2 days. According to the results, a significant difference was observed in the overall breast engorgement severity in the intervention group. The results of the hot herbal compress were compared with the results of routine interventions. From the results of this study indicate that the trend of the engorged breast using hot herbal compress treatment shows different results when respondents experience at the same time of treatment. The value generated in the engorged breast using hot herbal compress and routine interventions generally provided comparable clinical efficacy and could be considered as complementary and alternative treatments for the engorged breast.

Keywords: hot herbal compress, engorged breast, lactation

1. Introduction

Breast engorgement is a painful condition affecting large numbers of women in the early postpartum period[1]. It is often experienced by women on the third day until the fifth postpartum[2]. Engorgement leads to pain and if it is untreated, it can lead to mastitis and thus it can impact on the scope of exclusive breastfeeding. Globally, the suboptimal nature of the exclusive breastfeeding of children between 0-23 months of age causes a decrease of 804,000 child deaths each 9 years or 11.6% of all child mortality[3]. According to the Indonesia Demographic and Health Survey in 2012, the median duration of exclusive breastfeeding was 21.4 months. Based on the previous studies conducted in various countries, breastfeeding problems are common and associated with early cessation[4]. The early postpartum period is a critical time to set a foundation for the successful initiation of breastfeeding and to promote continued breastfeeding[3][5]. However, 17% of mothers sought emergency unit help due to problems with infant health, post-delivery complications or breastfeeding in the first two weeks after childbirth[6]. Breast engorgement may make it difficult for women to breastfeed. It may lead to complications such as an inflammation of the breast, infection and sore/cracked nipples[7].

Another source of instability in this period is the fragmented engorged breast care[8]. So far, the consistent evidence for effective forms of treatment is lacking[9]. Midwives need a quick reference guide for the implementation of evidence-based strategies to promote breastfeeding for all mother-newborn dyads. This can lead to muscular pain which can be relieved through massaging the affected areas. It also includes the use of heat applied to the muscles which expands the blood vessels and reduces the blood viscosity. As a result, the blood flow in the body improves. The applied heat also reduces muscular tension and increases flexibility[10]. The appropriate amount of heat and timing has not yet been studied before, nor has the relaxing effect that it delivers been examined[11].

This treatment was easy to implement and it was non-invasive for the client. The results of this study are expected to make up the basic data as a cut of point reference in a complementary treatment, so using a hot herbal compress in the context of midwifery services can run effectively according to the engorged breasts experienced by the client. The purpose of this study was to investigate the effect of a hot herbal compress on relieving engorged breasts in the lactation period.

2. Method

This research begins by selection of ingredients in making a hot herbal compress. Before retrieving the data, the first thing to do was to identify the respondent in accordance with the criteria set by the researcher. Then the respondents gave their informed consent if the respondent agreed to the data collection being done by a questionnaire. The inclusion criteria of this study were postpartum women who had moderate to severe swelling pain in the breast using a VAS scale. The exclusion criterion was the postpartum women who experienced only mild swelling in the breast. After the data collection was complete, the respondents were fitted with a hot herbal compress which served to reduce the engorged breasts of the mothers.

The research design used was quasi-experimental with a control group. The results of the hot herbal compress treatment were analyzed to see the changes in the pain and the nature of the engorged breast. The results were expected to be a means of measuring the engorged breasts experienced by the postpartum mother. The design in this study was a pre-test and post-test with a control group design. This research was conducted using the quota sampling technique. The sample was then divided into two groups; the experimental and the control. The data was collected using a Visual Analog Scale (VAS) 30 minutes after the treatment. The sample consisted of 20 respondents who were postpartum mothers with engorged breasts. Their representation was determined based on the inclusion criteria. The data retrieval was done after the respondent agreed for the hot herbal compress to be placed in corpus mammae. Each operational standard was conducted as shown in Figure 1.

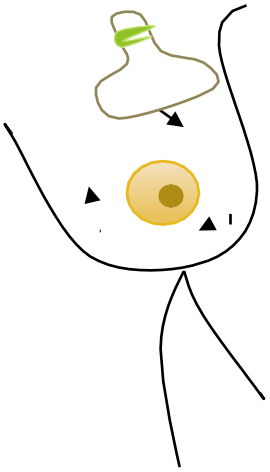

Figure 1. The reference position of the hot herbal compress[12]

The data retrieval began when the respondents experienced engorged breasts with a 5- 10 on the VAS pain scale. The hot herbal placed in corpus mammae. The ingredients are phlai, turmeric, zedoary, lemongrass and leech lime. The herbal ingredients were washed, pounded and mixed together with a little bit of borneo camphor and salt. The ingredients were wrapped tightly in a white piece of cloth. The process of making the hot herbal compress is as shown in Figure 2.

Figure 1. Reference photos of the herbs and herbal ball[12]

The data retrieval began when the respondents experienced engorged breast pain with a 5-10 VAS pain scale. The intervention was then carried out for 15 minutes. The baseline assessment before the intervention was conducted using a questionnaire to collect data on the demographics of the participants and their pain levels. The questionnaire included questions on pain measured using a tenth-point of the Visual Analog Scale. The instructions were provided by a certified trainer.
The results of the respondent's pain scale questionnaire were collected and then analyzed by the researchers assisted by enumerators. Furthermore, the data was presented in the form of an average value distribution. The statistical test used was the Wilcoxon test. The ethical review at the time of the study began by asking for permission to research in the health department and the place where the research data was collected. The research flow chart is as shown in Figure 3.

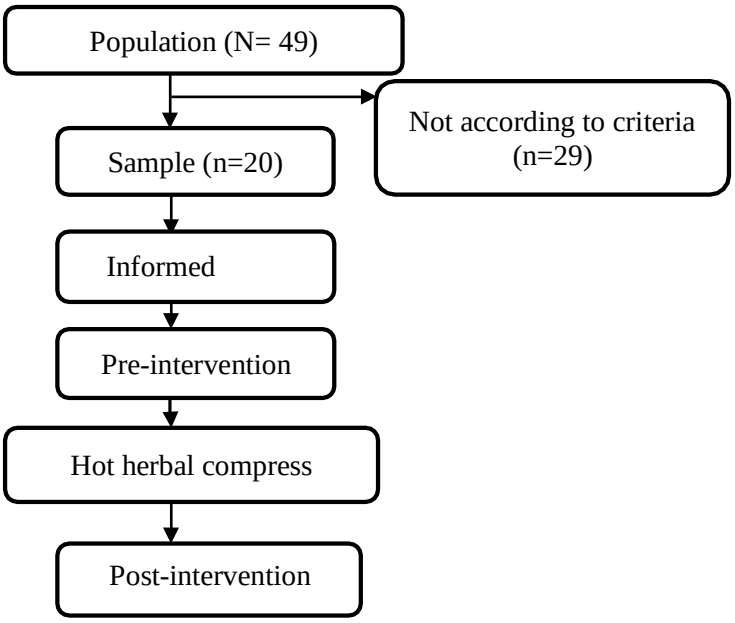

Figure 2. Flowchart

3. Results

This study shows that the average age of the respondents was (24.73 ± 2.71) years with the age range of the respondents being 21-30 years. The average parity of the respondents was (1.53 ± 0.52) with 1-2 pregnancies as a range. The average respondent's height was (156.46 ± 4.25) cm with a range of 152-167cm. The average pain scale using the visual analog scale (vas) was (6.33 ± 1.63) with a range of 5- 10. The characteristics of the respondents are as shown in table 1.

Table 1. Characteristics of the respondents

Characteristics	Min	Max	Mean ± SD
Age (years old)	21	30	24.73 ± 2.71
Parity	1	2	1.53 ± 0.52
VAS scale	5	10	6.331.63

Table 2. Distribution and average of engorged breasts in the lactation period

Variable	Pre		Post		*p-value*
	Median	Max-min	Median	Max-min	
Engorged breast pain	6.39	10-5	1.48	6-2	.000

The results of the intervention were analyzed using the Wilcoxon rank test. It indicated that the median post-test ranks, *Mdn* = 1.48, were statistically significantly higher than the median pre-test ranks, $p < .000$. Based on the distribution of the data from the analysis, the results obtained a significance level *(p-value*) of 0.000. This means that the engorged breast pain level in the respondents was significantly different. Based on Table 2 above, it can be seen that the average results of the engorged breasts in the 20 respondents enrolled in this study showed a decrease in

pain equal to 6 to 2 after being given the hot herbal compress.

2.1. Pretest

The results of this study indicate that the frequency of engorged breasts in the lactation period has a tendency to vary. The average maximum frequency that occurred in terms of engorged breast pain was on the tenth and the average minimum pain was in the fifth score.

2.2. Posttest

The average maximum frequency that occurred in the engorged breast after the intervention was measured on a scale of six and the minimum pain average was measured on a scale of two. The VAS scale for engorged breasts had a tendency to be directly proportional to the pretest of hot herbal compress on a moderate to heavy scale with a scale of moderate for as many as 15 people (75%) and heavy for as many as 5 people (25%), with an average pain scale 6.85. The VAS scale for the post-test proportional to the hot herbal compress was on a moderate to mild scale with a scale of moderate for as many as 5 people (25%) and mild for as many as 15 people (75%) with an average pain scale 2.95. The trend of the comparison of the VAS scales for the pretest and post-test hot herbal compress has been shown in Figure 3.

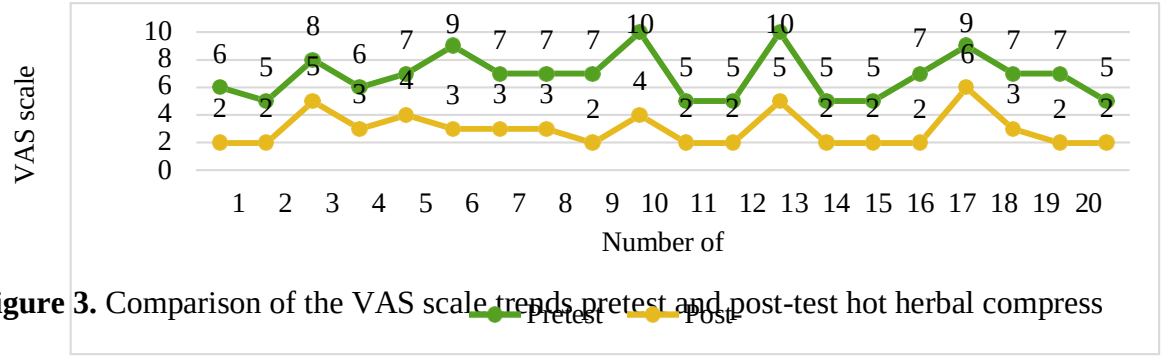

Figure 3. Comparison of the VAS scale trends pretest and post-test hot herbal compress

4. Discussion

The decrease in the intensity of engorged breasts occurred because the mother was given a hot herbal compress treatment for 30 minutes. This intervention was carried out when the mother had engorged breasts. Other potential confounding factors in this research could be the time of treatment. This result was accompanied by breast milk removal but the researchers did not examine the variable amount of breast milk expenditure in this study. The previous study shows that a hot herbal compress is a form of complementary care as an analgesic and anti-inflammatory treatment[13]. Heat from the hot herbal compression results in a dilation of the blood vessels and relaxation in the muscles[14]. Hot herbal compress therapy is a common alternative treatment to improve circulation and blood flow to a particular area[15]. Furthermore, the diverse components of the herbal ball offer various analgesic and anti-inflammatory properties[13]. The flavonoids in the turmeric herbs were substantiated in their analgesic and anti-inflammatory activities by a potential interaction with the prostaglandin cofactor substitution, while in the herbal ball these are acknowledged by traditional medicine practitioners as anti-inflammatory medicinal plants[16]. Phytochemical screening revealed the presence of certain secondary metabolites such as tannins, alkaloids, saponins, flavonoids and phenol. Flavonoids also inhibit either arachidonic acid lipoxygenation or related enzymes which are active in prostaglandin formation[17].

5. Conclusion

A hot herbal compress can be used as an alternative and efficient symptomatic treatment of engorged breasts. The results indicated that there was a significant improvement in VAS and it has been scientifically documented that a hot herbal compress can be effectively used as an alternative treatment for engorged breasts in primary health care. The future use of herbs for therapeutic purposes should be encouraged.

3.1.1 References

[1] Mangesi L and Zakarija-Grkovic I 2016 Treatments for breast engorgement during lactation *Cochrane Database Syst. Rev.*

[2] Yamashita H, Yoshida K, Nakano H and Tashiro N 2000 Postnatal depression in Japanese women: Detecting the early onset of postnatal depression by closely monitoring the postpartum mood *J. Affect. Disord.* **58** 145–54

[3] Cadwell K and C T-M 2016 *Pocket guide for lactation management* (Jones & Bartlett Learning)

[4] Feenstra M M, Jørgine Kirkeby M, Thygesen M, Danbjørg D B and Kronborg H 2018 Early breastfeeding problems: A mixed method study of mothers' experiences *Sex. Reprod. Healthc.* **16** 167–74

[5] Feldman-Winter L 2013 Evidence-based interventions to support breastfeeding *Pediatr. Clin.* **60** 169–87

[6] Barimani M and Vikström A 2015 Successful early postpartum support linked to management, informational, and relational continuity *Midwifery* **31** 811–7

[7] Thompson R, Kruske S, Barclay L, Linden K, Gao Y and Kildea S 2016 Potential predictors of nipple trauma from an in-home breastfeeding programme: a cross-sectional study *Women and Birth* **29** 336–44

[8] Wong B B, Chan Y H, Leow M Q H, Lu Y, Chong Y S, Koh S S L and He H-G 2017 Application of cabbage leaves compared to gel packs for mothers with breast engorgement: Randomised controlled trial *Int. J. Nurs. Stud.* **76** 92–9

[9] RH R U 2015 Traditional herbal medicine, pharmacognosy, and pharmacopoeial standards: a discussion at the crossroads *Evidence-Based Validation of Herbal Medicine* (Elsevier) pp 45–85

[10] Lertlop W 2015 The appropriate temperature of the Thai herbal ball compress for relaxing effected *Procedia-Social Behav. Sci.* **197** 1653–60

[11] Boonruab J, Niempoog S, Pattaraarchachai J, Palanuvej C and Ruangrungsi N 2016 Effectiveness of the court-type traditional Thai massage versus topical diclofenac in treating patients with myofascial pain syndrome in the upper trapezius

[12] School A T 2014 *Thai Traditional Medicine in Faculty of Medicine Siriraj Hospitals* (Bangkok: Siriraj Hospital)

[13] Boonruab J, Damjuti W, Niempoog S and Pattaraarchachai J 2019 Effectiveness of hot herbal compress versus topical diclofenac in treating patients with myofascial pain syndrome *J. Tradit. Complement. Med.* **9** 163–7

[14] Mosley C and Cantwell S 2018 Integrative Techniques for Pain Management *Analg. Anesth. Ill or Inj. Dog Cat* 204–16

[15] Hamlin A S and Robertson T M 2017 Pain and complementary therapies *Crit. Care Nurs. Clin.* **29** 449–60

[16] Gupta S and Singh A 2017 Antimicrobial, analgesic and anti-inflammatory activity reported on Tamarindus indica Linn root extract *Pharmacogn. J.* **9**

[17] Hämäläinen M, Nieminen R, Asmawi M Z, Vuorela P, Vapaatalo H and Moilanen E 2011 Effects of flavonoids on prostaglandin E2 production and on COX-2 and mPGES-1 expressions in activated macrophages *Planta Med.* **77** 1504–11

PAT-769

ASTHMA MANAGEMENT EDUCATION IN PARENT TO ASTHMA CONTROL BEHAVIOR IN CHILDREN;A SYSTEMATIC REVIEW

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ABSTRACT

Asthma control in children is very difficult to achieve because children are still dependent on parents or caregivers to make decisions about their health. Management of asthma by parents is needed in the control of child with asthma so there is no recurrence. The purpose of this systematic rewiew is to find out the effects of health education by parent to control asthma in child. The method used in this systematic review consists of 5 stages: (1) identification of instruments in the literature (database search); (2) identification of relevant literature based on title and abstract; (3) inclusion and exclusion criteria; (4) get fulltext literature; (5) grading based on the literature component and analysis of selected instruments. The database used in the search for literature were scopus, Proquest, Sciencedirect, BMC, Iranian Journal, PubMed 2010 and 2019 with relevant keywords. A total of 15 articles were identified through systematic searches and inclusion criteria from 2144 articles found. From the results of the study it was found that health education can change control behavior of child with asthma. Health education with counseling method is dominant intervention to give education for parents.

Keywords: education; asthma management; asthma control; children; parent

1. Introduction

Asthma control is the focus of modern asthma management. Asthma control in children is very difficult to achieve because children are still dependent on their parents or caregivers to make decisions about their health [1]. The management of asthma by the parents is needed so then there is no recurrence and asthma control can be achieved [2]. The fact is that the management conducted by the parents is still not optimal with the number of cases of recurrence. This is related to the poor knowledge of the parents about asthma management and this affects the child's health status.

Parents are an important key to controlling asthma in children [3]. The parents' knowledge about asthma severity and asthma management determines their help-seeking behaviors when it comes to managing their child's asthma [4]. The management of asthma can be improved by understanding asthma and finding solutions related to the obstacles in the management of asthma [5]. Accurate assessment and interventions by the parents and their children and timely good communication with health workers are both very important in the care and treatment of asthmatic children [6]. The experience of the parents with asthmatic children, particularly related to their beliefs, knowledge and attitudes about managing asthma, is important to asthma control [7]. Listening to the parents' experiences and understanding of asthma can lead to increased cooperation between the parents and nurses, which can enhance asthma management [8]. The parents may adopt a more positive approach when the nurses value the parents' knowledge and involve them in establishing asthma management strategies for their children [9].

The parents beliefs about asthma management, medication routines and adverse side effects impacts on asthma-related decisions and this results in consequences for the individual, the family and in turn, this are likely to affect the patient's quality of life and academic performance [10]. Therefore, it is crucial that most child health asthma education programs include the parents and focus on both the parents' and children's skillset and learning levels with the aim of developing successful asthma management strategies [11].

There are several methods used to improve asthma control in children by providing an asthma management education for the parent. Asthma management counseling is a face-to-face educational intervention. The content of the education program is stated according to the guidelines which were revised for children. It includes information on the pathogenesis of asthma, enviromental triggers for asthma exacerbations, asthma medications and how they act on disease and how the inhaled medications are used [12]. An asthma management intervention that is audiovisual is an educational intervention using audiovisual stimuli. This intervention emphasizes more how they act on disease and how they use inhalers as medication. [13]. This is because inhaler technique has an important clinical impact that is associated with asthma control [14]. The improper use of inhalers is one of the most common inhibitors of asthma control because it affects the acceptance of the patients' doses that are not optimal and the improvement of the patient's condition [15]. Intervention education through medication reminders shows that interactive voice response telephone calls that enquire about the symptoms, deliver education and encourage prescriptions refills resulted in a 32% improvement in controller adherence.

Intervention studies with asthma management education for the parents is carried through as asthma control in the children. Limited reviews have evaluated the effectiveness of the interventions and methods involved in providing asthma control. The importance of educational methods for children and their parents about appropriate asthma management has been highlighted in many studies, but little is known about the effectiveness of the education methods themselves [16].

The aim of this systematic review is to find out the effectiveness of asthma management educational interventions in parents as a form of treatment related to asthma control in the children with the aim of no recurrence. This review will enable practitioners to understand the scope of the problem and to potentially identify patients for screening. This will allow them to then provide the appropriate interventions to achieve asthma control in children.

2. Research methods

This research is a systematic review used to find out the asthma management education of the parents related to asthma control in the children from several related studies. There were 3 main steps to getting the data, which began with identifying and choosing the research related to the topic. Second, we assessed the research taken to see if it met all of the eligibility criteria. A review of the data within each study was then conducted. This review adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Study identification

The design of this study was a systematic review and the quantitative study was formulated to review relevant research studies and to conduct comprehensive analysis. This systematic reporting structure used PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) [17].

Eligibility criteria

This systematic review appliesd the inclusion and exclusion criteria that focused on several research study designs. Some of them used an RCT (Randomized Control Trial) or NRCT (Randomized Control Trial).

Search strategy

This review focused on studies investigating the role of asthma management education given to the parent to promote asthma control in the children. Several published reports with various study designs were considered and no restrictions were placed on the outcome measures. The eligible articles were retrieved from electronic databases, namely Scopus, PubMed and Cochrane. The systematic review was conducted by searching for relevant studies published between 2008 and 2019. The search strategies or key terms used for the search were four components combined, including: (1) health education OR (2) asthma children OR (3) control asthma OR (4) management asthma.

Study Quality Assessment

A total of 15 studies were taken and reviewed once the duplicate articles had been removed. The PRISMA diagram was used as a study guide in this systematic review followed by screening done adequately. This is because heterogeneity in the definition of the study design and in the main results is not always the same as in the initial study. The steps taken included (1) the removal of duplicated articles, (2) an independent examination of the titles, abstracts, and keywords, then deleting any irrelevant citations according to the inclusion criteria, (3) titles and abstracts that appear to meet the inclusion criteria according to the objectives of the systematic review were used to decide whether to look at the full text. (4) The final step was the selection of articles using a randomized method to reduce the risk of bias. Meta-analytic techniques cannot be done adequately because of the heterogeneity in the definition of the research design and due to the results' characteristics. The inclusion criteria were developed a priori and studies were included if they primarily explored the relationship between asthma management education given to the parent and asthma control. The exclusion criteria were as follows: (1) case reports, meta-analyses, systemic review, conference reports and articles without a research design; (2) the unavailability of the full text and (3) qualitative research studies. The main outcome is expected to improve asthma control in children.

3. Result

Study selection

The search using the Scopus and PubMed Cochrane Database of Systematic Reviews offered 2,144 documents. After screening and removing the duplicates, up to 1,210 citations were found. From that number, as many as 934 studies were discarded after reviewing the abstract where some who did not meet the criteria. The full texts of the 284 remaining citations were then reviewed in detail; 275 studies did not meet the inclusion criteria. Therefore this study finally reviewed 15 articles.

Result of the synthesis

3.2.1 Education conseuling. Effective communication between parent, children and health care provides is imperative for promoting adherence treatment asthma and control asthma. Improved

asthma outcomes with education have been reported in other socially deprived populations like. Counseling related to asthma management education for the parents showed a significant increase in asthma control in the children but it was not significantly effective when compared with the usual care [12]. The results suggested that the parents and children who received the face-to-face education programme were significantly less likely to require emergency care. [16]

3.2.2 Medication reminder. Medication reminder education is a form of personalized asthma education as well as generic written information. The medication regimen and asthma management plan was devised collaboratively with both the parent and child. The use of an electronic monitoring device reminder led to significant improvements in terms of the adherence to inhaled corticosteroids in school-aged children with asthma [18]. Medication reminder education in the 110 in the intervention group and when looking at the 110 in the control group made up of parents showed that the t Median percentage adherence was 84% in the intervention group compared with 30% in the control group ($p<0.0001$) [19]. Medication adherence in the parents related to asthma control was significantly higher in the intervention group who received feedback regarding their adherence. The mean adherence over the whole study was 79% in the intervention group versus 57.9% in the control group ($p <.01$). Adherence in the control group declined slightly over the study, whereas in the intervention group, the mean adherence was maintained and actually rose from 76.8% during the third month to 84.2% over the final month ($p<.01$).

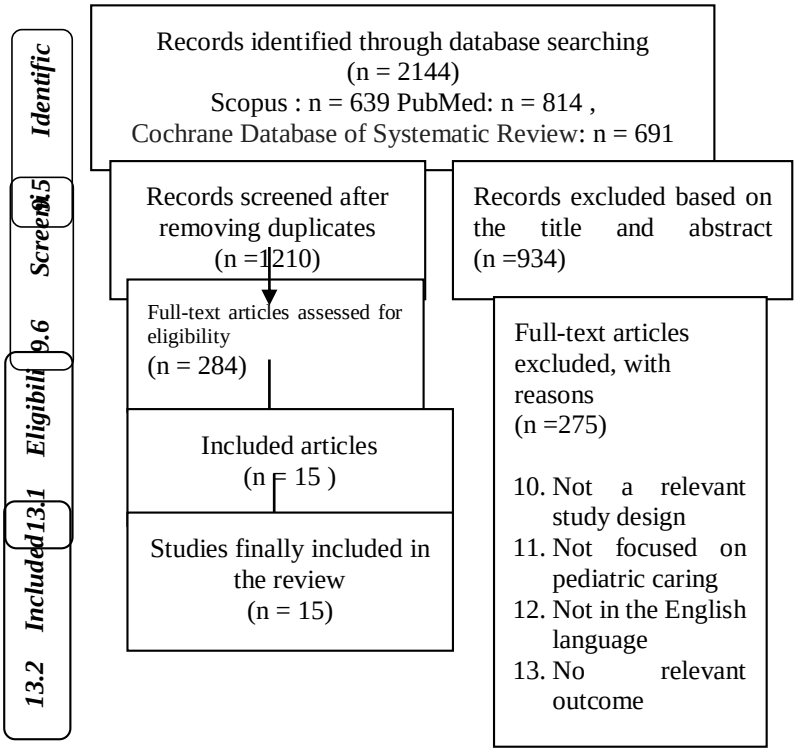

Figure 1. Flow diagram

3.2.3 Video education. The use of an audiovisual reminder significantly improved the adherence in school-aged children with asthma with corresponding improvements in several of the indicators of asthma control. [15]. The use of audiovisual reminders in education has significantly improved the adherence in school-aged children with asthma with corresponding improvements in the asthma

control indicators. There was an increase in knowledge in the groups with parents who had poor health knowledge by (p 0<01). However, there was an adequate or significant improvement in parents with a degree of health awareness after watching the video and practicing the correct use of inhalation at (p <0.001).

3.2.4 Asthma control test (ACT). The pre- and post-asthma control test scores (ACT) showed significant differences in the intervention group where the parents had asthma management education. With educational interventions during clinic visits, the majority of patients had higher ACT scores compared to usual clinical care. These findings are in agreement with the literature [20] indicating that an asthma control test after education showed that the intervention group and educational session resulted in a significantly higher proportion of well-controlled asthma patients with an ACT>19 (43% versus 77%) ($p < 0.001$) after three months. In the control group, this proportion remained similar (57% versus 67%) ($p > 0.1$).

4. Discussion

This systematic review was to find out about the effectiveness of asthma management education for the parent to control the asthma control of the children. The study used a heterogeneous research design. There are several findings related to various interventions regarding excellence. In accordance with the results of the review of the research studies conducted by [7], it was explained that asthma management education in families has changed the biology profile of childhood asthma to do with increasing control. The degree of uncontrolled or the most controlled form of asthma control can be seen by looking at the frequency of the recurrence of childhood asthma. [21] shows that that there is a relationship between knowledge and the attitudes of the mothers about asthma with the frequency of the recurrence of asthma in children. It can be concluded that increasing the knowledge of the families about asthma management can affect the degree of control of childhood asthma [22]. Counseling focused on asthma management education for the parents results in a significant increase in asthma control in the children but it is not significantly effective when compared with usual care [12]. In the counseling, the parents, doctors, nurses and children createe good relationships and beliefs together about the treatment [23]. The education counseling interventions in parents is performed by a respiratory nurse specialist. This is assessed by ACT over a three month follow-up period [24]. It has previously been shown that an educational session by an experienced respiratory nurse teaching the patients how to use their inhaler correctly improves their knowledge about their disease and other outcomes. The systematic review showed a good result from asthma management education through couseling with the parents to increase the adherence and control of asthma in children with no recurrence.

5. Conclusions

This review explains that asthma management education by the parents is effective at improving te asthma control in children. The evidence from th systematic review of clinical trials supports the conclusion that face-to-face education or conseuling is a more frequently deployed for educating asthmatic children. This approach helps in early recognition of poor asthma control. Thus nurses, who participate in educating asthmatic patients and their families due to their front-line role,

should instate appropriate formal methods of asthma education in asthma care and be able to identify effective approaches to improve the health outcomes. Despite the paucity of studies on asthma education with particular regard to hospital settings, the findings are impressive. Instituting face-to-face education in asthma care reduced health care utilisation (exhibited in substantial savings for hospitals in terms of the provision of direct care and financially improved healthcare outcomes for asthmatic children and their parents). This implies that face-to-face education in acute asthma care is the best deployment of education for asthmatic children and as well as being the most cost-effective method for health organisations. However, the optimum intensity of individual education was not ascertained.

References

[1] Conn K M, Halterman J S, Lynch K and Cabana M D 2007 The Impact of Parents' Medication Beliefs on Asthma Management *Pediatrics* **120** e521–6

[2] Zahran H S, Person C J, Bailey C and Moorman J E 2012 Predictors of asthma self-management education among children and adults-2006-2007 behavioral risk factor surveillance system asthma call-back survey *J. Asthma* **49** 98–106

[3] Horn I B, Mitchell S J, Gillespie C W, Burke K M, Godoy L and Teach S J 2014 Randomized trial of a health communication intervention for parents of children with asthma *J. Asthma* **51** 989–95

[4] Archibald M M, Caine V, Ali S, Hartling L, Scott S D, Archibald M M, Archibald M M, Caine V and Scott S D 2015 What Is Left Unsaid : An Interpretive Description of the Information Needs of Parents of Children With Asthma

[5] Garbutt J M, Banister C, Highstein G, Sterkel R, Epstein J, Bruns J, Swerczek L, Wells S, Waterman B, Strunk R C and Bloomberg G R 2010 Telephone Coaching for Parents of Children With Asthma *Arch. Pediatr. Adolesc. Med.* **164** 625–30

[6] Vale S, Ricardo N, Soares-Miranda L, Santos R, Moreira C and Mota J 2014 Parental education and physical activity in pre-school children. *Child Care, Heal. Dev.* **40** 446–52

[7] Walker H A, Chim L and Chen E 2009 The role of asthma management beliefs and behaviors in childhood asthma immune and clinical outcomes *J. Pediatr. Psychol.* **34** 379–88

[8] Duncan C L, Hogan M B, Tien K J, Chorney J M, Zettler M D, Koven L, Wilson W, Dinakar C and Portnoy J 2013 Efficacy of a Parent – Youth Teamwork Intervention to Promote Adherence in Pediatric Asthma **38** 617–28

[9] Engelke M K, Swanson M and Guttu M 2014 Process and Outcomes of School Nurse Case Management for Students With Asthma **30** 196–205

[10] Isik E, Fredland N M and Freysteinson W M 2019 Journal of Pediatric Nursing School and Community-based Nurse-led Asthma Interventions for School-aged Children and Their Parents : A Systematic Literature Review *J. Pediatr. Nurs.* **44** 107–14

[11] Churchill S S, Kratz L and Uding N 2013 A Randomized Clinical Trial of the Building on Family Strengths Program : An Education Program for Parents of Children with Chronic Health Conditions Building on Family Strengths Curriculum

[12] Arıkan-ayyıldız Z, Işık S, Çağlayan-sözmen Ş and Anal Ö 2016 Efficacy of asthma education program on asthma control in children with uncontrolled asthma 383–8

[13] Macy M L, Davis Þ M M, Clark S J, Stanley R M and Mhsa Þ 2020 Parental Health Literacy and Asthma Education Delivery During a Visit to a Community-Based Pediatric **27** 469–74

[14] Jahedi L, Downie S R, Saini B, Chan H-K and Bosnic-Anticevich S 2017 Inhaler Technique in Asthma: How Does It Relate to Patients' Preferences and Attitudes Toward Their Inhalers? *J. Aerosol Med. Pulm. Drug Deliv.* **30** 42–52

[15] Park H J, Byun M K, Kwon J W, Kim W K, Nahm D H, Lee M G, Lee S P, Lee S Y, Lee J H, Jeong Y Y, Cho Y S, Choi J H and Choi B W 2018 Video education versus face-to-face education on inhaler technique for patients with well-controlled or partly-controlled asthma: A phase IV, open-label, non-inferiority, multicenter, randomized, controlled trial *PLoS One* **13** 1–15

[16] Alatawi A 2017 The Effectiveness of Asthma Education Approaches for Children : Group Versus Individual Education **1** 794–9

[17] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Peter C, Ioannidis J P A, Clarke M, Devereaux P J and Kleijnen J 2009 The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration OF PUBLIC HEALTH The PRISMA statement for reporting systematic reviews and meta-analyses of studies th

[18] Burgess S W, Sly P D and Sc D 2010 Providing Feedback on Adherence Increases Use of Preventive Medication by Asthmatic Children 198–201

[19] Chan A H Y, Stewart A W, Harrison J, Jr C A C, Black P N and Mitchell E A 2015 The eff ect of an electronic monitoring device with audiovisual reminder function on adherence to inhaled corticosteroids and school attendance in children with asthma : a randomised controlled trial *Lancet Respir.* **2600** 8–9

[20] Page P M, Broek J L, Bousquet J, Baena-Cagnani C E, Bonini S, Canonica G W, Casale T B, Van Wijk R G, Ohta K, Zuberbier T and Schünemann H J 2017 *Global Strategy For Asthma Management and Prevention* vol 126

[21] Kaugars A S, Klinnert M D and Bender B G 2004 Family influences on pediatric asthma *J Pediatr Psychol* **29** 475–91

[22] Boulet L, Vervloet D, Magar Y and Foster J M 2016 A d h e re n c e : The Goal to Control Asthma Adherence Compliance Asthma control *Clin. Chest Med.* **33** 405–17

[23] Yue Z, Li C, Weilin Q and Bin W 2015 Patient Education and Counseling Application of the health belief model to improve the understanding of antihypertensive medication adherence among Chinese patients *Patient Educ. Couns.* **98** 669–73

[24] Desager K, Vermeulen F and Bodart E 2017 Adherence to asthma treatment in childhood and adolescence – a narrative literature review *Acta Clin. Belg.* **3286** 1–8

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THE EFFECTIVENESS OF MINDFULNESS MANAGEMENT THERAPY ON PSYCHONEUROIMMUNOLOGY OF CANCER SUFFERERS IN SUPPORTING COPING MECHANISMS AND RESILIENCE: SYSTEMATIC REVIEW

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ABSTRACT

Psychoneuroimmunology is a psychological factor that affects the immune system and physical health through nerve and endocrinological pathways. Mindfulness as an exercise is aware of the conditions experienced by the body, mind, feeling, current situation and conscious thought to create a calm feeling or situation. This review aims to find the effectiveness of mindfulness management therapy for psychoneuroimmunology in supporting constructive coping mechanisms and good resilience by using systematic reviews based on PRISMA guidelines. Scopus, ScienceDirect, and Pubmed, that have been published within the limits of January 2013-November 2018 with relevant keywords. A total of 15 studies were selected and reviewed that met all eligibility criteria through a systematic search and inclusion criteria from 307 studies found. The study reviewed consisted of fourteen analyzes of randomized controlled trial studies and one quasi-experimental study. The study findings consist of various mindfulness management therapies that have an influence on psychoneuroimmunology, indicating that the more mindful someone will choose the strategy of coping stress approach and good resilience, evidenced by an increase in posterior cingulate cortex rsFC with dlPFC ($p = 0.05$). Our review study shows that mindfulness management related to psychoneuroimmunology has a good impact on supporting coping mechanisms and resilience.

Keywords: mindfulness, psychoneuroimmunology, cancer, coping mechanisms, resilience.

1. Introduction

The field of psychoneuroimmunology (PNI) discusses how psychological factors affect the immune system and physical health through the neural and endocrinological pathways. This relationship is very relevant for immunological health problems carried out through mediation, including infectious diseases, cancer, autoimmunity, allergies and wound healing. Psychosocial characteristics are related to changes in the immune function that indicate that psychological interventions such as relaxation, hypnotherapy and mindfulness are aimed at improving mood, coping abilities and social support in an effort to modulate immune function [1].

Mindfulness also refers to practices or techniques such as meditation practice based on the contemplative Buddhist tradition [2]. Over the past few decades, the significance of cancer-related research with mindfulness management on psychoimmunology has been carried out. Some methods for the management of mindfulness therapy include Mindfulness-Based Cognitive Therapy (MBCT), Mindfulness-Based Cancer Recovery (MBCR) and Mindfulness-Based Stress Reduction (MBSR). Mindfulness-Based Stress Reduction (MBSR) is a treatment program used to relieve stress and to overcome chronic diseases as an inflammatory biomarker (Arefnasab *et al.*, 2016; Reich *et*

al., 2014; Kenne Sarenmalm *et al.*, 2017). Mindfulness-Based Cognitive Therapy (MBCT) consists of certified 8-weekly-based skill training group programs originally designed to prevent the recurrence of depression formed as a basis for empirical research to test the predictors of relapsing in terms of depression (Schoenberg and Speckens, 2014; Omidi *et al.*, 2013; Chiesa *et al.*, 2015; Kingston *et al.*, 2015; Wong *et al.*, 2017). Mindfulness-Based Cancer Recovery (MBCR) is used to combat the greater decline in mood disorders (especially fatigue, anxiety and confusion) and stress symptoms including tension, sympathetic stimulation and cognitive symptoms in cancer patients [11].

The impact of cancer is not only physical, but it is also psychological such as interference with the patient's coping and resilience mechanisms. Disorders of coping and resilience mechanisms in cancer patients caused by stress are due to long treatment, the treatment processes themselves and side effects of treatment such as from chemotherapy in addition to the threat of death itself *[12]*. The (International Agency for Research on Cancer (2012) found that cancer accounted for 7.6 million deaths worldwide. The WHO estimates that the death rate from cancer will increase significantly by around 13.1 million deaths per year worldwide by 2030. That number is 70% in low and middle income countries such as in Indonesia [14]. The data from (Badan Penelitian dan Pengembangan Kesehatan (2013) reported that the cancer prevalence in Indonesia has reached 1.4% - 4,9%, or an estimated 347,792 people.

Efforts to improve coping and resilience mechanisms in cancer patients are necessary because the influence caused by the disruption of coping and resilience mechanisms can worsen the situation and lessen the effectiveness of the treatment process, which can potentially lead to increased mortality in cancer cases. Poor coping mechanisms will interfere with the recovery process and cause feelings of uselessness. Poor resilience can also reduce self efficacy and decrease the ability of individuals to find sources of support so then the patients cannot maintain their physical functioning in order to continue the treatment that they undergo [16]. This is evidenced by the results of the research conducted by Bruggeman-Everts (2017), which states that cancer sufferers need a positive coping strategy and to strengthen their resilience to adapt to their changing health.

The aim of this systematic review is to find the effectiveness of mindfulness management therapy for the psychoneuroimmunology of cancer patients in supporting constructive coping mechanisms and good resilience.

2. Research Methods

This study is a systematic review conducted to find out the effectiveness of mindfulness management therapy for psychoneuroimmunology as drawn from several related studies in supporting constructive coping mechanisms and good resilience. There are 3 main steps to getting the data, beginning with identifying and selecting the research related to the topic Second, we assessed the research taken that meets all of the eligibility criteria. Then third, we write the review and extract the data for each study.

2.1. Study identification

The identification method of this study was carried out in the form of a retail search strategy using three electronic databases (Scopus, ScienceDirect, and Pubmed) which focused on articles published within the limits of January 2013 to November 2018. We conducted a literature search for articles

published in English and the searches were conducted by developing search method strategies based on the PICO framework model (Patient Problems or Population, Intervention, Comparison, and Outcome) (Schardt *et al.*, 2007; Fineout-overholt and Johnston, 2005). The keywords used were "Mindfulness" AND "Psychoneuroimmunology" OR "Psycho" OR "Neuro" OR "Immunology" OR "Cancer", OR "Coping Mechanisms" OR "Resilience". Furthermore, the method chosen was studies that used a randomized clinical trial (RCT) approach that reviewed the effect of mindfulness on psychology, neurology and immunology (PNI). Only studies that had an exposure related to the mindfulness management of psychoneuroimmunology of cancer sufferers in supporting the coping mechanisms and resilience were included.

2.2. Eligibility criteria

The study design being the inclusion criterion in the Systematic Review is a Random Controlled Trial (RCT) design and a quasi-experimental study. The populations in this systematic review were: (1) all studies that described cancer patients getting Mindfulness Management interventions with or without a control group. (2) Men and women> 17 years old. (3) Looking at the effect of mindfulness management on psychoneuroimmunology in supporting coping mechanisms and resilience. Various types of mindfulness interventions that affect the psychological, neurological and immunological effects of cancer that provide support in terms of coping mechanisms and resilience. The main result of this systematic review is to look at the influence of mindfulness interventions on psychology, neurology and immunology and their support as relates to forming coping mechanisms and resilience. The research used was without any time limit for the duration of the intervention.

2.3. Study quality assessment

A total of 15 studies were selected and reviewed that met all of the eligibility criteria. The standard protocol used as a guideline for this systematic review method was PRISMA as shown in Figure 1 below [20]. The steps taken include (1) the removal of duplications; (2) the independent examination of titles, abstracts and keywords, then removing excerpts that are not relevant in accordance with the inclusion criteria; (3) title and abstracts that appear to meet the inclusion criteria and according to the purpose of a systematic review are kept, where the next step is to select journals with the full text available and (4) the final step is the selection of articles using a Randomized Controlled Trial and quasi-experimental studies to reduce the risk of bias. Meta-analytic techniques cannot be done adequately because of the heterogeneity in terms of the definition of disease type and the study design. However, to facilitate our analysis and discussion, we grouped the results of the review to examine the influence on the mindfulness management on psychology, neurology and immunology in relation to supporting coping mechanisms and resilience.

2.3.1 Quality of appraisal. The quality assessment of the articles to be reviewed was done using the JBI Critical Appraisal Tools. A systematic review combines the process of criticism and assessment of the research evidence with the aim of assessing the methodological quality of a study to determine the extent to which a study has discussed the possibility of bias in its design, implementation and analysis. There are 13 questions on the JBI Critical Checklist for Randomized Controlled Trials and 9 questions on the JBI Critical Appraisal Checklist for quasi-experimental studies (The Joanna Briggs Institute, 2017). The choice of answers consists of "yes", "no", "unclear" and "not applicable". Each article was assessed independently by 3 reviewers (TEA, K, JS). The assessment iwas combined with other

reviewers. If there were differences of opinion among the reviewers, then this was completed in the next discussion phase. The allocation of scores for each article reviewed was based on how many "yes" answers refer to the quality of the article. The purpose of this quality assessment was not to distinguish between the quality of the articles but to refer to systematic processes and standard processes that can help to provide high-quality reviews based on the existing topics.

2.4 Data extraction

The data was extracted independently by 3 reviewers from each study that met the requirements. The forms of data extraction included the details of the study, the research samples, the characteristics of mindfulness, the disease characteristics and the results of each study. Disagreements on the extracted data were resolved through a discussion among the reviewers.

2.5 Data analysis

The studies were grouped according to the effects of mindfulness on psychology, neurology and immunology and the role of psychoneuroimunology in supporting the patient's coping and resilience mechanisms.

2.5.1 Study selection. Figure 1 summarizes the search results and the selection of studies following the PRISMA guidelines [20]. The selection of journals based on the keywords used produced 248 articles, with the total going down to 156 articles after duplication screening. Following this, 119 were eliminated because of being irrelevant studies based on their titles and abstracts. A total of 37 articles with a complete full text were taken with 22 studies excluded because they did not meet the inclusion criteria as follows: not an intervention study (n = 11), not using English (n = 6) and having subjects that were <17 years old (n = 3). The results of the final 15 studies were used to carry out the systematic review.

2.5.2 Study characteristics. A total of 15 studies were finally selected for review consisting of 14 analyzes of randomized controlled trials and 1 quasi-experimental study.

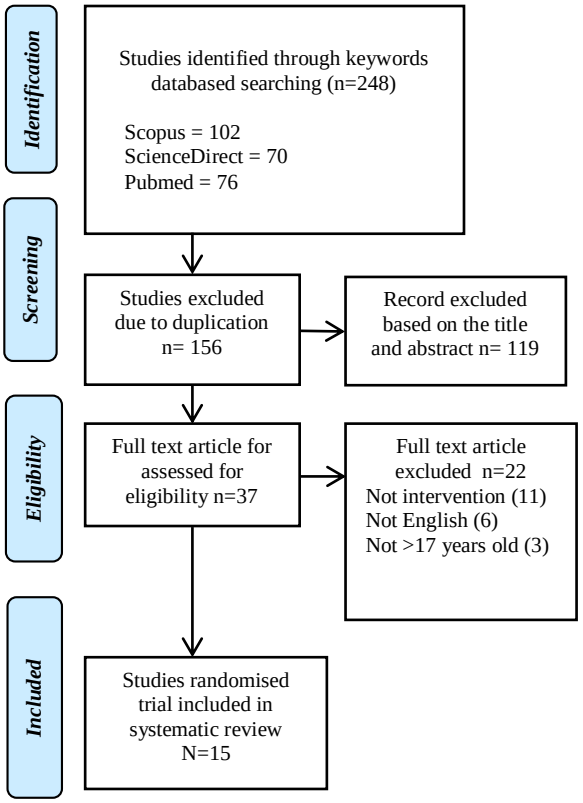

Figure 1 . *Flow diagram*

2.5.3 Population. The sample size of the 15 studies used in this systematic review totaled at least 23 people divided into two groups, namely the control and intervention groups, with the age range being 18 - 51 years. The characteristics of the female patients with stage I, II and III Breast Cancer aged > 18 years were the highest percentage of the samples, totaling as many as 271 people divided into 3 treatment groups.

2.5.4 Characteristics of the interventions. There were several types of mindfulness interventions used including Mindfulness-Based Cognitive Therapy (MBCT), Mindfulness-Based Cancer Recovery (MBCR), Mindfulness-based intervention (MBI) and Mindfulness Meditation (MM). The interventions were carried out with a different duration and frequency with the shortest time being 3 days at a duration of 25 minutes per day and the longest time being 8 weeks with a duration of 45 minutes per day.

2.5.5 Size of the clinical outcomes. The gathered research reported on the outcome measures used to measure psychology, neurology and immunology. Those used to measure psychology included the Symptoms of Stress Inventory (SOSI), the Profile of Mood States (POMS), the Beck Depression Inventory-2 (BDI-II) and the Hamilton Rating Scale for Depression (HAM-D). The measurement of the neurological results was done using salivary cortisol and neurological inflammation. To measure the immunology, the Lymphocyte Proliferation Test (LTT), ELISA (Cytokine Assays), Flow Cytometric Analysis (FACS), CD4, c-reactive protein, IL-6 and d-dimer were used.

2.5.6 Intervention efficacy analysis. Each RCT intervention explained that they evaluated the effect of mindfulness on the treatment separately. Some journals continued to follow up for up o 12 months after the intervention so then they could assess the long-term influence of the intervention that had been done.

3. Result

The literature search identified 15 journals that describe mindfulness management for psychoneuroimmunology in supporting the coping and resilience mechanisms of cancer patients. In the end, the 5 main theme findings from the synthesis have been summarized briefly as below.

3.1 Effect of mindfulness on psychological.

For the stress stage, according to Kingston et al (2015), they reported that the Mindfulness-based cognitive therapy (MBCT) group experienced a significant increase in awareness and a decrease in anxiety levels. Carlson et al. (2014) also stated that the most preferred program was Mindfulness-Based Cancer Recovery (MBCR) (55%) compared to the management of stress. The mindfulness group has been shown to experience improvements in mood disorders, stress, quality of life and personal growth as measured by the Profile of Mood States (POMS) and Symptoms of Stress Inventory (SOSI).

In the depression phase, the results of the study by Chiesa et al. (2015) showed a decrease in the level of depression measured using the proven HAM-D and BDI scores over the long-term period. This was more so in the MBCT group than in the psycho-education group. Kenne Sarenmalm et als (2017) study stated that the MBSR group experienced a significant increase in depression scores, with a pre-MBSR average using a HAD-score of 4.3 and a post-MBSR score of 3.3 (P = 0.001), compared to non-MBSR (P = 0.015). Kenne Sarenmalm et al's (2017) study states that the MBSR group experienced a significant increase in depression scores, with a pre-MBSR average using a HAD-score of 4.3 and a post-MBSR score of 3.3 (P = 0.001), compared to non-MBSR (P = 0.015).

In the fatigue stage, the research carried out by Bruggeman-Everts *et al.*, (2017) stated that fatigue decreased significantly in the Ambulance Activity Feedback (AAF) group and in the Web-based mindfulness-based cognitive therapy (eMBCT) group when compared to the psycho-education group. The relevant clinical changes in fatigue severity were observed in 66% (41/62) of patients receiving AAF therapy, in 49% (27/55) of patients receiving eMBCT and in 12% (6/50) of patients receiving psycho-education.

3.2 Effect of mindfulness on neurological.

The research conducted by Creswell *et al.* (2014) shows that there was an increase in posterior cingulate cortex rsFC with left dlPFC (p = 0.05). Mindfulness meditation training statistically changes IL-6, so mindfulness has been shown to increase the marker for the risk of inflammatory diseases.

3.3 Effect of mindfulness on immunology.

The research by Malarkey et al, (2013) shows that MBSR therapy carried out for 45 minutes / day for 8 weeks causes a decrease in the levels of CRP and IL-6. Hecht et al's (2018) study showed a decrease number of CD4 + T-cells in the 49.6 cell / µl MBSR group and in the control group there

was a 54.2 cell / μl difference from 4.6 cells (p = 0.85)

3.4 Effect of mindfulness on psychoneuroimmunology in supporting coping mechanisms.
One study explained and reported on coping mechanisms. The results showed that confrontational coping style, problem solving and positive assessment were positive and significant predictors of the tendency to seek social support during active care. The role of psychology is very necessary to make decisions when the patient is in trouble (Rankin et al, 2012).

3.5 Effect of mindfulness on psychoneuroimmunology in supporting resilience.
There were 5 studies that reviewed and reported on resilience. The patient's resilience score did not reach the threshold value. However, it was found that the resilience score in the HI-IPSC-C group was higher than in the LI-IPSC-C group. The HI-IPSC-C group also showed a decrease in the need for supportive care, in addition to improved mood and coping efforts [26].
Palacio et al (2018) showed that more than half showed high resilience, positive aspects of care, moderate care ability and low burden. RS-SC is a short and specific instrument for the self-reporting of resilience in patients with cancer in China. RS-SC has the potential to be used both in clinical practice and in research as an intervention for resilience (Ye et al., 2017).

4. Discussion

We conducted a systematic review using an RCT design and a quasi-experimental study. There were 15 studies that we included which examined the effect of the relationship between mindfulness and stress, depression, the inflammatory processes, psychology, neurology, immunology, coping mechanisms and resilience. In addition, including the heterogeneous types of mindfulness, the type of control group and duration of follow-up were also examined in this review. There are several important findings regarding the effect or effectiveness of mindfulness that will now be discussed in detail.

Mindfulness is a psychological intervention that is used to improve mood so as to reduce stress levels and anxiety. The program most favored by the patients with stage I, II, III breast cancer was MBCR (55%) compared to management stress. The mindfulness group has been shown to improve mood disorders, stress and quality of life [22]. There were no significant differences regarding the PA, MM, and HRVBF interventions because they were equally effective at reducing stress and the related symptoms [27]. The MBSR intervention showed that there were no significant improvements in their physical symptoms and mental health (p> 0.05). However, a significant increase was observed in the patients' quality of life (p> 0.05) [28].

Based on the MBCT intervention, the patients who experienced depression during treatment experienced a significant increase in the lessening of their depressive symptoms and mindfulness skills when compared to the control group [7]. The electro-cortical clinical work pathways with MBCT in multi-leveled depression are nonlinear and interdependent mechanisms, represented by the dynamics of mediated EEG synchronization [6]. Based on the HAM-D and BDI scores, as well as the quality of life scores and awareness, it showed a higher increase, which was especially evident over the long-term period more in the MBCT group than in the psycho-education group [8] [9]. In another study with breast cancer patients who underwent MBSR for 8 weeks, they experienced a significant increase in depression scores with a mean pre-MBSR HAD score of 4.3 and a post-

MBSR score of 3.3 (P = 0.001), compared with the non-MBSR HAD score (P = 0.015) [5].

Fatigue decreased significantly in the AAF and eMBCT groups compared to the psycho-education group. The relevant clinical changes in terms of fatigue severity were observed in 66% (41/62) of patients receiving AAF therapy, in 49% (27/55) of patients receiving eMBCT and in 12% (6/50) of the patients who received psycho-education [17].

The mindfulness of the neurological system shown in the 3-day intervention with a duration of 2.5 hours / day can reduce salivary cortisol reactivity and reactivate psychological stress after doing cognitive therapy. Mindfulness meditation training causes a rise in the posterior cingulate cortex rsFC with dlPFC (p = 0.05) and a statistically significant change in IL-6; mindfulness has therefore been shown to increase the marker of the risk of inflammatory diseases [23].

Mindfulness of the immunological system at this stage has been proven to improve mood, coping ability and social support in an effort to modulate immune function. There was a significant effect on the MBSR group related to mental health and quality of life compared to the control group and there was a significant increase of lymphocyte proliferation with phytohemagglutinin (PHA) and peripheral blood IL-17, but this did not significantly affect the lymphocytes (CD4 +, CD8 + and NK-cell) [3].

In this study, there are four factors that can be an influence, one of which the mechanisms must be adaptive. The first factor is positive beliefs or views. Meditation awareness is the patient's ability to calm and focus their attention on themselves, and at the same time, it is given a positive sentence. Depression and fatigue are increased through decreased pro-inflammatory cytokines and anti-inflammatory cytokines, mediated through the endocrine system and autonomous nervous system. The expression of genes is shown to indicate a decrease in inflammation and an improvement of the symptoms of the disease. In addition, through increasing the nerve growth factors such as BDNF, brain connectivity and the volume of gray matter in certain brains can increase and cause a decrease in depression, improve cognitive function and slow the progression of the disease.

The purpose of this systematic review is to analyze the clinical evidence of the influence of mindfulness interventions on psychoneuroimmunology in supporting coping and resilience mechanisms. Based on the results of the analysis, there are many positive effects resulting from mindfulness management. Based on a review of the journals, it was found that many mindfulness interventions stated the benefits related to the psychological disorders such as decreased levels of anxiety, depression, fatigue and improvement in quality of life. However, when followed up in the long term, it was found that mindfulness had no psychological effect. The mindfulness of neurology can reduce salivary cortisol reactivity and changes in IL-6, so mindfulness has been shown to increase the marker of the risk of inflammatory diseases. Against immunology, mindfulness as a psychological intervention can modulate immune function, resulting in a significant increase of lymphocyte proliferation with phytohemagglutinin (PHA), peripheral blood IL-17 and CD4.

There are several potential limitations associated with this systematic review, namely (1) the search is limited to published research, which might introduce the risk of publication bias; (2) there is a possibility that bias is introduced by the way that the studies are chosen or how the search criteria is determined and (3) what we consider to be the main outcome (psychology, neurology and immunology) is not always the same as in other studies.

5. Conclusions

Mindfulness-based meditation techniques are applied to deal with stress and exercise awareness. By practicing observing the sensations of the body, individuals can achieve a mindful condition in their daily lives, including when doing routine activities such as walking, eating, standing etc. The best results will be obtained through formal, mindful routine exercises such as body scan techniques, mindful checking in, mindful breathing and mindful informal practices. There are several types of mindfulness with differing effects on psychoneuroimmunology, but this cannot determine the type of mindfulness management that is the most effective. Mindfulness as a whole has an influence on psychoneuroimmunology, especially psychology. Further randomized research must be carried out by including more objective steps to explain the mechanism of mindfulness on psychology, neurology and immunology simultaneously in terms of supporting the patient's coping mechanisms and resilience.

References

[1] Jaremka L M, Glaser R, Loving T J, Malarkey W B, Stowell J R and Kiecolt-Glaser J K 2013 Attachment anxiety is linked to alterations in cortisol production and cellular immunity *Psychol. Sci.* **24** 272–9

[2] Paz R, Zvielli A, Goldstein P and Bernstein A 2017 Brief mindfulness training de-couples the anxiogenic effects of distress intolerance on reactivity to and recovery from stress among deprived smokers. *Behav. Res. Ther.* **95** 117–27

[3] Arefnasab Z, Babamahmoodi A, Babamahmoodi F, Noorbala A A, Alipour A, Panahi Y, Shams J, Rad F R, Khaze V and Ghanei M 2016 Mindfulness-based Stress Reduction (MBSfR) and its effects on psychoimmunological factors of chemically pulmonary injured veterans *Iran. J. Allergy, Asthma Immunol.* **15** 476–86

[4] Reich R R, Lengacher C A, Kip K E, Shivers S C, Schell M J, Shelton M M, Widen R H, Newton C, Barta M K, Paterson C L, Farias J R, Cox C E and Klein T W 2014 Baseline Immune Biomarkers as Predictors of MBSR(BC) Treatment Success in Off-Treatment Breast Cancer Patients *Biol. Res. Nurs.* **16** 429–37

[5] Kenne Sarenmalm E, Mårtensson L B, Andersson B A, Karlsson P and Bergh I 2017 Mindfulness and its efficacy for psychological and biological responses in women with breast cancer *Cancer Med.* **6** 1108–22

[6] Schoenberg P L A and Speckens A E M 2014 Modulation of induced frontocentral theta (Fm-h) event-related (de-)synchronisation dynamics following mindfulness-based cognitive therapy in Major Depressive Disorder *Cogn. Neurodyn.* **9** 13–29

[7] Hamidian S, Omidi A, Mousavinasab S M and Naziri G 2013 Comparison of the Effect of Mindfulness-based Cognitive Therapy Accompanied by Pharmacotherapy With Pharmacotherapy Alone in Treating Dysthymic Patients **15** 239–44

[8] Chiesa A, Castagner V, Andrisano C, Serretti A, Mandelli L, Porcelli S and Giommi F 2015 Mindfulness-based cognitive therapy vs . psycho-education for patients with major depression who did not achieve remission following antidepressant treatment *Psychiatry Res.* **226** 474–83

[9] Kingston T, Collie S, Hevey D, McCormick M M, Besani C, Cooney J and O'Dwyer A M

2015 Mindfulness-based cognitive therapy for psycho-oncology patients: An exploratory study *Ir. J. Psychol. Med.* **32** 265–74

[10] Wong S Y S, Zhang D X, Li C C K, Yip B H K, Chan D C C, Ling Y M, Lo C S L, Woo D M S, Sun Y Y, Ma H, Mak W W S, Gao T, Lee T M C and Wing Y K 2017 Comparing the Effects of Mindfulness-Based Cognitive Therapy and Sleep Psycho-Education with Exercise on Chronic Insomnia: A Randomised Controlled Trial *Psychother. Psychosom.* **86** 241–53

[11] Carlson L E, Tamagawa R, Stephen J, Drysdale E, Zhong L and Speca M 2016 Randomized-controlled trial of mindfulness-based cancer recovery versus supportive expressive group therapy among distressed breast cancer survivors (MINDSET): long-term follow-up results *Psychooncology*. 750–9

[12] Ye Z J, Peng C H, Zhang H W, Liang M Z, Zhao J J, Sun Z, Hu G Y and Yu Y L 2018 A biopsychosocial model of resilience for breast cancer: A preliminary study in mainland China *Eur. J. Oncol. Nurs.* **36** 95–102

[13] International Agency for Research on Cancer 2012 GLOBOCAN 2012: Estimated Cancer Incidence, Mortality and Prevelance Worldwide in 2012

[14] World Health Organization 2017 WHO | World's health ministers renew commitment to cancer prevention and control *WHO*

[15] Badan Penelitian dan Pengembangan Kesehatan 2013 Riset Kesehatan Dasar (RISKESDAS) 2013 *Lap. Nas. 2013* 1–384

[16] Duan-Porter W, Cohen H J, Demark-Wahnefried W, Sloane R, Pendergast J F, Snyder D C and Morey M C 2016 Physical resilience of older cancer survivors: An emerging concept *J. Geriatr. Oncol.* **7** 471–8

[17] Bruggeman-Everts F Z, Wolvers M D J, van de Schoot R, Vollenbroek-Hutten M M R and Van der Lee M L 2017 Effectiveness of Two Web-Based Interventions for Chronic Cancer-Related Fatigue Compared to an Active Control Condition: Results of the "Fitter na kanker" Randomized Controlled Trial *J. Med. Internet Res.* **19** e336

[18] Schardt C, Adams M B, Owens T, Keitz S and Fontelo P 2007 Utilization of the PICO framework to improve searching PubMed for clinical questions *BMC Med. Inform. Decis. Mak.* **7** 16

[19] Fineout-overholt E and Johnston L 2005 Teaching EBP : Asking Searchable , 1–4

[20] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gotzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *BMJ* **339** b2700

[21] The Briggs Institute Joanna 2017 Checklist for Quasi-Experimental Studies

[22] Carlson L E, Tamagawa R, Stephen J, Doll R, Faris P, Dirkse D and Speca M 2014 Tailoring Mind-Body Therapies to Individual Needs : Patients ' Program Preference and Psychological Traits as Moderators of the Effects of Mindfulness-Based Cancer Recovery and Supportive-Expressive Therapy in Distressed Breast Cancer Survivors

[23] Creswell J D, Pacilio L E, Lindsay E K and Brown K W 2014 Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology* **44** 1–12

[24] Malarkey W B, Jarjoura D and Klatt M 2013 Workplace based mindfulness practice and inflammation: A randomized trial *Brain. Behav. Immun.* **27** 145–54

[25] Rankin S R 2012 Influence of coping styles on social support seeking among cancer patient family caregivers *Diss. Abstr. Int. Sect. B Sci. Eng.* **72** 4367

[26] Eicher M, Ribi K, Senn-Dubey C, Senn S, Ballabeni P and Betticher D 2018 Interprofessional, psycho-social intervention to facilitate resilience and reduce supportive care needs for patients with cancer: Results of a noncomparative, randomized phase II trial. *Psychooncology.* **27** 1833–9

[27] Zwan J E Van Der, Vente W De, Huizink A C and Bo S M 2015 Physical Activity , Mindfulness Meditation , or Heart Rate Variability Biofeedback for Stress Reduction : A Randomized Controlled Trial 257–68

[28] Besharat M, Nabavi S M, Geranmayepour S, Morsali D and Haghani S 2017 Mindfulness-based stress reduction (MBSR) program: The effect of a novel psycho-interventional method on quality of life, mental health, and self-efficacy in female patients with multiple sclerosis: A randomized clinical trial *J. Biol. Today's World* **6** 211–5

PAT-793

THE EFFECT OF PROGRESSIVE MUSCLE RELAXATION ON ANXIETY: A SYSTEMATIC REVIEW

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ABSTRACT

Anxiety in patients is often neglected, although the psychological burden experienced can affect health and care. The aim is to analyze the effects of progressive muscle relaxation to reduce the patient's anxiety level. Literature search uses pre-determined keywords through several electronic databases such as Scopus, ProQuest, and Science Direct from 2014 to 2019. All studies include access based on (1) randomized controlled trials, (2) case control studies and (3) pseudo experimental. There were 14 studies reviewed, our findings show that after 6 weeks of PMR, it can reduce anxiety levels. Progressive muscle relaxation interventions are very effective in reducing the level of anxiety in patients. Interventions are needed to reduce anxiety in patients.

Keywords: progressive, muscle, relaxation, anxiety

1. INTRODUCTION

Anxiety disorders are the most common psychiatric disorders experienced by everyone, male or female, old or young, and associated with a severe burden of disease (1–8). Anxiety experienced by patients often gets less attention from all walks of life, even though anxiety affects the psychic patients who undergo treatment. So that efforts are needed to reduce the anxiety that patients respond to by PMR

Progressive Muscle Relaxation (PMR) is a widely known relaxation technique introduced by Jacobson that aims to reduce residual tension and eventually reach the threshold without firing through a systematic process of tightening and relaxing the muscles with muscle contractions which will be followed by muscle relaxation (9–13). This study evaluates the effectiveness of PMR in reducing patient anxiety by reviewing all relevant PMR trials.

2. METHODS

2.1 Literature Search

Search for English-language papers published from 2014 to 2019 is conducted at Scopus, ProQuest, and Science Direct database. The combinations used are "Progressive", "Muscle", "Relaxation", and "Anxiety." Journal related issues, study reference lists included, and other relevant papers in the field were searched in an effort to find possible records. from identification

of records to inclusion following the principles of the PRISMA statement (14).

2.2 Study Selection

Regarding the selection of studies, the inclusion criteria are as follows: (1) using PMR as an intervention; (2) original articles published in peer-reviewed journals. Exclusion criteria are as follows: the study was conducted not on people who suffer from certain diseases

2.3 Data Extraction

Data extracted from this paper included: study authors, countries, total number of patients, gender of patients, primary tumors, duration of PMR sessions, duration of intervention, frequency of exercise, average adherence rate, follow-up, variables studied, measurements used, and main findings.

3. RESULT

A total of 13 studies were identified to be included in the review. The search for Scopus, Science Direct and ProQuest found a total of 275 articles. After checking for duplication, there were 164 articles. Of these, 81 studies were discarded because after reviewing the abstract did not meet the criteria. The full text of the 83 remaining articles was examined in more detail, it turns out that 70 studies did not meet the inclusion criteria as determined. Therefore, 13 studies were finally included in our systematic review.

Participants in all studies were measured at baseline, those in the intervention group were given PMR sessions conducted during the follow-up period, and all were measured during the endpoint assessment. In total, 1196 patients were analyzed. Apart from the large range of sample sizes (12–210)

Summaries of Included Studies

The study results from 13 journals, show that progressive muscle relaxation not only reduces anxiety in patients, but also increases self efficacy (7), decreases depression (6,7,13), reduces stress (1), stabilizes blood pressure and nadi (6), increases the pain threshold (1). And in our opinion, the best time given for performing PMR is 2 times a day 5-6 times a week for 2 weeks because anxiety scores mean a steady decline from 6.76 at the pretest to 3.0 ($t = 25{,}068$, $P \leq 0.001$) in the post test and 1.12 ($t = 22{,}679$, $P \leq 0{,}001$) at follow-up (4)

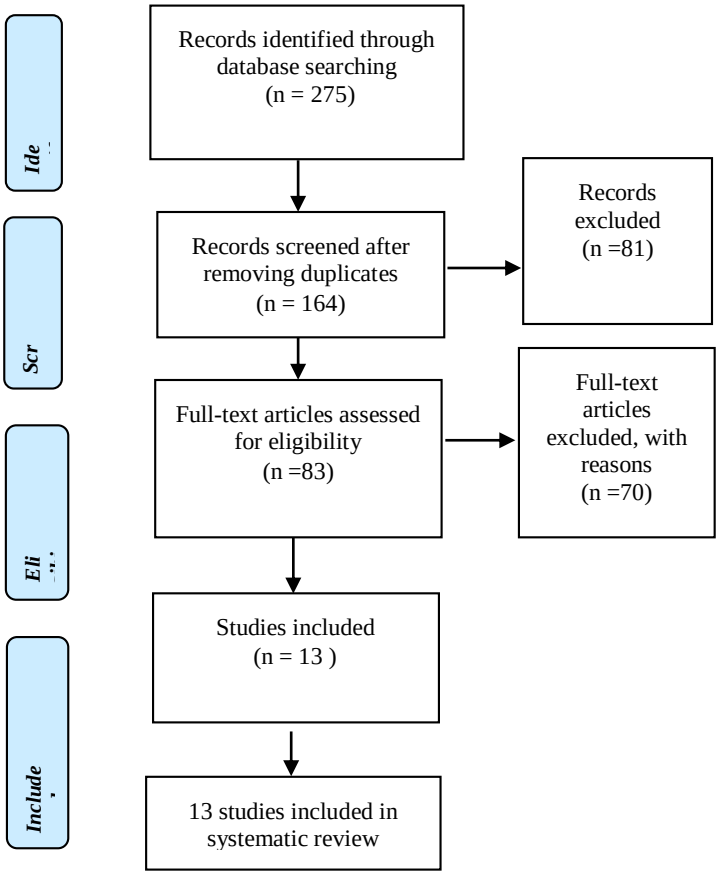

Figure 1. Flow diagram.

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Study	Country	Total N	n Gender	Primary tumor	Duration of PMR session	Duration of intervention	Frequency of Practice	Average adherence rate	Follow-up	Variables examined	Measures used	Main findings
Kaina et al. 2014 (15)	China	170	Female	Breast cancer	30 minutes	unknown	Twice a day	unknown	first day of admission to hospital until the day of discharge	depression, anxiety and length of hospital stay	ZSDS, SAI, and LHS	reduce depression, anxiety and length of hospital stay
Li-Qin Xie et al, 2014 (7)	China	90	56 male, 28 female	Extremity Fracture	30 minutes	unknown	Twice a day	unknown	48 hours after being hospitalized and collected before leaving the hospital	Anxiety and self efficacy	GSES, and STAI	reducing state anxiety and enhancing the self-efficacy
Theologia Tsitsi et al, 2017 (13)	Cyprus	62	Unknown	malignan	25 minutes	3 weeks	Once a day	Unknown	Sessions lasted for 3 weeks while the cd was given to parents to continue applying the relaxation techniques at the	Anxity and mood	HAM-A, POMs brief	the combination of PMR and GI in reducing anxiety and improving mood states in parents

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Study	Country	Total N	n Gender	Primary tumor	Duration of PMR session	Duration of intervention	Frequency of Practice	Average adherence rate	Follow-up	Variables examined	Measures used	Main findings
									hospital or at home.			
Jin Woo Suh, et al. 2015 (12)	Republic of Korea	27	unknown	Hwabyung	60 minutes	9 weeks	Once a week	Unknown	The session lasts 4 weeks	Anxiety and anger symtoms	Hwabyung Scale, STAI,STAXI, SCL-90-R	PMR can reduce anxiety even if it's not as good as EFT
Eun S. Park, Hyeon W. Yim, and Kang S. Lee, 2018 (6)	Republic of Korea	68	17 male, 51 female	dental	20 minutes	4 weeks	Once a week	unknown	3 months after starting the intervention	Anxiety	DAS	Progressive muscle relaxation therapy relieves tension and anxiety in dental patients
Lana J. McCloughan et al, 2015 (16)	Australia	12	Female	Stress	8,5 minutes	2 weeks	Once a day	Unknown	3 months after starting the intervention	Sleep and anxiety	EMAS-T	PMR is indicated as an effective strategy to reduce anxiety and improve sleep quality

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Study	Country	Total N	n Gender	Primary tumor	Duration of PMR session	Duration of intervention	Frequency of Practice	Average adherence rate	Follow-up	Variables examined	Measures used	Main findings
Yunping Li, et al, 2015 (10)	China	130	40 male, 90 female	Pulmonary Arterial Hypertension	40 minutes	12 weeks	Once per week	0,8	Unknown	Anxiety and depresion	HADS, QOL-PCS	PMR practice is effective in improving anxiety, depression, and the mental health
Senthilkumar Ramasamy, et al, 2018 (4)	India	50	36 male, 14 feale	Leprosy	30 minutes	2 weeks	Twice in a day for 5-6 days a week	Unknown	6 weeks after the initial intervention	Anxiety and depresion	HADS. BDI, BAI, and HAS	PMRT as a valid treatment for people who are hospitalized with leprosy in relieving symptoms of anxiety and depression
Elham Amini, et al, 2016 (3)	Iran	100	64 male, 36 female	Chronic Renal Failure Undergoing Hemodialysis	unknown	60 days	Once a day	unknown	once every two weeks through telephone call	Anxiety, Sleep quality, and fatigue	General anxiety, State anxiety, Trait anxiety, Beck anxiety,	PMR is better than aerobic exercise in improving symptoms

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Study	Country	Total N	n Gender	Primary tumor	Duration of PMR session	Duration of intervention	Frequency of Practice	Average adherence rate	Follow-up	Variables examined	Measures used	Main findings
											Piper fatigue, Rhoten fatigue, and Sleep quality	of anxiety, sleep disorders, and fatigue in hemodialysis patients.
Lukas de Lorent, et al, 2016 (9)	German	162	103 male 59 female	Anxiety disoerder	30 minutes	4 weeks	Twice a week	unknown	Unknown	Anxiety and depresion	VAS, CI Indeks,	PMR can reduce tension, anxiety, and anger
Andreas C., margarita G., Evangelos B., and Lefkios P, 2015 (2)	Cyprus	210	unknown	Breast and Prostate Cancer	10 minutes PMR, 15 minutes GI	3 week	Once a day	Unknown	3 weeks after intervension	Anxiety and depresion	SAS and BECK-II	PMR and GI can reduce anxiety and depression in patients with prostate and breast cancer
Dehkordi, A. H, Solati K., Tall, S. S., and Dayani,	Iran	70	32 male 38 female	Sugical	20 minutes	2 days	Every 6 hour	unknown	2 hours before the operation	Anxiety status and pain	POPSA, CBT	PMR could increase the pain threshold, stress and

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Study	Country	Total N	n Gender	Primary tumor	Duration of PMR session	Duration of intervention	Frequency of Practice	Average adherence rate	Follow-up	Variables examined	Measures used	Main findings
M. A., 2018 (1)												anxiety tolerance and adaptation level in surgical patients.
Mhaske, M. M., T. Poovishnu D., and Jagtap, V. K, 2018 (11)	India	45	31 male 14 female	Moderate chronic obstructive pulmonary disease	30 minutes	5 days	2 times per day	unknown	unknown	Anxiety and depresion	DASS21, HADS, 6MWT	PMR can reduce anxiety and depression in moderate COPD patients.

4. DISCUSSION

The purpose of this systematic review is to find out the benefits of progressive muscle relaxation related to reducing anxiety experienced by patients. The review revealed the limited research available in this field of study, which identified only thirteen relevant studies.

Anxiety is an individual's response to an unpleasant situation and is experienced by all living things in everyday life. Based on the concept of psychoneuroimmunology anxiety is a stressor that can reduce the body's immune system. This happens through a series of actions mediated by the HPA-axis (Hypothalamus, Pituitary and Adrenal) (17–19). Stress will stimulate the hypothalamus to increase the production of CRF (Corticotropin Releasing Factor). This CRF will then stimulate the anterior pituitary gland to increase ACTH production (Adreno Cortico Tropin Hormone). This hormone will stimulate the adrenal cortex to increase cortisol secretion. Cortisol is what will then suppress the body's immune system (20)

Progressive Muscle Relaxation (PMR) is a movement that tightens and relaxes the muscles consciously in one part of the body at a time to provide a feeling of physical relaxation. Progressive progression of tightening and relaxing muscles is carried out in a row, Progressive Muscle Relaxation pioneered Edmund Jacobson, a doctor from America in the early 1920s. (4,21)

Two of the studies included concerning patients with breast cancer (13,15), while others varied in the types of diseases that we often encounter in the community. The study conducted by Andreas had the highest number of participants with 210 but no known ratio of numbers between women and men, while with participants were only 12 people (16) So there are some potential limitations associated with this systematic review. Some studies do not know the comparison of the number of respondents, the ideal time for the duration of the intervention there is no specific standard, thus inhibiting generalization and comparing results.

5. LIMITATIONS

There are several potential limitations associated with this systematic review. Some studies do not know the number of respondents compared, the ideal time for giving an intervention there is no specific standard, thus inhibiting generalization and comparing results.

6. CONCLUSIONS

The results found that PMR is able to overcome the anxiety experienced by patients, and there are many other benefits. However, there is still no specific standard about how long PMR should be given to patients and how often it should be done. This technique is worthy of further investigation in the context of randomized controlled trials.

References

1. Hasanpour-dehkordi A, Solati K, Tali SS, Dayani MA. Effect of progressive muscle relaxation with analgesic on anxiety status and pain in surgical patients. 2019;28(3).
2. Charalambous A, Giannakopoulou M, Bozas E, Paikousis L. A Randomized Controlled Trial for the Effectiveness of Progressive Muscle Relaxation and Guided Imagery as Anxiety Reducing Interventions in Breast and Prostate Cancer Patients Undergoing Chemotherapy. 2020;2015.

3. Amini E, Goudarzi I, Masoudi R, Ahmadi A, Momeni A. Effect of Progressive Muscle Relaxation and Aerobic Exercise on Anxiety , Sleep Quality , and Fatigue in Patients with Chronic Renal Failure Undergoing Hemodialysis. 2016;8(12):1634–9.
4. Ramasamy S, Panneerselvam S, Govindharaj P, Kumar A, Nayak R. Progressive muscle relaxation technique on anxiety and depression among persons affected by leprosy. 2018;14(3):375–81.
5. McCloughan LJ, Hanrahan SJ, Anderson R, Halson SR. Psychological recovery: Progressive muscle relaxation (PMR), anxiety, and sleep in dancers. Perform Enhanc Heal [Internet]. 2016;4(1–2):12–7. Available from: http://dx.doi.org/10.1016/j.peh.2015.11.002
6. Park ES, Yim HW, Lee KS. Progressive muscle relaxation therapy to relieve dental anxiety : a randomized controlled trial. 2018;(10).
7. Xie L, Deng Y, Zhang J, Richmond CJ, Tang Y. Effects of Progressive Muscle Relaxation Intervention in Extremity Fracture Surgery Patients. 2014;
8. Hannedouche T, Roth H, Krummel T, London GM, Jean G, Bouchet JL, et al. Multiphasic effects of blood pressure on survival in hemodialysis patients. Kidney Int. 2016;90(3):674–84.
9. Lorent L De, Agorastos A, Yassouridis A, Kellner M, Muhtz C. Auricular Acupuncture Versus Progressive Muscle Relaxation in Patients with Anxiety Disorders or Major Depressive Disorder : A Prospective Parallel Group Clinical Trial. J Acupunct Meridian Stud [Internet]. 2016; Available from: http://dx.doi.org/10.1016/j.jams.2016.03.008
10. Y. L, R. W, J. T, C. C, L. T, Z. W, et al. Progressive muscle relaxation improves anxiety and depression of pulmonary arterial hypertension patients. Evidence-based Complement Altern Med [Internet]. 2015;2015:792895. Available from: http://www.embase.com/search/results?subaction=viewrecord&from=export&id=L603833998%5Cnhttp://dx.doi.org/10.1155/2015/792895%5Cnhttp://resolver.ebscohost.com/openurl?sid=EMBASE&issn=17414288&id=doi:10.1155%2F2015%2F792895&atitle=Progressive+muscle+relaxat
11. Mhaske MM, Poovishnu Devi T, Jagtap VK. Comparison of the effectiveness of visual imagery technique and progressive relaxation technique on anxiety and depression in subjects with moderate chronic obstructive pulmonary disease. Asian J Pharm Clin Res [Internet]. 2018;11(6):318–23. Available from: https://innovareacademics.in/journals/index.php/ajpcr/article/download/25067/14930
12. Suh JW, Chung SY, Kim SY, Lee JH, Kim JW. Anxiety and Anger Symptoms in Hwabyung Patients Improved More following 4 Weeks of the Emotional Freedom Technique Program Compared to the Progressive Muscle Relaxation Program : A Randomized Controlled Trial. 2015;2015.
13. Tsitsi T, Charalambous A, Papastavrou E, Raftopoulos V. Effectiveness of a relaxation intervention (progressive muscle relaxation and guided imagery techniques) to reduce anxiety and improve mood of parents of hospitalized children with malignancies: A randomized controlled trial in Republic of Cyprus and Gree. Eur J Oncol Nurs [Internet]. 2017;26:9–18. Available from: http://dx.doi.org/10.1016/j.ejon.2016.10.007
14. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate

health care interventions: explanation and elaboration. J Clin Epidemiol [Internet]. 2009;62(10):e1-34. Available from: http://www.ncbi.nlm.nih.gov/pubmed/19631507

15. Zhou K, Li X, Li J, Liu M, Dang S, Wang D. European Journal of Oncology Nursing A clinical randomized controlled trial of music therapy and progressive muscle relaxation training in female breast cancer patients after radical mastectomy : Results on depression , anxiety and length of hospital stay. Eur J Oncol Nurs [Internet]. 2014; Available from: http://dx.doi.org/10.1016/j.ejon.2014.07.010
16. Mccloughan LJ, Hanrahan SJ, Anderson R, Halson SR. and sleep in dancers. Perform Enhanc Heal [Internet]. 2015;6–11. Available from: http://dx.doi.org/10.1016/j.peh.2015.11.002
17. Barret KE, BArman SM, Boitano S, Brooks HL. Ganong ' s Review of Medical Physiology. 2016. 752 p.
18. Bunevicius R, Liaugaudaite V, Peceliuniene J, Raskauskiene N, Bunevicius A, Mickuviene N. Factors affecting the presence of depression, anxiety disorders, and suicidal ideation in patients attending primary health care service in Lithuania. Scand J Prim Health Care. 2014;32(1):24–9.
19. Brook CA, Schmidt LA. Social anxiety disorder: A review of environmental risk factors. Neuropsychiatr Dis Treat. 2008;4(1 A):123–43.
20. Suzanne C. Smeltzer, Brenda G. Bare, Janice L. Hinkle kerry HC. Brunner & Suddarth. Brunne-Suddarth infermieristica medico-chirurgica. 2015. 229-250 p.
21. Parás-Bravo P, Alonso-Blanco C, Paz-Zulueta M, Palacios-Ceña D, Sarabia-Cobo CM, Herrero-Montes M, et al. Does Jacobson's relaxation technique reduce consumption of psychotropic and analgesic drugs in cancer patients? A multicenter pre-post intervention study. BMC Complement Altern Med. 2018;18(1):1–9.

PAT-807

THE EFFECTS OF BUTEYKO BREATHING TECHNIQUE ON ASTHMA PATIENTS: A *SYSTEMATIC REVIEW*

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ABSTRACT:

Poor asthma control and exacerbation of asthma will lead airway remodeling and decerase pulmonary function. Non-pharmacological therapies such as breathing exercises and physical exercise can be applied for increasing asthma control and pulmonary function . Buteyko breathing technique is one of breathing exercises for asthma patients that use breath-holding techniques and nasal breathing. The aim of this study was to examine the effectiveness and safety of Buteyko breathing techniques in asthma patients by systematic review and with the PRISMA guidelines. Database Search Scopus, PubMed, Proquest, and Science Direct in the range 1998-2018 by using keywords Buteyko and asthma. The research method used in this study (1) randomized controled trial (2) quasi experimental. Eleven articles reported that Buteyko breathing technique significantly increased FEV1, PEFR, FVC, asthma control, control pause, quality of life of adult asthma patients. Buteyko breathing technique also reduces dipsneu, asthma symptoms, bronchodilator use, and inhaled corticosteroids use. Buteyko breathing technique can be used as one of the effective and safe breathing training methods on adult asthma patients

Keywords: *Buteyko, asthma*

1. Introduction

Asthma is a chronic respiratory disease that attacks all age groups, especially children [1]. Chronic respiratory disease is a major public health problem and it will remain a challenge for the future. However, this disease still receives minimal attention and care. Asthma management can be carried out both pharmacologically and non-pharmacologically. The goal of long-term asthma management is to achieve asthma control. Asthma control is needed to minimize the risk of exacerbation so then the asthma patients can carry out their activities optimally in their daily lives [1]. Poor control asthma can reduce the quality of life of asthma patients [1]. Poor control asthma and the exacerbation of asthma will lead to airway remodeling and decreased pulmonary function [2]. Decreased pulmonary function in asthma patients is caused by airway obstruction and the weakness of the respiratory muscles as a result of frequent inflammatory processes, dypsneu and the presence of obstacles in activity [3].

Non-pharmacological management was developed for completing the pharmacological methods in order to improve asthma control [4]. Non-pharmacological management can be done

through physical activity and breathing exercises [1]. The recommended breathing exercise for asthma is Buteyko [5]. The prevalence of asthma in the world is estimated to be 334 million people of all ages (Phillips, 2014); an estimated 235 million people live with asthma and in countries with a middle to lower income, around 80% of deaths are associated with asthma (WHO, 2018). In 2025, the prevalence of asthma in the world is estimated to reach 400 million people [8]. Research in the Asia Pacific shows that poor asthma control is at 21%, asthma that is not well controlled is at 59% and 33% of respondents revealed that their asthma symptoms appear at night, early in the morning or for more that a week [9]. Poor control of asthma is due to the type of asthma, co-morbidity, a lack of education by the health workers, a lack of regular monitoring of their asthma, a lack of control of the precipitating factors, poor adherence to treatment programs and a lack of regulating a healthy lifestyle such as smoking and a lack of physical activity and exercise [10]. Low physical activity can increase the prevalence of asthma due to decreased asthma control [11]. Asthma patients who do not do breathing exercises regularly can aggravate the symptom of shortness of breath when they are having an asthma attack because the patients do not know the correct breathing technique to use. This can cause a ventilation-perfusion imbalance in the lungs. Breathing training and physical activity or exercises that are not carried out by asthmatic patients have an impact on the weakness of the respiratory muscles so then there is a decrease in lung function. In addition to respiratory disorders and the symptoms of shortness of breath, their tolerance to activity decreases. One breathing technique can be done is Buteyko. The advantages of the Buteyko breathing technique include the control pause which can reduce excessive CO2 expenditure which will regulate breathing through the medulla respiratory center, producing nitric oxide (NO) which has bronchodilating effects. This reduces the breathing volume using a combination of increased abdominal muscles and the relaxation of the respiratory accessory muscles. Breathing length can restore the exchange of carbon dioxide, accompanied cerebral vasodilation as a result of an increase in oxygen and excessive CO2 expenditure [12].

The aim of this systematic review was to assess the effectiveness and safety of the Buteyko breathing technique in adult asthma patients.

2. Methods

2.1 Design

The design of this study was a systematic review of quantitative study approaches formulated to review the relevant experimental studies and to conduct comprehensive analysis. This systematic goal was developed based on the PICO (Patient, Intervention, Comparison, and Outcome) framework [13]. The systematic reporting structure used PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analysis)[14].

2.2 Inclusion and Exclusion Criteria

This systematic review established inclusion and exclusion criteria that focus on experimental studies that use a randomized controlled trial and quasi-experimental design. A feasibility study was used to describe the effectiveness and safety of implementing the Buteyko breathing technique in asthmatic patients using the language eligibility criteria with English abstracts. The year of publication was limited to the last 20 years, between 1998 and 2018. The criteria for the inclusion group were studies with adult asthma patients and the exclusion criteria were children and smokers, asthma patients who

were obese, asthma in pregnancy, having other lung diseases such as pulmonary TB, COPD, pulmonary carcinoma, hypertension, heart failure, epilepsy and musculoskeletal disorders.

2.3 Search Strategy

The systematic search of the PICO electronic data framework was carried out according to the PICO framework (Xiaoli Huang., Jimmy Lin., 2006). In the first step, we looked on the electronic databases of Scopus, Pubmed, Proquest and ScienceDirect to identify key articles and to identify the keywords by adjusting the key concepts: 1. Asthma patients, 2. Buteyko breathing technique and 3. Experimental studies. Our keywords were used to look for quotes and full articles, including the title, abstract, text and reference information. The second step was translating keywords into English to find the relevant articles in the electronic databases. The third step was filtering using the PICO framework to determine which articles passed for further review according to the topic. The complete search strategy was limited to the last 20 years between 1998 and 2018.

Table 1. Eligibility Criteria

Criteria	Inclusion	Exclusion
Study Design	Quantitative Approach Experimental Study	Qualitative Approach
Concept	Buteyko breathing technique	Yoga, gym, etc
Population	Asthma patient	Asthma with obesity, pregnant, another lung disease, heart disease, musculoskeletal disorder
Context	Adult asthma	Children
Language	English (*min. Abstract)	Full text without Abstract on English
Date range	≥ 1998- 2018/	< 1998

2.4 Quality Of Appraisal

The assessment of the quality of the articles to be reviewed was done using the quantitative study tool, the Critical Appraisal Skills Program (CASP). There were 10 different questions that considered the results of the qualitative studies, the validity of the studies and their uses (Critical Appraisal Skills Program, 2018).

3. Result

3.1 Study Selection

The search strategy was carried out by generating a total of 471 citations, of which the researcher deleted 217 duplicates. Following this, 210 items of existing literature were deleted during the first

screening because the title and/or abstract did not match the specified eligibility criteria; 33 full articles from the second phase of screening resulted in 11 articles being obtained for review.

3.2 Study Characteristics

The total of 11 studies reviewed from 2008 - 2018 were conducted in 7 countries: the UK, Egypt, India, Canada, New Zealand, Australia and the Philippines. The experimental studies included were randomized controlled trials and quasi-experimental.

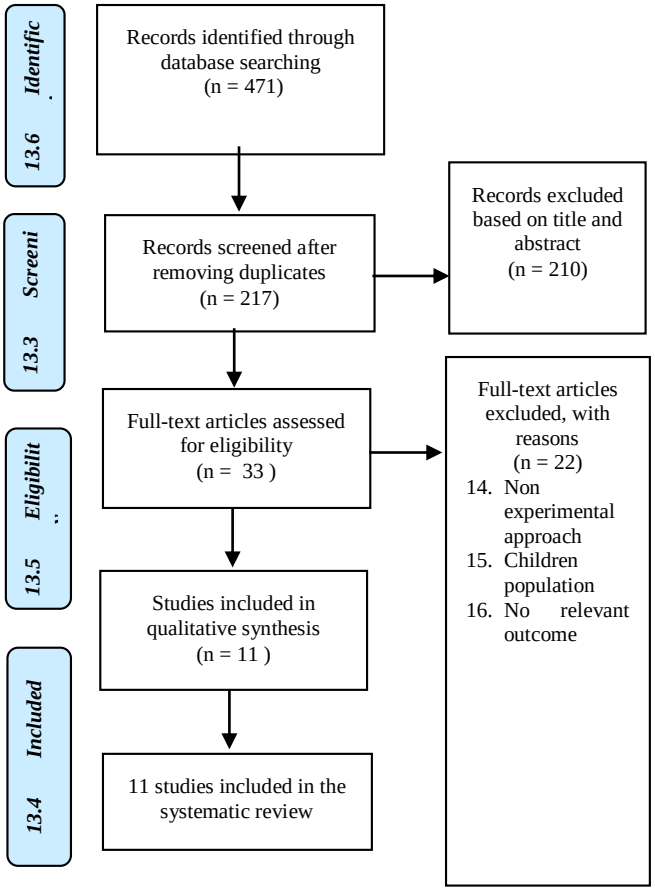

Figure 1. Flow Diagram

3.3 Result of Synthesis

The literature search identified 11 journals that explain the Buteyko breathing technique for asthma patients. Finally, the 2 main themes of the findings of the synthesis were summarized: Buteyko technique theory and Buteyko breathing technique

Buteyko Theory. The Buteyko breathing technique is a complementary therapy used to help asthmatics to prevent and control their asthma symptoms and to reduce or eliminate drug use[15]. The Buteyko breathing technique is a series of breathing exercises which consist of slow breathing and reduced breathing, combined with the time spent holding your breath, known as control pauses and extended pauses. These aim to reduce hyperventilation through a decreased frequency of breathing (Buteyko Technique - Buteyko Breathing Association, 2017).

The aim of the Buteyko breathing technique is to train patients who breathe excessively to be able to breathe properly. The Buteyko technique can also restore the patient's condition so then he can

breathe normally by exercising his breath, by breathing through the nose and by relaxing the diaphragm to achieve a normal breathing volume.

There is a theory underlying the development of the Buteyko breathing technique (Buteyko Technique - Buteyko Breathing Association, 2017). When asthma patients practise deep breathing, the amount of CO2 released will increase so the amount of CO2 in the lungs, blood and tissues becomes reduced. When asthma patients breathe too much air volume compared to what the body needs, the CO2 that comes out will also increase rapidly. This causes a chemical reaction that complicates the release of oxygen from the blood to the tissues of the body so then the tissue becomes deprived of oxygen. This results in the muscle layer surrounding the tissue reacting by contraction. CO2 deficiency causes the blood pH to become alkaline. Respiratory alkalosis is a clinical disorder that causes an increase in blood acidity (pH) due to alveolar hyperventilation (hypocapnia). Hypocapnia occurs because the elimination of CO2 exceeds the production of CO2 in the tissue. The increased pH is modified to a small degree by intracellular buffers. To compensate for the increased loss of CO2 and excess base, hydrogen ions are released from the buffer tissue, which further decreases the plasma bicarbonate concentration.

Buteyko Breathing Technique. The Buteyko breathing technique consists of relaxation and exercise. At the stage of relaxation, the body posture is as comfortable as possible, especially the upper body. This serves to relax the respiratory muscles and ribs slowly, namely when stretching the ribs outward during inhalation and the withdrawal of ribs inward during expiration. When practicing breathing exercises with asthma patients, it is recommended to breathe through the nose and not through the mouth (Buteyko Technique - Buteyko Breathing Association, 2017).

According to Buteyko theory, breathing through the nose will reduce the release of CO2. By relaxing the breathing muscles, the air insufficiency that occurs during the attack will decrease. In doing the Buteyko breathing technique, a chair and a room are as comfortable as possible for practice. It is best to do the exercises before eating or to wait at least 2 hours after eating. This is because digestion affects breathing. The important things that must be considered in carrying out Buteyko breathing techniques are:

1. Measurement of control pause

In doing Buteyko breathing exercises, first the ability to hold the breath (control pause) must be measured. After completing the exercise, the measurement of the control pause and pulse must be done again.

2. Posture

Good posture is very important to do the exercises properly, which can reduce shortness of breath when attacked by asthma. Using a chair that has a backrest allows them to sit upright and for their feet to touch the floor. This means that the body is in a condition that is as comfortable as possible. If you do not have a chair with a backrest, then the position of the head, shoulders and hips should be adjusted so then it is perpendicular.

3. Concentration

Focus on breathing, feel the air moving in and out of the nose and the different movements of the body when breathing and exhaling. The individual is recommended to concentrate on their breathing, because a person cannot change their breathing if they are not aware of how they breathe.

4. Shoulder relaxation

The shoulder is an important part in the effort to improve breathing in the event of tension and stiffness, which can cause difficulty in trying to raise the shoulder muscles when breathing, which affects the amount of air able to go into the lungs. The patients should try to be as relaxed as possible and let their shoulders relax and move naturally every time they breathe. Relaxation will help to regulate their breathing.

5. Monitor airflow

Feel the air coming out of the nostrils by placing a finger under the nose horizontally. The fingers should not be too close to the nostrils because this can interfere with the flow of air entering and leaving the nose. Shallow breathing is when you feel the air reaching your fingers. Start breathing again. This will help to reduce the amount of air each time that you breathe. This activity will increase the amount of breath carried out per minute which aims to reduce the volume of air overall. The warmer air that is felt less on the finger indicates that the successful decrease in air volume. Patients are expected to be able to continue breathing this way for 3-5 minutes. It is possible that the patient cannot complete the full 5 minutes when they first exercise.

Procedure [17]:

Step 1 – Beginning Control Pause (CP)

Step 2 –3 to 5 minutes of relaxed reduced-volume breathing or slow breathing

Step 3 – Maximum Pause (MP). The MP may be substituted with a CP if the MP is contraindicated due to the presence of kidney disease, epilepsy, hypertension or another severe chronic illness

Steps 2 and 3 were then repeated up to 5 times

Final control pause

4. Discussion

The Buteyko breathing technique helps to reduce the degree of dyspneu and it increases FEV1 and PEFR ($p = 0.001$) [18], which is supported by Grover (2014) and Mohamed, Riad and Ahmed (2013). The research conducted by Grover (2014) shows that the Buteyko technique also increased FVC. The Buteyko group showed an increase in quality of life and asthma control compared to the control group [20]. The effects of the Buteyko technique on asthma control are also supported by the previous research (Cowie *et al.*, (2008) and Mohamed, Riad and Ahmed (2013). Buteyko therapy can reduce both asthma symptoms ($p = 0.003$) and bronchodilator use ($p = 0.005$). There was no difference in FEV-isolation and the use of inhaled corticosteroids in both groups [15]. The results of the research conducted by [21] proves that the Buteyko Technique can improve asthma control from 40% to 79%, thus reducing the need for inhaled corticosteroids ($p = 0.02$).

The research conducted by Grover (2014) showed that the Buteyko breathing technique can increase FEV1, FEV1 / FVC and Peak Forced Expiration Flow through a control pause mechanism that can, in turn, increase the CO2 concentration. This will regulate the breathing through the medulla respiratory center, producing nitric oxide (NO) and a bronchodilating effect, reducing the breathing volume using a combination of increased abdominal muscle and the relaxation of the respiratory accessory muscles. A long breath can restore the exchange of carbon dioxide gas, followed by cerebral vasodilation as a result of the decreased oxygen and increased CO2 [12].

The research conducted by Mohamed, Riad and Ahmed (2013) showed that the Buteyko breathing technique can increase the peak flow of forced expiration, control pause and asthma control. The main cause of bronchospasms in asthma is a CO2 deficiency in the alveolar air, which results from hyperventilation and low metabolic activity. It can thus be concluded that hyperventilation is the main element in the etiology and pathogenesis of asthma (Mohamed, Riad and Ahmed, 2013).

The research conducted by Cooper et al. (2003) shows that the Buteyko breathing technique can reduce bronchodilator use but there was no difference with the Pranayama group in terms of bronchial responsiveness and pulmonary function through the mechanism of holding the breath at functional residual capacity and mouth-tapping at night. This refers to sleeping on the left side and preventing supine sleep because this can cause hyperventilation. Both of these techniques will increase the pressure of the arterial and alveolar CO2 [15]. Research conducted by Slader et al. (2006) and Villareal et al., (2014) showed that the Buteyko technique can improve asthma control and the quality of life of asthmatic patients through a normal breath blowing mechanism, where they breathe and then hold their breath until they first feel uncomfortable or want to breathe again. This time was recorded as a control pause. In healthy people, it can reach 50-60 seconds but in moderate to severe asthma sufferers, it often can only last for 1-3 seconds. Then this was followed by breathing slowly and not through the nose, which is shallow breathing. Then they proceeded with physical activity to increase the level of CO2. Increased CO2 will cause the dilatation of smooth muscles in the bronchial wall, bronchioles and alveolar so then perfusion ventilation balance occurs [20]. The Buteyko technique also teaches breathing through the nose because it will be able to bring in benefits such as filtering the air of allergens and dust pollution, humidification and producing nitric oxide which will promote airway bronchodilation. Research conducted by [21] showed that the Buteyko breathing technique can reduce the use of inhaled corticosteroid therapy.

Bowler et al, (1998) carried out a study of 39 patients. The patients were divided into two groups. One group was taught the Buteyko breathing technique and the control group was taught a course of asthma education, relaxation and diaphragmatic exercise. The study looked at the outcomes of medication use, quality of life, respiratory function and CO2. The results showed that those who were taught the Buteyko technique reduced their use of bronchodilators by about 90% in 12 weeks compared with 5% in the control group. The reduction in medication use was not associated with a reduction in quality of life. Lung function was unchanged in both groups. The study by McHugh et al., (2003) had the aim of assessing the impact of BBT on medication use in asthma. It followed 38 subjects over a 6-month period and found similar results to the first trial with an 85% decrease in bronchodilator use. The trial was run over a longer period for 6 months and this longer period was also able to demonstrate a 50% decrease in steroid use. The researchers concluded that Buteyko breathing therapy appears to represent a safe, efficacious alternative for the management of asthma. A general practice-based study by Opat et al., (2000), also conducted in Australia, randomized 36 adults with asthma and assigned them to watch either a Buteyko video or a nature video twice a day for 4 weeks. After 8 weeks, those who had watched the Buteyko video had reduced their use of bronchodilators by 60%. Both groups showed a significant improvement in their quality of life [21].

5. Conclusions

The Buteyko breathing technique significantly increases FEV1, PEFR, FVC, the control of asthma, control pauses and breath resistance and, overall, the quality of life of adult asthma patients. The Buteyko breathing technique also reduces the degree of dyspnoea, asthma symptoms, bronchodilator use and inhaled corticosteroids.

References

[1] GINA 2018 Global Strategy for Asthma Management and Prevention

[2] Reddel H K, Taylor D R, Bateman E D, Boulet L-P, Boushey H A, Busse W W, Casale T B, Chanez P, Enright P L and Gibson P G 2009 An official American Thoracic Society/European Respiratory Society statement: asthma control and exacerbations: standardizing endpoints for clinical asthma trials and clinical practice *Am. J. Respir. Crit. Care Med.* **180** 59–99

[3] Sahat C S, Irawaty D and Hastono S P 2011 Peningkatan kekuatan otot pernapasan dan fungsi paru melalui senam asma pada pasien asma *J. Keperawatan Indones.* **14** 101–6

[4] Hall C, Nici L, Sood S, Zuwallack R, Castro M and Louis S 2017 Nonpharmacologic Therapy for Severe Persistent Asthma *J. Allergy Clin. Immunol. Pract.* **5** 928–35

[5] Godfrey K 2010 The Buteyko technique in asthma management *Pract. Nurs.* **21** 238–42

[6] Phillips S Global Asthma Report 2014

[7] Anon 2013 WHO | Asthma *WHO*

[8] Masoli M, Fabian D, Holt S, Beasley R and Program G I for A (GINA) 2004 The global burden of asthma: executive summary of the GINA Dissemination Committee report *Allergy* **59** 469–78

[9] Lai C K W, Kuo S H, De Guia T, Lloyd A, Williams A E and Spencer M D 2006 Asthma control and its direct healthcare costs: findings using a derived Asthma Control TestTM score in eight Asia-Pacific areas *Eur. Respir. Rev.* **15** 24–9

[10] Braido F 2013 Failure in asthma control: reasons and consequences *Scientifica (Cairo).* **2013**

[11] Rasmussen F, Lambrechtsen J, Siersted H C, Hansen H S and Hansen N C 2000 Low physical fitness in childhood is associated with the development of asthma in young adulthood: the Odense schoolchild study *Eur. Respir. J.* **16** 866–70

[12] Grover G M A S K 2014 Gauri Mayank Afle 1 Sumeeta Khaund Grover 2 **1** 116–9

[13] Huang X, Lin J and Demner-Fushman D 2006 Evaluation of PICO as a knowledge representation for clinical questions *AMIA annual symposium proceedings* vol 2006 (American Medical Informatics Association) p 359

[14] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration **6**

[15] Cooper S, Oborne J, Newton S, Harrison V, Coon J T, Lewis S and Tattersfield A 2003 Effect of two breathing execise (Buteyko and Pranayama) in asthma : a randomized controlled trial *Thorax* 674–9

[16] Anon Buteyko Technique - Buteyko Breathing Association

[17] Courtney R 2013 *Buteyko breathing method* (Elsevier Ltd)

[18] Narwal R, Bhaduri S N and Misra A 2012 A Study of effects of Buteyko Breathing Technique on Asthmatic Patients *Indian J. Physiother. Occup. Ther.* **6** 224–9

[19] Mohamed Z, Riad N M and Ahmed F H 2013 Effect of Buteyko breathing technique on patients with bronchial asthma *Egypt. J. Chest Dis. Tuberc.* **61** 235–41

[20] Prem V, Sahoo R C and Adhikari P 2013 Comparison of the effects of Buteyko and pranayama breathing techniques on quality of life in patients with asthma - A randomized controlled trial *Clin. Rehabil.* **27** 133–41

[21] Cowie R L, Conley D P, Underwood M F and Reader P G 2008 A randomised controlled trial of the Buteyko technique as an adjunct to conventional management of asthma $ 726–32

[22] Slader C A, Reddel H K, Spencer L M, Belousova E G, Armour C L, Bosnic-Anticevich S Z, Thien F C K and Jenkins C R 2006 Double blind randomised controlled trial of two different breathing techniques in the management of asthma *Thorax* **61** 651–6

[23] Villareal G M C, Villazor B P U, Villegas A M, Visaya S N, Vista M E, Tan C B and G C E 2014 Health and Medicine Effect of Buteyko Method on Asthma Control and Quality of Life of Filipino Adults with Bronchial Asthma **2** 44–60

[24] S.D. B, A. G and C.A. M 1998 Buteyko breathing techniques in asthma: A blinded randomised controlled trial *Med. J. Aust.* **169** 575–8

[25] McHugh P, Aitcheson F, Duncan B and Houghton F 2003 Buteyko breathing technique for asthma: An effective intervention *N. Z. Med. J.* **116** 1–6

[26] Opat A J, Cohen M M, Bailey M J and Abramson M J 2000 A clinical trial of the Buteyko Breathing Technique in asthma as taught by a video *J. Asthma* **37** 557–64

Table 2. Journal Analysis Table

No	Title, Authors, & Time	Design	Sample size (N)	Variable	Data collection and Instrument	Result
1	A Study of effects of Buteyko Breathing Technique on Asthmatic Patients Ravinder Narwal, S.N. Bhaduri, Ajita Misra (2012)	Quasi experimental	30 (20-40 years old) Group A: BBT (15) Group B : Diaphragm breathing and Pursed Lip Breathing (15)	Independent variable: 1. Buteyko Breathing Technique (BBT) 2. Diaphragm breathing and Pursed Lip Breathing Dependent variable : FEV1, PEFR, dyspneu	BBT: 5 repetitions twice/day, 6 days/week,6 weeks. Diaphragm breathing and Pursed Lip Breathing: 5 repetitions twice/day, 6 days/week,6 weeks Spirometer	Group - Buteyko Breathing Technique (BBT) group-A showed a significant improvement in FEV1 and PEFR and a significant decrease in the levels of dyspnea, whereas PLBE within DE Group - B showed no significant changes in any of the three measurements. FEV1, PEFR (p= 0.001)
2	Comparison of the effects of Buteyko and pranayama breathing techniques on quality of life ; a randomized controlled trial - in patients with asthma Venkatesan Prem, Ramesh Chandra Sahoo and Prabha Adhikari (2012)	RCT	120 (18-60 years old) Group 1 : BBT (40) Group 2 : Pranayama Breathing(40) Group 3 : Control (40)	Independent variable: Buteyko Breathing Technique (BBT), Pranayama breathing . Dependent variable : Asthma Quality of Life, Asthma Control, pulmonary function test. (FEV1, FEV1/FVC)	Buteyko Breathing Technique (15 minutes/twice/ day for 3 months) Pranayama Breathing (15 minutes/2 times/day for 3 months) Spirometer Asthma Quality of Life Questionnaire Asthma Control Questionnaire	The Buteyko group showed better improvement trends (mean (95% confidence interval), P-value) in total. The Asthma Quality of Life Questionnaire score was better than the pranayama (0.47 (–0.008–0.95), P = 0.056) and control groups (0.97 (0.48–1.46), P = 0.0001). In comparison, between the pranayama and control groups, pranayama showed a significant improvement

						(0.50 (0.01–0.98), P = 0.042) in the total Asthma Quality of Life Questionnaire score.
3	Effect of two breathing exercise(Buteyko and Pranayama) ini asthma : a randomized control trial S Cooper, et al (2003)	RCT	90 (18-70 years old) BBT (30) Group 2 : Pranayama Breathing/PCLE (30) Group 3 : Control (30)	Independent variable: Buteyko Breathing Technique (BBT), Pranayama breathing/Pink City Lung Exerciser Dependent variable : Bronchodilator use, FEV1, asthma symptom	Buteyko Breathing Technique (twice/week for 6 weeks) Pranayama Breathing ((/2 times/week for 6 weeks)	The symptoms remained relatively stable in the PCLE and placebo groups but they were reduced in the Buteyko group. The median change in symptom scores at 6 months was 0 (interquartile range –1 to 1) in the placebo group, –1 (–2 to 0.75) in the PCLE group and –3 (–4 to 0) in the Buteyko group (p=0.003 for difference between groups). Bronchodilator use was reduced in the Buteyko group by 2 puffs/day at 6 months; there was no change in the other two groups (p=0.005). No difference was seen between the groups in terms of FEV1, exacerbations or the ability to reduce inhaled corticosteroids.
4	Effect of Buteyko breathing Technique on patient with bronchial	Quasi experimental	40 (30-50 years old) Group 1: Buteyko Breathing	Independent variable: Buteyko Breathing Technique (BBT),	Buteyko Breathing Technique 1st week: 4 times/week Weeks 2-6:	The study revealed there to be a significant decrease in asthma daily symptoms, a

	asthma Hasssan, et al (2012)		Technique. Group 2: control	Dependent variable : PEFR, asthma control	twice/week Peak flow meter	significant improvement in PEFR and the control pause test in group (A), while there were insignificant changes in group (B).
5	A randomised controlled trial of the Buteyko technique as an adjunct to conventional management of asthma Cowie, et al (2008)	RCT	129 (18-50 years old) Group 1: Buteyko (65) Group 2: Control (64)	Independent variable: Buteyko Breathing Technique (BBT). Dependent variable: asthma control, inhaled corticosteroid use	Buteyko Breathing Technique for 6 weeks Asthma control according to the Canadian Asthma Consensus	In the Buteyko group, the proportion with asthma control increased from 40% to 79% and in the control group, this increased from 44% to 72%. In addition, the Buteyko group significantly reduced their inhaled corticosteroid therapy compared with the control group (p ¼ 0.02). None of the other differences between the groups at 6 months were significant.
6	Effect of Buteyko method on asthma control and quality of life of Filipino Adults with bronchial asthma Villareal, et al (2014)	Quasi eksperi mental with approac hpretest-post test design	Sample: 16 adults with bronchial asthma (18-40 years old) Group 1: Buteyko Breathing Technique (BBT) Group 2: control	Independent variable: Buteyko Breathing Technique (BBT). Dependent variable: asthma control, quality of life	Buteyko Breathing Technique 3 times/day for 30 minutea every session for 4 weeks Asthma Quality of Life Questionnaire Asthma Control Questionnaire	The experimental group showed a significant improvement in the asthma control (p=0.029) and quality of life scores (p=0.006) after the 4 week period.
7	To study the effectiveness of buteyko	Quasi eksperi mental	46 (20-65 years old) Group A:	Independent variable: Buteyko	The duration of data collection was 6 months.	The results were calculated using a 0.05 level of

	breathing technique versus diagragmatic breathing in asthmatic Afle &Grover (2014)	dengan one gropu pre-test-post test design	Buteyko Breathing (23) Group B : Diaphragm breathing (23)	Breathing Technique (BBT)., Dependent variables: FEV1, FEV, FVC, PEFR	The time of the study was for 2 weeks. The duration of each treatment session was 60-90 minutes. Spirometry	significance. On the basis of the above statistical analysis, the p value for group A is less than 0.05. The intervention for group A was more effective than the intervention for group B.
8	Double blind randomised controlled trial of two different breathing techniques in the management of asthma Slader, et al (2006)	Double blind randomised controlled trial	57 (15-80 years old) Group 1: Buteyko Breathing Group 2: non-specific upper body exercise	Independent variable: Buteyko Breathing Technique (BBT), non-specific upper body exercise. Dependent variable: asthma control, quality of life, inhaled corticosteroid use.	Buteyko Breathing Technique (BBT), non-specific upper body exercise twice/day, 30 minutes every session for 30 weeks Asthma Quality of Life Questionnaire Asthma Control Questionnaire	Overall the QoL score remained unchanged (0.7 at baseline v 0.5 at week 28, p = 0.11 both groups combined), as did lung function and airway responsiveness. However, across both groups, reliever use decreased by 86% (p,0.0001) and ICS dose was reduced by 50% (p,0.0001; p.0.10 between groups).
9	Buteyko breathing techniques in asthma: a blinded randomised controlled trial Bowler, et al (1998)	Blinded randomized control trial	Sample: 39 pasien asma (12-70 tahun) Group 1: Buteyko Breathing Technique. Group 2: control	Independent variable: Buteyko Breathing Technique. Dependent variable: Medication use; PEF); forced expiratory volume in one second (FEV1); end-tidal (ET) CO2; resting minute volume (MV) and quality of life (QOL) score	Buteyko Breathing Technique once/day for 12 weeks Asthma Quality of Life Questionnaire Spitometry	No change in daily PEF or FEV1 was noted in either group. At three months, the BBT group had a median reduction in daily beta2-agonist dose of 904 (*P* = 0.002). Daily inhaled steroid dose fell By 49% (*P* = 0.06). A trend towards a greater improvement in the QOL score was noted for the BBT

						subjects (*P* = 0.09).
10	Buteyko Breathing Technique for asthma: an effective intervention McHugh, et al (2003)	Quasi-experimental	38 (18-70 years old) Group 1: Buteyko Breathing Technique Group 2: Control	Independent variable: Buteyko Breathing Technique. Dependent variable:: Beta 2 agonis use, ICS use, FEV1	Buteyko Breathing Technique for 6 weeks	No significant change in FEV1 in either group. The BBT group exhibited a reduction in inhaled steroid use by 50% and 2-agonist use by 85% 6 months from the baseline.
11	A Clinical Trial of the Buteyko Technique in Asthma as Taught Breathing by a Video Opat, et al (2000)	Quasi-experimental	36 (18-50) Group 1: Buteyko Breathing Technique. Group 2: Control (placebo)	Independent variable: Buteyko Breathing Technique. Dependent variables: Quality of life PEF, inhaled bronchodilator use	Twice/day for 4 weeks	Those assigned to BBT compared with the placebo had a p value of *p* = 0.0431, as well as a significant reduction in inhaled bronchodilator intake *(p* = 0.008).

PAT-845

INTERVENTIONS TO INCREASE THE ADHERENCE OF FLUID RESTRICTIONS IN HEMODIALYSIS CLIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Fluid restriction is become a major problem on clients undergoing hemodialysis with a percentage of nonadherence ranging from 10%-60%. Low adherence causes complications such as heart disease, cognitive function disorders, increased hospitalization and mortality. Interventions that can improve the adherence of fluid restriction in clients undergoing hemodialysis still need to be studied. The aims of this study was to evaluate and conclude the most effective interventions to increasing the adherence of fluid restriction in clients undergoing hemodialysis. Using electronic database including Scopus, ProQuest, and SpringerLink, limited year used 2009-2019, combining intervention, improve, adherence, fluid, restriction, hemodialysis as the search keywords 257 articles retrieved. Using matching keyword 15 articles determined to be systematic review. Psychosocial Interventions are the most frequently used and effective interventions to increase the adherence of fluid restriction in clients with hemodialysis. Psychosocial interventions including cognitive behavioral therapy, empowerment, motivation, communication and approaches through group support (health workers and the environment) have an impact on reducing stress, and improve the quality of life, so clients to be more adherence with treatments in hemodialysis programs. Psychosocial interventions are effective as interventions to improve adherence of fluid restriction in clients undergoing hemodialysis.

Keywords: intervention, improve, adherence, fluid, restriction, hemodialysis

1. Introduction

Chronic Kidney Disease (CKD) has become a major health problem in the world and it causes high morbidity and mortality and it constitutes a significant social and financial burden. (1). CKD patients with End Stage Renal Disease (ESRD) require renal replacement therapy *[2]*. Hemodialysis is the most common renal replacement therapy provided to patients with CKD (3). Patients undergoing hemodialysis must undergo significant adaptations related to fluid restriction, diet and drug dependence as well as psychosocial adaptations [4]. Fluid restriction is still a major problem in the care of CKD patients undergoing hemodialysis programs [5]. The comprehensive and collaborative effort of all health care teams with the main focus of care being the patients and their support system will be very necessary. The interventions that can increase the fluid intake restrictions in the CKD patients undergoing hemodialysis still need to be learned.

Rates of no adherence in hemodialysis therapy regimens around the world range from 8.5% - 22.1% and this rate has increased to 86.9%. The non-adherence to the fluid restriction ranges from 10 - 60% (6). In Japan and Europe, the non-adherence to the fluid restrictions increased from 9.7%

to 49.5%. CKD patients who are undergoing hemodialysis programs have increased in their rate of morbidity and mortality caused by the non-adherence to the fluid restrictions. Low adherence can lead to complications such as heart disease, cognitive dysfunction, increased hospitalization and mortality [7]. The negative effects of the non-adherence to the fluid restrictions mentioned above are a serious problem, so interventions to improve the adherence to the fluid restrictions need to be studied and developed.

The results of the previous studies showed that there was a significant effect from increasing the fluid adherence with the average change score during treatment [8]. There was a significant increase in the post-test score in the intervention group compared with the pre-test score after education related to the adherence of fluid restriction was carried out [3]. Results in other research also stated that after introducing communication solutions focused on fluid adherence, the average interdialytic weight gain of the patients decreased significantly, below the level that was considered to be an indication of adherence [9]. The results of the studies mentioned above inspired the researchers to evaluate the interventions used to improve the adherence of the CKD patients to the fluid restrictions when undergoing hemodialysis programs.

The purpose of this systematic review was to summarize the interventions that have been used effectively to improve the adherence of fluid restriction in hemodialysis patients so then it can provide meaningful information to both hemodialysis facilitators and clinical researchers.

2. Methods

The systematic review source search used electronic databases including Scopus, Proquest and Springer Link, with the limited year range used being 2009 - 2019 (10 years). The source search used the appropriate keywords (intervention, improve, adherence, fluid, restriction, hemodialysis) that were contained in the PICO framework [10] as shown in Table 1. This systematic reporting structure used PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analysis*), as shown in Figure 1. Based on the search results, 257 articles were retrieved and then 15 articles were finally selected to do the systematic review.

The systematic search of the PICO base of the electronic data framework was carried out in accordance with the PICO framework (Xiaoli Huang., Jimmy Lin., 2006). The first step as where we looked through the Scopus, Proquest and Springer Link electronic databases to identify key articles and to identify the keywords by adjusting the key concepts: 1. interventions to improve adherence, 2. patients undergoing hemodialysis and 3. fluid restrictions. Our keywords were used to look for citations and full articles, including the title, abstract, text and reference information. The second step was translating the keywords into English to find the relevant articles in the electronic databases. The third step was to filter using the PICO framework to determine which articles passed for further review according to the topic.

This systematic review established inclusion and exclusion criteria that focus on the interventions that can improve the adherence to fluid restrictions in hemodialysis patients including the language eligibility criteria of using English. The year of publication was limited to the last 10 years from 2009 - 2019. Further criteria for the inclusion group were studies in adult hemodialysis patients and the exclusion criteria were that they were peritoneal dialysis patients or child hemodialysis patients.

3. Result

The search strategy was carried out to obtain a total of 273 articles. The researcher deleted 253 articles because the title and abstract did not match the specified eligibility criteria. Of the 20 articles obtained, 5 articles were omitted due to duplication so 15 articles on the interventions used to improve the adherence to the fluid restrictions in hemodialysis patients were maintained for review.

The total of 15 studies reviewed from 2009 - 2019 were conducted in 8 countries: the USA, Iran, Turkey, Spain, Greece, China, Sweden and Lebanon. The overall research method was a quantitative study including educational, psychological, social, e-health and relaxation therapy interventions. Almost all of the articles used questionnaires in accordance with the theoretical constructs as instruments to measure the level of adherence of the patients undergoing hemodialysis programs in terms of fluid restriction. In addition, the adherence to the fluid restrictions of the patients undergoing hemodialysis can also be seen from the biological marker and the patient's IDWG (*Interdialytic Weight Gain*).

Tabel 1. PICO Strategy

	Keywords
P	CKD patients or hemodialysis patients
I	Hemodialysis
O	Improve adherence to the fluid restrictions

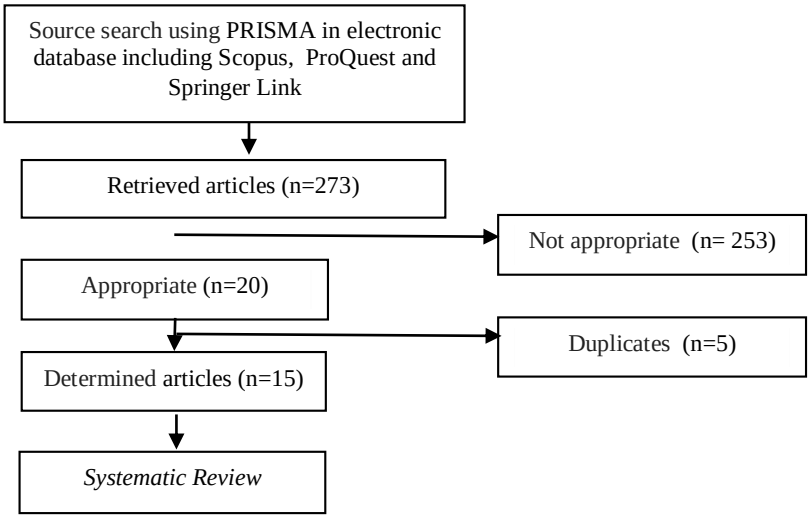

Figure 1. PICO strategy and the PRISMA source search in the electronic databases

The number of samples ranged from 17 to 237 patients undergoing hemodialysis. In the 15 articles, the respondents were around 18 - 65 years old and they had experienced being on the hemodialysis program for more than 3 months.

The interventions used to improve the adherence to the fluid restrictions in patients undergoing

hemodialysis found in 15 articles were educational interventions (education in a face to face meeting and video conference education), a psychological intervention, social approaches (social support and group support), e-health and relaxation therapy. Psychosocial interventions including cognitive behavioral therapy, empowerment, motivation, communication and social approaches through group support (health workers and the environment) were the most frequently used and these are as effective as interventions used to increase the adherence to the fluid restrictions in patients with hemodialysis.

Low adherence can result in complications such as heart disease, cognitive function disorders, increased hospitalization and mortality [7]. The negative effects of no adherence to the fluid intake mentioned above are immediate problems that must be followed up with efforts to improve the adherence to fluid restrictions.

The results of the study that was conducted stated that after being educated, there was a significant increase in the post-test score in the intervention group compared to the pre-test score, with a significance value ($p < 0.05$ and $p < 0.001$). Pre-dialysis weight and diastolic blood pressure were also reported to decrease significantly [3]. Level of knowledge is one of the factors that influences the adherence to fluid restrictions and the diet of the patients undergoing hemodialysis [3]. The existence of directed education regarding the fluid restriction for the patients is expected to increase the level of knowledge of the patients. This is so then the patients can understand the condition of their disease and try to adhere to the treatment. Research that was conducted by [11] said that there was a significantly increased level of knowledge, adherence and quality of life in the intervention group compared to the control group. Adherence is also reported to positively affect several dimensions in the quality of life intervention through education. This can help the patients to improve their diet and fluid management knowledge [12].

Based on the results of the studies[8][13][9][3], there is a significant effect from Cognitive Behavior Therapy (CBT) on increasing adherence to fluid restrictions [8]. The results of another study said that there was a significant positive effect from Behavioral Self-Regulation on interdialytic weight over time observed for the intervention group which showed the benefits of the intervention [5]. The systolic / diastolic blood pressure, interdialytic weight gain, hemoglobin and hematocrit levels differed and changed significantly between the groups before and after empowerment via the self efficacy intervention [14]. Significantly higher levels of adherence, lower levels of depression and anxiety and a better Health-Related Quality of Life (HRQL) score came after the Motivational Interviewing intervention [15]. The research that used Rational Emotive Therapy showed that it can effectively change the coping mode and mental state of the patient and then increase their adherence to fluid restrictions [13].

The results of the research report after introducing a Focused Communication Solution by the nurses showed that the average interdialytic weight gain of patients decreased significantly to below the level considered to be an indication of no adherence [9]. Social support also has a significant relationship with dietary adherence and the patient's fluid restriction within hemodialysis [16]. Support from a subgroup of patients is very clinically relevant to the adherence of fluid control of the patients undergoing hemodialysis programs [17].

The results of the studies that involved e-health showed that computer literacy applications can assess the ability to complete Personal Digital Assistant (PDA) tasks. This application was very helpful for individuals to use to monitor their own diet and fluid intake [18].

Previous studies have reported that after relaxation with the Benson relaxation method through the audiotape media, there was a significant difference in IDWG that showed the adherence to fluid restriction [19].

4. Discussion

After reviewing several articles, it can be seen that psychosocial interventions are the most frequently used and effective interventions that can increase the adherence to fluid restrictions in patients with hemodialysis. Fluid retention can cause dangerous conditions for patients such as edema of the lower extremities, pulmonary edema, hypertension and cardiovascular disorders. Therefore fluid management (restriction) appears to be important in CKD patients.

Psychosocial interventions including cognitive behavioral therapy, empowerment, motivation, communication and approaches through group support (health workers and the environment) have an impact on reducing stress and improving quality of life, so the patients to be more adherent with the treatments that are a part of the hemodialysis programs. Psychosocial interventions focus on how one thinks, behaves and communicates. Psychosocial interventions will help the patients to provide a cognitive assessment in addition to providing guidance on how to make decisions when determining a choice from the process of thinking independently. This will teach the patients to learn skills that are effective in terms of thinking, feeling, and behaving, thus their adherence to therapy will be more rational.

This study has several limitations, including the diversity of the psychosocial interventions found. It has not been focused on one intervention. The relatively long time for implementing the interventions is because it is related to behavior changes. The number of synthesized articles was also a limitation of this study.

5. Findings

Psychosocial interventions (cognitive behavioral therapy, empowerment, motivation, communication and approaches through group support) are effective as interventions to improve the adherence to fluid restrictions in patients undergoing hemodialysis. For the next systematic review, we can use more articles that have been published and more specific types of intervention. Psychosocial interventions can be a reference for improving the adherence to fluid restriction and this can be applied by the nurse or facilitator related to hemodialysis in practice.

Reference

[1] Melegy Z & K 2016 Effect of family centered empowerment model on hemodialysis patients and their caregivers **6** 119–32

[2] Kim Y and Kim M 2015 The Experience of Fluid Management in Hemodialysis Patients *Korean Acad. Nurs. Sci.* **45** 773–82

[3] Düzalan Ö B and Pakyüz S C 2018 Educational interventions for improved diet and fluid management in haemodialysis patients : An interventional study *JPMA* **68** 532–7

[4] Clark S, Farrington K and Chilcot J 2014 Nonadherence in dialysis patients: Prevalence, measurement, outcome, and psychological determinants *Semin. Dial.* **27** 42–9

[5] Howren M B, Kellerman Q D, Hillis S L, Cvengros J, Lawton W and Christensen A J 2016 Effect of a Behavioral Self-Regulation Intervention on Patient Adherence to Fluid-Intake

Restrictions in Hemodialysis : a Randomized Controlled Trial *ann. behav. med.* 167–76

[6] Griva K, Nandakumar M, Ng J H, Lam K F Y, Mcbain H and Newman S P 2018 Hemodialysis Self-management Intervention Randomized Trial (HED-SMART): A Practical Low- Intensity Intervention to Improve Adherence and Clinical Markers in Patients Receiving Hemodialysis *Am. J. Kidney Dis.* 371–81

[7] Welch J L, Thomas-hawkins C, Bakas T and Mclennon S M 2013 Needs , Concerns , Strategies , and Advice of Daily Home Hemodialysis Caregivers

[8] Cukor D, Ver Halen N, Asher D R, Coplan J D, Weedon J, Wyka K E, Saggi S J and Kimmel P L 2014 Psychosocial Intervention Improves Depression, Quality of Life, and Fluid Adherence in Hemodialysis *J. Am. Soc. Nephrol.* **25** 196–206

[9] Beyebach M and Ph D 2018 Impact Of Nurses´ Solution-Focused Communication On The Fluid Adherence Of Adult Patients On Hemodialysis 0–2

[10] Xiaoli Huang., Jimmy Lin. D D-F 2006 Evaluation of PICO as a Knowledge Representation for Clinical Questions *AMIA 2006 Symposium Proceedings* pp 359–63

[11] Alikari V, Tsironi M, Matziou V, Tzavella F, Stathoulis J and Babatsikou F 2018 The impact of education on knowledge , adherence and quality of life among patients on haemodialysis *Qual. Life Res.* **0** 0

[12] Parker J R 2019 Use of an Educational Intervention to Improve Fluid Restriction Adherence in Patients on Hemodialysis *Nephrol. Nurs. J.* **46** 43–9

[13] Yong-mei H, Pei-cheng H, Yan-ping L and Zhan-yu M 2010 Effects of rational-emotive therapy on adherence to fluid restrictions of patients maintained on hemodialysis prior to and after kidney transplantation * ★ *J. Clin. Rehabil. Tissue Eng. Res.* **14** 5869–72

[14] Moattari M, Ebrahimi M, Sharifi N and Rouzbeh J 2012 The effect of empowerment on the self-efficacy , quality of life and clinical and laboratory indicators of patients treated with hemodialysis : a randomized controlled trial *Heal. Qual. Life Outcome* 1–10

[15] Garcı H, Olga P and Rafael C 2014 Motivational Interviewing Promotes Adherence and Improves Wellbeing in Pre-Dialysis Patients with Advanced Chronic Kidney Disease *J Clin Psychol Med Settings* 103–15

[16] Ahrari S, Moshki M and Bahrami M 2014 The Relationship Between Social Support and Adherence of Dietary and Fluids Restrictions among Hemodialysis Patients in Iran *J. Caring Sci.* **3** 11–9

[17] Lindberg M, Wikstrom B and Lindberg P 2010 Subgroups of haemodialysis patients in relation to fluid intake restrictions : a cluster analytical approach *J. Clin. Nurs.* 2997–3005

[18] Welch J L, Siek K A, Connelly K H, Astroth K S, Mcmanus M S, Scott L, Heo S and Kraus M A 2010 Patient Education and Counseling Merging health literacy with computer technology : Self-managing diet and fluid intake among adult hemodialysis patients *Patient Educ. Couns.* **79** 192–8

[19] Pasyar N, Rambod M, Sharif F, Rafiie F and Mohammadif N P- 2015 Improving adherence and biomedical markers in hemodialysis patients : The effects of relaxation therapy *Complement. Ther. Med.* **23** 38–45

PAT-865

THE EFFECT OF SELF MANAGEMENT EDUCATION FOR COMPLIANCE FLUID INTAKE ON CLIENTS UNDERGOING HEMODIALYSIS IN NTB PROVINCIAL HOSPITAL

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ABSTRACT

The purpose of this study to determine the effect of self-management education for compliance fluid intake in clients who undergo hemodialysis. This study used a design approach quasy experiment. Sampling technique used accidental sampling. The sample in this study were 24 peoples, divided into 12 respondents treatment group and the control group of 12 respondents. The treatment group was given self-management education interventions with the media calendar fluid management. The variable in this study were the knowledge, attitudes, actions and IDWG. Data were collected by using questionnaires and observation sheets then analyzed using the Wilcoxon Sign Rank Test with α of 0.05, Paired t test with α of 0.05and Mann Whitney U test with α of 0.05. Result study used 24 respondents showed between the pre and post in the treatment group showed a significant difference for knowledge, action and IDWG, but there was no significant difference for the variables attitude. Results of statistic test Mann Whitney U test showed no difference between the compliance component of the treatment group and the control that knowledge with p = 0.043, p = 0.005 attitudes, actions IDWG p = 0.017 and p = 0.007.

Keywords: self-management education, compliance fluid intake, hemodialysis

1. Introduction

In patients undergoing routine hemodialysis (HD), they often experience excess volume of fluid in the body, this is due to decreased kidney function in secreting fluid. Although CKD patients at the beginning of HD have been given health education to reduce fluid intake for a day, in the next HD therapy, patients often present with complaints of shortness of breath due to excess body fluid volume, namely an increase of more than 5% of the patient's dry weight [1].

The results of interviews with 10 clients who have undergone HD on February 1, 2016 at the Provincial Hospital of NTB, found that 7 clients claimed to not comply with restrictions on fluid intake. Clients do not understand about fluid restrictions, even though they have been given health education. Clients often experience shortness of breath and must undergo HD outside the predetermined schedule. The research conducted by [2] concerning factors related to patient compliance with Chronic Kidney Disease (CKD) undergoing hemodialysis at RSPAU Dr. Esnawan Antariksa Halim Perdana Kusuma Jakarta shows that compliance with CKD patients who undergo HD is influenced by age, education level, duration of CKD.

Limitation of fluid intake in CKD patients aims to prevent the occurrence of cardiovascular edema and complications. The water that enters the body is balanced with the water that comes out, either through urine or IWL. In limiting fluid intake, the fluid entering depends on urine output.

Daily weight is an important parameter monitored, in addition to accurate records of intake and output. The amount of intake is limited according to the amount of urine that is available plus insensible water loss (IWL). If there is excessive fluid intake during the period between dialysis, there will be a large increase in body weight [3]. One way to improve patient adherence in limiting fluid intake is by increasing the patient's understanding of the importance of limiting fluid intake in patients undergoing hemodialysis. Understanding good counseling material can influence the attitude of patients in caring for themselves so that patients are more obedient in limiting fluid intake.

Self-Care Theory by Orem found that humans have the ability to care for themselves (self-care agency). Self-management is the compliance and support partner of individuals in their treatment, knowledge and skills possessed to care for themselves, make decisions about their own care, identify problems, set goals, and monitor and manage symptoms. Self-management includes problem solving skills, decision making in response to signs and symptoms, and taking action, for example learning how to change behavior [4].

Self-care agency can be improved through a nursing agency in which there is a supportive educative system, one of which is through self-management education. In this study, researchers tried to provide education with fluid management calendar media (KPC). The fluid management calendar is a tool to monitor the development of the client's weight during HD. In addition, clients can plan or distribute fluid intake which will be consumed every day according to the doctor's recommendations.

2. Material and methods

2.1. Research design

The design was Quasi-experiment with pre-post test on control and intervention group.

2.2. Population and sample

The population in this research were all hemodialysis patients who experienced an increase of IDWG clients in the hemodialysis room of NTB Province Hospital, as many as 118 respondents and from which 24 respondents were obtained with accidental sampling. This research was conducted at the hemodialysis room of Provincial Hospital NTB on August 12 – October 4, 2016. Inclusion criteria in this research were clients who experienced increase of IDWG >4% and willing to be respondents, while exclusion criteria was clients who can’t read.

2.3. Variables

The independent variable in this study was self-management education. The dependent variable in this study was knowledge, attitudes, actions and IDGW clients undergoing hemodialysis.

2.4. Instruments

The instruments used in data collection were questionnaires of knowledge, attitudes, observation and body weight scale for IDGW.

2.5. Research procedures

In the first week the researcher collected respondents' data and chose respondents according to the criteria set by the researcher so that 24 respondents were obtained and the researcher measured the knowledge, attitudes, actions using questionnaires and IDWG measurements. In the 2nd week to

the 7th week the researchers gave intervention in the intervention group while the control group was not given. In the 8th week the researchers conducted a post test on the respondents.

2.6. Analysis

Data was analyzed by using IBM SPSS Statistic 24. Statistical analysis consists of two stages, namely descriptive and inferential analysis. Descriptive analysis includes the mean and standard deviation. Inferential analysis used Wilcoxon Signed Ranks Test for pre-test and Mann Whitney U Test for post-test to determine the different between the independent and dependent variables of control and intervention group. Confidence interval was 95% with alpha (α) = 0.05.

2.7. Ethical Clearance

This research has passed the ethical review and obtained an Ethical Approval certificate with No. 070.1/ 04/ KEP/ 2016 issued by Research Ethics Committee of NTB Province Hospital.

3. Results

Characteristics of respondents in table 1 showed the majority of respondents' age, both in the treatment group and the control group were in the range of 36-50 years which is equal to 58.3%, the sex in the treatment group respondents and the control group is dominated by men, the last education in the treatment group respondents is a college that is equal to 33.4% and the control group is high school is equal to 50%. The occupation of the treatment group respondents was dominated by the private sector, namely 33.3%, and the control group was dominated by respondents who did not work, namely 33.3%. Most of the respondents in the treatment and control groups had undergone HD <1 year.

Table 1. Characteristics respondents in both of group

Variable	Treatment Group		Control Group	
	f	%	f	%
Age				
20-35	2	16,7	2	16,7
36-50	7	58,3	7	58,3
51-65	3	25	3	25
Gender				
Male	11	91,7	10	83,3
Female	1	8,3	2	16,7
Education				
No or Not Graduate from ES	1	8,3	1	8,3
ES	1	8,3	1	8,3
JHS	3	25	-	0
SHS	3	25	6	50
College	4	33,4	4	33,4
Work				
Government Employees	2	16,7	3	25,0
Private	4	33,3	2	16,7
Entrepreneur	3	25,0	3	25,0
Freelance	3	25,0	4	33,3
Years of HD				
<1 year	7	58,3	8	66,7
1- <3 year	3	25,0	4	33,3
3-5 year	0	0	0	0
>5 year	2	16,7	0	0

Table 2 shows that in the treatment group there was an increase in knowledge scores, it can be seen in the pre-test data which showed that 1 respondent (8.3%) is in the less category, 2 respondents (16.7%) in the sufficient category and 9 respondents (75 %) were in the good category. Post-test data shows that the knowledge score of all respondents (100%) were in the good category after being given SME. While in the control group there is also an increase in the score of knowledge, this can be seen in the pretest data which shows that there was 1 respondent (8.3%) in the less category, 2 respondents (16.7%) in the sufficient category and 9 respondents (75%) in the good category. In the post test data the knowledge score contained 1 respondent (8.3%) in the sufficient category and 11 respondents (91.7%) in the good category.

For the treatment group there was an increase in attitude scores that were not significant, namely the positive category increased by 1 respondent. This can be seen in the pre-test data of the number of positive categories as much as 4 respondents (33.3%) and the negative category as many as 8 respondents (66.7%) in the post test data positive categories as much as 5 respondents (41.7%) and negative categories 7 (58.3%). Whereas in the control group there was no change in attitude score, this can be seen in the pre-test and post-test data which had a fixed attitude score, namely the positive category of 7 respondents (58.3%) and the negative category of 5 respondents (41.7%).

It is also showed that in the treatment group there was a significant increase in the score of action, it can be seen in the pre-test data which showed that 7 respondents (58.3%) in the category were sufficient, 5 respondents (41.7%) were in the good category. The post test data shows the score of action of all respondents (100%) in the good category after being given SME. While the control group did not experience a significant increase in score of action, it can be seen in the pre-test data which showed that 3 respondents (25%) in the less category, 3 respondents (25%) in the sufficient

category and 6 respondents (60%) in the good category. In the post test data the knowledge score contained 1 respondent (16.7%) in the less category, 3 respondents (25%) in the sufficient category and 7 respondents (58.3%) in the good category.

In addition, it is showed that in the treatment group there was a decrease in IDWG numbers, this can be seen in the pre-test data which showed that 12 respondents (100%) in the average category became 12 respondents (100%) in the mild category. While in the control group there is also a decrease in IDWG numbers in some respondents, this can be seen in the pre-test data which shows that 12 respondents (100%) were in the average category, in the post test data this became 6 respondents (50%) in the mild category and 5 respondents (41.7 %) in the average category and 1 respondent (8.3%) in the hazard category.

Table 2. Distribution of knowledge, attitudes, actions and IDGW of respondents before and after intervention

Variable	Treatment Group				Control Group			
	Pre test		Post test		Pre test		Post test	
	n	%	n	%	n	%	n	%
Knowledge								
Well	9	75	12	100	9	75	11	91,7
Enough	2	16,7	0	0	2	16,7	1	8,3
Less	1	8,3	0	0	1	8,3	0	0
Total	12	100	12	100	12	100	12	100
Attitude								
Positive	4	33,3	5	41,67	7	58,3	7	58,3
Negative	8	66,7	7	58,3	5	41,67	5	41,67
Total	12	100	12	100	12	100	12	100
Action								
Well	5	41,7	12	100	6	50	7	58,3
Enough	7	58,3	0	0	3	25	3	25
Less	0	0	0	0	3	25	2	16,7
Total	12	100	12	100	12	100	12	100
IDGW								
Light	0	0	12	100	0	0	6	50
Average	12	100	0	0	12	100	5	41,7
Danger	0	0	0	0	0	0	1	8,3
Total	12	100	12	100	12	100	12	100

Statistical results showed there was a significant difference between the pre-test and post-test knowledge in the treatment group with p = 0.007 while in the control group there is no significant difference between the pre-test and post-test. The Mann Whitney U Test showed p = 0.043, which means there was a significant difference in knowledge between the treatment groups given the SME compared to the control group not given the SME.

On the other hand, there was no significant difference between the attitude of the pre-test and post-test in the both of treatment and control group with p = 0.09 and 0.422 respectively. But the Mann Whitney U Test showed that p = 0.005, which means there were significant differences in attitudes between the treatment groups given the SME compared to the control group not given SME.

Statistical tests also showed significant differences in the respondent's actions between the pre-test and post-test in the treatment group with a value of p = 0.003 while in the control group there is no significant difference with the value p = 0.202. The Mann Whitney U Test showed p =

0.017 which means that there was a significant difference in the compliance measures of fluid intake between the treatment groups given by the SME compared to the control group not given the SME.

4. Discussion

The results of the study of knowledge variables showed that there was a difference in knowledge between the pretest and posttest in the group given self-management education intervention while in the group that was not given self-management education there was no difference between the pretest and posttest. The results also showed a significant difference between groups given self-management intervention in education and control groups. The results of this study are consistent with the research conducted by [5] stating that self-management education can improve patient knowledge. Another study conducted by [6] and [7] also states the same thing, that education about self-care can increase knowledge in the management and care of patients..

According to [8] the higher the level of education, the easier it is for individuals to understand a problem that arises in themselves or in the environment. The results of this study are in line with the research conducted by [9]. In patients who have a broader knowledge that allows patients to control themselves in overcoming the problems faced, they have high self-confidence, experience, and have a correct estimate of how to overcome the incident and easily understand what is recommended by health workers, which will be able to reduce anxiety so that it can help these individuals in making decisions.

The researcher assumed that the increase in knowledge scores in the treatment group was caused by higher levels of education. This is because many respondents have higher levels of education in the treatment group compared to the control group. The researchers also assumed that an increase in knowledge scores could be caused by continuous education given 8 times over 4 weeks.

The results of the attitude variable study showed that there were no significant differences between the attitudes of respondents in the pretest and posttest both in the groups given self-management education and control groups. The results also showed a significant difference between groups given self-management education and control groups. . The results of this study are not in accordance with the research conducted by [10] stated that self-management effectively increases behavior change and prevents the development of disease in patients with chronic kidney disease.

[11] explains that a person's attitude is built on three basic structures, namely cognitive, affective and conative. Cognitive is the representation of trust and confidence in a particular object. Affective indicates feelings and subjective emotional conditions for certain objects. This emotional feeling makes a person maintain his attitude although the attitude shown is not necessarily a positive attitude. While the conative structure is more directed at the tendency of actions and behavior of a person towards an object. This provides an overview and the reason why the respondent has a negative attitude and is positive.

Researchers assume that statistically there is no difference in attitude, but by looking at the accumulative data the client's attitude score it can be seen that there is a change in attitude scores but not much, this can be caused by the duration of 4 weeks of SME giving so that it is not enough to change one's attitude. Other factors can also be caused by filling out questionnaires filled out by respondents so that the level of validity is lacking, the condition of the hospital conditions that are not conducive can also cause the client to become unfocused when answering the questionnaire.

The results of the action variable study showed that there were significant differences between the pre-test and post-test actions in the group given self-management education intervention while in the group that was not given self-management education there was no difference between the pretest and posttest. The results of the study also showed a significant difference between the groups given self-management education intervention compared to the group that was not given self-management education.

[8] explains that a person's behavior is determined by predisposing factors which include beliefs, values, perceptions relating to one's motivation to act; supporting factors include the availability of health facilities and facilities; and driving factors include attitudes and behavior of health workers, families, or other officers who are a reference group of community behavior.

The researcher assumed that the increase in respondent's actions could occur because of the perception and belief that by adhering to fluid intake there would be improvements in his health condition and preventable complications. Family support is also influential in helping to regulate fluid intake and as a reminder that sufferers always adhere to prescribed fluid intake. The presence of fluid management calendar media also makes it easier for sufferers and families to remember and write down the fluid intake that has been consumed. In addition, sufferers can also evaluate how much fluid they have consumed and control how much fluid they consume.

The results of IDGW Variable study showed that there were significant differences between the IDWG pre-test and post-test in the group given self-management education intervention while in the group that was not given self-management education there was no difference between the pretest and posttest. The results also showed a significant difference in IDWG between groups given self-management education intervention compared to the control group. Data shows that all respondents in the treatment group experienced a decrease in the average IDWG value. The results of this study are supported by research conducted by [12] patients who received an educational intervention, and decreased IDWG2, 64 kg decreased to 2.21 kg and the level of adherence increased from 47% to 71%.

[13] suggests several factors that influence weight gain between two dialysis women, including fluid input, thirst, social support and self-efficacy. The results of research conducted by [14] state that there is a relationship between fluid input and weight gain between two dialysis times. Understanding and the patient's ability to regulate fluid intake that is close to the body's fluid requirements is needed to avoid the effects of excess fluid. The recommended daily intake of fluids for patients undergoing hemodialysis is the amount of urine plus insensible water losses [15].

[16] mentions thirst management in HD patients consisting of two strategies that are influenced by the patient's ability to choose and use thirst management effectively. The first strategy aims to reduce the amount of liquid entering in accordance with fluid restrictions. This method can be done by measuring the amount of fluid intake throughout the day or calculating the amount of liquid contained in fruits and vegetables. The second strategy aims to reduce thirst such as chewing candy, gum or using other saliva substitutes.

The researcher assumed the decrease in IDWG in the treatment group in this study apart from the routine dialysis process was also because of the client's ability to manage thirst and control the limitation of fluid intake consumed. The treatment group experienced a higher IDWG reduction than the control group, because the treatment group received self-management education interventions with fluid management calendar media whereas the client measures the liquid

consumed, which comes out every day for 6 weeks.

5. Conclusion

Self-management education using a management calendar fluids are able to increase knowledge, actions and client IDWG that undergo hemodialysis. While Self-management education with using a fluid management calendar has not been able to improve attitudes clients undergoing hemodialysis.

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References

[1] Kresnawan T 2001 *Pengatur makanan (diet) pada pasien gagal ginjal kronik yang menjalani hemodialisa dengan terapi konservatif dan terapi pengganti* (Jakarta: RSCM)
[2] Syamsiah N 2011 *Faktor-faktor yang berhubungan dengan kepatuhan klien CKD yang menjalani hemodialisis di RSPAU Dr. Esnawan Antariksa Halim Perdana Kusuma Jakarta* (Universitas Indonesia)
[3] Suwitra 2014 *Buku ajar penyakit dalam* ed S Setiadi (Jakarta: Internal Publisher)
[4] Lindberg 2010 *Eccesive fluid overload Among Haemodialysis Patient : prevalence, individual characteristic and self regulation fluid intake* (Universitas Upsaliensis Uppsala)
[5] McGeoch M A 2006 A global indicator for biological invasion *Conserv. Biol.* **20**
[6] Efraimsson 2008 Effects of COPD self-care management education at a nurse-led primary health care clinic *Scand. J. Caring Sci.* **22**
[7] Dowson 2010 Impulsive aggression in adults with attention-deficit/hyperactivity disorder *Acta Psychiatr. Scand.* **121**
[8] Notoatmojo S 2007 *Promosi Kesehatan dan Ilmu Perilaku* (Jakarta: Rineka Cipta)
[9] Kamaluddin & R 2009 Jurnal Keperawatan Soedirman (The Soedirman Journal of Nursing), Volume 4 No.1 Maret 2009 **4**
[10] Sidhu 2015 Editorial : May 2015
[11] Azwar S 2007 *Sikap Manusia Teori Dan Pengukurannya* (Yogyakarta: Pustaka Pelajar)
[12] Barnett J E 2008 The ethical practice of psychotherapy : easily within our reach *J. Clin. Psychol.* **64**
[13] Sonnier 2000 *Effects of self-monitoring and monetary reward on fluid adherence Among Adult Hemodialysis Patient* (University of North Texas)
[14] Istanti Y 2009 *Faktor--faktor yang berkontribusi terhadap IDWG pada klien dengan CKD di Unit Hemodialisa RS PKU Muhammadiyah Yogyakarta* (Universitas Indonesia)
[15] Suddarth B and Bare S 2008 *Textbook of medical surgical nursing* (Philadelphia: Philadelphia Lippincrot)
[16] Welch, JL, Perkins, SM, Johnson, CS & Kraus M 2006 Patterns of interdialytic weight gain during the first year of hemodialysis *Nefrol. Nurs. J.* **33**

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THE EFFECT OF PROGRESSIVE RELAXATION THERAPY ON INSOMNIA ON OLDER ADULT

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ABSTRACT

One of the efforts made by the older adult to improve their welfare is to fulfill their basic needs. One of the basic needs is the need for sleep and rest, about 60% of the older adult experience insomnia or sleep disorders. Insomnia in the older adult can be overcome by non- pharmacological methods, one of which is progressive relaxation exercises. Progressive relaxation is a systematic physical relaxation of the head then down to the feet accompanied by a visualization suggestion that aims to deepen the relaxed state and is used to deal with sleep disorders. This study aims to identify insomnia in the older adult and analyze the effect of progressive relaxation therapy on insomnia in the older adult. This study used a Pre- experiment with the One Group Pretest Posttest approach, and the sampling technique used a total sampling of 29 people. Data analysis using paired T test. The conclusion of this study shows that there is an effect of progressive relaxation therapy on insomnia in the older adult. The results of the study as a basic guide or independent effort to overcome the quality of sleep, can be done alone or accompanied by a family

Keywords: Progressive relaxation, insomnia, older adult

1. Introduction

Insomnia is a sleep disorder that causes excessive drowsiness, if someone experiences insomnia then someone's sleep needs will be disrupted. Those who get insufficient sleep will experience physical and mental health problems, including; feeling tired, lack of concentration, reduced memory, less able to make decisions, irritability and not relax, nausea, dizziness, and increased the risk of accidents.

The Indonesian Ministry of Health stated that the elderly who experience sleep disorders per year are around 750 people. Insomnia is the most common disorder. Every year it is estimated that around 35-45% of adults report a serious sleep disorder. The prevalence of sleep disorders in the elderly is quite high at around 50%.

One of the non-pharmacological management in dealing with sleep disorders is progressive muscle relaxation therapy. Relaxation exercises can be used to enter the sleep state because deliberately relaxing the muscles forms a calm and relaxed atmosphere [1][2][3][4][5][6][7].

2. Research Methods

This was a pre-experiment research with one group pre-posttest design. Population were older adults listed at Psyandu Lansia (integrated health care center for older adults) N=48, at Posyandu Selobanteng Banyuglugur Situbondo, Probolinggo, East Java. Samples were older adults with insomnia. There were 29 older adults with insomnia involved in this research.

The independent variable was progressive relaxation therapy which run according to the standard operating procedure. The dependent variable was the level of insomnia which was collected by using an insomnia questionnaire. At first, the researcher gave an explanation to the prospective respondents about this research. If they are willing to become respondents, they were invited to sign an informed consent. After that, respondents should complete the questionnaire given by the researcher. When all had finished, the researcher rechecks the completeness of questionnaire to make sure that all item was answered. Statistical analysis was conducted with paired t-test with level of significance 95%.

3. Results

Table 1 had shown that all of respondents (100%) have an insomnia at a severe level before progressive relaxation therapy. After progressive relaxation therapy conducted, a half of respondents (55.17%) have an insomnia on a light level. There were only 7 (24.13%) respondents who still have moderate level of insomnia. Then, as many as 6 (20.7%) respondents were free from insomnia.

Table 2 had shown significant differences between respondent's pre and posttest score for the level of insomnia. Statistical analysis by using paired t-test shown p=0.000 which means progressive relaxation therapy has a significant effect on the level of insomnia on older adult. Mean score decreased from 3.00 (before intervention) to 2.03 (after intervention).

Table 1. The level of insomnia on older adult before and after intervention (n=29)

The level of Insomnia	**Before intervention**		**After intervention**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Not insomnia	0	0	6	20,7
Light	0	0	16	55,17
Moderate	0	0	7	24,13
Severe	29	100	0	0
Total	29	100	29	100

Table 2. The effect of progressive relaxation therapy on older adult with insomnia

Variable	*n*	*Mean*	*T count*	*T table (df=27)*	*ρ Value (CI=95%)*
Before intervention	29	3,00	7,641	1,703	0,000
After intervention		2,03			

4. Discussion

All of respondents have a severe level of insomnia before intervention. The older adult was more often experiencing sleep disorders, especially insomnia. Insomnia can be caused by many factors, such as stress and depression, anxiety, physical condition, uncomforted environment, response to disease, and unhealthy lifestyle. Some medication also can affect the sleep quality.

Insomnia is often associated with poor sleep habits. If conditions persist, fear of not being able to sleep can lead to vigilance. During the day, someone with chronic insomnia can feel drowsy, tired, depressed, and anxious. One way to overcome insomnia is by relaxation methods. This

technique is called progressive relaxation which is a technique to reduce tension in the muscles. Relaxation exercises can be used to enter sleep conditions because by deliberately relaxing the muscles will form a calm and relaxed atmosphere. Feeling relaxed is forwarded to the hypothalamus to produce a Corticotrophin Releasing Factor (CFR) then CFR stimulates the pituitary gland to increase the production of Proopiomelanocortin which causes beta endorphin as a neurotransmitter that affects the mood to relax and the production of encephalin by the adrenal medulla increases so that there is an increase in the number of older adult sleep fulfilment.

Based on a survey conducted by researchers in May that the level of insomnia in the older adult at the IHC was quite high. Sleep disorders experienced by the elderly are caused by dizziness that often suffers. This dizziness is felt because the elderly have a heavy burden in their daily lives, namely working in the fields from 7:00 a.m. to 5:30 p.m.

After progressive relaxation therapy all of respondents showed a decrease on the level of insomnia. Many of them have light level. There were only less than 25% who still have moderate level of insomnia. While the rest are already free from insomnia. Previous research conducted at BPSTW Ciparay Bandung also found that there were differences on the level of insomnia before and after progressive muscle relaxation therapy.

Progressive relaxation is self-teaching or instructional exercises that include learning to relax the muscle group systemically, starting with the facial muscles and ending in the leg muscles. This action usually takes 15 to 30 minutes and can be accompanied by recorded instructions that direct the individual to pay attention to the relaxed muscle sequence. The progressive relaxation techniques taught by researchers, include: instructing the older adult to lie down comfortably, take a deep breath, stretch the calves and toes, train the abdominal and chest muscles, clench their fists as hard as possible for a few seconds, tighten the neck and shoulders as if touching the shoulder, close your eyes as hard as you can, touch your lips. For the older adult, adequate sleep is very important, if the need for sleep is very less, it will have an impact on excessive drowsiness during the day and a decrease in quality of life.

Statistical analysis had shown that progressive relaxation therapy has an effect on the level of insomnia in older adults. It can decrease the level of insomnia. So that, it can be one of alternative interventions to treat older adults with insomnia. Progressive relaxation therapy can help older adults to express negative feelings into positive feelings, so they can change their unhealthy lifestyle which can interfere with their quality and quantity of sleep. During the intervention, the older adult expresses a good condition, calmness, and relax. Progressive muscle relaxation therapy which combined with a breathing technique that is consciously carried out and uses the diaphragm, allows the abdomen to rise slowly and the chest to fully expand. The breathing technique is able to provide a massage to the heart that is beneficial due to the rise and fall of the diaphragm, opening blockages and facilitating blood flow to the heart and increasing blood flow throughout the body. Increased blood flow can also increase nutrients and oxygen. Increased oxygen in the brain will stimulate an increase in serotonin secretion, making the body calm and easy to fall asleep. Based on this research progressive relaxation therapy is able to overcome insomnia disorders that occur in the older adult and can be used as a consideration in choosing interventions for health workers and the community, especially for the older adult who experience insomnia.

The population and samples desired by researchers in this study are limited in number so that the expected results are less than optimal, data collection methods carried out with questionnaires

and observations that require a longer time in its implementation influenced the attitude, patience, skills and subjectivity and psychological response of the researcher. A truly accurate study, of course, requires considerable time for the respondents to be examined. However, this research was conducted in just one month, which of course was considered less representative of the desired results, Researchers are still classified as beginner researchers and this research is the first study that affects the results of the study.

5. Conclusion

The level of insomnia in the older adults before progressive relaxation therapy in severe insomnia Posyandu. The level of insomnia of respondents after progressive relaxation therapy at the Posyandu was not insomnia, mild insomnia and severe insomnia. There is an effect of progressive relaxation therapy on insomnia in the older adult at Posyandu. The results of this study can be input or consideration as a nursing intervention for insomnia in the elderly. The results of this study hopefully can help improve nurses' knowledge in carrying out providing services in reducing insomnia for the elderly. For that we as nursing provide information about how to deal with insomnia in the elderly and in the community. Insomnia can be prevented by progressive relaxation therapy.

References

[1] Perry & Potter, *Buku Ajar Fundamental Keperawatan*. 2006.
[2] A. Ridwan, *Manfaat Relaksasi Otot Progresif*. 2016.
[3] S. Purwanto, "Mengatasi Insomnia Dengan Terapi Relaksas," *J. Kesehat.*, vol. Vol.1. No., 2008.
[4] S. Notoatmodjo, *Metodologi Penelitian Kesehatan*. 2012.
[5] A. Fauzi, *Terapi Aktifitas KelompokTeknik RelaksasiProgtresif*. 2016.
[6] S. 2012 Rizema Putra, *Panduan Riset Keperawatan dan Penulisan Ilmiah*. 2012.
[7] Priyoto, *NIC dalam Keperawatan Gerontik*. 2015.

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HEALTH BELIEF MODEL (HBM) AND ADHERENCE IN CHRONIC ILLNESS: A SYSTEMATIC REVIEW

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ABSTRACT

Adherence to treatment is an important component in the management of various acute and chronic diseases. Low levels of adherence to medical interventions are a common and very complex problem, especially for patients with chronic illness. This Systematic Review aims to describe the effect of Health Belief Model (HBM) based interventions on adherence to the treatment of patients with Chronic Illness. Article search using the PECOT framework in the database; Scopus, Science Direct, ProQuest, and Ebsco, are limited to the last 10 years; 2008 until 2018, the best 15 articles reviewed. Health Belief Model has been shown to be effective in describing medication adherence in chronic illness that require long-term therapy such as pulmonary TB, Cancer, Diabetes Mellitus, and others. The Health Belief Model (HBM) theory can be used as a theoretical reference in predicting behavior and making interventions to improve medication adherence to Chronic Illness.

Keywords: Health Belief Model, Adherence, Compliance, Chronic Illness

1. Introduction

Chronic disease is defined by the World Health Organization (WHO) as being of long duration, generally slow in progression and not passed from person to person [1]. The Global Burden of Disease study 2013 reported a substantial (42.3%) increase in the years lived with disability (YLD) from 1990 to 2013 [2]. This was overwhelming due to non-communicable diseases, with no infectious diseases in the top 20 leading causes of YLDs globally in 2013. Chronic condition multi-morbidity is high in developed countries [3] and the prevalence of it increases with age; Australian data indicates that around 40% of people aged over 44 years have chronic disease multi-morbidity, increasing to around 50% for 65–74 year olds, and 70% for 85 years or over [4]. Millions of Americans are living with at least one chronic disease, and while the majority have been prescribed medication to control symptoms-medication adherence is a widespread problem. Medication nonadherence varies by chronic disease, patient characteristics, and insurance coverage, and previous research has identified non-financial barriers including disease-related knowledge, health literacy and polypharmacy [4].

Medications are an essential part of chronic disease management. However, adherence to long-term therapy remains poor. The World Health Organization (WHO) defines adherence to long-term therapy as "the extent to which a person's behavior – taking medication, following a

diet, and/or executing lifestyle changes – corresponds with agreed recommendations from a health-care provider" . Poor adherence is considered a major drug-related problem and is associated with increased emergency-room visits, hospitalizations, and suboptimal clinical outcomes, all of which are associated with an increased burden on the health care system. [5].

Adherence is an often discussed issue nowadays. Also the World Health Organization (WHO) is concerned with the problem of poor adherence. In one of its reports the magnitude of adherence is described and examples for different adherence estimates for various chronic conditions are given. Data from Middle Eastern countries indicates that medication adherence ranges from 1.4% to 88% depending on the methods used to assess and quantify adherence [6]. Reasons for poor treatment adherence include disease characteristics and severity, treatment factors (e.g., treatment duration, number of medications, cost, frequency of administration), and medication side effects, among others. In addition, patients have their own beliefs and perceptions about medications, which can have a significant impact on their intention to take the prescribed medications [5]

Health education to patients of chronic diseases, both in the form of tailored patient education, or participation in health education seminars on general topics, have a profound effect on the patient's knowledge and understanding of the risk involved with carelessness about their health [6]. Health education and awareness is the most effective way to disseminate information and encourage people to adopt healthy lifestyles. Adoption of a healthy lifestyle not only helps in the prevention of diseases, but also in reducing the risk of complications resulting from these diseases. However, the most important role of health education is on patients of chronic diseases (most commonly, diabetes and hypertension) who routinely visit the PHC centers for follow-up and replenishment of their drug supplies [6].

Thus, the purpose of the education is for the disease to be managed by the patient and to improve the patients' quality of life (17). To reduce the complications of diabetes, some studies emphasize that healthcare workers should not merely provide knowledge to people, but take into account the perception of the risk as a central concept for understanding healthy behaviors and making changes in behavior. So, patients with diabetes need to properly understand the risk of diabetic complications and the structure of the Health Belief Model (HBM) with respect to constructs appropriate for intervention (18). HBM as a theoretical framework for this research, is one of the most effective models of health education, mainly focused on prevention of diseases and adoption of behaviors to avoid illness and disease chains and it is one of the important precise models which is used to determine the relationship between health beliefs and behaviors. The HBM posits that people will take action to prevent illness if they regard themselves as susceptible to a condition (perceived susceptibility), if they believe it would have potentially serious consequences (perceived severity), if they believe that a particular course of action available to them would reduce the susceptibility or severity or lead to other positive outcomes (perceived benefits), and if they perceive few negative attributes related to the health action (perceived barriers) [7]. The aim of this systematic review was to describe the effects of educational intervention based on the health belief model (HBM) on compliance behavior in patients with

chronic disease.

2. Methods

2.1. Protocol

This systematic review using Procedures outlined in the Preferred Reporting Items for Systematic-Reviews (PRISMA) were followed [8,9].

2.2. Eligibility criteria

Journal articles published in English from January 2008 to January 2018. Searching strategy using the PICO framework to identify the keywords.

2.2.1. Type of study design. The design of this study was a systematic review of quantitative study approaches formulated to review observational studies and relevant experimental studies and comprehensive analysis. Design of this study were quantitative studies, with observational methods that include cross sectional and cohort and experimental methods which include RCT and Non-randomized experimental studies. Journals written in English were induced.

2.2.2. Type of participants. Studies were included with adult patients (>18 years) with chronic diseases who get long-term therapy.

2.2.3. Type of interventions. Educational interventions based on the Health Belief Model (HBM) with exclusion criteria HBM-based educational interventions that have been modified with other interventions such as mindfulness, experimental learning or other interventions.

2.3. Information sources

Studies were identified by comprehensive searching of four databases namely Scopus, Medline, Proquest, and Science Direct.

2.4. Search

Search terms in the database using a combination of keywords (1) Health Belief Model AND (2) Adherence AND (3) Chronic Disease

2.5. Study selection

Titles and abstracts were independently screened by reviewer against the inclusion criteria. Reviewer assigned inclusion codes of yes, no or unsure. Full-text articles were then obtained and assessed for eligibility. The reviewers compared the screening results and discussed any disagreements regarding study eligibility.

2.6. Data collection process

The following data were extracted: the identity of studies, the setting of the study and the main results. Two authors (IEK and LH) were involved in data extraction, and after organizing results in a table, the findings were discussed and reviewed again. One review author extracted the following data from included studies and the other checked the extracted data. Disagreement is resolved by discussion between authors.

2.7. Data items

Reviewers used a customized form to extract study information to enable the evaluation of study characteristics, heterogeneity, and likely population impact through reach, effectiveness, adoption and

Implementation. The following data were extracted: (1) study country; (2) cohort characteristics; (3) study inclusion and exclusion criteria; (4) study design; (5) characteristics of the intervention and control groups; (6) details of the intervention; (7) setting in which interventions were adopted; (8) who implemented the intervention; (9) timing of follow-up assessments; (10) primary and secondary outcomes; (11) measurement tools; and (12) intervention effects on outcomes.

3. Result

3.1. Study selection

The search strategy was carried out by generating a total of 352 citations, which deleted 215 duplicates. 145 existing literature was deleted during the first screening because the title and or abstract did not match the specified eligibility criteria. 38 full articles from the second phase of screening and 16 articles were obtained for review. Study characteristics, including cohort information, intervention details, and outcome measures are described in Appendix A.

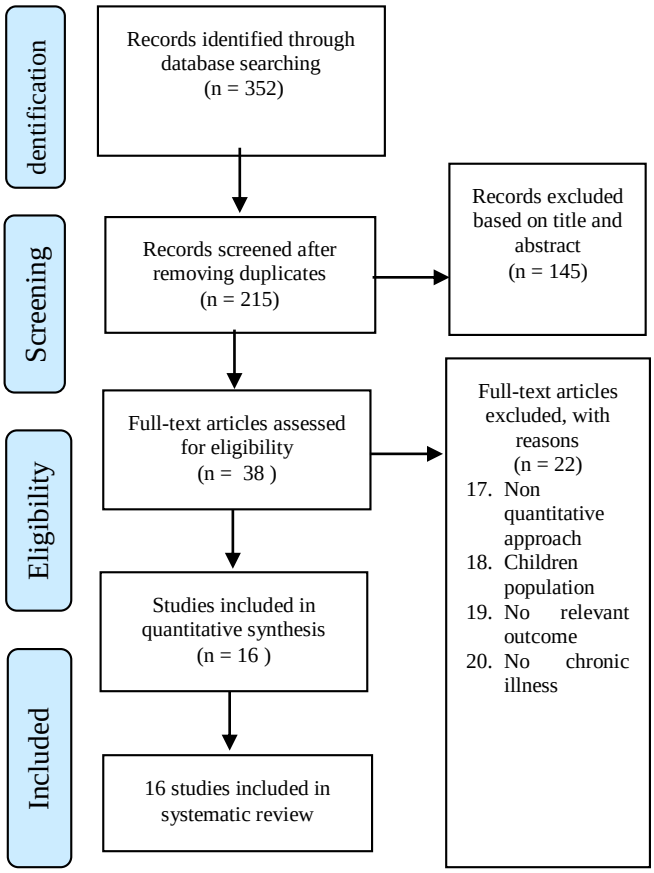

Figure 1. Study inclusion based on the preferred reporting items for systematic reviews

3.2. Study characteristic

The search strategy was carried out by generating a total of 352 citations, which deleted 215 duplicates. 145 existing literature was deleted during the first screening because the title and or abstract did not match the specified eligibility criteria. 38 full articles from the second phase of screening and 16 articles were obtained for review.

3.2.5 Type of participant. A total of 16 studies reviewed in 2008-2018 were conducted in 7 countries: UK, Iran, India, Turkey, China, Saudi Arabia and Malaysia. The research method used by several articles varied from Observational study include Cross Sectional (n=5) and cohort study (n=1), experimental studies include randomized controlled trials (RCT) (n=6) and quasi experimental (n=4). The total number of samples is 4,246 people.

3.2.6 Type of study design. All study adopted a Quantitative Approach Observational study and Experimental Study

3.2.7 Type of interventions. There were Health Belief Model (HBM) based education intervention. Further descriptions of the interventions, including timing and modality, are provided in Appendix 1.

3.3. Result of individual studies

Health Belief Model (HBM) in Pulmonary Tuberculosis. Research on the factors that influence compliance behavior in patients (TB) using the Health Belief Model (HBM) approach. The results showed that perceived threat variables, benefits, barriers, and self-efficacy accounted for 42% of the variance in adherence to therapy. The strongest predictor of adherence is self-efficacy. The results of this study also state that Health Belief Model (HBM) seems to be a suitable model in predicting therapeutic compliance in TB patients. Health Belief Model (HBM) can predict treatment compliance behavior in patients with TB [10–12].

A study conducted by [13]regarding the provision of psychological counselling and educational interventions guided by Health Belief Model (HBM), it results that after Health Belief Model (HBM) based counselling and education is given a significantly reduced rate of medication non-compliance among the intervention group through increasing Health Belief Model (HBM) constructs. The provision of psychological counselling and health education for Health Belief Model (HBM)-guided TB patients can be recommended in routine TB treatment strategies as an effort to improve compliance behavior in TB patients for the therapy given.

Health Belief Model (HBM) in Cancer. Study aimed at evaluating a Health Belief Model (HBM) based intervention in breast cancer patients in breast cancer screening. The study found that after 8 weeks of Health Belief Model (HBM)-based educational intervention, it was found that the average score of knowledge, perceived susceptibility, severity, benefits, barriers, self-efficacy, and behavioral intention related to Breast Self-Examination (BSE) and mammography in the intervention group increased significantly compared to the control group. The results confirm the efficiency and effectiveness of Health Belief Model (HBM)-based educational interventions on increasing factors that influence breast cancer screening behavior [14]. Study who stated that six months after being given Health Belief Model (HBM) -based education, 28.4% of women had undergone MMG, 69.9% had done BSE and 33.6% had undergone pap smear tests

[15]. Other study about factors affecting adherence in screening colorectal cancer also found that knowledge of colorectal cancer and Health Belief Model (HBM) constructs which included perceptions of susceptibility and resistance were significant predictors of compliance in conducting colorectal cancer screening, so it can be concluded that Health Belief Model (HBM)-based information-giving interventions can influence screening behavior for breast cancer and colorectal cancer patients [16].

A similar study the effectiveness of Health Belief Model (HBM)-based interventions in smokers in the prevention behavior of Oral Cancer. The results showed that after obtaining Health Belief Model (HBM)-based educational interventions there was a significant increase in the mean score of knowledge, perceived vulnerability, severity, benefits, self-efficacy, cues to act, and oral cancer prevention behaviors in the experimental group. In addition there were no significant changes observed in the mean scores of knowledge, perceived vulnerability, severity, benefits, self-efficacy, cues to act, and oral cancer prevention behaviors, in the control group, so it can be concluded that Health Belief Model (HBM)-based educational programs have a positive effect on oral cancer prevention efforts through increased knowledge, perceived vulnerability, severity, benefits, and self-efficacy [17].

Health Belief Model (HBM) in Diabetes Mellitus. Health Belief Model (HBM), which includes perceptions of vulnerability, severity, benefits, barriers and self-efficacy influences adherence behavior in the treatment of type 2 DM patients [18]. HBM-based self-efficacy education in DM type 2 patients. The results of the study stated that in the intervention group that was given education for 12 weeks (8 sessions, 2 sessions each) and evaluated after 6 months of intervention there was a decrease in sugar levels blood, lipid profile and anthropometric level and there was an increase in quality of life score [19]. HBM in DM education programs effective in improving adherence to nutritional type 2 DM patients. In the study of Dehghani-tafti, Saeed, Mahmoodabad, & Morowatisharifabad (2015), approve the efficiency of the health trust model in predicting self-care behavior compliance among DM patients, therefore it can be used as a framework for designing and implementing educational interventions in diabetes control plans. HBM-based diabetes self-management education is recommended for use as a health education intervention in patients with type 2 diabetes. [20], [21]

Other studies mention that after HBM-based interventions, all HBM variables differ significantly except the perceived threat. There is a significant linear relationship between self-efficacy and components of the health trust model after educational intervention in both groups [22]. It can be concluded that the administration of HBM-based educational interventions can improve adherence and effectiveness of therapeutic regimens in DM patients, thus influencing the stability of blood sugar levels and improving quality of life in type 2 DM patients.

4. Discussion

4.1. Summary of evidence

After reviewing several articles, it can be seen that health beliefs or beliefs are one of the individual factors that influence the compliance behavior of patients with chronic diseases that

require long-term therapy. Health Belief Model (HBM) -based educational interventions conducted on three chronic diseases with long-term therapy, namely Lung Tuberculosis, Cancer and Diabetes Mellitus resulted in the construct of the Health Belief Model (HBM) which included perceptions of vulnerability and seriousness, perceived benefit, perceived inhibition and self-efficacy can be used to predict patient behavior in seeking treatment and patient compliance behavior in carrying out treatment. The strongest predictor is self-efficacy, so the results of this study emphasize the importance of self-efficacy in adherence to the treatment that health educators should consider when developing programs to motivate patients to adhere to treatment.

In patients with pulmonary tuberculosis treatment adherence is the main determinant of treatment success. Non-compliance causes long periods of infection, recurrence, drug resistance which results in increased morbidity and mortality. One of the factors that affect non-compliance in TB treatment is a lack of knowledge about TB and its treatment. On the other hand, the patient trust is the main individual factor in influencing TB patient compliance, because belief is one of the decisive elements in shaping attitudes which ultimately affects someone to behave[13]. Research conducted by [11] also produced findings that HBM constructs can predict compliance behavior in patients with pulmonary tuberculosis. The provision of psychological counseling and education interventions based on the Health Belief Model (HBM), significantly reduced treatment non-compliance among the intervention groups through an increase in the construct of the Health Belief Model (HBM).

Beliefs about health and knowledge about breast cancer are two important factors that influence the delay in seeking treatment in patients with breast cancer, so to reduce this delay proper health education programs must be established [23]. The provision of a Health Belief Model (HBM) -based educational intervention has confirmed that the efficiency and effectiveness of interventions on increasing factors affecting breast cancer screening behavior through increased knowledge, perceived vulnerability, severity, benefits and self-efficacy [14].

Patients' perceptions and beliefs must be assessed as part of a patient-centered medication adherence intervention in patients with diabetes mellitus The provision of HBM-based education can improve compliance behavior and maintain normal blood sugar in type 2 DM patients [24] Self Efficacy, perceptions of vulnerability and resistance are each of the strongest predictors of influencing someone to behave obediently in patients with Diabetes Mellitus [25].

5. Conclusions

The Health Belief Model (HBM) has been shown to be effective in describing treatment compliance in chronic diseases that require long-term therapy such as pulmonary tuberculosis, cancer and diabetes mellitus. Provision of HBM-based educational interventions can effectively improve the adherence of patients to treatment through increasing patient confidence. The increase in perceptions of vulnerability and seriousness, perception of benefits, perceptions of barriers and self-efficacy on the disease will increase patient confidence, then will form a positive attitude. The existence of a positive attitude will encourage positive behavior too, in this case the behavior is obedient to treatment, so that the patient's confidence in his illness is one of the factors

that influence patients in behaving obediently to treatment.

Provision of Health Belief Model Education Interventions can be used as an alternative choice for health workers in providing education to patients, while for the next researcher, the Health belief model can be used as a frame of reference or framework in developing nursing interventions in an effort to improve patient compliance behavior with chronic diseases that get other long-term therapies such as hypertension, epilepsy, HIV, kidney failure and others..

Appendix A

Table A1. Summary Table of study characteristics

No.	The title and author of a scientific paper	Variables	Method	Result
1.	*Effectiveness of Health Belief Model on Oral Cancer Prevention in Men Smoker.* [17]	Independent: HBM-based educational intervention Dependent: Knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, self-efficacy and oral cancer prevention behaviors.	Design: quasi-experimental Samples : 200 smokers n = 100 HBM-based educational intervention group, n = 100 control group (without the HBM-based educational interventions) Instrument : questionnaire Analysis : T test, chi-square, paired t test.	- After getting an HBM-based educational intervention there is a significant increase in the average score of knowledge, perceived susceptibility, severity, benefits, self-efficacy, cue to action, and oral cancer prevention behaviors. - HBM-based educational programs provide a positive effect on behavior improvement for prevention of oral cancer by enhancing the knowledge, perceived susceptibility, severity, benefits, and self-efficacy.
2.	*Evaluation of Health Belief Model-Based Intervention on Breast Cancer Screening Behaviors among Health Volunteers* [14]	Independent: HBM-based educational intervention Dependent: Knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers for BSE (breast self-examination), self-efficacy for BSE, intention to behave on BSE, skills BSE, perceived benefits of BSE, perceived benefits of mammography, the intention to behave to mammography.	Design : Experimental study Samples : N = 240 women in the intervention group based education HBM, n = 240 women in the control group. Instrument : 1. *Noorizadeh questionnaire (2010)* 2. *Health Belief Scale models of champions* Analysis : 1. Chi- square Mann-Whitney	- The results showed that the average scores of knowledge, perceived vulnerability, severity, benefits, barriers, self-efficacy, and behavioral intentions regarding the examination of breast self-examination (BSE) and mammography in the intervention group improved significantly compared with the control group immediately after and two months after the educational intervention. - There are significant differences between the groups in the skills of BSE 2 months prior to the intervention, but there was no significant difference between the two groups in behavioral therapy and mammography 2 months after the intervention.

No.	The title and author of a scientific paper	Variables	Method	Result
				- The results confirm the efficiency and effectiveness of the HBM-based educational interventions on improving the factors that influence the behavior of breast cancer screening.
3.	*The impact of self-efficacy education based on the health belief model of in Iranian Patients with type 2 diabetes: a randomized controlled intervention study.* [19]	Independent: self-efficacy-based educational intervention HBM Dependent: - Knowledge about nutrition, health belief, quality of life - Glycemic control and metabolic include hba1c, blood glucose, lipid profile and anthropometry level	Design : *Randomized controlled intervention* Samples : N = 120 patients with type 2 diabetes mellitus in the HBM-based educational intervention group and n = 120 type 2 diabetic patients in the control group who received conventional education Instrument : 1. Blood samples 2. Diabetes knowledge questionnaire (DKQ-24) 3. HBM questionnaire 4. Quality of Life Questionnaire (DQOL) Analysis: 1. ANOVA 2. *Independent test* 3. *Chi-square test* 4. *Paired t test* 5. *Mann-Whitney test* 6. *Friedman repeated measure test*	- After being given education for 12 weeks (8 sessions, each session 2 hours) an evaluation after 6 months of intervention showed that there were significant differences in the levels of blood sugar, lipid profile and anthropometry level between the control and intervention groups. - Decreased levels of blood sugar, lipid profile and anthropometry levels found in the intervention group. - Score increased after a given educational knowledge in the intervention group. - An increase in quality of life scores in the intervention group after being given an education. - HBM-based educational interventions improve medication adherence in patients with diabetes mellitus type 2 which affects the stability of blood sugar levels and improved quality of life in patients with type 2 DM.
4.	*The Effect of*	Independent: Education	Design: Semi-experimental	- HBM-based education improves the

No.	The title and author of a scientific paper	Variables	Method	Result
	Education on the Early Diagnosis of Breast and Cervix Cancer on the Women's Attitudes and Behaviors Regarding Participating in Screening Programs [15]	about early diagnosis of breast cancer and cervical cancer based HBM Dependent: attitudes and behavior of women regarding participation in the program of early diagnosis, screening and training of cancer.	study Instrument: 1. *Champion's Health Belief Model Scale* 2. Form breast cancer risk evaluation 3. *Health Belief Model Scale for Cervical Cancer* 4. Pap-smear test Analysis: 1. *T- test* 2. *Mann Whitney test* 3. ANOVA	behavior of early detection of breast cancer and cancer of the cervix. - Six months after being given education, 28.4% of women had undergone MMG, 69.9% had done the BSE, and 33.6% had undergone a pap smear test.
5.	*Causes of Delay in Seeking Treatment in Patients with Breast Cancer Iranian Based on the Health Belief Model (HBM)* [23]	Independent: HBM variables which include knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers and cues to action. Dependent Behavior for the delay in seeking treatment.	Design : Cross-sectional study Sample: 80 breast cancer patients with a delay of <3 months and 80 breast cancer patients with a delay of> 3 months Instrument: HBM components Questionnaire Analysis: 1. *Descriptive analysis* 2. *T test* 3. *Chi-square* 4. Multivariate logistic regression	- Results of multivariate logistic regression showed that there was a significant correlation between perceived barriers OR = 1.48 (CI95% = 1.18 to 1.86), cues to action OR = 0.72 (CI95% = 0.55 to 0, 93), perceived vulnerability OR = 0.87 (CI95). % = 0.78 to 0.97), and the first symptoms OR = 0.259 (CI95% = 0.08 to 0.79) and delays in seeking treatment in patients with breast cancer. - Beliefs about health and knowledge about breast cancer are two important factors that affect delays in seeking treatment in patients with breast cancer in Kerman, Iran. - To reduce this delay, the appropriate

No.	The title and author of a scientific paper	Variables	Method	Result
				health education programs should be established. - The construct HBM can be used as a framework to predict the behavior of breast cancer patients in seeking treatment.
6.	*Complex relations among Health Belief Model components in TB prevention and care.* [26]	Independent: Components of the Health Belief model include: 1. Demography 2. Knowledge (knowledge) 3. Benefits (benefits) 4. Vulnerability (severity) 5. Severity (susceptibility) Dependent: 1. TB prevention behavior 2. Intention to seek TB treatment	Design: Cross-sectional study Instrument: 1. TB Knowledge Questionnaire 2. TB preventive behavior questionnaire 3. HBM questionnaire 4. Questionnaires intention TB treatment Analysis: *Path analysis* / Path analysis	- 6 constructs in HBM can predict medication adherence behavior in patients with TB.
7.	*The Effect of an Educational Program Based on the Health Belief Model on Self-Efficacy among Patients with Type 2 Diabetes Referred to the Iranian Diabetes*	Independent: health education Dependent: *self-efficacy* Health belief models and components	Design: Randomized control clinical trial Sample: 40 patients with type 2 diabetes in the intervention group and 40 patients with type 2 diabetes in the control group Instrument: 1. The questionnaire of health belief model of	- After the intervention all of the variables are significantly different than the perceived threat. A significant linear relationship between self-efficacy and health belief model components after educational intervention in both groups. - HBM-based educational interventions improve adherence behavior of

No.	The title and author of a scientific paper	Variables	Method	Result
	Association in 2014. (Vahidi, Shahmirzadi, Shojaeizadeh, and Haghani, 2015)		2. Self-efficacy questionnaire Analysis: *1. Chi - square* 2. Pearson correlation *3. Independent sample t-test* *4. Paired t-test*	patients with diabetes mellitus type 2 through increased HBM constructs.
8.	*Determinants of adherence to tuberculosis treatment in Iranian Patients: Application of health belief models.* [10]	Independent: HBM variables which include the perceived threat, perceived benefits, perceived barriers and self-efficacy. Dependent: behavioral treatment adherence.	Design: cohort studies. Sample: 297 TB patients. Instrument: interviews and questionnaires developed by the construct HBM and looked at medical records and medical cards that are used in the performance of medical checklists. Analysis: 1. Test data using Kolmogorov Smirnov normality. 2. ANOVA *3. Independent T-Test* 4. Multiple linear regression analysis.	- The results showed that the variables of perceived threats, benefits, barriers, and self-efficacy accounted for 42% of the variance in therapy adherence. - The most powerful predictor of adherence was self-efficacy - HBM seems to be a suitable model to predict therapy adherence in patients with TB. - The results of the present study emphasize the importance of self-efficacy in treatment adherence, which should be considered by health educators when developing programs to motivate patients to adhere to treatment,
9.	*Estimating the effect of lay knowledge and prior contact with pulmonary TB Patients, health-belief on the model in a high-risk*	Independent: lay knowledge and history of contact through HBM measurement constructs. Dependent: - Confidence in the perception of	Design: survey Sample: 500 people with a high risk of pulmonary TB transmission Instrument: Likert scale developed by every definition of variables Humanely the	- Experience direct interaction with pulmonary tuberculosis proved to have a significant relationship with the knowledge and confidence of the participants on the effectiveness of health behaviors. If participants had previous contact with pulmonary TB

No.	The title and author of a scientific paper	Variables	Method	Result
	population pulmonary TB transmission. [12]	threat, vulnerability perception, perception of seriousness. - Confidence in the health behaviors, perceived benefits and perceived barriers.	development of HBM Champion and Skinner Analysis: Logistic and linear regression analysis	patients, they are more likely to have a better level of knowledge, as well as specific health behaviors tend to regard as effective for the prevention or treatment of pulmonary tuberculosis. - Contacts previously found to have no effect on personal health threat. It also implies that when ordinary people have the experience of interacting with pulmonary TB patients, although prone to the development of pulmonary TB, they still think that they are not at risk of contracting this disease. In addition, our findings suggest that the perceived vulnerability of participants is higher than the perceived severity. This implies that the participants understand correctly that pulmonary TB is threatening illnesses and causes severe consequences. However, they do not consider themselves as having a high risk of infection, even if they live in neighborhoods with the highest risk of contracting pulmonary tuberculosis in Surabaya. This may be due to a lack of knowledge of participants about how pulmonary TB is transmitted from the patient to the health of the people. - The construct HBM can be used to predict the behavior of prevention and treatment in people with risk of contracting TB.

No.	The title and author of a scientific paper	Variables	Method	Result
				- Educational programs should be able to reconstruct people's misconceptions about pulmonary tuberculosis, thus bringing the perception of health risks so that not only focus on increasing knowledge of the layman.
10.	*Factor Associated with adherence to Colorectal Cancer Screening among Moderate Risk Individuals in Iran.* [16]	Independent: HBM variables which include susceptibility, seriousness, benefits, barriers, motivation, health and self-confidence. Dependent: The behavior of a screening for colorectal cancer.	Design: *cross sectional* Sample: 200 people with age above 50 years. Instrument: health belief model scale Champions (CHBMS) Analysis: Multiple logistic regression.	- Our findings suggest that knowledge of colorectal cancer, perceived susceptibility and resistance is a significant predictor of compliance for colorectal cancer screening. - Perceived vulnerability against colorectal cancer has the lowest percentage of all subscales. Participants who feel more vulnerable (OR = 2.99; CI 95%: 1:23 to 5:45) and reported a higher knowledge (OR = 1.29; 95% CI: 1.86-3.40) and those who reported fewer barriers (OR = .37; CI 95%: .21- .89), more likely to be screened for colorectal cancer. - Strategies to improve the knowledge and overcome the barriers at-risk individuals seems to be required. - Educational programs should be promoted to overcome the lack of knowledge and negative perception in the elderly Iran
11.	*Determinants of Self-Care in Diabetic Patients*	Independent: perceived susceptibility, perceived seriousness, perceived	Design: *cross sectional study* Sample: 110 patients with diabetes.	- Health belief model construction including perceived benefits, barriers, severity, vulnerability, self-efficacy,

No.	The title and author of a scientific paper	Variables	Method	Result
	Based on Health Belief Model [25]	benefits, perceived barriers, self-efficacy, social support. Dependent: *Self-care adherence behavior*	Instrument: a questionnaire about demographic data and questionnaire drawn up by the construct HBM, scale of family support, 11 items Toobert & Glascow scale of diabetes self-care. Analysis: Linear regression analysis	and social support predicted 33.5% of the observed variance of compliance self-care behaviors. Vulnerability and perceived self-efficacy has a positive effect on self-care behaviors; while the perceived barriers have a negative effect. Self-efficacy, perceptions of susceptibility and resistance of each is the most powerful predictor. - These findings agree the efficiency of health trust model in predicting compliance self-care behaviors among diabetic patients. - These findings realize the health belief model structures; therefore, it can be used as a framework for designing and implementing educational interventions in diabetes control plan.
12.	*Effects of Education Based on Health Belief Model on Dietary adherence in Diabetic Patients* (Mardani Hamuleh M * 1, Shahraki Vahed A2, 2010)	Independent: HBM-based education. Dependent: The construct HBM which include susceptibility, seriousness, benefits and barriers, patient adherence to a diet behavior and glycosylated hemoglobin.	Design: *Quasi-experimental study.* Sample: 128 diabetic patients were divided into 2 groups: the treatment group and the control group. Instrument: a questionnaire about demographic data and questionnaire developed by HBM construct as well as a questionnaire about patient behavior related to diet. Analysis: *1. Chi square*	The results showed that using HBM in diabetes education program is effective in dietary compliance among patients with type 2 diabetes.

No.	The title and author of a scientific paper	Variables	Method	Result
			2. *Wilcoxon.* 3. *Paired t test.* 4. *Simple t test*	
13.	*The Effect of Diabetes Self-Management Education, Based on the Health Belief Model, on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia.* [21]	Independent: Diabetes self-management education, based on Health Belief Model (HBM) Dependent: *Self-efficacy, self-care behavior*, quality of life and glycemic control.	Design: *RCT with pre-test and post-test design.* Sample: 120 patients with type 2 diabetes were divided into 2 groups: the treatment group and the control group. Instrument: 1. DMSES (Diabetes management self-efficacy scale) 2. DDS (Diabetes distress scale) 3. SDSCA (summary of diabetes self-care activities) 4. DQOL (Diabetes quality of life)	- Diabetes self-management education based on HBM have a significant effect on the outcome psychosocial patients with type 2 diabetes. - This study has highlighted the importance of education in improving the psychosocial health of the patient. HBM approach to educational interventions, have significantly increased self-efficacy, self-care behaviors and quality of life, and reduce the level of pressure diabetes and their blood glucose levels. - Diabetes self-management education based HBM recommended for use as a health education intervention for patients with type 2 diabetes.
14.	*Psychological and Educational Intervention to Improve Tuberculosis Treatment adherence in Ethiopia Based on Health Belief Model: A Cluster Randomized Control*	Independent: Education and psychology-based interventions HBM Dependent: Behavioral treatment compliance.	Design: RCT Sample: 698 TB patients Instrument: - Knowledge and perception questionnaire compiled based construct HBM. - Kessler-10 item instrument. - Visual Analogue Scale	- Psychological counseling and educational interventions, guided by HBM, significantly reducing the level of non-compliance with treatment among intervention groups through increased HBM constructs. Provision of psychological counseling and health education for tuberculosis patients recommended guided by the theory of behavior could be incorporated into routine TB treatment strategy.

No.	The title and author of a scientific paper	Variables	Method	Result
	Trial. [13]		(VAS) Analysis: Multilevel logistic regression.	
15.	*The Association between Health Beliefs and Medication Adherence among Patients with Type 2 Diabetes* [18]	Independent: Health Belief Dependent: Medication adherence.	Design: cross sectional. Sample:217 patients with type 2 DM. Instrument: Expanded Health Belief Model Questionnaire Analysis: - ANOVA - Person correlation - Mann Whitney -	- The results showed that the construct HBM (perceived susceptibility, keseriuasan, benefits, barriers and self-efficacy) influence compliance behavior in the treatment of patients with diabetes mellitus type 2. - Perception and trust of patients should be assessed as part of treatment adherence interventions centered on the patient.
16.	*The Effects Of Education Based On Extended Health Belief Model in Type 2 Diabetic Patients: a Randomized Controlled Trial.* [24]	Independent: HBM-based educational Dependent: Compliance behavior, blood sugar levels	Design: RCT Sample: 120 patients with type 2 DM.	- HBM Award based education can improve compliance behavior and maintain normal blood sugar in patients with type 2 diabetes mellitus.

References

[1] World Health Organization 2014 Global status report on noncommunicable diseases.

[2] Bill F and Foundation M G 2015 Global , regional , and national incidence , prevalence , and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries , 1990 – 2013 : a systematic analysis for the Global Burden of Disease Study 2013 *Lancet* **6736** 1990–2013

[3] Dennis S 2016 Secondary prevention of chronic health conditions in patients with multimorbidity : what can physiotherapists do ? **6** 50–2

[4] Reynolds R, Dennis S, Hasan I, Slewa J, Chen W, Tian D, Bobba S and Zwar N 2018 A systematic review of chronic disease management interventions in primary care 1–13

[5] Lemay J, Waheedi M, Al-sharqawi S and Bayoud T 2018 Medication adherence in chronic illness : do beliefs about medications play a role ? *Dovepress* 1687–98

[6] Sharaf F 2010 Impact of health education on compliance among patients of chronic diseases in Al Qassim, Saudi Arabia *IJHS* **4** 139–48

[7] Shabibi P, Sadegh M, Zavareh A, Sayehmiri K, Qorbani M, Rastegarimehr B, Mansourian M, Sciences M, Sciences M, Population M, Sciences M and Management H 2017 Effect of educational intervention based on the Health Belief Model on promoting self-care behaviors of type-2 diabetes patients *Electron. Physician* **9** 5960–8

[8] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration **6**

[9] Moher D, Tetzlaff J, Altman D G, Liberati A and Group P 2009 Preferred reporting items for systematic reviews and meta-analyses : the PRISMA statement **339**

[10] Azizi N, Karimy M and Salahshour V N 2018 Original Article Determinants of adherence to tuberculosis treatment in Iranian patients : Application of health belief model

[11] Liu C-M, Chung C-L, Hsu C-T, Song M-Z, Chen C-C and Li C-Y 2015 Impact of diabetes mellitus on cholecystectomy rate: A population-based follow-up study *Formos. J. Surg.* **48** 157–62

[12] Rizqy Amelia Zein1 2 Fendy Suhariadi1 Wiwin Hendriani1 2017 Estimating the effect of lay knowledge and prior contact with pulmonary TB patients , on health-belief model in a high-risk pulmonary TB transmission population 187–94

[13] Tola H H, Shojaeizadeh D, Tol A, Garmaroudi G, Yekaninejad M S, Kebede A, Ejeta L T, Kassa D and Klinkenberg E 2016 Psychological and Educational Intervention to Improve Tuberculosis Treatment Adherence in Ethiopia Based on Health Belief Model : A Cluster Randomized Control Trial 1–15

[14] Ghaffari M, Esfahani S N, Rakhshanderou S and Koukamari P H 2018 Evaluation of Health Belief Model-Based Intervention on Breast Cancer Screening Behaviors among Health Volunteers

[15] Kocaöz S, Özçelik H, Talas M S and Akkaya F 2017 The Effect of Education on the Early Diagnosis of Breast and Cervix Cancer on the Women ' s Attitudes and Behaviors Regarding Participating in Screening Programs

[16] Taheri-kharameh Z, Noorizadeh F, Sangy S and Zamanian H 2015 Factors Associated with Adherence to Colorectal Cancer Screening among Factors Associated with Adherence to Colorectal Cancer Screening among Moderate Risk Individuals in Iran

[17] Jeihooni A K, Dindarloo S F and Harsini P A 2018 Effectiveness of Health Belief Model on Oral Cancer Prevention in Smoker Men
[18] Alrayees M M 2015 The Association between Health Beliefs and Medication Adherence among Patients with Type 2 Diabetes
[19] Mohammadi S, Karim N A and Talib R A 2018 The impact of self-efficacy education based on the health belief model in Iranian patients with type 2 diabetes
[20] Mardani Hamuleh M*1, Shahraki Vahed A2 P A 2010 Effects of Education Based on Health Belief Model on Dietary Adherence **9** 1–6
[21] Rondhianto, Kusnanto S M 2018 The Effect of Diabetes Self-Management Education, Based on The Health Belief Model, on the Psychosocial Outcome of Type 2 Diabetic Patients in Indonesia **8**
[22] Vahidi S, Shahmirzadi S E, Shojaeizadeh D and Haghani H 2015 The Effect of an Educational Program Based on the Health Belief Model on Self-Efficacy among Patients with Type 2 Diabetes Referred to the Iranian Diabetes Association in 2014 181–9
[23] Khanjani N, Rastad H, Saber M, Khandani B K and Tavakkoli L 2018 Causes of Delay in Seeking Treatment in Iranian Patients with Breast Cancer Based on the Health Belief Model (HBM) **11**
[24] Bayat F, Shojaeezadeh D, Baikpour M, Heshmat R, Baikpour M and Hosseini M 2013 The effects of education based on extended health belief model in type 2 diabetic patients: a randomized controlled trial *J. Diabetes Metab. Disord.* **12** 45
[25] Dehghani-tafti A, Saeed S, Mahmoodabad M and Morowatisharifabad M A 2015 Determinants of Self-Care in Diabetic Patients Based on Health Belief Model **7** 33–42
[26] Li Z T, Yang S S, Zhang X X, Fisher E B, Tian B C and Sun X Y 2015 Complex relation among Health Belief Model components in TB prevention and care **9**

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AROMATHERAPY EFFECTS IN CLIENTS UNDERGOING HEMODIALYSIS: A SYSTEMATIC REVIEW

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ABSTRACT

Complexity of problems in clients undergoing hemodialysis starts from a clinical and psychological perspective and requires appropriate and efficient intervention. The purpose of this systematic review is to find out the effects of aromatherapy on clients who undergo hemodialysis. The method used in this systematic review consists of 5 stages: (1) identification of instruments in the literature (database search); (2) identification of relevant literature based on title and abstract; (3) inclusion and exclusion criteria; (4) get full-text literature; (5) grading based on the literature component and analysis of selected instruments. The database used in the search for literature were Scopus, Proquest, ScienceDirect, BMC, Iranian Journal, PubMed by limiting the keywords "Aromatherapy" AND "Hemodialysis", published in the years between 2014-2017. Additional sources used were HerMed, Natural Medicine, Nephro Urology monthly. From the results of the study, it was found that aromatherapy can help overcome problems with sleep disorders, fatigue, pain, depression, pruritus, and anxiety. Aromatherapy with essential lavender which is the most dominant aromatherapy is given in the treatment process of patients undergoing hemodialysis.

1. Introduction

Chronic renal failure is a progressive and irreversible deterioration in kidney function which causes loss of the body's ability to maintain metabolic and electrolyte balance. In 2005, half a million people in the United States underwent hemodialysis. This number is expected to increase to 0.7 million in 2015. In 2011, it was reported that 35,000 Iranians needed dialysis and kidney transplants [1]. The incidence of chronic kidney failure increases from year to year. The number of chronic kidney failure in the world in 2009 in the United States has an average prevalence of 10-13% or around 25 million people affected by Chronic Kidney Disease. While in Indonesia in 2009 there was a prevalence of 12.5% or 18 million adults affected by chronic kidney disease. According to data from Peneftri (Indonesian nephrology union), it is estimated that there are 70 thousand kidney sufferers in Indonesia, but those detected suffering from terminal kidney failure from those undergoing dialysis (hemodialysis) are only around 4 thousand to 5 thousand. It is estimated that there are more than 100,000 patients who have recently undergone hemodialysis. Recent technological advances can improve hemodialysis (HD) clients with End Stage Renal Disease (ESRD) by prolonging the life of patients on dialysis, which can cause some physical and mental problems (e.g., fatigue, pain, itching, drowsiness, and depression) determined that 71% of dialysis patients suffer from lack of sleep. Given that sleep disorders occur depending on psychological factors and stress, anxiety and depression can affect the subjective quality of sleep of people undergoing dialysis. Anxiety is one of the disorders found in dialysis patients, which is associated with behavioral, psychological, physical and mental symptoms. Diseases and changes in the professional family, marriage, family and social life cause anxiety in these patients. Most dialysis clients continue to experience anxiety and distress about financial problems, sexual dysfunction, family responsibilities, and lack of freedom [2].

The therapies used in dealing with client problems that undergo HD are of various kinds. One of them is the use of aromatherapy. Aromatherapy is a therapy that relies on the sense of smell and touch which, in this case, is the skin. So far, the use of aromatherapy in the treatment of diseases

has been shown to be complementary and alternative medicine. In this systematic review, we will discuss the effectiveness of aromatherapy on psychological, clinical and health status for patients with hemodialysis. Aromatherapy refers to the provision of complementary therapies tailored to the dosage and type of aromatherapy given.

Aromatherapy is a form of alternative medicine using volatile plant material, widely known in the form of essential oils and various other forms that aim to regulate cognitive function, mood, and health. Aromatherapy is formed from various types of plant extracts such as flowers, leaves, wood, plant roots, bark, and other parts of the plant by making different ways by using and using their respective functions. There are many types of aromatherapy, such as essential oils, incense, candles, salt, massage oil, and soap. The types of plants used as extract are also very large, namely rosemary, sandalwood, jasmine, orange, basil, ginger, lemon, tea tree, ylang-ylang, and many more. There are many ways to use aromatherapy that have their own benefits. Inhalation aromatherapy is an essential oil that is inhaled to the lungs, which provides benefits both psychologically and physically. Not only does the aroma of essential oils stimulate the brain to trigger a reaction, but the natural ingredients found in essential oils at inhalation also provide therapeutic effects. There is also the use of essential oils that are applied to the skin. Essential oils applied to the skin can be absorbed into the bloodstream. One of the benefits of using topical applications is the effect that works directly on the desired body part. Massage is the best way to get the benefits of topical aromatherapy where there are therapeutic effects. However, excessive use also gives some concern about side effects, because the concentration of essential oils is very high, sometimes it can trigger irritation to the skin especially in pure essential oil ingredients. However, further research is needed to evaluate the efficacy and safety of the use of medicinal herbs. In addition, previous studies have shown that the level of complementary drug therapy (and especially medicinal herbs) in hemodialysis patients is very high even up to sixty percent of patients with end-stage kidney disease in one study. This is despite the fact that none of the treatments applied have been proven to be scientifically efficient [3].

2. Research Method

This Systematic review uses Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA) guideline.

2.1. Literature Search Strategy

The scope of the literature is the use of aromatherapy in both combination and single intervention. The use of aromatherapy in question is via inhalation and topical. Aromatherapy is used in clients who undergo hemodialysis. Literature studied is in English and Arabic in order to increase the amount of literatur**e.** The database used in literature searches is Scopus, Proquest, ScienceDirect, Iranian Journal, PubMed by limiting the keywords "Hemodialysis" AND "Aromatherapy" AND "Effect", published between 2014-2019.)

2.2. Criteria for inclusion and exclusion

2.2.1. Study design. The study design is the inclusion criteria in this Systematic Review is a Random Controlled Trial (RCT) design that is published using English

2.2.2. Population. The population in this systematic review were all studies that describe patients who receive interventions for giving aromatherapy with or without a control group, men and women> 17 years old, and seeing the effect of aromatherapy on patients with hemodialysis.

2.3. Intervention

Various types of aromatherapy interventions that affect the psychological, clinical and health status

of patients with hemodialysis.

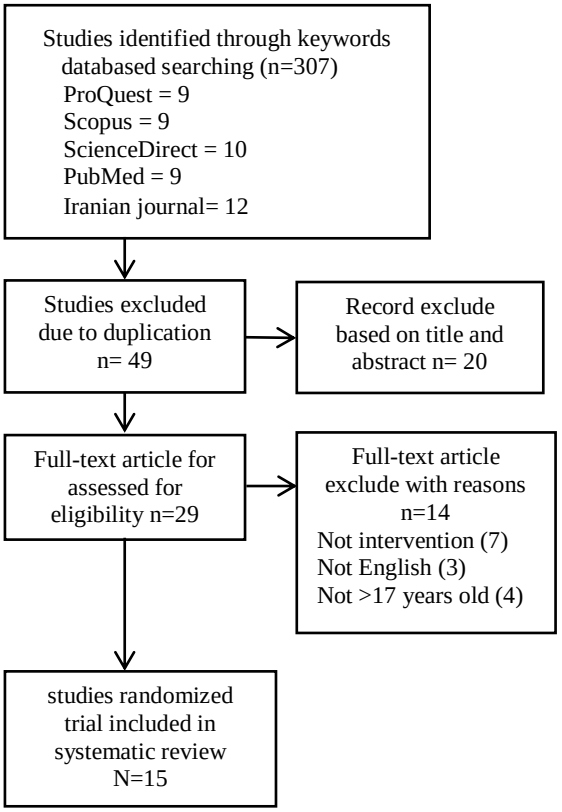

Figure 1. Flow diagram

2.4. Clinical results

The main objective of this systematic review is to look at the effect of interventions on aromatherapy on psychological, clinical and health status for patients with hemodialysis. Research is used without any time limit for the duration of the intervention.

2.5. Study selection

The standard protocol for selecting studies as suggested in the systematic review method guide, PRISMA. The steps taken were: removal of duplication; independent examination of titles, abstracts, and keywords and delete citations that are not relevant according to the inclusion criteria; if the title and abstract seem to meet the inclusion criteria and are in accordance with the objectives of the systematic review, the next step is the selection of journals with full text; the final step is choosing articles that use the Randomized Controlled Trial approach to reduce the risk of bias.

2.6. Data extraction

Data is extracted from each study that meets the requirements. The extracted data includes research characteristics, characteristics of aromatherapy, characteristics of results and summary of results.

2.7. Data analysis

The studies were grouped according to the effects arising from aromatherapy on psychological, clinical and health status for patients with hemodialysis. If possible, the research was then grouped

based on the time of follow-up and the type of control group.

3. Results

The research articles found 15 published journals from 2014 to 2017. Research was conducted in various countries with various methods. The research method found in the study was Randomized Controlled Trial (n = 6), Quasi-Experiment (n = 3), Clinical Trial (n = 4), Crossover Study (n = 1) and Non-equivalent comparison group pretest-posttest design (n = 1). The most widely used research design is the Randomized Controlled Trial. Then found 15 articles that were analyzed into a systematic review.

3.1 Population

The sample size of 15 studies used in this systematic review was the least 30 people divided into two groups, namely the control and intervention groups, with the age range 18-51 years, and the characteristics of the patients where the highest number of samples was 92 people were divided into two treatment groups also patients with hemodialysis with age> 18 years.

3.2 Intervention characteristic

Aromatherapy is a complementary intervention that is used to overcome health problems in clients undergoing hemodialysis. Aromatherapy used in the study as an intervention were lavender, rosemary, sweet almond, sweet orange, palm, bergamot and mustard greens. Most studies found used lavender aromatherapy. Lavender aromatherapy is used, given to clients with a variety of concentrations and different uses. But some studies combine lavender and other aromatherapy as well as lavender and rosemary aromatherapy.

3.3 Method of giving aromatherapy

The protocol for giving aromatherapy in each study is different. Aromatherapy is given through inhalation, topical or combined with massage or massage. Inhalation is the most intervention and is significantly successful in providing therapy to clients.

3.4 Effect on general health status

Health in general greatly affects the quality of life of clients undergoing hemodialysis. One study found a significant effect of using mustard inhaled aromatherapy 3 times a day for 5 minutes in 4 weeks measured using SF36V2 questionnaire [3].

3.5 Clinic Effect

3.5.1 Sleep quality. Improved sleep quality was found in RCT studies using essential lavender. It was found that the quality of sleep improved but the decrease in fatigue and sleep strength was not significant [4], combination lavender and bergamot 1:1 [5], essential lavender 5% [6]. The three studies in common using the lavender aromatherapy found significant results in improving sleep quality by measuring using PSQI and Quality Of Sleep Questionnaire.

3.5.2 Fatigue. Fatigue is a further problem that occurs in clients who undergo hemodialysis. Three studies have found that aromatherapy is a combination of lavender and sweet orange combination lavender and bergamot 1:1 [5] and a combination of 3 drops of lavender and rosemary 3: 3 [7]

significantly able to reduce fatigue by measuring using VAS fatigue Scale, BFI, and The Piper Fatigue Scale.

3.5.3 Pruritus. The research was developed using aromatherapy Palm with 1-2 droplets applied to the skin [8] and administration of sweet almond oil in pruritic areas as much as 5-10 cc [9] significant in overcoming the occurrence of pruritus in clients undergoing hemodialysis by measuring 5-D Pruritus Scale (Duration, Degree, Direction, Disability, Distribution) and Questionnaire of Pruritic Score.

3.5.4 Pain. Significantly 10% lavender aromatherapy essence [10], essential lavender aromatherapy lotion 100% [11], a combination of 1% lavender with 1% rosemary on 48cc oil with massage [11], a combination of 1% lavender with 1% rosemary on 48cc oil with massage [12], lavender essence by inhaling with a concentration of 10% for 5 minutes for 3 sessions of hemodialysis [13] can reduce pain by measuring Pain Scale and NRS (Numeric Rating Scale) VAS.

3.6 Psychological Effect

3.6.1 Depression. Depression is found in clients who undergo hemodialysis. Aromatherapy inhaled rosemary with a concentration of 2%[14], 5% lavender essential oil for 10 minutes [1], every time they undergo hemodialysis significantly decreases depression in clients with measurements of The Hospital Anxiety and Depression Scale (HADS), The DASS-21 for depression, anxiety, and stress.

3.6.2 Anxiety. The anxiety experienced by clients is related to HD processes. Application of an essential combination of lavender 5% and sweet almond [15] and 25% concentrate [2] tested significantly by measuring The Spielberger's State-Trait Anxiety Inventory.

4. Discussion

We conducted a systematic review using an RCT design to investigate the effect of aromatherapy on psychological, clinical and health status for patients with hemodialysis. We included 15 studies that examined the relationship between aromatherapy on psychological, clinical and health status in patients with hemodialysis. Including heterogeneous types of aromatherapy, type of control group and duration of follow-up. There are several important findings regarding the effects of aromatherapy on the psychological, clinical and health status of patients with hemodialysis which will now be discussed in detail.

Overall administration of aromatherapy has different effects on different types of aromatherapy in patients undergoing hemodialysis. The administration of aromatherapy refers to the dosage according to the type of aromatherapy. In general health status, there was an increase in health status. Health in general greatly affects the quality of life of clients undergoing hemodialysis. Health in general in the intervention group was better than the control group with a value of $p < 0.05$. The client is given a wet handkerchief dripped with mustard aroma and asked to breathe 3 times a day for 5 minutes in 4 weeks [3]

The clinical effects obtained by administering aromatherapy are improving sleep quality, decreasing fatigue, decreasing pruritus and decreasing pain. Improved sleep quality was found in RCT studies using essential lavender. Improves sleep quality ($p < 0.05$) [4]. It was found that the quality of sleep improved but the decrease in fatigue and sleep strength was not significant [5], There was a difference in the quality of sleep on the client. The intervention group had better sleep quality with a value of $p < 0.0001$[6]. The three studies in common using the lavender aromatherapy found significant results in improving sleep quality by measuring using PSQI and Quality Of Sleep Questionnaire. Fatigue is a further problem that occurs in clients who undergo hemodialysis. Three

studies have found that aromatherapy decreases fatigue ($p < 0.05$) [5], decreased fatigue with a p-value of <0.05 [7] significantly able to reduce fatigue by measuring using VAS fatigue Scale, BFI and The Piper Fatigue Scale. The research was developed using palm aromatherapy, which was found with a value of $p = 0.001$ [8] and with a lower pruritus rate in the intervention group with a value of $p < 0.05$ [9] significant in overcoming the occurrence of pruritus in clients undergoing hemodialysis by measuring 5-D Pruritus Scale (Duration, Degree, Direction, Disability, Distribution) and Questionnaire of Pruritic Score. Aromatherapy lavender inhalation effectively reduces pain in AVF clients who have a value of $p < 0.001$[10], lavender aromatherapy lotion can reduce the pain intensity of the installation of dialysis needles with a value of $p = 0.001$ [12], In the intervention group there was a decrease in headache with VAS measurements and $p < 0.001$ [13] Differences in pain intensity were found with better intervention groups, namely with values $p = 0.009$.

The effect of aromatherapy on patients undergoing other hemodialysis is psychological. Depression is found in clients who undergo hemodialysis. Aromatherapy inhaled decreased depression, anxiety and stress with a p-value of ≤ 0.005[14], Giving aromatherapy effectively reduces depression and anxiety with value $p = 0.005$ [1]. The anxiety experienced by clients is related to HD processes. Application of aromatherapy can decrease anxiety with p-value = 0.005 [15], The findings after the intervention decreased anxiety by measuring the Spielberger's State-Trait Anxiety Inventory with a value of $p = 0.009$ [2] Differences and decreases in anxiety in the intervention group were found compared to the control group with a value of $p = 0.001$.

The limitation of this review was references collected in this systematic review have not been tested elsewhere or research has been done in a different place. The environment and perceptions of each individual both client, family and nurse greatly influence the success of the therapy given. Searching for literature that is constrained by language is because there is one article that uses languages other than English. Resource constraints in translating English into Indonesian. The discussion used is still in the form of aromatherapy, in general, to deal with problems in clients who undergo hemodialysis so that it does not look specific to one aromatherapy.

5. Conclusion

This systematic review aims to find evidence of the effects or effects of aromatherapy use on clients of End Stage Renal Disease during hemodialysis. The search for literature is based on relevance and then evaluates the quality of the literature. The findings show the effects of aromatherapy on health in general, clinical effects such as decreased pain intensity, increased sleep quality, decreased fatigue and decreased incidence of pruritus, and psychological effects namely decreased depression and anxiety. But the weaknesses of the methodology, the small sample size, the short duration, and the challenges associated with blinding. The combination of aromatherapy with massage is the best intervention compared to others. However, there is a need for further research on the side effects of aromatherapy, the use of which is in the long term so that the right and useful dosage is obtained.

Reference

[1] Article O, Bagheri-nesami M, Shorofi S A, Nikkhah A and Espahbodi F 2017 The effects of lavender essential oil aromatherapy on anxiety and depression in haemodialysis patients **3** 8–13

[2] Barati F, Nasiri A, Akbari N and Sharifzadeh G 2016 The Effect of Aromatherapy on Anxiety in Patients **8**

[3] Atapour A, Asghari G, Esfahani S N and Abyaneh K M 2016 The Effect of Aromatherapy with Chicory essence On The Quality of Life In Patients Undergoing Hemodialysis **5** 371–8

[4] Muz G and Taşcı S 2017 Effect of aromatherapy via inhalation on the sleep quality and fatigue

level in people undergoing hemodialysis *Appl. Nurs. Res.* **37** 28–35
[5] Park H, Chun Y and Kwak S 2016 The Effects of Aroma Hand Massage on Fatigue and Sleeping among Hospice Patients 515–23
[6] Lenjan S 2014 Effect of aromatherapy with Lavender on sleep quality among patients undergoing hemodialysis, **18** 145–50
[7] Bicer S 2017 The Effect of Aromatherapy Inhalation on Fatigue Level in Individuals Undergoing Hemodialysis Therapy **10** 161–9
[8] Abdelghfar S Z, Elsebae H A, Elhadry S M and Hassan A A 2017 Effect of Aromatherapy on Uremic Pruritus among Patients Undergoing Hemodialysis **6** 22–30
[9] Afrasiabifar A, Mehri Z and Hosseini N 2017 Efficacy of Topical Application of Sweet Almond Oil on Reducing Uremic Pruritus in Hemodialysis Patients : A Randomized Clinical Trial Study **19**
[10] Aliasgharpour M, Abbaszadeh R, Mohammadi N and Kazemnejad A 2016 Nursing Practice Today Effect of lavender aromatherapy on the pain of arteriovenous fistula puncture in patients on hemodialysis **3** 26–30
[11] Ghods A A, Abforosh N H, Ghorbani R and Asgari M R 2015 The effect of topical application of lavender essential oil on the intensity of pain caused by the insertion of dialysis needles in hemodialysis patients: A randomized clinical trial *Complement. Ther. Med.* **23** 325–30
[12] Biçer S 2015 The Effect of Aromatherapy Massage Applied to Facial Area upon Headache Severity among Patients who Suffered from Headache During Hemodialysis **8** 722–9
[13] Bagheri-nesami M, Espahbodi F and Nikkhah A 2014 Complementary Therapies in Clinical Practice The effects of lavender aromatherapy on pain following needle insertion into a fi stula in hemodialysis patients **20** 1–4
[14] Dehkordi A K, Tayebi A, Ebadi A, Sahraei H and Einollahi B 2017 or re ct Pr oo nc or re ed Pr oo
[15] Kiani F, Shahrakipour M, Ali M and Zadeh H 2016 Available Online through Research Article **8** 13853–65

Appendix

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Table 1. Characterized of literature

Author	Study Design	Sample	Intervention	Control/ Comparation	Outcomes measures	Result
Muz et al (2017)	Randomized Controlled Trial	N = 62 The intervention group N = 27 and the control group N = 35	Aromatherapy in the form of sweet orange and lavender is given inhaled at a dose of 10mL with a dark bottle	General intervention	Visual Analogue Scale (VAS) PSQI Piper Fatique Scale	Aromatherapy decreases fatigue and improves sleep quality ($p < 0.05$)
Abdelghfar (2017)	Quasi Experiment	N=30	Giving Aromatherapy Palm with 1-2 droplets applied to the skin	General intervention	5-D Pruritus Scale (Duration, Degree, Direction, Disability, Distribution)	Based on 5-D pruritus scale, the effect of palm aromatherapy was found with a value of $p = 0.001$
Dehkordi et al (2017)	Clinical Trial	N = 56 With each group N = 28	The client is connected to a dialysis machine, given a piece of cloth smeared with three drops of damask rose oil with a constant density of 2% which is tied to the patient's collar, and the patient is asked breathe normally	Without intervention	The DASS-21 for Depression, anxiety and stress	Measurements of The DASS-21 found a decrease in depression, anxiety and stress with a p value of ≤ 0.005
Bicer et al (2017)	Quasy Experiment	The number of samples is N = 105 with the inclusion criteria of 50 clients	Clients are asked to breathe in aromatherapy a combination of lavender and rosemary 3: 3 in 3 drops	Give the placebo	VAS fatique Scale dan BFI	VAS Fatique Scale and BFI measurements were found to decrease fatigue with a p value of <0.05
Afrasiabifar et al (2017)	Randomized Controlled clinical Trial	N = 42 with intervention group N = 22 and	Clients are given sweet almond oil in the area of pruritus as much	Without intervention	Questionnaire of Pruritic Score	There were differences in each group with

		control N = 20	as 5-10 cc			a lower pruritus rate in the intervention group with a value of p <0.05
Barati et al (2016)	Randomized Controlled Trial	N=46	Clients are given sweet almond oil in the area of pruritus as much as 5-10 cc The client is given three drops of rose water (at a concentration of 25%) on a clean absorbent cotton handkerchief using a dropper every night before going to bed and also 15-20 minutes before starting a dialysis session	Without intervention	The Spielberger's State-Trait Anxiety Inventory	The findings after the intervention decreased anxiety by measuring the Spielberger's State-Trait Anxiety Inventory with a value of p = 0.009
Nesami et al (2017)	Randomized Controlled Trial	N = 72 with each group N = 36	Aromatherapy with 3 drops of lavender 5% essential oil for 10 minutes each time they undergo hemodialysis for a period of one month	General intervention	The Hospital Anxiety and Depression Scale (HADS)	Giving aromatherapy effectively reduces depression and anxiety with value p = 0.005
Atapour et al (2016)	Clinical Trial Study	N = 80 with each group N = 40	The client is given a wet handkerchief dripped with mustard aroma and asked to breathe 3 times a day for 5 minutes in 4 weeks	The client is given a wet handkerchief without aromatherapy drop	SF36V2 questionnaire	Health in general in the intervention group was better than the control group with a value of p <0.05
Kiani et al (2016)	Clinical Trial Study	N = 70 with each group N = 35	Clients are asked to breathe a combination of essential 5% lavender and sweet almonds which are dropped on cotton for 15-	General intervention	The Spielberger's State-Trait Anxiety Inventory	Differences and decreases in anxiety in the intervention group were found

			20 minutes placed on the client's neck			compared to the control group with a value of p = 0.001
Park et al (2016)	Non-equivalent comparison group pretest-posttest design	N = 30 with intervention group N = 17 and control N = 13	The client is given aroma massage with a mixture of lavender and bergamot essential oils in a ratio of 1: 1 diluted to 1% with 100 ml of jojoba carrier oil. Provided massage with a duration of 5 minutes before the client sleeps	Clients are given massage without using aromatherapy with the same duration and time as the intervention group	The Piper Fatigue Scale Quality of sleep Quantity Of Sleep	It was found that the quality of sleep improved but the decrease in fatigue and sleep strength was not significant
Aliasgharpour et al (2016)	Quasy Experiment Clinical Trial Study	N = 40 with each group N = 20	Aromatherapy intervention is three drops Aromatherapy mixture contains 10% lavender essence which is poured into cotton in a pouring container, and the patient is asked to breathe it before insertion of the needle for 5 minutes from a distance of 7-10 cm	General intervention	VAS Scale Pain	Aromatherapy lavender inhalation effectively reduces pain in AVF clients who have a value of p <0.001
Ghods et al (2015)	Crossover Study	N=34	Clients to be carried out by AVF are given 100% lavender essential aromatherapy lotion	Giving placebo is sterile water	NRS (Numeric Rating Scale)	100% lavender aromatherapy lotion can reduce the pain intensity of the installation of dialysis needles with a value of p = 0.001
Bicer et al (2015)	Randomized Controlled Experiment	N = 50 with each group N = 25	Aromatherapy given to clients is a combination of	General intervention	VAS pain Scale	In the intervention group

	Trial		1% lavender with 1% rosemary on 48cc oil with massage on the face area every day for 3 weeks			there was a decrease in headache with VAS measurements and p <0.001
Nesami et al (2014)	Randomized Controlled Clinical Trial	N = 92 with each group N = 46	The client is given the essence of lavender by inhaling with a concentration of 10% for 5 minutes for 3 sessions of hemodialysis	Clients are given aromatherapy without lavender	Vas Pain Scale	Differences in pain intensity were found with better intervention groups, namely with values p = 0.009
Lenjan et al (2014)	Clinical Trial	N = 60 with each group N = 30	Clients are asked to breathe lavender essential aromatherapy with 5% given to the cotton placed on the client's neck	General intervention	PSQI	There was a difference in the quality of sleep on the client. The intervention group had better sleep quality with a value of p <0.0001

PAT-895

ACUPRESSURE IN RELIEVING FATIGUE : A SYSTEMATIC REVIEW

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ABSTRACT

Fatigue is a common symptom of patients with acute and chronic health problems. The complementary alternative therapy which commonly used to relieving fatigue is acupressure. The aim of this review is to explain the effects of acupressure on managing fatigue in various acute and chronic health problems. A systematic review of English articles using Fifteen journals from the databases such as Scopus, Science Direct, PubMed, and Pro-Quest were selected was performed using the search terms of acupressure and fatigue. Studies during which acupressure was applied as an intervention and assessed for its effectiveness on relieving fatigue were selected with the last ten years time limitation. The results of the study reported the positive impact of acupressure in relieving fatigue level with several cases, especially on patient with end stage renal disease, persistent Cancer-Related Fatigue, postpartum women, post-caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine. From this review, health care providers should begin to incorporate acupressure into their interventions, especially in reducing fatigue in patients with various illness.

Keywords: acupressure, fatigue, acute, chronic, disease, health problem and complementary theraphy.

1. INTRODUCTION

Fatigue is a common symptom associated with a wide range of chronic illness (Whitehead, 2009). Fatigue can refer to a subjective symptom of malaise and aversion to activity or to objectively impaired performance. It has subjective health complaint that entails emotional, cognitive, and behavioral components (Lewis and Wessely, 1992). The symptom of fatigue is a poorly defined feeling, and careful inquiry is needed to clarify complaints of fatigue, tiredness, or exhaustion and to distinguish lack of energy from loss of motivation or sleepiness, which may be pointers to specific diagnoses (Mayou, 2002). Patients may complain of difficulty in carrying out normal activities of daily living, inability to work energetically or a feeling of tiredness even upon waking up (Kalra and Sahay, 2018).

Subjective fatigue is normally distributed in the population. The prevalence of clinically significant fatigue depends on the threshold chosen for severity (usually defined in terms of associated disability) and persistence. Surveys report that 5- 20% of the general population suffer from such persistent and troublesome fatigue. Fatigue is twice as common in women as in men but is not strongly associated with age or occupation. It is one of the commonest presenting symptoms in primary care, being the main complaint of 5-10% of patients and an important subsidiary symptom in a further 5- 10% (Mayou, 2002).

Patients generally regard fatigue as important (because it is disabling), whereas doctors do not (because it is diagnostically non-specific). This discrepancy is a potent source of potential difficulty in the doctor-patient relationship. Fatigue may present in association with established

medical and psychiatric conditions or be idiopathic. Irrespective of cause, it has a major impact on day to day functioning and quality of life. Without treatment, the prognosis of patients with idiopathic fatigue is surprisingly poor. Half those seen in general practice with fatigue the use of acupressure is based on meridian theory. Acupressure is rapidly gaining acceptance as a safe, cost-effective, noninvasive, and non- pharmacological form of therapy. Proposes that acupressure stimulates meridians, a network of energy path-ways throughout the body, to increase the flow of qi (bioenergy), subsequently altering the symptom experience. Acupressure is applied to specific points by the use of finger, hand, elbow, foot, and/or acupressure band, an elastic band with a protruding plastic button for stimulation of these pathways to increase the flow of qi (Parisi *et al.*, 2013). Studies testing the efficacy of acupressure for symptom management have been a focus of research, particularly during the last decade. However, no reviews have been pub-lished reporting the efficacy of acupressure for relieving fatigue in various illness.

2. METHOD

This systematic review using Fifteen journals from the databases such as Scopus, Science Direct, PubMed, and Pro-Quest were selected was performed using the search terms of acupressure and fatigue. Studies during which acupressure was applied as an intervention and assessed for its effectiveness on relieving fatigue were selected with the last ten years time limitation. The study consist of Randomized Controlled Trials (RCTs) and Quasi Experiments from several database sources such as Scopus, ScienceDirect, PubMed and Pro-Quest with the last 10 years time limitation (from 2009 to 2018). The keywords acupressure, fatigue, acute, chronic, disease, health problem and complementary theraphy.

Table 1 Inclusion chriteria

Design
* Randomized Control Trial (RCT)
* Quasi-Experimental Design
Population
* Patient acute and chronic illness
Intervention
* Acupressure
Outcomes measured
* Fatigue
Comparation
*Acupressure Intervention Versus No Treatment
* Acupressure Intervention Versus Placebo

The inclusion criteria are set to limit the scope of the systematic review. The inclusion criteria of this systematic review include the research using acupressure intervention on adult age.
The first step in the preparation of this sytematic review is the identification of 142 journals that have been collected from various databases based on the reviewer's defined keywords. The journals are selected according to predetermined inclusion criteria

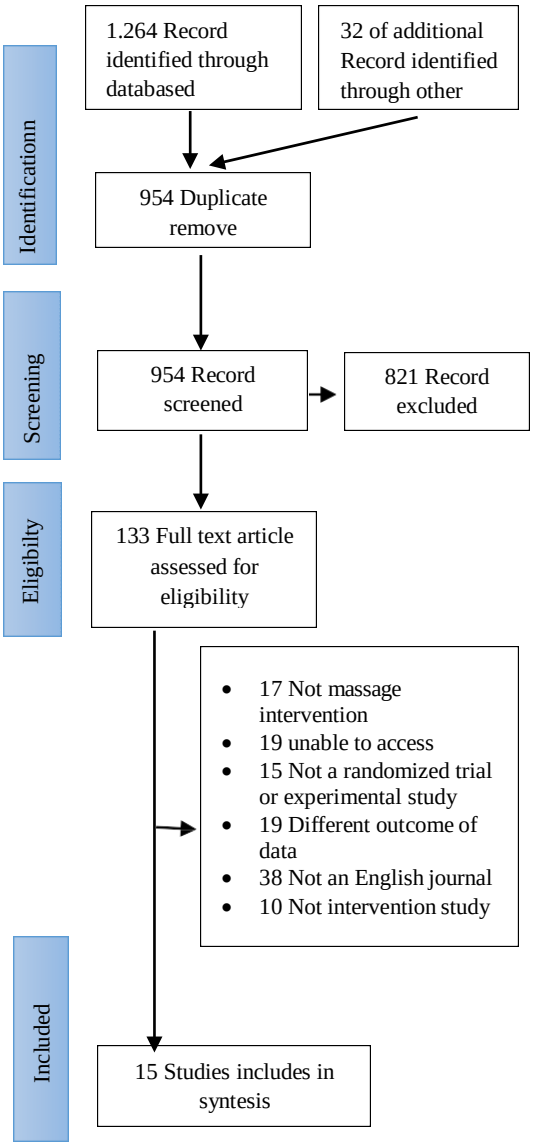

Figure 1. Flow of studies through the review

3. RESULT

Of the 15 research studies extracted, , three conveyed the use of acupressure to diminish the patient with end stage renal disease , five studies persistent Cancer-Related Fatigue. and the other studies includes postpartum women, post- caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine.

Table 1. Description of the interventions and protocols used in the selected studies.

No	Author/year	Method	Case	Acupressure point	∑ Sample	Time
1	(McDougall and McDougall Jr., 2005)	QE	End stage renal disease	Combination St36, Sp6, K1, taixi	Acupressure (n = 28) Control (n = 28)	12 minutes 3 times a week For 4 weeks
2	(Tsay, 2004)	RCT	End-stage renal Disease	Combination K1, St36, GB34, Sp6	Acupressure (n = 35) Placebo (n = 35) Control (n = 36)	15 minutes 3 times a week 1 week
3	(Sabouhi, 2013)	RCT	Hemodialysis patients	Combination K1, GB 34, St36, Sp6, BL 23, and HT7	Acupressure (n = 32) Placebo (n = 32) Control (n = 32)	20 minutes 3 times a week For 4 week
4	(Akça, Taççi and Karatas, 2013)	QE	Hemodialysis patients	Combination St36, GB34, Sp6, K1	Acupressure (n = 52) Control (n = 66)	3 times a week For 4 week
5	(Kuo *et al.*, 2016)	RCT	Post-caesarean section women	Auricular	Acupressure (n = 40) Control (n = 40)	3 munutes (twice a day) For 5 days
6	(Jung *et al.*, 2017)	QE	Postpartum women	The combination meridian Acupressure Abdomen, upper limbs, chest, abdomen, and lower limbs, side, back, back and lower limbs	Acupressure (n = 19) Control (n = 20)	90 min For 5 days
7	(Ghanbari, Sharifi and Adib, 2019)	RCT	Cancer under chemotheraphy	Combination L14, St36 and Sp6	Acupressure (n = 32) Placebo (n = 32) Control (n = 32)	1 day
8	(Lan *et al.*, 2015)	QE	Hepatocellular Carcinoma Patients	auricular acupoints, including Yintang, Shenting, Cuanzhu, Taiyang, Jingming, Yangbai Fengchi and Baihui	Acupressure (n = 32) Control (n = 32)	4 minutes 2 times a day For 5 days
9	(Zick *et al.*, 2012)	RCT	Persistent Cancer-Related Fatigue	Combination CV6, LI4, St36, K3, Ht7, Liv3, Anmian, and Yin Tang	Relaxation acupressure (*n* = 14) Low-intensity acupressure (*n* = 14) High-intensity acupressure (*n* = 15)	24 minutes For 12 weeks
10	(Zhang *et al.*, 2017)	RCT	Breast cancer receiving chemotherapy	Combination LI4, St36, Sp6	Acupressure (n = 24) Control (n = 24)	30 minutes 3 days A week For 12 weeks
11	(Harris *et al.*, 2016)	RCT	Breast cancer survivors	The combination Relaxing acupressure *yin*	relaxing acupressure (n = 94),	3 minutes 10 weeks

No	Author/year	Method	Case	Acupressure point	∑ Sample	Time
				tang, *anmian*, H7, Sp6, Liv3. *Du* 20, CV 6, LI4, St 36, Sp 6, K3.	stimulating acupressure (n = 90) Control (n = 86).	
12	(El-saadawy, 2013)	QE	Chronic obstructive pulmonary disease	The combination P6, St 36, CV22, Bl3, Du 14, L1 & L10.	Acupressure (n = 20) Control (n = 20)	20 – 25 min For 4 weeks
13	(Stomski *et al.*, 2018)	RCT	Patients with migraine	The combination P6, Yin Tang	Acupressure (n = 38) Placebo (n = 38)	3 minutes 3 days For 4 weeks
14	(Movahedi *et al.*, 2017)	RCT	Female nurses with chronic back pain	The combination GV20, H7 K1, BL60, BL32, GB30	Acupressure (n = 25) Placebo (n = 25)	14 minutes 3 times a week 3 weeks
15	(Bastani, Sobhani and Emamzadeh Ghasemi, 2015)	RCT	Multiple sclerosis	The combination St36, Sp6, LI4	Acupressure (n = 50) Placebo (n = 50)	18 minutes 2 weeks (14 days)

*RCT : Randomized Controlled Trials
*QE : Quasi Experiments

3.1 The Effectiveness Of Acupressure On Fatigue In patient with end stage renal disease

Three study showed that acupressure can effectively reduce fatigue in patient with end stage renal disease. Patients with the end-stage renal disease (ESRD) who require maintenance hemodialysis often reported symptoms of fatigue.

Fatigue is viewed by health professionals as something that cannot be changed as it is part of the disease process (McCann and Boore, 2000). Thus, fatigue is rarely treated medically. However, medical treatment for ESRD patients may involve routine supplement of erythropoietin to correct anemia that may be related to the symptom of fatigue (Jhamb *et al.*, 2014).

Four acupoints were used to decrease fatigue, such as Yungchuan (K1) in both feet, Zusanli (St36), Yanglingchuan (GB34) and Sanyingjao (Sp6) in both legs. This study has shown that fatigue is a major concern. Results found that adjusted for differences in baseline fatigue, depression and sleep quality, patients in the acupressure group had a significantly lower level of fatigue (PFS) than patients in the control group (Tsay, 2004).

This study adds to previous research by supporting the positive effect of acupressure on the perception of fatigue. for hemodialysis patients. Participants in the study displayed a moderately severe level of fatigue. Moreover, many of these patients stated symptoms of fatigue began with the initiation of dialysis therapy, continued to experience post-dialysis fatigue that persisted during nearly all-waking periods. Patients managed symptoms of fatigue mainly through inactivity and sleep.

Acupressure techniques is noninvasive, safe and effective, can be easily taught to patients so that they can manage fatigue, and decrease adverse health outcomes to improve their quality of life. The findings of this study suggest that acupressure could improve fatigue (Eğlence, Karataş and Taşci, 2013)

3.2 The Effectiveness Of Acupressure On Fatigue In Patients With Cancer Underwent Chemotherapy

Cancer-related fatigue is the commonest symptom in cancer patients, with a high prevalence in most of studies. Side effects of medications and non-suitable relief of fatigue with medications, shifts the patients to complementary and alternative medicine like acupressure medicine.

Results of this investigation showed that acupressure in three points of L14, ST36 and SP6 has short-term effectiveness on the cancer-related fatigue of patients undergoing chemotherapy (Zick *et al.*, 2012). The study explored the effects of acupressure on fatigue and depression during transcatheter arterial chemoembolization in HCC patients. Acupressure contains eight auricular acupoints, including Yintang, Shenting, Cuanzhu, Taiyang, Jingming, Yangbai, Fengchi, and Baihui. Stimulating the Yintang, Cuanzhu, Taiyang, Yangbai, Fengchi, and Baihui acupoints can alleviate headache symptoms. Stimulation of the Shenting acupoints can raise vitality and improve dizziness. Stimulation of the Jingming acupoint can diminish tired eyes. Stimulation of the Fengchi acupoint can improve stiff neck, headache, dizziness, and fatigue (Lan *et al.*, 2015) .

3.3 The Effectiveness Of Acupressure On Fatigue In postpartum and post-caesarean section women

In particular, early postpartum mothers reported that maternal fatigue were high in childbirth. If the physical and psychological stresses of the postpartum period persist, they can have a negative impact on the mother and impair her adjustment to daily life, and negative feelings about the maternal experience are likely to lead to postpartum depression. Acupressure massage, which promotes the circulation of blood and lymph, mental stability, and relaxation of muscles, is thought to be effective in decreasing maternal obesity, edema, stress, and fatigue. Postpartum healthcare is one of the major issues in women's lives. Many study study find benefits of acupressure massage for postpartum women (Yeh *et al.*, 2017). This finding strongly suggests that meridian acupressure massage was effective for relieving fatigue in postpartum women.

Considering the average length of postpartum care center stay for postpartum women (1 week) and the time needed to perform a whole-body massage, we decided to apply meridian acupressure massage once a day for 90 min, over 5 days. Each meridian acupressure massage session consisted of a 5-min preparatory stage, an 80-min principal stage on abdomen, upper limbs, chest, abdomen, and lower limbs, side, back, and back and lower limbs), and a 5-min finishing stage (Jung *et al.*, 2017).

The other study showed auricular acupressure also can decreased fatigue symptoms of post-caesarean section women in early postpartum. No studies were found on the effects of auricular acupressure on fatigue, but two studies reported that acupuncture and acupressure of three acupoints (Zusanli, located at the anterior border of the tibia below the knees; Sanyinjiao, located at the medial border of the tibia above the ankle; and Hegu, located on the back of the hand between the thumb and index finger bones) reduced fatigue symptoms in women with cancer-related fatigue (Kuo *et al.*, 2016)

3.4 The Effectiveness Of Acupressure On Fatigue In patient with chronic obstructive pulmonary disease

The aim of the current study was to examined the effect of acupressure on dyspnea & fatigue among patients with COPD. The findings concluded that study group has statistically significant improvement in relation to dyspnea, respiratory rate and oxygen saturation than the control group (El-saadawy, 2013).

The demand for complementary therapies amongst chronic disease patients has gained significant momentum over recent years especially acupressure because it is safe effective method of treatment, with no side effect profile, which in part adds to its popularity amongst patients (Filshie, 2010).

Acupressure was applied by pressing in circular movements on the acupoint with the thumb finger. Seven acupoints were used in the current study which were: P6 (eiguan), St36 (Zusanli), CV 22 (Tiantu), BL3 (Feishu), Du14 (Dazhui), L1 (Zhongfu) & L10 (Yuji). The duration of each session

ranged between 20 – 25 min \ session, cosseting of 3 min of massage for neck and each shoulder to free the Qi and blood and 3 min for each acupoints to apply acupressure (El-saadawy, 2013).

3.5 The Effectiveness Of Acupressure On Fatigue In patient with chronic back pain

Lower back pain (LBP) is an extremely common health problem (Deyo, 2002). Lower back pain causes more global disability than any other condition. Disability-adjusted life years (DALYs) increased from 58.2 million in 1990 to 83 million in 2010 (Hoy *et al.*, 2014). It is causing an enormous economic burden in both developed and developing countries (Thelin, Holmberg and Thelin, 2008).

LBP is defined as a nonspecific condition that refers to complaints of acute or chronic pain and discomfort in the area between the lower posterior margin of the ribcage and the horizontal gluteal fold (Shmagel, Foley and Ibrahim, 2016).

LBP has a major negative impact on individuals health-related quality of life, including poor general health, psychological distress, sleep disturbances, disability and fatigue (Kovacs *et al.*, 2005). Fatigue limits functionality and can lead to social and psychological impairments. Fatigue is a symptom that can be particularly problematic for LBP patients, can complicate and disrupt recovery and delays optimal return to daily life and work (Sharpe, 2002)

Chronic low back pain (CLBP) has been associated with altered trunk muscle responses as well as increased muscle fatigability This study showed the positive effect of acupressure on the improvement of fatigue among female nurses with chronic back pain, immediately, 2 weeks, and 4 weeks after the intervention of acupressure (Movahedi *et al.*, 2017).

3.6 The Effectiveness Of Acupressure On Fatigue In patient in Women with Multiple Sclerosis

Multiple Sclerosis (MS) is the most prevalent neurological disease (Mao and Reddy, 2010). It is characterized by lesions and scarring of the protective myelin sheath of the central nervous system (CNS), leading to neuronal damage and axonal loss. It is more common in women than in men (Schwendimann and Alekseeva, 2007). According to a study in Multiple Sclerosis is unpredictable and is one of the major diseases affecting patients quality of life (Janardhan and Bakshi, 2002).

The course of the disease is uncertain and the clients with MS may face physical problems including muscle weakness, bladder and bowel dysfunction, problems with speech, and vision (Motl, Snook and Schapiro, 2008) and also hidden difficulties such as fatigue (Homorodean, Leucuta and Perju-Dumbravă, 2016). The patient's fatigue might be extremely debilitating and often causes one to have a sedentary lifestyle i.e. sitting, lying down or sleeping. Moreover, it has a great influence on all aspects of life, particularly on occupation, daily life activities, social relationships and self-care activities (Samuels & Ropper, 2010).

The experimental group were received acupressure, at the acupoints (ST36, SP6, LI4) and the placebo group, But at post- test, the results showed significant improvement of the mean scores of fatigue in the experimental group compared to the placebo group at immediately, two, and four weeks after the intervention (Bastani, Sobhani and Emamzadeh Ghasemi, 2015)

4. RESULT

From the results of the fifteen studies, acupressure is shown to reduce various fatigue patient with end stage renal disease, persistent cancer-related fatigue. And the other studies includes postpartum women, post-caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine. This study shows that there are various acupressure points in relieving fatigue. Further research using combination with one or more other acupoints or using other methods would be very important for accelerating the process of healing for patients. Some experts believe that stimulation of points in acupressure prevents the transfer of acute stimuli and

increases the level of endorphins in the blood, and thus, causes pain relief. In some studies, it was also shown that massaging the placebo points could cause varying degrees of release and relaxation in the body, and consequently, affect the pain of muscle cramps.

Acupressure is a nonpharmacological theraphy that can cause the body to relax and is easy, safe and efficient. The who recognizes acupressure as a treatment to activate neurons in the nervous system, where it stimulates the endocrine glands and can turn on problematic. Zick, *et al* in breast cancer survivors found that the use of acupressure protocol was effective in significantly reducing fatigue; however, only relaxing acupressure was effective in also significantly improving sleep and quality of life (litzinger *et al.*, 2010). These effects are consistent with why one might select these points in an acupuncture protocol.

According to traditional chinese medicine theory, points used in the relaxing protocol were calming to the spirit (*Yin Tang*, *Anmian*, Ht 7), involved in the smooth flow of qi and emotions (LI 3), and involved in the formation of qi and blood (Sp6). Several of these points are commonly used in the treatment of insomnia (Deadman, 1998).

The stimulating protocol included the point involved in the formation of qi and blood (Sp6) but also included points to stimulate generation of qi and blood (St36), restore yang (LI4), *Tonify qi*/kidney/*Yang* (CV6, K3) and raise yang (*Du* 20). Several of these points are commonly used to increase energy and endurance (Deadman, 1998).

5. CLINICAL RECOMMENDATION

The systematic review begins to establish a credible evidence base for the use of acupressure in relieving fatigue. An evidence-base of reliable and valid evaluation is crucial for clinicians. In terms of the implication for nursing education, practice, and research, the review provides important evidence that acupressure uses a non-invasive, timely, and effective way. In addition, acupressure should be included in the nursing education curriculum to help students learn about the effectiveness of complementary therapies. Health care providers should have begun to incorporate acupressure into their practice to help patients who experience fatigue. before giving therapy, health care providers must have an official practice permit to ensure patient safety. they must also practice based on practical guidelines for acupressure management, because the incorrect application of finger pressure, the inaccuracy acupressure points and the inaccuracy selection of acupoint combinations may give different results to the patient.

6. CONCLUSIONS

The results of the study reported the positive impact of acupressure in relieving fatigue level with several cases, especially on patient with end stage renal disease, persistent Cancer-Related Fatigue, postpartum women, post-caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine. This review shows that acupressure is a noninvasive, timely, and effective action in reducing fatigue in patients with various diseases.

7. LIMITATIONS

This study only contains the effects of acupressure in various patients with limited literary sources. we need to add other literature to support the results of the review, more special reviews are needed as evidence that acupressure can objectively relieve fatigue, for example from the biochemical and neuroimmunological dynamics of the human body.

8. REFERENCE

Akça, N. K., Taççi, S. and Karatas, N. (2013) 'Effect of Acupressure on fatigue in patients on hemodialysis', *Alternative Therapies*. doi: http://dx.doi.org/10.5812/ircmj.28691.

Bastani, F., Sobhani, M. and Emamzadeh Ghasemi, H. S. (2015) 'Effect of Acupressure on Fatigue in Women With Multiple Sclerosis', *Global Journal of Health Science*, 7(4), pp. 1– 7. doi: 10.5539/gjhs.v7n4p375.

Deadman P, Al-Khafaji M, Baker K. *A Manual of Acupuncture*. East Sussex, England: Journal of Chinese Medicine Publications; 1998.

Deyo, R. (2002) 'Cost, Controversy, Crisis: Low Back Pain And The Health Of The Public', *Annual Review of Public Health*. doi: 10.1146/annurev.publhealth.12.1.141.

Eğlence, R., Karataş, N. and Taşci, S. (2013) 'The effect of acupressure on the level of fatigue in hemodialysis patients', *Alternative Therapies in Health and Medicine*, 19(6), pp. 23–31. doi: 10.1007/s00405-018-5098-x.

El-saadawy, D. (2013) 'Effect of Acupressure on Dyspnea and Fatigue among Patients with Chronic Obstructive Pulmonary Disease', 4(22), pp. 50–61.

Ghanbari, A., Sharifi, M. and Adib, M. (2019) 'Effects of acupressure on fatigue in patients with cancer underwent chemotherapy', *European Journal of Surgical Oncology*, 45(2), p. e88. doi: 10.1016/j.ejso.2018.10.312.

Harris, R. E. *et al.* (2016) 'Investigation of 2 Types of Self-administered Acupressure for Persistent Cancer-Related Fatigue in Breast Cancer Survivors', *JAMA Oncology*, 2(11), p. 1470. doi: 10.1001/jamaoncol.2016.1867.

Homorodean, R., Leucuta, D. C. and Perju- Dumbravă, L. (2016) 'Fatigue in multiple sclerosis', *Human and Veterinary Medicine*. doi: 10.1080/21641846.2013.843812.

Hoy, D. *et al.* (2014) 'The global burden of neck pain: Estimates from the global burden of disease 2010 study', *Annals of the Rheumatic Diseases*. doi: 10.1136/annrheumdis-2013- 204431.

Janardhan, V. and Bakshi, R. (2002) 'Quality of life in patients with multiple sclerosis: The impact of fatigue and depression', *Journal of the Neurological Sciences*. doi: 10.1016/S0022- 510X(02)00312-X.

Jhamb, M. *et al.* (2014) 'Prevalence and correlates of fatigue in chronic kidney disease and end- stage renal disease: Are sleep disorders a key to understanding fatigue?', *American Journal of Nephrology*. doi: 10.1159/000356939.

Jung, G.-S. *et al.* (2017) 'Effects of Meridian Acupressure Massage on Body Composition, Edema, Stress, and Fatigue in Postpartum Women', *The Journal of Alternative and Complementary Medicine*, 23(10), pp. 787–
793. doi: 10.1089/acm.2016.0362.

Kalra, S. and Sahay, R. (2018) 'A LEMON a day keeps fatigue away - The ABCDE of fatigue', *US Endocrinology*. doi: 10.17925/EE.2018.14.1.15.

Kovacs, F. M. *et al.* (2005) 'The transition from acute to subacute and chronic low back pain: A study based on determinants of quality of life and prediction of chronic disability', *Spine*. doi: 10.1097/01.brs.0000172159.47152.dc.

Kuo, S. Y. *et al.* (2016) 'Auricular acupressure relieves anxiety and fatigue, and reduces cortisol levels in post-caesarean section women: A single-blind, randomised controlled study', *International Journal of Nursing Studies*. Elsevier Ltd, 53, pp. 17–26. doi: 10.1016/j.ijnurstu.2015.10.006.

Lan, S. C. *et al.* (2015) 'Effects of acupressure on fatigue and depression in hepatocellular carcinoma patients treated with transcatheter arterial chemoembolization: A quasi- experimental study', *Evidence-based Complementary and Alternative Medicine*, 2015. doi: 10.1155/2015/496485.

Lewis, G. and Wessely, S. (1992) 'The epidemiology of fatigue: More questions than answers', *Journal of Epidemiology and Community Health*. doi: 10.1136/jech.46.2.92.

Litzinger, A. *et al.* (2010) 'Relaxation Acupressure Reduces Persistent Cancer-Related Fatigue', *Evidence-Based Complementary and Alternative Medicine*, 2011(January), pp. 1–10. doi: 10.1155/2011/142913.

Mao, P. and Reddy, P. H. (2010) 'Is multiple sclerosis a mitochondrial disease?', *Biochimica et Biophysica Acta - Molecular Basis of Disease*. doi: 10.1016/j.bbadis.2009.07.002.

Mayou, R. (2002) 'ABC of psychological medicine: Trauma', *BMJ*. doi: 10.1136/bmj.325.7361.426.

McCann, K. and Boore, J. R. P. (2000) 'Fatigue in persons with renal failure who require maintenance haemodialysis', *Journal of Advanced Nursing*. doi: 10.1046/j.1365- 2648.2000.01584.x.

McDougall, G. J. and McDougall Jr., G. J. (2005) 'Research review: The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease', *Geriatric Nursing*, 26(3), pp. 164–165.

Motl, R. W., Snook, E. M. and Schapiro, R. T. (2008) 'Symptoms and physical activity behavior in individuals with multiple sclerosis', *Research in Nursing and Health*. doi: 10.1002/nur.20274.

Movahedi, M. *et al.* (2017) 'The effect of acupressure on fatigue among female nurses with chronic back pain', *Applied Nursing Research*. Elsevier Inc., 36, pp. 111–114. doi: 10.1016/j.apnr.2017.06.006.

Parisi *et al.* (2013) 'Acupressure therapy for insomnia in adolescents: a polysomnographic study', *Neuropsychiatric Disease and Treatment*, (May 2014), p. 157. doi: 10.2147/ndt.s41892.

Schwendimann, R. N. and Alekseeva, N. (2007) 'Gender Issues in Multiple Sclerosis', *International Review of Neurobiology*. doi: 10.1016/S0074-7742(07)79017-7.

Sharpe, M. (2002) 'ABC of psychological medicine: Fatigue', *BMJ*. doi: 10.1136/bmj.325.7362.480.

Shmagel, A., Foley, R. and Ibrahim, H. (2016) 'Epidemiology of Chronic Low Back Pain in US Adults: Data From the 2009–2010 National Health and Nutrition Examination Survey', *Arthritis Care and Research*. doi: 10.1002/acr.22890.

Stomski, N. J. *et al.* (2018) 'The effect of self- selected complementary therapies on cancer patients' quality of life and symptom distress: A prospective cohort study in an integrative oncology setting', *Complementary Therapies in Medicine*. Elsevier, 37(January), pp. 1–5. doi: 10.1016/j.ctim.2018.01.006

Thelin, A., Holmberg, S. and Thelin, N. (2008) 'Functioning in neck and low back pain from a 12-year perspective: A prospective population- based study', *Journal of Rehabilitation Medicine*. doi: 10.2340/16501977-0205.

Tsay, S. L. (2004) 'Acupressure and fatigue in patients with end-stage renal disease - A randomized controlled trial', *International Journal of Nursing Studies*, 41(1), pp. 99–106. doi: 10.1016/S0020-7489(03)00079-8.

Whitehead, L. (2009) 'The Measurement of Fatigue in Chronic Illness: A Systematic Review of Unidimensional and Multidimensional Fatigue Measures', *Journal of Pain and Symptom Management*. doi: 10.1016/j.jpainsymman.2007.08.019

Yeh, C. *et al.* (2017) 'Auricular Point Acupressure to Manage Aromatase Inhibitor–Induced Arthralgia in Postmenopausal Breast Cancer Survivors: A Pilot Study', *Oncology Nursing Forum*, 44(4), pp. 476–487. doi: 10.1188/17.ONF.476-487.

Zhang, B. *et al.* (2017) 'Effect of therapeutic care for treating fatigue in patients with breast cancer receiving chemotherapy', *Medicine*, 96(33), p. e7750. doi: 10.1097/MD.0000000000007750.

Zick, S. M. *et al.* (2012) 'Acupressure for persistent cancer-related fatigue in breast cancer survivors (AcuCrft): a study protocol for a randomized controlled trial', *BMC Complement Altern Med*, 12, p. 132. doi: 10.1186/1472-6882-12-132.

PAT-905

EFFECTIVENESS OF PURSED LIPS BREATHING EXERCISE ON RESPIRATORY STATUS IN PATIENTS WITH COPD: A SYSTEMATIC REVIEW

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ABSTRACT

Pursed lips breathing is a breathing technique used to resolve shortness of breath and breathing difficulties in COPD patients. Objective : To investigate the effectiviness use of PLB in exercise performance, ventilatory parameters, oxygen saturation and quality of life for individual during exercise in patients with COPD. Methods: the method used by searching through a database of the journal "Science Direct, Scopus, and Pro Quest". This search is limited to his journal starting in 2007-2018 Results: Literature search for completion of 608 journals. After reading the title and abstract on the inclusion and exclusion criteria, we finally included 15 relevant journals in the breathing control exercise. Study selection: This review includes random crossover studies, quasy experimental studies, mixed methodological studies and cross-sectional studies as a strategy to enhance the effects of PLB during exercise in patients with COPD. Data analysis: Systematic review adapted to PRISMA. Assessors analyze independent search results to find potential studies that meet the requirements and studies according to the title then the abstract is analyzed and only the journal meets the selected requirements. Conclusions: PLB effectively reduces ventilation parameters, increasing oxygen saturation and quality of life in patients with COPD.

Keywords: breathing exercises, pursed lips breathing, COPD

1. Introduction

Chronic Obstructive Pulmonary Disease (COPD) Often arises in middle age from smoking in a long time. Various risk factors such as smoking, air pollution, age and others[1]. Globally, an estimated 3 million deaths in the caused by this disease in 2015 i.e., 5% of all deaths worldwide in that year. Over 90% of COPD deaths occur in developing countries with weak economic levels. In Indonesia, the prevalence of COPD was 3.7% and increases with age and the incidence of COPD was higher in the males as much as 4.2%, whereas in women by 3.3%[2].

The impact of COPD on each individual Depending on the degree of complaints especially crowded and Decreased exercise capacity, characterized by airflow limitation due to obstruction of the airways. Because peripheral airway obstruction, the volume of water can Become trapped in the lungs[3], Secara general non-pharmacological therapy is given to Patients to manage, reduce

symptoms, improve lung function, cardiac work and improve the quality of life of Patients[4],

Pursed lips breathing is one of the very popular breathing techniques and is used for Patients with COPD. This breathing technique uses strategies pursed lips together when the exhalation [1].

Of the 15 studies recommend exercise PLB can do 6-10 minutes in a resting state can control and manage COPD Patients so well that PLB can reduce hyperventilation, increase of the diffusion of the alveoli, increasing improvement in lung function, working Decrease lung, lower respiration rate , stabilizing heart rate, lowering tightness and increase of oxygen saturation.

This study aims to Determine the effectiveness of the use of PLB in improving the ventilation parameters, oxygen saturation and quality of life ,

2. Method

2.1 Sources of Data and search

Systematic method used in this review begins with the selection of topics. Electoral population is used to search through the database of the journal "Science Direct, Scopus, and Pro Quest". This search is limited to journals starting in 2008-2018. Keyword English used is breathing exercises; pursed lips breathing; COPD, From the all journals have 15 journals on the topic. Fifteen of the journal Articles were then observed and performed Systematic Review

2.2 Study Selection

The review included a randomized crossover study, quasi-experimental study, a mixed methodological study and roomates across-sectional study aims to Evaluate the effects of PLB during exercise in Patients with COPD. The selected studies included Patients with the following characteristics: (a)ambulatory COPD Patients $\geq$ 40 years of age, smokers or ex-smokers $\geq$ 20 years; (B) a clinical diagnosis of COPD using spirometry criteria and GOLD criteria 2, 3 and 4 in a stable condition. (C) Absence: Client COPD status is unstable and with other comorbid diseases, The main intervention using PLB as a strategy to improve ventilation parameters, oxygen saturation and quality of life (QOL) for individuals during exercise in Patients with COPD,

2.3 Intervention

Data were collected and evaluated According to the criteria of inclusion and exclusion. Of Several journals, many interventions Independently Carried out with a different time. The duration of the intervention study intervention chest 10 minutes to 1 month.

a. Intervention 10 minutes to do the exercise PLB combination with other variables
b. Interventions for 1 till 4 weeks conducted exercises PLB combination with other variables

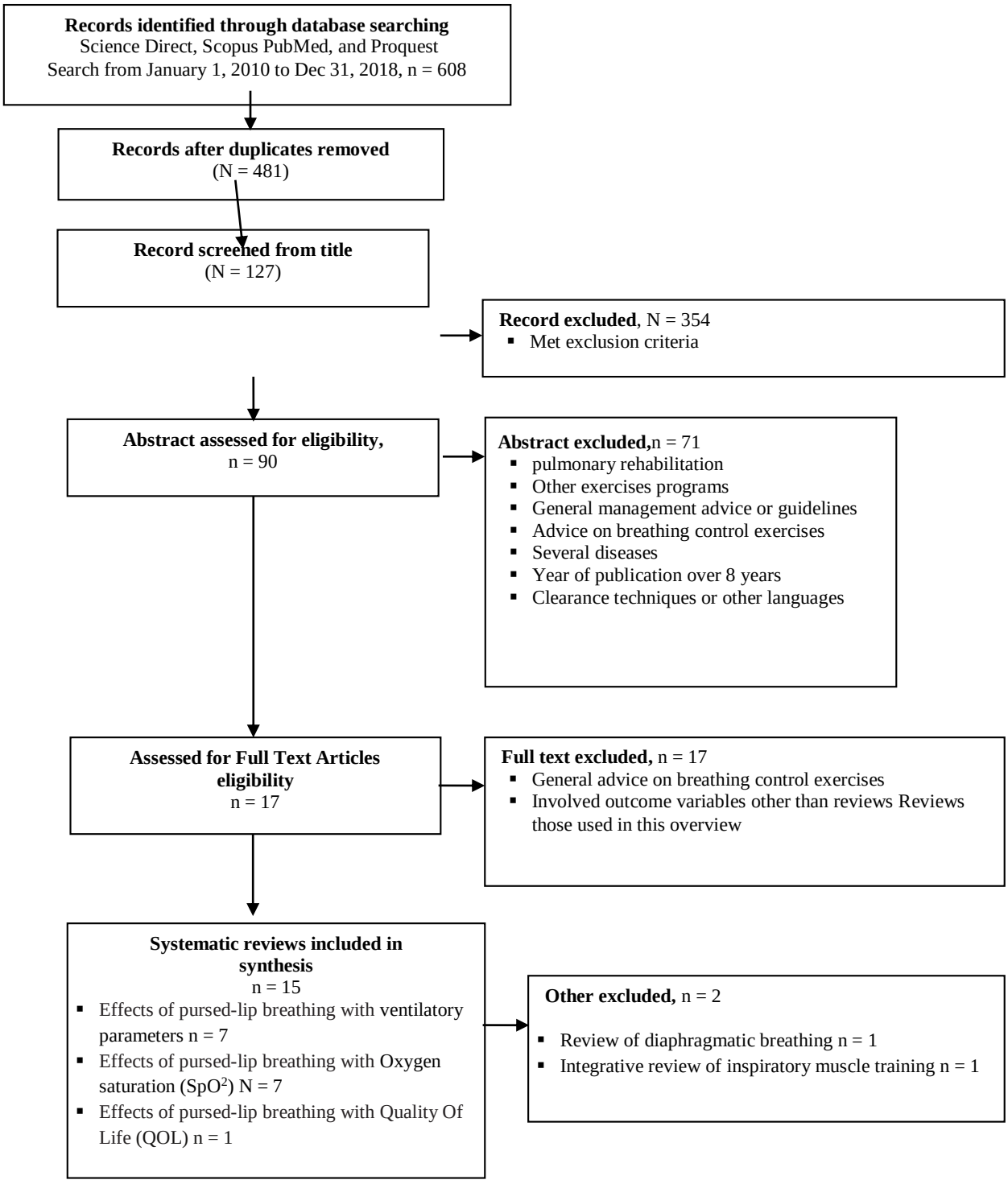

Figure 2 Flow chart of inclusion and exclusion process.

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Table 2. Analysis Effectiveness PLB on Ventilation Parameters, Kinematics and Muscle of Breathing, Shortness of Breath, Oxygen Saturation (SaO_2) and Quality of Life

[1] Studies	**[2] Control Breathing Exercise**	**[3] outcome [4] variable [5] (Measure)**	**[6] Study Design**	**[7] Participants**	**[8] Intervention [9] descriptor and duration**	**[10] [11] [12] Pooled statistics on play effect variables Mean ± SD**
[13] Mendes L P S, et. al, 2018	[14] PLB combination diaphragmatic breathing	[15] dyspnea	[16] quasi-experimental study	[17] 17 Participants [18]	[19] 2 days training	[20] 0:52 ± 0.79, P = 0:17
[21]	[22]	[23] oxygen saturation	[24]	[25]	[26]	[27] 95.96% ± 2.61%; P = 0.01) in,
[28]	[29]	[30] respiratory rate	[31]	[32]	[33]	[34] 75.86 ± 14.77 breaths / min; P = .67
[35] Roberts S E, Schreuder F M, Watson T and Stern M 2016	[36] PLB management for dyspnea	[37] dyspnea	[38] A mixed methodological study	[39] 13 participant	[40] 6 months - 24 months	[41] No quantitative pooling of data
[42] Lucia et al ,. 2015	[43] PLB	[44] QOL	[45] A cross-sectional	[46] 80 participant	[47] 12 months	[48] The statistical significance value for symptoms [49] is represented by 0712, activity by 0275, and for impacts by 0255.
[50] Shahria r et al., 2018	[51] PLB	[52] oxygen saturation [53]	[54] pre-experimental [55] study	[56] 40 participant	[57] 30 minutes	[58] ± 94.05 to 96.90 ± 1:20 2:41 p = 0.001
[59]	[60]	[61] RR	[62]	[63]	[64]	[65] 20:45 ± 1.76 to 19.70 ± 1:10 p = 0342
[66] Sano Y, Ueki J, Tamura N	[67] PLB combination [68] walking	[70] oxygen saturation	[71] pre-experimental [72] study	[73] 90 participants	[74] 4 weeks	[75] 95.4 ± 1.5% to 91.0 ± 2.9% (p <0.0001)

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[1] Studies	[2] Control Breathing Exercise	[3] outcome [4] variable [5] (Measure)	[6] Study Design	[7] Participants	[8] Intervention [9] descriptor and duration	[10] [11] [12] Pooled statistics on play effect variables Mean ± SD
and Obata K 2015	[69]					
[76]	[77]	[78] dyspnea	[79]	[80]	[81]	[82] 0.4 ± 0.6 to 2.0 ± 1.7 (p <0.0001)
[83] Spahija J, Marchie M De and Ghezzo H 2010	[84] PLB combination of two incremental bicycle exercise	[85] dyspnea	[86] Across-sectional study	[87] 57 participants	[88] 2 days	[89] 4.0 ± 1.2 to 5.3 ± 1.5 p = .010 [90] [91] | [92]
[93]	[94]	[95] oxygen saturation	[96]	[97]	[98]	[99] 90.9 ± 7.7 to 97.4 ± 1.2 p = .003
[100] Visser F J, Dekhuijzen P N R and Heijdra F 2011	[101] PLB	[102] inspiratory Capacity	[103] quasi Experiment	[104] 35 participants	[105] 2 days	[106] -0.33 ± 0:24 0.000004 liters p < [107]
[108] Araujo C, Karloh M, Reis C, PalÃº M and Mayer A 2015	[109] Pursed-lip breathing combination of two 6-min walk tests [110] (6MWT) [111]	[112] dynamic hyperinflation	[113] a randomized crossover study	[114] 25 participants	[115] 10 minutes	[116] 0:22 ± 0:24 to 0:24 ± 0:20 [117] P = 0.71 [118]
[119] Leandro Ferracini Cabral, Tatiana Cunha D'Elia D de S M and Walter	[120] PLB [121]	[122] peak expiratory flow (EPF)	[123] a randomized crossover study	[124] 53 participants	[125] 10 minutes	[126] 40.2 ± 8.6 vs 53.3 ± 17.8% predicted, P <0.05

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[1] Studies	[2] Control Breathing Exercise	[3] outcome [4] variable [5] (Measure)	[6] Study Design	[7] Participants	[8] Intervention [9] descriptor and duration	[10] [11] [12] Pooled statistics on play effect variables Mean ± SD
Araujo Zin F G 2014						
[127]	[128]	[129] inspiratory capacity (IC)	[130]	[131]	[132]	[133] 1:19 ± 0:33 to 1:35 ± 0:39 L; P <0.05
[134]	[135]	[136] oxygen saturation	[137]	[138]	[139]	[140] 3.1 ± 4.6 to 94.0 ± 4.1%; P <0.05)
[141]	[142]	[143] RR	[144]	[145]	[146]	[147] 19.3 ± 4.5 to 16.9 ± 6.0 P<0,05
[148] Stoltzfus J C, Dey T, Nanda S and Guleria R 2012	[149] Pursed-lip breathing combination of 6-min walk tests [150] (6MWT)	[151] dyspnea	[152] randomized crossover study	[153] 15 participants	[154] 10 minutes	[155] 30.86 + 0.68 to 28 036 + 18.85 P = 0:38 [156] [157]
[158]	[159]	[160] respiratory rate	[161]	[162]	[163]	[164] 23.5 + 3:25 to 19:29 + 4.90 p = 0.002
[165] Kalpana et al., 2015	[166] PBL [167]	[168] QOL	[169] A cross-sectional	[170] 40 participants	[171] 1 month	[172] 47.80 ± 16.66 was for physical, 59.26 ± 12.69 for [173] social, and 59.51 ± 15:17 for psychological domains [174] the total quality of life was 54.97 ± 13.83
[175] Bianchi R, et. al 2007	[176] PLB [177]	[178] the volume of the chest wall (VCW)	[179] Analytic Cohort	[180] 32 participants	[181]	[182] ± 0.74 to 0.63 ± 0:26 0:52 P = 0.00005
[183]	[184]	[185] dyspnea	[186]	[187]	[188]	[189] ± 1.61 ± 0:45 1:13 to 0:42 p = 0.0007
[190]	[191]	[192] RR	[193]	[194]	[195]	[196] 14.91 ± 4.91 -6.78 ± 4:40 o0.000003 [197]
[198] Ramos E M C, Vanderlei L	[199] PLB [200]	[201] oxygen saturation [202]	[203] Experimental Study	[204] 16 participants	[205]	[206] 96 ± 3 to 98 ± 1 [207]

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[1] Studies	[2] Control Breathing Exercise	[3] outcome [4] variable [5] (Measure)	[6] Study Design	[7] Participants	[8] Intervention [9] descriptor and duration	[10] [11] [12] Pooled statistics on play effect variables Mean ± SD
C M, Ramos D, Teixeira L M, Pitta F and Veloso M 2009						
[208]	[209]	[210] RR	[211]	[212]	[213]	[214] 19 ± 4.6 to 10 ± 3
[215] Maind G, Nagarwala R and Retharekar S 2015	[216] PLB and Mouth Taping [217] [218]	[219] dyspnea	[220] A cross-sectional study	[221] 80 participants	[222]	[223] 404.77 ± 75.86 to 339.15 ± 84.53 [224] P = 0.00 [225]
[226]	[227]	[228] RR	[229]	[230]	[231]	[232] 4:46 ± 35.78 to 33.45 ± 4.75 P = 0.033 [233]
[234] Sakhaei S, Sadagheyani H E, Zinalpoor S, Markani A K and Motaarefi H 2018	[235] PLB [236]	[237] oxygen saturation	[238] an experimental study	[239] 66 participants	[240]	[241] 95.4 ± 1.5% to 90.6 ± 3.2% (p <0.0001)
[242]	[243]	[244] dyspnea	[245]	[246]	[247]	[248] 0.4 ± 0.8 to 1.4 ± 1.4 (p0.0001)

2.4 Data analysis

Systematic reviews in adjust to the Preferred Reporting Items for Systematic Reviews and Meta-analyzes (PRISMA). Appraisers analyze the results of an independent search to find any potential eligible studies. First, the study abstract is separated by title then Analyzed and only the selected journals qualify. Based on the abstract, the full article was Obtained for review, consideration, Analyzed and disputed on the feasibility study. In case of disagreement between the judge journals.

Systematic review which included organized and presented in one image. Figure 1 presents the information in a systematic search method selection. Table 2 Analysis overview effectiveness PLB on ventilation parameters, kinematics and muscle of breathing, shortness of breath, oxygen saturation (SaO2) and quality of life, Table 3 categorizes the description of the intervention and the authors' conclusion about PLB breathing control exercises on exercise performance, ventilation parameters, oxygen saturation and quality of life (QOL) Respiratory.

3. Results

Figure 2 shows the process of inclusion SR. Literature search identified 608 journals. After checking the titles and abstracts of the inclusion and exclusion criteria, we finally enter the relevant SR 15 on breathing control exercises. SR is based on complex interventions on exercise performance, ventilation parameters, oxygen saturation and quality of life and the authors have collected the data on different Reviews their pursed lips breathing exercises that exercise performance with variable, ventilation parameters, oxygen saturation and quality of life

In the subgroup analysis, there were effects found on ventilation parameters, oxygen saturation and quality of life, review diaphragmatic breathing and review inspiring muscle training not included as an exercise in this overview and therefore we exclude this SR, Furthermore, we exclude one-SR which was the previous updated version,

There is no effect on the SR-evaluation of shortness of breath / dyspnea, on relaxation techniques, exercise posture or muscle training.

4. Discussion

We-reviewed journal on the effectiveness of the quality of PLB to the ventilation parameters, oxygen saturation and quality of life in COPD Patients. The main result we show that, the effectiveness of PLB to the ventilation parameters, there are 18 independent variables are related, one journal no regard 1 to 3 variables related that the kinematics of the chest wall, as in kronisasi wall of the chest, shortness of breath , breathing patterns, respiration rate, work of breathing, improving the capacity of inspiration and dynamic hyperinflation. PLB effectiveness against oxygen saturation, there are seven independent variables related to and effectiveness of PLB to the quality of life there is one independent variable.

5. The effectiveness of the ventilation parameters PLB

respiratory ventilation explains the process of exchanging water between the environment and the lungs. Variables used to reflect Respiratory patterns are sensitive to changes in the frequency or volume of water diffused during respiration. Besides that, the pattern breathing Allows us to the study the mechanics and regulation of ventilation in the context of many factors that Affect supply oxygen, PLB effectiveness in regulating respiration in COPD Patients at rest - Significantly reducing respiratory frequency and increasing volume elasticity has been explained by authors such as Mende set al., Mayer et al., Borge et al., Laura et al.and others. Thus, this breathing pattern seems to be more effective than spontaneous breathing in COPD Patients.

Of the 15 journals there were 18 independent variables related, reported symptoms of decreased congestion, increased tidal volume and a significant Decrease in the frequency of breathing when using the PLB and Also There were no reports of improvement and Showed a significant decrease in respiratory frequency, Although there was no change in tidal volume. This finding supports the idea that not all Patients benefit from this breathing pattern. Author Associated improvement breathing pattern decreases end-expiratory lung volume(EELV),The author summarizes that a reduction of 3% to 4% in EELV in COPD Patients can be interpreted as a biomechanically favorable for inspiration. Low and higher tidal volume; The end result is Increased ventilation efficiency

5.1 Effect of PLB on kinematics and respiratory muscles

The breathing muscles are responsible for maintaining adequate ventilation. Strength and endurance of respiratory muscles can be assessed by measuring Several variables, such as maximum respiratory pressure (both inspiration and expiration), maximum voluntary ventilation, and transdiaphragmatic pressure, Dynamic measurement of the breathing muscles during the respiratory cycle is Achieved mainly by studying intrathoracic pressure (pleural pressure) measured in the esophagus and stomach pressure measured in the stomach area or, Alternatively, by plethysmography of the chest surface. Respiratory muscle function can also be evaluated by noninvasive (electrode surface) or invasive electromyography of the chest wall muscles (Mendeset al., 2018, [8–10,14].

The authors studied the work of breathing and the use of PLB during muscle ventilation in COPD Patients, observing significant reduction in gastric and pleural pressure during inspiration and improvement in breathing work. Enhancement of this is due to an increase of in the work of the chest wall (ribs) as a result of decreased work from the diaphragm, the which is the caused by more negative pleural pressure and Decreased gastric pressure during inspiration. Visser, besides confirming Reviews These results, Noted the use of abdominal muscles during the entire respiratory cycle and a significant Decrease in the diaphragm tension-time index. In another study, gastric pressure and surface electromyography were measured in COPD Patients, justifying Increased gastric pressure during expiration and contraction of all the abdominal muscles studied [15].

In summary, the PLB can be said to cause changes in the pattern of use of respiratory muscles, increase of the use of accessory muscles in the chest wall and increase of abdominal muscle activity throughout the breathing cycle while, at the same time, Decrease the use of the diaphragm muscle. All of Reviews These cause changes COPD patients to breathe more efficiently,

5.2 PLB on breathlessness

Patients with COPD, who perform PLB independently. Their findings suggest that the decrease breathlessness in patients due to reduced expiratory flow variability, leading to a decrease in the Bernoulli effect created by the air flow and thus reducing the tendency of the airways. Nevertheless, using the Borg scale to measure dyspnea in patients with COPD, compared to spontaneous breathing to PLB breathing and found that PLB-although improving ventilation, do not reduce the degree of dyspnea and even increased significantly in patients with PLB can be beneficial for patients with exercise [5,12].

5.3 PLB influence oxygen saturation (SaO2)

The author studied the oxygen consumption and clinical implications of having COPD Patients breathing exercises were put through with PLB Compared with spontaneous breathing. Studied changes in the volume of the chest wall lungs in COPD Patients do PLB. The authors observed that Patients Showed a significant reduction in end-expiratory lung volume (EELV), with a greater Decrease in obstruction. In addition, they Noted that Patients with COPD can perform Independently PLB.

Mechanically, EELV is the point of balance between the power of elasticity of the lung and the chest wall. The decrease EELV is an increase in the elasticity of the chest and potentially more energy for inspiration, which can occur passively as a result of the potential energy of the chest wall at the end of expiration. Effectiveness of PLB in PaO2, PaCO2 and oxygen saturation (SaO2) in COPD patients at rest and during exercise. At rest, they found a significant increase in PaO2 and SaO2 and a significant reduction in PaCO2; the result is the same for all patients. Patients feel the benefits of PLB. No significant changes in arterial gases during exercise was observed [5,13,16].

5.4 PLB influence on quality of life

Studies have shown that pulmonary rehabilitation, improves emotional function and increase of the sense of control that Patients of Reviews their condition. Reviews These are clinically significant improvements. Pulmonary rehabilitation is an important component of COPD management and was very helpful in quality of life related to health. We Evaluate the quality of life using the SGRQ [15–17].

6. Conclusion

Given the results reported in a systematic review, we conclude that PLB can improve

respiratory function in Patients with primary or secondary respiratory disease. Effectiveness PLB against the parameters of ventilation, oxygen saturation and quality of life in COPD patients is to improve the kinematics of the chest wall, as in kronisasi chest wall, work of breathing, improving the capacity of inspiration, oxygen saturation, quality of life and decreased shortness of breath, breathing patterns, respiration rate and hyperinflation dynamic in COPD patients.

Bibliography

[1] Perhimpunan Dokter Paru and Indonesia 2016 Penyakit paru obstruktif kronik (PPOK): Pedoman praktis dan penatalaksanaan di Indonesia *Jakarta Indah Offset Graf.* 1–88

[2] Quaderi S A and Hurst J R 2018 The unmet global burden of COPD *Glob. Heal. Epidemiol. genomics* **3**

[3] Araujo C, Karloh M, Reis C, PalÃº M and Mayer A 2015 Pursed-lips breathing reduces dynamic hyperinflation induced by activities of daily living test in patients with chronic obstructive pulmonary disease: A randomized cross-over study *J. Rehabil. Med.* **47** 957–62

[4] Borge C R, Hagen K B, Mengshoel A M, Omenaas E, Moum T and Wahl A K 2014 Effects of controlled breathing exercises and respiratory muscle training in people with chronic obstructive pulmonary disease : results from evaluating the quality of evidence in systematic reviews

[5] Sano Y, Ueki J, Tamura N and Obata K 2015 Effects of Entrained Pursed-Lip Breathing With Walking on Oxygen Desaturation and Dyspnea in Patients With Obstructive Lung Disease *Chest* **148** 911A

[6] Spahija J, Marchie M De and Ghezzo H 2010 Factors Discriminating Spontaneous Pursed-Lips Breathing Use in Patients with COPD **i** 254–61

[7] Visser F J, Dekhuijzen P N R and Heijdra F 2011 Pursed-Lips Breathing Improves Inspiratory Capacity in Chronic Obstructive Pulmonary Disease 372–8

[8] Leandro Ferracini Cabral, Tatiana Cunha D'Elia D de S M and Walter Araujo Zin F G 2014 Pursed lip breathing improves exercise tolerance in COPD: a randomized crossover study

[9] Stoltzfus J C, Dey T, Nanda S and Guleria R 2012 Volitional pursed lips breathing in patients with stable chronic obstructive pulmonary disease improves exercise capacity

[10] Bianchi R, Gigliotti F, Romagnoli I, Lanini B, Castellani C, Binazzi B, Stendardi L, Grazzini M and Scano G 2007 Patterns of chest wall kinematics during volitional pursed-lip breathing in COPD at rest *Respir. Med.* **101** 1412–8

[11] Ramos E M C, Vanderlei L C M, Ramos D, Teixeira L M, Pitta F and Veloso M 2009 Influence of pursed-lip breathing on heart rate variability and cardiorespiratory parameters in subjects with chronic obstructive pulmonary disease (COPD) *Rev. Bras. Fisioter.* **13** 288–93

[12] Maind G, Nagarwala R and Retharekar S 2015 Comparison between effect of pursed lip breathing and mouth taping on dyspnoea: a cross sectional study *Res. Artic. Int J Cur Res Rev* **7** 17–21

[13] Sakhaei S, Sadagheyani H E, Zinalpoor S, Markani A K and Motaarefi H 2018 The Impact

of Pursed-lips Breathing Maneuver on Cardiac , Respiratory , and Oxygenation Parameters in COPD Patients **6** 1851–6

[14] Mendes L P S, Moraes K S, Hoffman M, Vieira D S R, Ribeiro-samora G A, Lage S M and Britto R R 2018 Effects of Diaphragmatic Breathing With and Without Pursed-Lips Breathing in Subjects With COPD 1–9

[15] Theodorakopoulou E P, Gennimata S, Harikiopoulou M, Kaltsakas G, Palamidas A, Koutsoukou A, Roussos C, Kosmas E N, Bakakos P and Koulouris N G 2017 Respiratory Physiology & Neurobiology Effect of pulmonary rehabilitation on tidal expiratory flow limitation at rest and during exercise in COPD patients *Respir. Physiol. Neurobiol.* **238** 47–54

[16] Roberts S E, Schreuder F M, Watson T and Stern M 2017 Do COPD patients taught pursed lips breathing (PLB) for dyspnoea management continue to use the technique long-term? A mixed methodological study *Physiotherapy* **103** 465–70

[17] Fleig A, Karloh M, Laura C, Araujo P De and Almeida A 2018 Effects of acute use of pursed-lips breathing during exercise in patients with COPD : a systematic review and meta-analysis *Physiotherapy* **104** 9–17

[18] Chen Y C, Cao J M, Zhou H, Guo X and Wang Y 2014 The effect of loaded deep inhale training on mild and moderate COPD smokers *Int. J. Clin. Exp. Med.* **7** 3583–7

[19] Rossi R C, Vanderlei F M, Bernardo A F, Souza N M De, Clara A, Real C, Mara E, Ramos C, Pastre C M, De L C, Carlos L and Vanderlei M 2016 Effect of Pursed-Lip Breathing in Patients With COPD : Linear and Nonlinear Analysis of Cardiac Autonomic Modulation Effect of Pursed-Lip Breathing in Patients With COPD : Linear and Nonlinear Analysis of Cardiac Autonomic Modulation

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Table 3: Characteristic included in the study

[249 o.	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] artici pants	[255] Instrument and Analysis	[256] Intervention	[257] result
[258	[259] 4] [1	[260] Effects of diaphragmatic breathing with and without pursed-lip breathing in subjects with COPD [261]	[262] this study to assess the effect of diaphragmatic breathing and diaphragmatic breathing combined with pursed lips on the kinematics of the chest wall breathing, shortness of breath, and chest wall asynchronous in COPD patients [263]	[264] uasi-experimental study (	[265] 7 Participants [266]	Instruments Optoelectronic plethysmography analysis: [267] Shapiro-Wilk test. [268]	[269] Seventeen subjects with COPD, the average age of elementary, 65 _ 7 years old, with a history of smoking and clinical stability without hospitalization or exacerbation of symptoms in the past 4 weeks, were evaluated. On day 1, the characteristics of the participants were collected, and they learn diaphragmatic breathing and its combination with lip breathing. On the second day, the participants were evaluated by optoelectronic plethysmography with the participants in a sitting position while doing breathing exercises	[270] The second breathing exercise can increase the volume of the chest wall without affecting dyspnea. Combination drills retain a benefit but does not reduce the impact of respiratory diaphragm. [271]
[272	[273]	R [274]	Do [275]	Dy [276]	[278]	Instrument:	[280] Patients	[281] PLB role

[249 o.	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result
	oberts S E, Schreuder F M, Watson T and Stern M 2016	COPD Patients taught pursed lips breathing (PLB) for dyspnea management continue to use the technique of long-term? A mixed methodological study	spnea management in the long term	mixed methodological study [277]	3 participant	short questionnaire, observation, respiration rate (RR), Oxygen saturation (SpO^2) anysis: Qualitative analysis and grounded theory **[279]**	with COPD are taught exercises breathing with pursed lips memalui telephone interview; discourse focus groups and home visit and observed for 6 months	in improving patients' trust in their ability to manage shortness of breath and can be used at night
[282	[283] [17]	[284] Effects of acute use of pursed-lip breathing during exercise in Patients with COPD: a systematic review and [285] meta-analysis	[286] To investigate the effects of pursed-lip breathing exercise to dyspnea, ventilation and oxygen saturation parameters in COPD patients	[287] ystematic review	[288]	• Instrument : dyspnea, Ventilation and oxygen saturation parameters • analysis**:** Meta-analysis	[289]	[290] PLB is effective in reducing the rate of breathing and minute ventilation during exercise in patients with COPD. [291]
[292	[293] [4]	[294] Effects of controlled breathing exercises and [295] respiratory muscle training in people with [296] chroni	[297] To Determine the effect of breathing exercises control (ESB) and respirato	[299] ystematic review	[300]	• instrument: dyspnea and quality of life • analysis**:**	[301]	1. Three have a high quality (two on respiratory muscle training and one-on pursed-lip

[249 o.	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257]	result
		c obstructive pulmonary disease: results from evaluating the quality of evidence in systematic reviews	ry muscle training in shortness of breath / dyspnea and other symptoms, and quality of life for individuals with COPD disease. [298]			Meta-analysis			breathing, diaphragmatic breathing and yoga breathing) 2. Pursed-lip breathing Affect positive effect to control breathing patterns
[302	[303]]	[5	[304] Effects of entrained pursed-lip breathing with walking on oxygen desaturation and Dyspnea in Patients with obstructive lung disease [305]	[306] Tested the effects of PLB trained on running-induced hypoxemia in Patients with obstructive lung disease	[307] re-experimental [308] tudy	[309] 0 participants	• instrument : (Borg CR10) dyspnea scale and oximetry • analysis **:** Chi-square test • •	[310] At first, his own PLB, PLB sightseeing, instructed by the physiotherapist to the patient. Before and after this instruction, walk tested with the rhythm and pace the patient himself. During the test run, SpO2, and dyspnea (Borg CR10) are monitored.	[311]	PLB trained with useful runs a rehabilitation program to improve patient with hypoxemia and / or dyspnea caused by walking [312] [313] [314]
[315	[316]]	[6	[317] Lips pursed Discriminating Factors Spontaneous Breathing	[319] To evaluate the prevalence of spontan	[321] cross-sectional	[322] 7 participants	• Instrument Peak work loads	[323] Observations carried PLB [324] five consecutive breaths to	[327]	PLB performed when the patient is more hypercapnia resting

[249 o.	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result
		Use in Patients with COPD [318]	eous PLB and to identify the factors that distinguish its use. [320]	study		(Wpeak), oxygen uptake (VO2peak), breathing pattern, and dyspnea (Borscale) • analysis : Logistic regression •	categorize events [325] during the resting period the previous breathing exercise, during exercise and / [326] or recovery	conditions, and has a tolerance of exercise and a low diffusion capacity, and limited the flow and hyperinflation. [328]
[329	[330]]	[7 [331] Lips pursed-Breathing Improves inspiratory Capacity in Chronic Obstructive Pulmonary Disease	[332] To measure the effects of PLB on the parameters of inspiration	[333] uasi Experiment	([334] 5 participants	• Instrument : pulmonary Function Tests and Visual Analogue Scale • analysis : Spearman's rank	[335] PFTs were measured before PLB then do the PBL for five cycles measured with PFTs inspiration and expiration PBL 3 cycles measured with PFTs and VAS [336] [337]	[338] IC conveniently indicates improvement after PLB shown to decrease [339] hyperinflation in patients with severe COPD;

[249 o.	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result
						correlation test		
[340	[341]]	[3 [342] Pursed-lip breathing Reduces dynamic hyperinflation induced by activities of daily living test in Patients with Chronic obstructive pulmonary disease: a randomized crossover study [343] [344] [345] [346] [347]	[348] Evaluating the effects of PLB on dynamic hyperinflation (DH) and the functional capacity of the lungs in COPD Patients	[349] randomized crossover study	a [350] 5 participants	• instrument: pulmonary function tests, Inspiratory capacity (IC) measurement and Glitre-ADL test • analysis : Shapiro-Wilk test • •	[351] Clients do PBL for 6-8 cycles and measured inspiration capacity with a spirometer [352] Clients running up the stairs for 6 minutes and then measured index of dyspnea and oxygen saturation	[353] This study Showed that PLB DH reduce the caused by TGlit- tre, [354] while it did not Affect the DH the caused by the 6MWT in the group [355] Patients with moderate to very severe COPD.
[356	[357]]	[8 [358] Pursed lip breathing improves exercise tolerance in COPD: a randomized crossover study [359]	[360] To evaluate the effects of PLB on exercise tolerance, breathing patterns, dynamic hyperinflation	[361] randomized crossover study	a [362] 3 participants	• Instrument: Electrically braked cyclo ergometer • analysis:	[363] Clients do PBL for 8 cycles for 5 minutes measured inspiration capacity by volume plethysmographic [364]	[365] PLB usage during high-intensity exercise lowered dynamic hyperinflation (DH) and increasing SpO2 and exercise tolerance in patients with COPD

[249o.]	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result
			and arterial oxygenation in patients with COPD during high-intensity exercise			Kolmogorov Smirnov test, Lilliefors' correction, paired t-test and Spearman's correlation		
[3660	[367]	[9]	[368] Volitional pursed lips breathing in Patients with stable chronic obstructive pulmonary disease improves exercise capacity	[369] Knowing the combined effect of PLB with 6MWT and without 6MWT	[370] and omized crossover stud	[371] 5 participants	• instrument : Pulmonary function tests (PFTs), Maximal inspiratory pressures (MIP) and Maximal expiratory pressures (ME	[372] PLB combination with the experimental group and a control group without the 6MWT 6MWT combination is then measured pre- and post using PFTs, MIP and MEP	[373] PLB can show significant results with P = 0:01 at 6 MWT. In addition the use of PLB at 6 MWT may Decrease respiratory rate (RR) Compared groups Tilapia control with p = 0.003.

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[249o.]	[250] Studies	[251] title	[252] Aim	[253] Study Design	[254] participants	[255] Instrument and Analysis	[256] Intervention	[257] result
						P) • analysis : Wilcoxon signed rank test • •		
[3741	[375] 9]	[1	[376] Effect of Pursed-Lip Breathing in Patients With COPD: Linear and Nonlinear Analysis of Cardiac Autonomic Modulation [377]	[378] To Evaluate the Effect of PLB on cardiac autonomic modulation in COPD Patients at rest	[379] and omized Control Trial	[380] 2 participants	• instrument : Pulmonary function testing (spirometry one) and Heart rate variability (HRV) • analysis : Shapiro-Wilk test and Detrended fluctuation analysis	[381] Clients do PBL and measured cardiac autonomic modulation before, during and after the Pulmonary function testing (spirometry one) and Heart rate variability (HRV) [382]	[383] PLB causes loss of fractal correlation properties of heart rate toward linearity in Patients [384] with COPD as well as Increased vagal activity and the impact on the spectral analysis. Difference [385] the magnitude of the changes produced by PLB between groups may be associated with [386] the presence of disease and changes in the rate of respiration.
[3872	[388] 0]	[1	[389] Patterns of chest	[391] Evaluating	[394] nal	[395] 2	Instrument :	[396] Patients do PLB and	[397] PLB lead to increased

[249o.]	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result
		wall kinematics during volitional pursed-lip breathing in COPD at rest [390]	the displacement of the chest wall and its compartments, ribs and abdomen, with optoelectronic plethysmography (OEP), during the movement of the PLB in COPD patients [392] [393]	ytic Cohort	participants	optoelectronic plethysmography (OEP) analysis**:** Pearson's coefficient Correlation	Chest wall kinematics were measured using optoelectronic plethysmography (OEP)	end-expiratory volume of the ribs and the chest wall, a greater increase in the volume of end-inspiration from the ribs and abdomen, and the lower tidal volume of the chest wall.
[3983	[399] 1]	[1 [400] Influence of pursed-lip breathing on heart rate variability and cardiorespiratory parameters in subjects with chronic obstructive pulmonary disease [401]	[402] To assess the effect of PLB on heart rate (HR), blood pressure (BP), respiratory rate (RR) and oxygen saturation SPO2 in Patients with COPD. [403]	[404] xperimental Study	] [405] 6 participants	instrument: RMSSD RR, SpO2 and BP analysis **:** Kruskal-Wallis test	[406] Patients ten minutes of normal breathing without PLB (R1), eight minutes by PLB (R2) and ten minutes of normal breathing once again (R3) and measured by a heart monitor [407]	[408] The results Showed that PLB resulted in significant changes in HR, RR and SpO 2, and [409] changing BP and parasympathetic activity Increased in indicating that this technique influenced cardiac autonomic modulation. [410] [411] [412] [413]

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[249o.]	[250] Studies	[251] title	[252] Aim	[253] tudy Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result
[4144	[415] 2]	[1 [416] Between comparison Effect of Breathing and Mouth Lips pursed Taping on dyspnea: a cross sectional study [417] study [418]	[419] To compare the PLB and mouth breathing taping to relieve dyspnea and analyze its effectiveness	[420] cross-sectional study	[421] 0 participants	instrument: Heart rate, respiratory rate, Blood pressure Modified Borg CR10 scale analysis **:** Paired 't' test	[422] The subjects were divided into two groups, techniques and special education [423] MT techniques. Measured level dyspnea According to Modification [424] CR10 Borg scale were assessed before and after intervention.	[425] MT and PLB both have proven effectiveness in reducing dyspnea
[4265	[427] 3]	[1 [428] The impact of pursed-lip breathing maneuvers on cardiac, respiratory, and oxygenation parameters in COPD Patients [429] [430] [431] [432] [433] [434] [435]	[436] This study was conducted to Evaluate the effects of PLB on the level of the heart, lungs and oxygenation in Patients with COPD	[437] n experimental study [438]	[439] 0 participants	instrument: spirometry, oximetry and vital signs analysis **:** Descriptive statistics, ANOVA and Chi-square	[440] The subjects of the three groups were randomly allocated into two groups of intervention and control. Form demographic, anthropometric information and checklists noted the changes in the level of oxygenation, respiration, temperature, heart rate and blood pressure at follow-up cardiopulmonary three stages before, during and after the PLB used for data collection	[441] PLB effective as a method that is easy, inexpensive, non-invasive and non-pharmacological considered an important factor in improving the oxygenation status and physiological indicators in patients with COPD,

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[249 o.	[250] Studies	[251] title	[252] Aim	[253] Study Design	[254] articipants	[255] Instrument and Analysis	[256] Intervention	[257] result	
	[442]	[443]	[444]	[445]	[446]	[447]	[448] [449] [450]	[451]	[4

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A SYSTEMATIC REVIEW OF SLEEP QUALITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE ON DIFFERENT SHIFT DIALYSIS

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ABSTRACT

The cause of poor sleep quality in hemodialysis patients is multifactorial, but one of the factors considered to be the cause is related to the timing of hemodialysis therapy. The purpose of this study was to determine the effect of differences in the timing of hemodialysis on sleep quality. This study uses search through electronic databases, which is Scopus, PubMed and Science Direct and Spingerlink which have been published without time limits using keywords ("dialysis" AND "shift" AND "sleep" AND "sleep" AND "quality"). Initial searches were found in 158 articles, and after going through the selection 8 articles were obtained. The schedule for implementing hemodialysis of patients with chronic kidney disease is divided into morning, afternoon, evening, night and rotation shifts. The main instrument used to determine changes in sleep quality in hemodialysis patients is by using The Pitsburg Sleep Quality Index (PSQI). Several articles also known to assess the level of daytime sleepiness, and restless legs syndrome. The average percentage of hemodialysis patients who experience poor sleep quality from each shift is approximately the same, which is around 40% -70%. The difference in the timing of the implementation of hemodialysis does not significantly influence the level of sleep quality.

Keywords: dialysis shift, hemodialysis, sleep quality.

1. Introduction

Hemodialysis is one of the renal replacement therapies for patients suffering from chronic kidney disease. Users of hemodialysis therapy reach 2.5 million or 80% of the 3 million people who use various types of kidney replacement therapy. Hemodialysis can prolong the life expectancy of patients with chronic kidney disease, but the therapy can have an impact on changes in the body's biological functions, one of which is a change in the quality of sleep [1]. More than 80% of patients undergoing hemodialysis have complaints of subjective sleep quality disorders [2].

The statement of the results of the study was also supported by the results of other studies that 73.9% of 142 ESRD patients undergoing hemodialysis therapy had poor sleep quality [3]. Sleep quality disorders that are often experienced by hemodialysis patients include insomnia, sleep apnea syndrome (SAS), restless legs syndrome (RLS), periodic limb movements (PLM) disorder and excessive daytime sleepiness (EDS) [2].

Disorders of sleep quality can cause emotional and physical problems in hemodialysis patients

[4]. Emotional problems that can occur in hemodialysis patients due to poor quality of sleep include increased irritability, confusion and cognitive decline that affect decision-making processes and problem solving [1],[5]. Physical problems that can be experienced by hemodialysis patients due to poor quality of sleep are fatigue, drowsiness, disruption of daily activities (especially during the day), impaired quality of life related to health (Quality of Life) and increased occurrence of morbidity and mortality [5].

The cause of sleep quality disruption in patients undergoing hemodialysis is multifactorial, but one factor that is considered to be the cause is related to the timing of the implementation of hemodialysis (dialysis shift). Patients with chronic kidney disease who undergo hemodialysis in the morning are believed to be more able to prolong life expectancy, but experience insomnia more often and can cause drowsiness and sleep during dialysis which lasts higher than patients who undergo hemodialysis at different times [4],[6].

Hemodialysis therapy during the day can cause disruption of the sleep wake cycle circadian rhythm, which can inhibit melatonin production at night [4], [7]. The implementation of hemodialysis at night at home is considered to be the most effective because patients do therapy as well as sleep at night so as to reduce drowsiness and excessive sleep during the day, but home hemodialysis facilities are not found in many developing countries [8].

The literature study using systematic review methods related to the effects of hemodialysis on sleep quality has been reviewed, but there is no systematic review that discusses the impact of the timing of hemodialysis (dialysis shift) on patient sleep quality. This systematic review seeks to review the research literature that deals with the influence of the timing of hemodialysis (dialysis shift) on the sleep quality of hemodialysis patients and knows the timing of hemodialysis which has the mildest sleep disturbance effect. Determination of the level of sleep quality in patients undergoing hemodialysis with different schedules in each literature obtained using a questionnaire that assessed sleep quality subjectively.

2. Method

This systematic review uses a guide based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) guidelines [9].

2.1. Search strategy

Literature searches in this Systematic Review through four electronic databases, namely Scopus, PubMed and Science Direct and Springer link which have been published indefinitely. The keywords used are (1) dialysis shift, (2) hemodialysis (3) sleep quality.

2.2. Inclusion and exclusion criteria

2.2.1. Study Design. The study design that became the inclusion criteria for a systematic review was a design (1) clinical trial (2) a cross-sectional study.

2.2.2. Type of Participants. Participants in this systematic review were patients with chronic kidney disease who underwent hemodialysis and who were over 18 years of age

2.2.3. Output Measurement. The main output examined was subjective sleep quality in patients with

chronic kidney disease who underwent hemodialysis at different times, i.e. morning, afternoon, evening or night measured using the Pittsburg Sleep Quality Index (PSQI).

2.3. Study Selection

The protocol standard for selecting research studies is suggested in the PRISMA method for systematic review followed by screening by removing duplication, then the reviewer selects titles, abstracts and keywords, then removes irrelevant citations according to the selection criteria. The reviewer noted the reasons for choosing the research study including the selection of inclusion data. The selection of research studies that have been recorded by reviewers is then compared with each other to adjust their feasibility to the criteria set. Second, to minimize the risk of incorrect entry into the selection there are several research studies that have been applied or can be applied by reviewers to be included in the next review stage. The full text of the article is obtained if the title and abstract meet the inclusion criteria or if the feasibility study is clearly completed through joint discussions between reviewers.

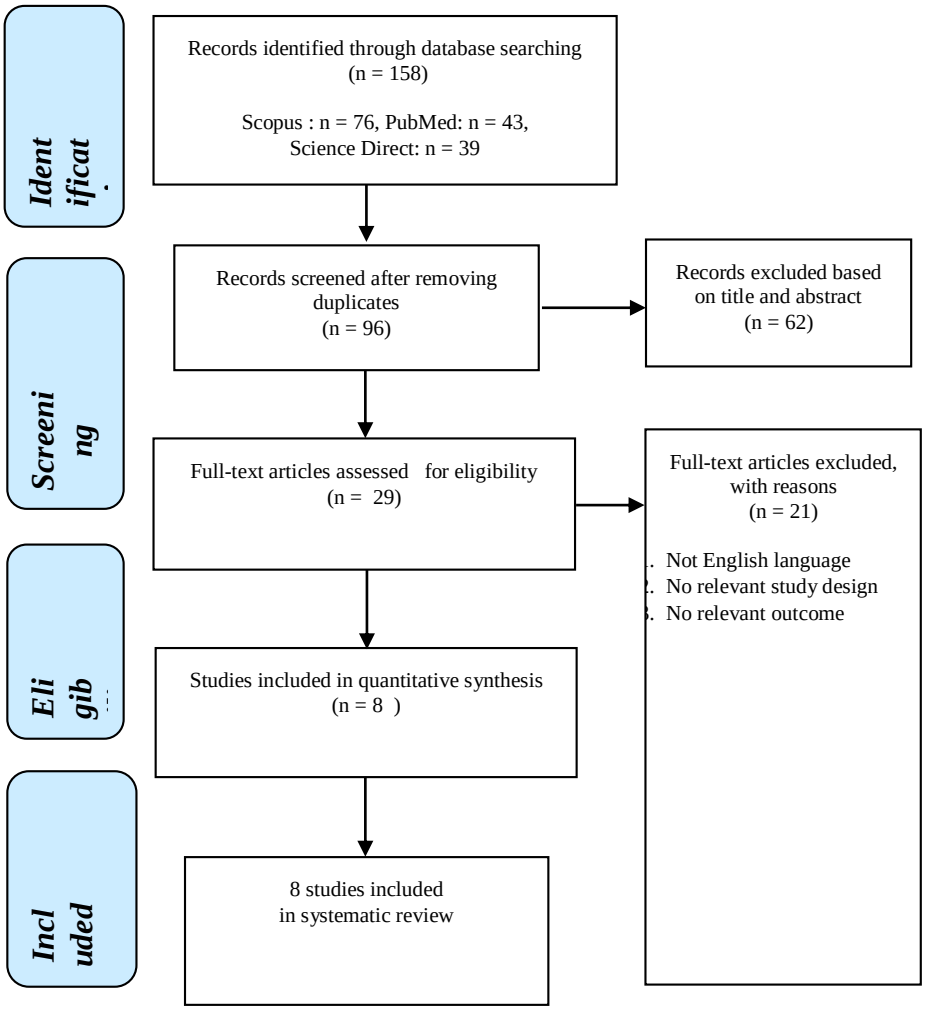

Figure 1. Flow Diagram

Table 1. Characteristic of studies

No.	Author, Year	Study Design	Sample	Sex	Mean Age (Year)	HD Frequency	HD Duration	Mean HD Experience (Months)	Subjective Measurement
1.	Bastos et al., 2007	Cross-sectional Study	100	- Men: 59 - Women: 41	45.8±15.3	3 Shift: ▪ Morning: ✓ 6-10 a.m. ✓ n = 23 ▪ Afternoon: ✓ 11a.m-3 p.m. ✓ n = 41 ▪ Evening: ✓ 4-8 p.m. ✓ n = 36	4 hours	62.1 ± 50.0	✓ SQ (PSQI) ✓ Daytime sleepiness (ESS) ✓ RLS (International Restless Legs Syndrome Study Group)
2.	Hsu et al., 2008	Cross-sectional Study	150	- Men: 67 - Women: 83	55.28 ±11.09	3 Shift: ▪ Morning: ✓ 8-12 a.m. ✓ n = 51 ▪ Afternoon: ✓ 1 p.m-5 p.m. ✓ n = 55 ▪ Evening: ✓ 6-10 p.m. ✓ n = 44	4 hours	60.14 ± 43.80	✓ SQ (PSQI) ✓ Daytime sleepiness (ESS)
3.	Resic, Spasovski, Avdic, & Alajbegovic, 2012	Cross-sectional Study	200	- Men: 122 - Women: 78	56.8 ± 14.3	4 Shift: ▪ Morning: ✓ 7-11 a.m. ✓ n = 65 ▪ Afternoon: ✓ 12 a.m-4 p.m. ✓ n = 73 ▪ Evening: ✓ 7-9 p.m. ✓ n = 49	4 hours	62.6 ± 57.0	✓ SQ (PSQI)
No.	**Author, Year**	**Study Design**	**Sample**	**Sex**	**Mean Age (Tahun)**	**HD Frekuensi**	**HD Duration**	**Mean HD Experience (Months)**	**Subjective Measurement**
				-		▪ Night: ✓ 10 p.m-2 a.m. ✓ n = 13			

4.	Wang, Chan, Chang, Chen, & Tsai, 2013.	Cross-sectional Study	206	- Men: 107 - Women: 99	52,4	3 Shift: ▪ Morning: ✓ 7-11 a.m. ✓ n = 92 ▪ Afternoon and Evening ✓ 12 a.m-4 p.m. and 7-9 p.m. ✓ n = 114	4 hours	80,4	✓ SQ (PSQI),
5.	Trbojević-stanković, Stojimirović, Bukumirić, & Hadžibulić, 2014	Cross-sectional Study	222	- Men: 132 - Women: 90	57.3±11.9	2 Shift: ▪ Morning: ✓ 8-12 a.m. ✓ n = 111 ▪ Afternoon: ✓ 1-5 p.m. ✓ n = 111	4 hours	-	✓ SQ (PSQI),
6.	Firoz, Shafipour, Jafari, Hosseini, & Charati, 2015	Cross-sectional Study	125	- Men: 65 - Women: 60	61.56	4 Shift: ▪ Morning: ✓ 8-12 a.m. ✓ n = 35 ▪ Afternoon: ✓ 1-5 p.m. ✓ n = 27 ▪ Evening: ✓ 6-10 p.m. ✓ n = 27 ▪ Rotation: ✓ n = 36	4 hours	-	✓ SQ (PSQI),

No.	**Author, Year**	**Study Design**	**Sample**	**Sex**	**Mean Age (Tahun)**	**HD Frekuensi**	**HD Duration**	**Mean HD Experience (Months)**	**Subjective Measurement**
7.	Mehrabi, Sarikhani, & Roozbeh, 2017	Cross-sectional Study	197	- Men: 73 - Women: 124	52	3 Shift: ▪ Morning: ✓ 8-12 a.m. ✓ n = 106 ▪ Afternoon: ✓ 1-5 p.m.	4 hours	-	✓ SQ (PSQI),

						✓ n = 72 ▪ Evening: ✓ 6-10 p.m. ✓ n = 19			
8.	Firoz & Hosseini, 2017	Cross-sectional Study	310	- Men: 162 - Women: 148	59.64 ± 13.94	3 Shift: ▪ Morning: ✓ 8-12 a.m. ▪ Afternoon: ✓ 1-5 p.m. ▪ Evening: ✓ 6-10 p.m. ▪ Rotation:	4 hours	39.89 ± 42.59	✓ SQ (PSQI),

3. Result

3.1. Literature search and selection

A total of 8 studies were identified to be included in the review. Searches from Scopus, PubMed, and Science Direct and Springer link found a total of 158 articles. After checking for duplication, a total of 98 articles were obtained. Of these, 67 studies were discarded because after a review the abstract did not meet the criteria. The full text of the 39 remaining articles was examined in more detail, apparently 21 studies did not meet the inclusion criteria as specified (Figure 1).

3.2. Study Characteristics

3.2.1. Population. This study involved 1,539 participants with the main inclusion criteria being patients with chronic kidney disease who underwent hemodialysis aged 18 years or older who were assessed for their sleep quality.

3.2.2. Outcomes. The main results assessed in this study were the subjective sleep quality level of chronic kidney disease patients undergoing hemodialysis with different times including morning, afternoon, evening or evening using the Pittsburg Sleep Quality Index (PSQI).

4. Analysis

4.1. Study characteristics

Table 1 contains the characteristics of the study from the results of identification of the literature used in systematic reviews. Eight literature used a cross-sectional study design. A total of 1,539 hemodialysis patients with a mean age of 56 years were involved in this study. These patients had undergone hemodialysis therapy for 65 months with a 4-hour implementation time for each hemodialysis procedure. Each patient can undergo hemodialysis 3 times a week which is divided into 3 or 4 different shifts, namely morning, afternoon, evening, night or rotation.

The entire assessment of subjective sleep quality in the literature uses the Pittsburg Sleep Quality Index (PSQI). Some literature also conducts daytime sleepiness assessments using Epworth

Sleepiness Scale (ESS). The assessment of the occurrence of restless legs syndrome (RLS) in hemodialysis patients is determined using the International Restless Legs Syndrome Study Group.

4.2. The effect of hemodialysis on subjective sleep quality.

Poor subjective sleep quality is a common problem in patients undergoing hemodialysis. Assessment of subjective sleep quality in patients undergoing hemodialysis was searched in all research articles using the Pittsburg Sleep Quality Index (PSQI) instrument. The results of subjective sleep quality assessment performed using PSQI showed that 40%-90% of hemodialysis patients experience poor sleep quality [2],[4],[6],[7],[8],[10],[11],[12]. In particular there are research results that show that 53% of hemodialysis patients experience subjective sleep quality problems from a total of 73.5% of the various types of sleep problems they have experienced (Table 3) [10].

There were 2 studies using the Epworth sleepiness scale (ESS) sleep scale to observe nap activity [2], [6]. One study showed that 28% of hemodialysis patients had long naps [2], whereas other studies showed that no long napping activity was found in hemodialysis patients with an average ESS = 2.37 [6]. From the two results of the study it can be concluded that the action of hemodialysis does not significantly affect the length of the patient's napping activity and the level of nap activity was not significantly affected by differences in hemodialysis therapy schedules ($p = 0.41$ and $p = 0.34$) [2],[6].

Assessment of the occurrence of restless legs syndrome (RLS) was also carried out using the International Restless Legs Syndrome Study Group in hemodialysis patients. The results obtained from the study amounted to 48% of 100 hemodialysis patients experiencing restless legs syndrome (RLS) [2]. Restless legs syndrome had a significant impact on sleep quality disorders ($p = 0.004$) and the occurrence of prolonged napping activities ($p = 0.005$), but were not significantly affected by differences in hemodialysis therapy schedules ($p = 0.52$) [2] (Table 3).

4.3. Effect of the timing of hemodialysis (dialysis shift) action on the subjective sleep quality

The timing of hemodialysis is considered to have an effect on the quality of the patient's sleep, but some results of the study state that the hemodialysis schedule has no effect on the patient's sleep quality.

This systematic review conducted a review of eight research literatures. Related to the schedule for implementing hemodialysis therapy, it can be divided into several times (shift), namely morning, afternoon, evening, night or rotation. In table 2 one literature study can be seen with 4 shifts and 2 shifts in hemodialysis time, four literatures studies with 3 shift hemodialysis schedules and two literatures studies with 3 shift hemodialysis schedules and rotational schedule. There are five research pieces of literature which show that hemodialysis time does not have a significant effect on the level of sleep quality of patients with a value of $p > 0.05$ [2],[11],[7],[12],[8].

The average percentage of hemodialysis patients who experience poor sleep quality from morning shift, afternoon, evening, night and rotation are more or less the same, which is around 40% -70% (Table 2).

There are three studies showing different results, namely there is a significant effect related to differences in the application of hemodialysis at the level of quality of sleep of patients [6],[10],[4]. One of the three studies stated that patients who took hemodialysis therapy in the evening had longer

sleep duration (p = 0.020) and took sleeping pills (p = 0.049) less than patients who took therapy in the morning or afternoon [6]. The results of other studies also stated that hemodialysis therapy in the evening has better sleep quality than other shifts (p = 0,000). Evening hemodialysis therapy had a significant effect on subjective sleep quality (p = 0.045), sleep duration (p = 0.000), sleep habits (p = 0.000) and sleeping drug consumption (p = 0.022) [10]. But there is a literature that states differently that patients who perform hemodialysis in the morning have better sleep quality than hemodialysis performed in the afternoon or evening (p = 0.01) [13] (Table 2).

5. Discussion

This systematic review is to determine the effect of differences in the timing of hemodialysis (shift dialysis) on the patient's sleep quality. Based on a review of 8 articles involving 1539 patients who routinely performed hemodialysis, the results showed that in general sleep quality changes occurred in patients undergoing hemodialysis.

Subjective measurement of sleep quality was conducted using the Pittsburg Sleep Quality Index (PSQI) in all articles shows that 40%-90% of hemodialysis patients experience poor sleep quality (Table 3). In addition, most articles state that patients taking hemodialysis therapy with a specific schedule or shift have the same level of sleep quality disorder, which is 40%-70% (Table 2) [2],[4],[6],[7],[8],[10],[11],[12].

Metabolic abnormalities in hemodialysis patients affect the increase in blood urea levels or uremia, thus causing beta 1 and 2 adrenergic receptors in blood plasma to significantly decrease. The decrease in beta adrenergic receptors has an impact on the decrease in levels of the hormone melatonin in the body that plays a role in regulation of the sleep cycle [14], [15]. Melatonin levels in hemodialysis patients are also influenced by the timing of hemodialysis therapy [14]. Hemodialysis therapy in the morning can cause excessive drowsiness during the day, which interferes with the wakeful sleep cycle in hemodialysis patients [16].

6. Conclusion

During the hemodialysis process, mononuclear cells produce interleukin 1 (IL-1), interleukin 6 (IL-6) and tumor necrosis factor (TNF) as a result of complement activation, interaction with dialyzer, and / or exposure to bacterial wall fragments (muramyl peptide). IL-1 is involved in the production of body heat (fever) and sleep induction. Fever and shivering generally occur during or after the dialysis process on a machine contaminated with endotoxin. IL-1, IL 6 or TNF produced by peripheral blood mononuclear cells in the bloodstream are considered as pyrogenic signals by the central nervous system (CNS).

The signal induces prostaglandin synthesis which represents the central mediator of a coordinated response that leads to an increase in the body's core temperature. Body temperature can also increase due to heat load from the hemodialysis procedure. This condition will stimulate the thermostat in the hypothalamus to activate the body's cooling system, thereby increasing the tendency to sleep during the day and will reduce the onset of sleep at night. Increased episodic body temperature due to hemodialysis procedures can change the tendency of sleep rhythms [18]. In the

end, reduced sleep onset at night results in a loss of time to produce melatonin at night so that the levels of the hormone melatonin decrease [14]. Decreasing levels of the hormone melatonin results in reduced sleep duration and difficulty maintaining sleep [17].

7. Limitation

The limitation in this systematic review is the assessment of the sleep quality of hemodialysis patients which is only limited subjectively by using a questionnaire without being accompanied by objective assessments, for example measuring oxygen saturation or using polysomnography (PSG). This systematic review explains the effect of the different timing of the hemodialysis action on the sleep quality of subjects with hemodialysis. In general, chronic kidney failure patients undergoing hemodialysis experience poor subjective quality of sleep. Hemodialysis patients undergoing hemodialysis therapy in the morning, afternoon, evening or evening have the same sleep quality. So that it can be concluded that the difference in the timing of the implementation of hemodialysis has no significant effect on the level of sleep quality of the patient.

References

[1] Zubair U Bin, Butt B. Association Of Quality Of Sleep With Cognitive Decline Among The Patients Of Chronic Kidney Disease Undergoing Hemodialysis. J Ayub Med Coll Abbottabad. 2017; 29(4):619–22.

[2] Bastos JPC, de Sousa RB, Nepomuceno LADM, Adrianzen OAG, de Bruin PFC, Araújo MLL de B, et al. SLEEP DISTURBANCES IN P A TIENTS ON MAINTENANCE HEMODIAL YSIS : ROLE OF. 2007; 53(6):4–8.

[3] Avşar U, Avşar UZ, Cansever Z, Yucel A, Cankaya E, Certez H, et al. Caregiver Burden, Anxiety, Depression, and Sleep Quality Differences in Caregivers of Hemodialysis Patients Compared with Renal Transplant Patients. Transplant Proc. 2015; 47(5):1388–91.

[4] Wang M, Chan S, Chang L, Chen T, Tsai P. International Journal of Nursing Studies Better sleep quality in chronic haemodialyzed patients is associated with morning-shift dialysis : A cross-sectional observational study. Int J Nurs Stud [Internet]. Elsevier Ltd; 2013; 50(11):1468–73. Available from: http://dx.doi.org/10.1016/j.ijnurstu.2013.02.010

[5] Momennasab M, Ranjbar M, Najafi SS. Comparing the effect of listening to music during hemodialysis and at bedtime on sleep quality of hemodialysis patients: A randomized clinical trial. Eur J Integr Med. 2018; 17(December 2017):86–91.

[6] Hsu C, Lee C, Lee Y, Huang T, Yu C, Lee L, et al. Better Sleep Quality and Less Daytime Symptoms in Patients on Evening Hemodialysis : A Questionnaire-based Study. 2008; 32(9):711–6.

[7] Firoz MN, Shafipour V, Jafari H, Hosseini SH, Charati JY. Evaluation of subjective sleep quality in hemodialysis patients and its association with hemodialysis timing. 2015;2(4):43–50.

[8] Firoz MN, Hosseini SH. Relationship of Hemodialysis Shift with Sleep Quality and Depression in Hemodialysis Patients. 2017;

[9] Moher D, Tetzlaff J, Altman DG, Liberati A, Group P. Preferred reporting items for systematic reviews and meta-analyses : the PRISMA statement. 2009; 339(august).

[10] Resic H, Spasovski G, Avdic E, Alajbegovic A. Quality of sleep in patients undergoing hemodialysis. 2012; 557–67.

[11] Trbojević-stanković J, Stojimirović B, Bukumirić Z, Hadžibulić E. Depression and Quality of Sleep in Maintenance Hemodialysis Patients. 2014; 142:437–43.

[12] Mehrabi S, Sarikhani S, Roozbeh J. Sleep Quality in Patients Undergoing Long-term Hemodialysis Using the Pittsburgh Sleep Quality Index. Nephrourol Mon [Internet]. 2017; 9(2):2–7. Available from: http://numonthly.com/en/articles/13137.html

[13] Eyigor S, Uslu R, Apaydın S, Caramat I, Yesil H. Can yoga have any effect on shoulder and arm pain and quality of life in patients with breast cancer? A randomized, controlled, single-blind trial. Complement Ther Clin Pract. 2018; 32(3):40–5.

[14] Geron R, Shurtz-swirski R, Sela S, Gurevitch Y, Tanasijtchouk T, Orr ZS, et al. Polymorphonuclear leucocyte priming in long intermittent nocturnal hemodialysis patients — is melatonin a player ? 2006 ;(August):3196–201.

[15] Merlino G, Piani A, Dolso P, Adorati M, Cancelli I, Valente M, et al. Sleep disorders in patients with end-stage renal disease undergoing dialysis therapy. 2006; (September 2005):184–90.

[16] Lindner A V., Novak M, Bohra M, Mucsi I. Insomnia in Patients With Chronic Kidney Disease. Semin Nephrol [Internet]. Elsevier; 2015; 35(4):359–72. Available from: http://dx.doi.org/10.1016/j.semnephrol.2015.06.007

[17] Kim TW, Jeong J, Hong S. The Impact of Sleep and Circadian Disturbance on Hormones and Metabolism. 2015; 2015.

[18] Parker, K.P., Bliwise, D.L. & Rye, D.B. (2000). Hemodialysis disrupts basic sleep regulatory mechanisms: building hypotheses. Nurs. Res. 49, 327-332

PAT-922

INTERVENTION OF WALKING EXCERCISE TO REDUCE FATIGUE IN BREAST CANCER PATIENTS: SYSTEMATIC REVIEW

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ABSTRACT

The occurrence of fatigue in breast cancer patients is a side effect that often occurs in patients after undergoing chemotherapy and radiotherapy. Rest does not always reduce fatigue. Many people think that cancer fatigue and cancer symptoms are very disturbing or troublesome. Even felt worse than pain. This fatigue can interfere with their social life, their work, and other activities they like. The purpose of this systematic review is to describe the effect of walking exercise intervention on reducing fatigue in cancer patients who have undergone chemotherapy and radiotherapy treatments. Article search uses the PECOT framework in the database; Scopus, ScienceDirect, ProQuest, and SpringerLink with limited year used 2015- 2019. In searching for articles, 115 articles were taken. Using matching keywords 20 article determined to be a systematic review. Walking therapy is an effective therapy that can reduce fatigue in cancer patients after undergoing treatment. Walking exercises can reduce fatigue in cancer patients who have chemotherapy and radiotherapy treatments.

Keywords: cancer, fatigue, walking exercise

1. Introduction

Breast cancer is the most common cancer found in women, with 25%, or 1,67 million new breast cancer cases occurring in 2012 [1]. There are many treatment methods for breast cancer including chemotherapy, radiotherapy, surgery, and immunotherapy, yet, these treatments may cause unwanted side effects that affect the patients' life quality. The medication used in the chemotherapy causes harmful symptoms like body pain, fatigue, nausea and vomiting, anxiety, depression, anorexia, insomnia, damaged skin and nails, suffocation, mouth ulcer, and other muscular nerve systems damages [1].

One of the most reported side effects of chemotherapy and radiotherapy cancer medication, as told by the patients, is fatigue. In this case, fatigue is caused by the cancer medication which affects the patients' condition before, during, and after the curing process [2]. A percentage of 41% of breast cancer patients have reported medium to severe fatigue during medication. Even years after the medication is finished, 30% of the patients could still experience the symptoms [3]. About 80 to 96 percent of the chemotherapy patients and 60 to 93 percent of radiotherapy patients also experience it [4]. This condition is reported to be the most disturbing condition that impacts the patients' quality of life and disturbs their daily activities [3].

There are ways to cure the post-medication fatigue that happens to a patient, which is to take

pharmacological and non-pharmacological therapy. One of the non-pharmacological treatments that can be applied is walking exercise. It can minimize the side effects results from the medication. Moreover, this method does not require much financial expense, while it has been proved to be one of the most effective interventions to reduce fatigue caused by cancer medication. Hence, non-pharmacological treatment can be considered as an alternative [5].

The objective of this systematic review is to acknowledge the effects of walking exercise therapy in breast cancer patients with fatigue symptom from the available quantitative studies to inform the patients, carer (family), and clinical research.

2. Method

2.1. Protocol

This Systematic review uses a guide based on the Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA) [6].

2.2. Eligibility criteria

Journal articles published in English from 2008 to 2018. Search strategy using the PICO framework to identify the keyword.

2.2.1. Type of study design. All of these studies are experimental studies (including RCTs and non-randomized trials) that study the effectiveness of exercise exercises running on fatigue in breast cancer patients after treatment.

2.2.2. Type of participants. The studies studied included patients with breast cancer, patients after getting treatment and patients with fatigue.

2.2.3. Type on intervention. The intervention carried out was walking exercise given to breast cancer patients who had undergone treatment to reduce the occurrence of fatigue after treatment.

2.2.4. Type of clinical outcome. Fatigue is a problem that occurs after treatment of breast cancer patients.

2.3. Information sources

Studies were identified by searching electronic databases and scanning reference lists of articles. Three databases were systematically searched including Scopus, Science Direct, ProQuest, and SpringerLink.

2.4. Search

Search terms in the database using a combination of keywords (1) cancer (2) fatigue (3) walking exercise.

2.5. Study selection

The protocol standard for selecting research studies is suggested in the PRISMA method for systematic reviews followed by screening by removing duplicates, then two reviewers (AR and EY) chose titles, abstracts, and keywords, and then deleted irrelevant articles. The selection of research studies that have been recorded by two reviewers is then compared with each other to adjust their feasibility to the specified criteria. The full text of the article is obtained if the title and abstract meet

the inclusion criteria or if the feasibility study is clearly supplemented by joint discussions between reviewers.

2.6. Data collection process

The following data were extracted: author, year, journal, country, research arrangement, and main results. Two authors (AR and EY), are involved in data extraction, and after organizing the results in a table, the findings are discussed and reviewed. One review author extracted the following data from the included studies and other authors examined the extracted data. Disagreement is resolved by discussion between authors.

2.7. Data item

Information was extracted from each included study on (1) study identity (including the author's name, year of publication and origin of study); (2) study arrangements (including participant characteristics, interventions, presence of control groups as a comparison, intervention time, modality, frequency, setting, and implementation); (3) outcomes measure and tools; (4) major findings relevant for review.

2.8. Risk of bias assessment

Two reviewers independently evaluated the quality and risk of bias in each study according to the Cochrane Risk of Bias Tool. For research using the RCT design, the assessment uses RoB 2.0 which consists of 5 domains, namely: (1) the randomization process, (2) the deviation from the intended intervention, (3) missing results data, (4) measuring results and (5) Selection of reported results [7]. Non-randomized studies were assessed using ROBINS-I [8]. The ROBINS-I tool includes seven domains, where bias can be included in non-randomized studies or interventions (NRSI). The first two domains discuss the problem before the intervention comparisons, the third domain discusses the classification of the intervention itself and the other four domains discuss the problem after the intervention has begun [7]. Reviewers re-examine their final assessment and resolve disagreements through a discussion.

2.9. Data analysis

The study was grouped based on the intervention used and the study population. If possible, the study was then grouped based on the time of follow-up and the type of control group. All studies were individually assessed for levels of evidence using the National Hierarchy of Evidence (NHMRC) Board of Health and Medical Research (IV-I guidelines, with me being the strongest level of evidence).

2.10. Meta-analysis

Meta-analysis is not possible because studies are too heterogeneous in design and methodology, namely; in the type of intervention, type of control group, outcome measures used and time of follow-up.

3. Result

3.1 Study Selection

The search strategy that had been carried out resulted in a total of 115 citations, with 47 duplicates and 68 kinds of literature deleted in the first roll due to incompatibility between the articles' title and the feasibility criterion that had been set. There were 29 full articles from the second filtering process from which 12 articles were finally kept for a further review. Another 8 articles were obtained from the reference screening, thus, the final result consisted of 20 articles about exercise and fatigue cancer patients.

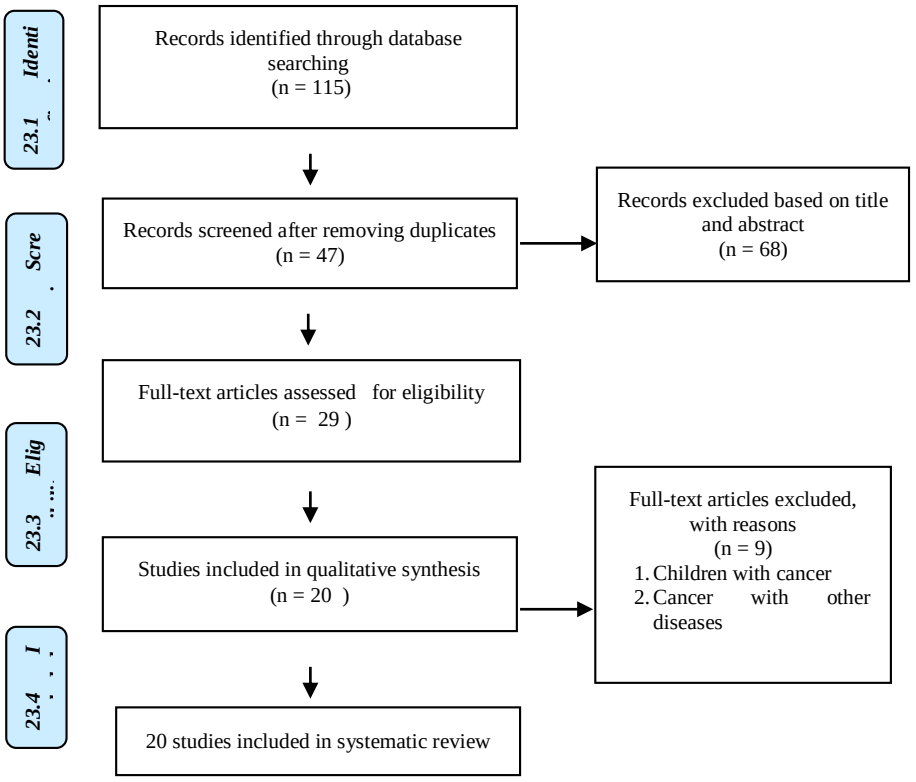

Figure 1. Flow Diagram

3.2 Characteristics Study

The 16 chosen studies, based on the 2008-2018 review, were carried out in 13 different places: England, Australia, America, China, Turkey, Amsterdam, New York, Taiwan, Thailand, London, Germany, Iran, and Korea. The quantitative method used in the studies covered mixed methods study, randomized controlled trials, quasi-experimental desgign, uncontrolled random group experiments, cross-sectional descriptive and comparative designs, cross-sectional study, retrospective analysis of archived data, and quasi-randomized trials.

3.3 Results synthesis

The literature research process had identified 20 journals defining the intervention of exercise to reduce fatigue in breast cancer patients who undertook chemotherapy and radiotherapy. Finally, it was found out in the journals that mild walking exercise could actually reduce fatigue

3.3.1 Walking exercise. Walking as an exercise is one of the most effective approved nonpharmacological interventions to reduce fatigue in connection to cancer [5]. This activity is accessible by everyone and a cheap option to recover from fatigue [4]. Walking exercise has significant effects. It is expected to be routinely done in mild to medium intensity to maintain functional ability and to reduce fatigue in women with breast cancer who undergo chemotherapy treatment [9]. The walking exercise intervention has been proven to effectively improve the physical activity which produces energy and reduces exhaustion. [5]

3.3.2 Fatigue. Fatigue is commonly reported by cancer patients and it often happens to patients who take medication [10]. It is a side effect that a patient could experience before, during, and after the medication therapy [2]. Some studies have demonstrated that there is a significantly high prevalence number of clinical fatigue during and after medication, but there are also some minor cases in which the fatigue does not get better; it even gives a paralysis effect months or years after the medication ended [2]. The fatigue caused by cancer medication can also agitate the medication process itself [9]. Hence, the occurrence of fatigue that happens after breast cancer patients take chemotherapy and radiotherapy medication must be treated sooner to prevent further possible harmful effects

4. Discussion

This systematic review was formulated to explore interventions for walking exercises to reduce fatigue in breast cancer patients undergoing chemotherapy and radiotherapy. There are 20 articles that have been identified to discuss issues that contain objectives that are consistent with this study. The research design used in this study included a quantitative approach, which was used in 19 studies, and 1 mixed method.

Effective exercise interventions can be carried out for patients who have undergone chemotherapy and radiotherapy [1,11]. A sports intervention suitable for cancer patients is walking exercise, which is generally recognized as an approach to recovery and to prevent a recurrence. This therapy needs to require assistance from the family or the closest person [12]. This exercise can be an inexpensive method to improve cognitive function in women with breast cancer carried out gradually by making a notebook of daily activities for physical activity and monitoring [2,13,14].

Physically active women experience higher psychological wellbeing, less fatigue, and faster recovery after treatment [15]. They will also feel fitter after walking exercise. The results of previous studies also said that there was no difference seen in fatigue for the intervention and control groups before walking exercise. However, after the intervention, the intervention group fatigue was lower than the control group and this difference was statistically significant [16]. Physical active motion during and after cancer treatment can help cancer sufferers reduce the negative effects after treatment and it is evident that walking exercise has a positive impact.

Regarding the search strategy, it is implemented in a broad context at an early stage, this review study has several limitations. (1) the results of this systematic review are based on secondary

findings from previous studies. Previous studies have not been explored thematically which could lead to several factors that have not been mentioned before. (2) Heterogeneity of study design.

The walking exercise can be used for complementary theory development. It has a possibility to be chosen as an alternative intervention that can be applied by a nurse to minimize fatigue or exhaustion. The use of walking exercise or doing another form of exercise in mild intensity demonstrates significantly good result in reducing fatigue in breast cancer patients. Its application as part of the intervention given by the nurses, this could increase society's impression on the health-care provided by nurses. Thus, it is logical to assume that this is because walking exercise is simple, evokes a comfortable feeling, and strengthens the interpersonal bond between a patient and the nurse. Besides, walking exercise induces very minimum side effects, requires very little financial expense, and can be done by the patient at home with the accompaniment of family members.

5. Conclusions

This systematic review is aimed to discover proofs of the effectiveness of walking exercise in reducing fatigue in breast cancer patients undertaking medical treatment. The results show that walking exercise can actually minimize fatigue in patients, as demonstrated in almost all of the previous studies. The limitations of the study include the small amount of sample, the short intervention duration, and the unavailable tryout from a different region. There needs to be a further study about the effectiveness of walking exercise in reducing fatigue in a bigger sample group and longer duration of intervention.

References

[1] Berna Kurt S K 2018 European Journal of Integrative Medicine The e ff ect of relaxation exercises on symptom severity in patients with breast cancer undergoing adjuvant chemotherapy : An open label non- randomized controlled clinical trial *Eur. J. Integr. Med.* **22** 54–61

[2] Carolina et al. 2017 Randomized Evaluation of Cognitive-Behavioral Therapy and Graded Exercise Therapy for Post-Cancer Fatigue *J. Pain Symptom Manage.* **54** 74–84

[3] Fernandez et al. 2012 Physical activity and cancer : A cross-sectional study on the barriers and facilitators to exercise during cancer treatment 37–42

[4] Qi Zhang 2018 International Journal of Nursing Studies E ff ects of nurse-led home-based exercise & cognitive behavioral therapy on reducing cancer-related fatigue in patients with ovarian cancer during and after chemotherapy : A randomized controlled trial *Int. J. Nurs. Stud.* **78** 52–60

[5] Pi-Hua Chang, Yeur-Hur Lai, Shiow-Ching Shun, Lih-Ying Lin, Mei-Ling Chen, Youngsen Yang, Jen-Chen Tsai G-S H and S-Y C 2008 Effects of a Walking Intervention on Fatigue-Related Experiences of Hospitalized Acute Myelogenous Leukemia Patients Undergoing Chemotherapy : A Randomized Controlled Trial **35** 524–34

[6] Anon 2009 PRISMA 2009 Checklist PRISMA 2009 Checklist **2** 1–2

[7] Ac J, Higgins J P T, Elbers R G, Reeves B C, Jüni P, Yk L, Td P, Cr R, Regidor D, Hr R, Sandhu L, Pl S and Hj S 2016 Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I): detailed guidance 1–53

[8] Sterne J A C, Hernán M A, Reeves B C, Savović J, Berkman N D, Viswanathan M, Henry D,

Altman D G, Ansari M T, Boutron I, Carpenter J R, Chan A, Churchill R, Deeks J J, Hróbjartsson A, Kirkham J, Jüni P, Loke Y K, Pigott T D, Ramsay C R, Regidor D, Rothstein H R, Sandhu L, Santaguida P L, Schünemann H J, Shea B, Shrier I, Tugwell P, Turner L, Valentine J C, Waddington H, Waters E, Wells G A, Whiting P F and Higgins J P T 2016 ROBINS-I : a tool for assessing risk of bias in non-randomised studies of interventions (“ Risk Of Bias In Non-randomised tool for evaluating risk of bias in 4–10

[9] Ji Jeong Kim Y A S and M H S 2015 Effect of a 12-week walking exercise program on body composition and immune cell count in patients with breast cancer who are undergoing chemotherapy **19** 255–62

[10] Lindsey Renee Hanna, Patricia Frist Avila, John D. Meteer, Donald R. Nicholas and L A K 2008 on Physical Function , Fatigue , and Mood in Patients With Various Types of Cancer **35** 461–9

[11] Dennis R. Taaffe et al 2017 Effects of Different Exercise Modalities on Fatigue in Prostate Cancer Patients Undergoing Androgen Deprivation Therapy : A Year-long Randomised Controlled Trial **72** 293–9

[12] Aileen V. Irelanda, Jennifer Finnegan-Johnb, Gill Hubbardc, Karen Scanlonb R G K 2018 Social Science & Medicine Walking groups for women with breast cancer : Mobilising therapeutic assemblages of walk , talk and place *Soc. Sci. Med.* 0–1

[13] P. de Roos, C. Lucas, J.H. Strijbos E van T 2018 Effectiveness of a combined exercise training and home-based walking programme on physical activity compared with standard medical care in moderate COPD: a randomised controlled trial *Physiother. (United Kingdom)* **104** 116–21

[14] Elizabeth Ann Coleman, Julia A. Goodwin, Robert Kennedy, Sharon K. Coon, Kathy Richards, Carol Enderlin, Carol B. Stewart, Paula McNatt, Kim Lockhart and E J A 2012 Effects of Exercise on Fatigue, Sleep, and Performance: A Randomized Trial **39**

[15] Anna Wilhelmsson, Maria Roos, Lars Hagberg, Yvonne Wengstr€om K B 2017 Motivation to uphold physical activity in women with breast cancer during adjuvant chemotherapy treatment *Eur. J. Oncol. Nurs.* **29** 17–22

[16] Martina E. Schmidt, Joachim Wiskemann, Petra Armbrust, Andreas Schneeweiss C M U and K S 2014 breast cancer patients undergoing adjuvant chemotherapy : A randomized controlled trial **00**

[17] Amanda L. Gentry, Kirk I. Erickson, Susan M. Sereika, Frances E. Casillo M E C and Patrick T. Donahue, George A. Grove, Anna L. Marsland, Jennifer C. Watt C M B 2018 Protocol for Exercise Program in Cancer and Cognition (EPICC): A randomized controlled trial of the e ff ects of aerobic exercise on cognitive function in postmenopausal women with breast cancer receiving aromatase inhibitor therapy **67** 109–15

[18] Ian M. Lahart, Amtul R. Carmichael, Alan M. Nevill G D K and G S M 2018 The effects of a home-based physical activity intervention on cardiorespiratory fitness in breast cancer survivors; a randomised controlled trial *J. Sports Sci.* **36** 1077–86

[19] Arslan S 2016 The Effects of a Walking Exercise Program on Fatigue in the Person with COPD 303–12

[20] Martina E. Schmidt , Joachim Wiskemann, Cornelia M. Ulrich A S and K S 2017 Self-reported physical activity behavior of breast cancer survivors during and after adjuvant therapy : 12 months follow-up of two randomized exercise intervention trials *Acta Oncol. (Madr).* **0** 000

[21] L.K. Juvet, I. Thune, I.K.Ø. Elvsaas , E.A. Fors , S. Lundgren, G. Bertheussen, G. Leivseth L

M O 2017 The effect of exercise on fatigue and physical functioning in breast cancer patients during and after treatment and at 6 months follow-up : A meta-analysis *The Breast* **33** 166–77

[22] Mohammadali Hassanzadeh, Fatemeh Kiani, Salehoddin Bouya M Z 2018 Complementary Therapies in Clinical Practice Comparing the effects of relaxation technique and inhalation aromatherapy on fatigue in patients undergoing hemodialysis *Complement. Ther. Clin. Pract.* **31** 210–4

[23] Freerk T. Baumann1 & Oliver Bieck & Max Oberste1 & Rafaela Kuhn & Joachim Schmitt & Steffen Wentrock & Eva Zopf1 & Wilhelm Bloch & Klaus Schüle & Monika Reuss-Borst 2016 Sustainable impact of an individualized exercise program on physical activity level and fatigue syndrome on breast cancer patients in two German rehabilitation centers *Support. Care Cancer*

Appendix

Table 1. Analysis Journal

No	Title & Author	Variable	Method	Results
1	Walking groups for women with breast cancer: Mobilizing therapeutic assemblages of the walk, talk, and place [12]	Independent: Walking groups Dependent: Mobilizing therapeutic assemblages of the walk, talk, and place	Design: Mixed-methods study Sample: 82 female patients with breast cancer Instruments: Questionnaire Analysis: Framework Analysis	Intervention group runs, such as Best Foot Forward, it combines periods of physical activity in the outdoors with the discussion in the room, can be regarded as an effective way to encourage support led by peer conversations that may not occur permanently (clinical) setting supportive care,
2	Effects of Different Exercise Modalities on Fatigue in Prostate Cancer Patients Undergoing Androgen Deprivation Therapy [11]	Independent: Exercise Modalities Dependent: Fatigue	Design: Randomized Controlled Trial Sample: 163 prostate cancer patients Instrument: Questionnaires Piper Fatigue Scale (PFS) Analysis: Randomized Controlled Trials	Different exercise modes have a comparable effect in reducing fatigue and increasing vitality during ADT. Patients with the highest and lowest levels of fatigue vitality have the greatest benefit.

No	Title & Author	Variable	Method	Results
3	Randomized Evaluation of Cognitive Behavioral Therapy and Graded Exercise Therapy for Post-Cancer Fatigue [2]	Independent: Cognitive-Behavioral Therapy and Graded Exercise Therapy Dependent: Post-Cancer Fatigue	Design: Randomized Controlled Trial Sample: 46 breast cancer patients who fit the criteria. Instrument: Questionnaires Piper Fatigue Scale Analysis: Chi-squared And independent-sample two-tailed t-tests	Combined Cognitive behavioral therapy (CBT) and graded exercise therapy (GET) fatigue and improve functional outcomes for most patients with post-cancer.
4	Effect of a 12-week walking exercise program on body composition and immune Cell count in patients with breast cancer who are undergoing chemotherapy [9]	Independent: Effect of a 12-week walking exercise program on body composition and immune Cell count Dependent: Patients with breast cancer who are undergoing chemotherapy	Design: Experimental quality Sample: 20 patients with breast cancer Instrument: Questionnaires Analysis: Two-way repeated ANOVA	These results indicate that the 12-week exercise program runs impact on the balance between weight, BMI and percentage of body fat in patients with breast cancer.
5	Effects of nurse-led home-based exercise & cognitive behavioral therapy on reducing cancer-related fatigue in patients with ovarian cancer during and after chemotherapy [4]	Independent: Effects of nurse-led home-based exercise and cognitive behavioral therapy Dependent: Reducing cancer-related fatigue in	Design: Randomized Controlled Trial Sample: 72 breast cancer patients who fit the criteria. Instrument: Questionnaires Analysis: ANOVA	E & CBT brought home-based carers to have a measurable benefit in helping women with ovarian cancer to reduce cancer-related fatigue, depression symptoms and improve the quality of their sleep.

No	Title & Author	Variable	Method	Results
		Patients		
6	The effect of relaxation exercises on symptom severity in patients with breast cancer undergoing adjuvant chemotherapy: An open-label nonrandomized controlled clinical trial [1]	Independent: Relaxation exercises Dependent: Breast cancer undergoing adjuvant chemotherapy	Design: Experimental random groups without control Sample: 49 patients with breast cancer Instrument: Questionnaires Analysis: Mann-Whitney U test Analysis Friedman Chi-Square	The severity of pain, fatigue, nausea, sadness, anxiety, sleeplessness, lack of appetite, feeling bad, shortness of breath, skin and nail changes and sprue is significantly less in the intervention group than in the control group. The severity of these symptoms increased significantly in the control group ($P < 0.05$).
7	Protocol for Exercise Program in Cancer and Cognition (EPICC): A randomized controlled trial of the effects of aerobic exercise on cognitive function in postmenopausal women with breast cancer receiving aromatase Inhibitor therapy [17]	Independent: Exercise Program in Cancer and Cognition (EPICC): aerobic exercise Dependent: Breast cancer receiving aromatase Inhibitor therapy	Design: Randomized Controlled Trial Sample: 254 postmenopausal women with early-stage breast cancer Instrument: Questionnaires Piper Fatigue Scale (PFS) Analysis: Linear mixed-effects modeling Voxel-wise analyzes	All participants maintain a diary of activity; monitoring physical activity and sleep are repeated three and seven months post-randomization. If successful, the sport can be an inexpensive method for improving cognitive function in women with breast cancer that is adaptable to the home or community breast cancer.
8	Motivation to uphold physical activity in women with breast cancer during adjuvant chemotherapy treatment [15]	Independent: Motivation to uphold physical activity Dependent: During adjuvant chemotherapy for breast cancer	Design: Cross-sectional descriptive and comparative design Sample: 100 women with breast cancer receiving adjuvant chemotherapy	Women who are physically active experienced higher psychological well-being, less fatigue and faster recovery after treatment. They also feel fitter.

No	Title & Author	Variable	Method	Results
		treatment	Instrument: The questionnaire Pittsburgh Sleep Quality Index (PSQI) Analysis: One-way ANOVA	
9	The effects of a home-based physical activity intervention on cardiorespiratory fitness in breast cancer survivors [18]	Independent: Physical activity intervention Dependent: Cardiorespiratory fitness in breast cancer	Design: Randomized controlled (RCT) Sample: 32 patients with post-adjuvant breast cancer therapy Instrument: Questionnaires Analysis: Variances t statistic	Physical effectiveness of home-based (PA) on cardiorespiratory fitness in survivors of breast cancer is very effective to do.
10	Effectiveness of a combined exercise training and home-based walking program on physical activity compared with standard medical care in moderate COPD [13]	Independent: The combined exercise training and home-based Walking program on physical activity Dependent: Medical care in moderate COPD	Design: A randomized controlled trial Sample: 52 elderly patients Instrument: Chronic Respiratory Questionnaire and Exercise Self-Regulatory Efficacy Scale Analysis: Independent t-test or Mann-Whitney U-test	The combined sports training and home-based road program in the elementary school of physiotherapy treatments improve PA in patients with moderate COPD.
11	The Effects of a Walking exercise Program on Fatigue in the Person with COPD	Independent: Walking exercise Dependent:	Design: Randomized controlled trial Sample:	There is no visible difference between the points of fatigue pretest. But the intervention and control groups after the posttest, the point of exhaustion lower the

No	Title & Author	Variable	Method	Results
	[19]	Fatigue	65 patients COPD Instrument: Brief Fatigue Inventory (BFI) and Asthma Fatigue Scale (CAFS) Analysis: ANOVA	intervention group than the control group and this difference was statistically significant.
12	Effects of Exercise on Fatigue, Sleep, and Performance [14]	Independent: Exercise Dependent: Fatigue, Sleep, and Performance	Design: Randomized Trial Sample: 187 patients with MM Instrument: Questionnaires Functional Assessment of Cancer Therapy-Fatigue (FACT-F) Analysis: Analysis of variance (ANOVA) and chi-square analyzes	The effect of exercise seems minimal reduction in fatigue, improve sleep quality, and improve performance (aerobic capacity).
13	Self-reported physical activity behavior of breast cancer survivors during and After adjuvant therapy: 12 months follow-up of two randomized exercise Intervention trials [20]	Independent: Self-reported physical activity behavior Dependent: Breast cancer survivors during and After adjuvant therapy	Design: Randomized controlled trials Sample: 227 breast cancer patients Instrument: Questionnaires Analysis: Multiple ordinal logistic regression analyses	Effective exercise interventions reply decreased physical activity during cancer therapy and improve strength training in a few months after the intervention, but longer
14	The effect of exercise on fatigue and physical functioning in	Independent: Effect of exercise	Design: Randomized controlled trials	Regular exercise can improve physical function and reduce fatigue in breast cancer patients. Improved physical function and

No	Title & Author	Variable	Method	Results
	breast Cancer patients during and after treatment and at 6 months follow-up [21]	Dependent: Fatigue and physical functioning in breast Patients with cancer during and after treatment	Sample: 40 samples with cancer Instrument: Questionnaires Analysis: MANOVA	fatigue are more pronounced when patients received the intervention after adjuvant treatment of breast cancer compared to during treatment. Physically active during and after cancer treatment can help reduce the negative effects of cancer patients following breast cancer diagnosis and after adjuvant breast cancer treatment.
15	Effects of a Walking Intervention on Fatigue-Related Experiences of Hospitalized Acute Myelogenous Leukemia Patients Undergoing Chemotherapy [5]	Independent: Walking Intervention Dependent: Fatigue-Related Experiences of hospitalized Acute Myelogenous Leukemia	Design: Randomized Controlled Trial Sample: 22 patient Instrument: Questionnaire Brief Fatigue Inventory (BFI) and the questionnaire Pittsburgh Sleep Quality Index (PSQI) Analysis: ANOVA	A short program which is driven by sport, such as WEP, should start at the beginning of chemotherapy to reduce chemotherapy-related fatigue.
16	Physical activity and cancer: A cross-sectional Study on the barriers and facilitators to Exercise during cancer treatment [3]	Independent: Physical activity and cancer Dependent: -	Design: Cross-sectional study Sample: 30 participants Instrument: Questionnaires Analysis: Qualitative content analysis	The difference is found in breast cancer results when comparing with other forms of cancer. Patients with breast cancer reported higher levels of fatigue and muscle weakness, as well as a higher level of education and knowledge about the need for exercise during cancer treatment.
17	The Effects of a Comprehensive Exercise Program On Physical Function, Fatigue, and Mood In Patients With	Independent: Effects of a Comprehensive Exercise Program Dependent:	Design: Retrospective analysis of Archived Data Sample: 39 patients with	A comprehensive exercise program consisting of aerobic and resistance exercise of moderate intensity, education, and support twice a week for eight weeks resulted in a significant improvement in

No	Title & Author	Variable	Method	Results
	Various Types of Cancer [10]	Physical Function, Fatigue, and Mood In Patients With Various Types of Cancer	cancer and cancer survivors Instrument: Questionnaires Piper Fatigue Scale (PFS) Analysis: ANOVA	physical function, fatigue, and mood in patients in the active treatment And cancer patients cannot be treated.
18	Effects of resistance exercise on fatigue and quality of life in Breast cancer patients undergoing adjuvant chemotherapy [16]	Independent: Effects of resistance exercise Dependent: Fatigue and quality of life in Patients undergoing adjuvant breast cancer chemotherapy	Design: A randomized controlled trial Sample: 101 patients with breast cancer Instrument: Questionnaires Analysis: ANCOVA	Resistance training can be an integral part of supportive care for breast cancer patients undergoing chemotherapy
19	Comparing the effects of relaxation technique and inhalation Aromatherapy on fatigue in patients undergoing hemodialysis [22]	Independent: Comparing the effects of relaxation technique and inhalation Aromatherapy Dependent: Fatigue in Patients undergoing hemodialysis	Design: Randomized controlled clinical trial Sample: 105 hemodialysis patients Instrument: Questionnaire Brief Fatigue Inventory (BFI) Analysis: Descriptive statistics (mean, standard deviation, and percentage), and analytical tests (Chi-square, t-pair test, and One-way ANOVA test)	Significant differences in the average change in score of fatigue before and after the intervention between relaxation and aromatherapy group, but the difference was not significant in the control group. Aromatherapy with lavender essential oil can reduce the level of fatigue in patients undergoing hemodialysis compared to Benson relaxation techniques.
20	Sustainable impact of an	Independent: Sustainable	Design: Quasi-randomized	In the control group showed almost no difference while the

No	Title & Author	Variable	Method	Results
	individualized exercise program On physical activity level and fatigue syndrome on breast Cancer patients in two German rehabilitation centers [23]	impact of an individualized exercise program Dependent: Level of physical activity on breast cancer fatigue syndrome Patients in two German rehabilitation centers	Sample: 111 patients with breast cancer Instrument: Questionnaires Analysis: MANOVA	intervention group showed a slightly reduced effect on fatigue syndrome. The intervention group Show deficits in four dimensions (general fatigue, mental fatigue, reduced activity, and physical fatigue) while the control group revealed fatigue reduction in only two dimensions (general fatigue and physical exhaustion).

PAT-923

THE INFORMATION MOTIVATION AND BEHAVIORAL SKILL (IMB) MODEL OF ADHERENCE AFFECT SELF CARE ADHERENCE IN PATIENT WITH DIABETES MELLITUS: A SYSTEMATIC REVIEW

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ABSTRACT

Diabetes Mellitus is a metabolic disease that cause its patient need a long life maintenance. Diabetes self care is an important part of diabetes care. It is complex and involves major lifestyle changes that need to become a part of patient's daily routine including self- monitoring blood glucose (SMBG), diet, physical activity, foot care, and taking prescribed medication. Diabetes self care requires high level of adherence to those lifestyle changes. The Information Motivation Behavioral Skill (IMB) model of adherence focuses comprehensively on the information, motivation), and behavioral skills factors that are conceptually and empirically linked to adherence This systematic review aims to describe how information, motivation, and behavioral skill can affect adherence in patient with Diabetes Mellitus. 15 best articles were found using PECOT framework in some databases; EBSCO, Science Direct, Scopus, and Journal of Universitas Airlangga. Those articles have been chosen based on some criteria. The Information Motivation and Behavior Skill Model of Adherence has been shown to be effective in describing medication adherence in Diabetes Mellitus. So it can be used as a theoretical reference in making interventions to improve medication adherence in patient with Diabetes Mellitus

Keywords: information motivation behavioral skill, adherence, diabetes mellitus

1. Introduction

Diabetes is a global public health challenge because of its high prevalence and associated mortality and morbidity [1]. The International Diabetes Foundation (IDF) in 2009 predicted an increase in the number of people with DM from 7 million in 2009 to 12 million by 2030 [2]. Diabetes Mellitus is a hyperglycemia disease characterized by absolute absence of insulin or a relative decrease in insensitivity of cells to insulin. In people with uncontrolled diabetes mellitus, there will be an increase in blood glucose (sugar), called hyperglycemia. Hyperglycemia that lasts for a long time will cause serious damage to the body, especially to the nerves and blood vessels. Therefore, it is important to control glucose levels in the blood of Diabetes Mellitus patients. Type 2 Diabetes Mellitus patients often have problems with adherence to the treatment of Diabetes Mellitus. A recent study revealed 1 in 3 patients did not take the prescribed Diabetes Mellitus drug [3]. The management of Diabetes Mellitus in everyday life is a complex activity and requires an understanding of self-care therapy regimens for people with Diabetes Mellitus

such as physical activity, diet, self-monitoring blood glucose (SMBG), and glycemic control [4]. These things are the personal responsibility of a person with Diabetes Mellitus. But most Diabetes Mellitus patients do not adhere to the therapeutic regimen.

Diabetes Mellitus can also be called a "Long life" disease because this disease cannot be cured during the life span of the sufferer. So that patients need "Long life maintenance" or long-term management. The success of a treatment, both primary and secondary, is strongly influenced by the adherence of patients with Diabetes Mellitus to maintain their health. With good compliance, primary and secondary treatment can be carried out optimally and the quality of health can still be felt, but if Diabetes Mellitus patients do not have self-awareness to be obedient, it can lead to failure in treatment which results in decreased health. Even due to non-compliance in maintaining health, it can have an impact on the complications of Diabetes Mellitus and can lead to death.

Information Motivation Behavioral Skills (IMB) is a model of adherence in predicting behavioral adherence with treatment therapy regimens. The IMB model includes three main constructs that influence behavioral change: Information barriers, motivation barriers (personal and social), and behavioral skill barriers *[5]*. If there is a deficit in the three constructions, it will reduce the consistency of behavior performance in adherence. The IMB model of adherence focuses comprehensively on the information, motivation), and behavioral skills factors that are conceptually and empirically linked to adherence [6]. The research question of this systematic review was how The Information Motivation and Behavioral Skill affects self care adherence in patients with Diabetes Mellitus. This systematic review aims to describe and summarize how information, motivation, and behavioral skill can affect adherence in patients with Diabetes Mellitus.

2. Methods

The method used in Systematic Review begins with the selection of the topic of Self-Care Adherence in patients with Diabetes Mellitus Type 2. Keywords in articles were searched in several databases such as EBSCO, Science Direct, Scopus, ProQuest and Journal of Airlangga University. Keywords used were “Information Motivation Behavior Skill Model of Adherence”, "Diabetes Mellitus Type 2", "Self-Care", and "Adherence". This search was limited to the last 10 years range from 2008 to 2018. It found 111 articles in EBSCO, 40 in Science Direct, 63 in Scopus, and 8 in the Journal of Airlangga University.

Articles were selected for review based on studies that fit the inclusion criteria. The inclusion criteria in this Systematic Review were English and Indonesian articles, Self-Care Adherence in Diabetes Mellitus Type 2 patients, and the research design were Qualitative Study with phenomenology approach, case study, ethnography, and focus group discussion. The 20 suitable articles reviewed.

3. Result

3.1 Study Selection and Eligibility Criteria

Figure 1 showed numbers of studies screened in this systematic review. The inclusion criteria were English and Indonesian articles, Self-Care Adherence in Diabetes Mellitus Type 2 patients, and the research design was a qualitative study with a phenomenological approach, case study, ethnography, and focus group discussion.

Further criteria were used to include or exclude studies for this review. Those criteria were primary outcome, primary outcome measurement, study design, and language or location. For primary outcome, the article must include diabetes (type 1 or type 2, not restricted to age group studied) with a primary focus on adherence to prescribed glucose-lowering regimens. Studies were excluded if they did not specify the medications evaluated or if the primary focus was not adherence. Primary outcome measurement criteria was that the study must include descriptions about barriers to self care adherence in patients with Diabetes Mellitus. Study design criteria was qualitative study with a phenomenological approach, case study, ethnography, and focus group discussion. Other quantitative studies were included if the study design was described. Articles were excluded if they were review articles, editorials, letters, opinion papers, general practice papers, meta-analyses, a dual publication, protocol-only paper, or were published outside the review's time frame. The last criteria is language or location, studies from all countries were included if published in English to allow for a global understanding of self-care adherence in diabetes.

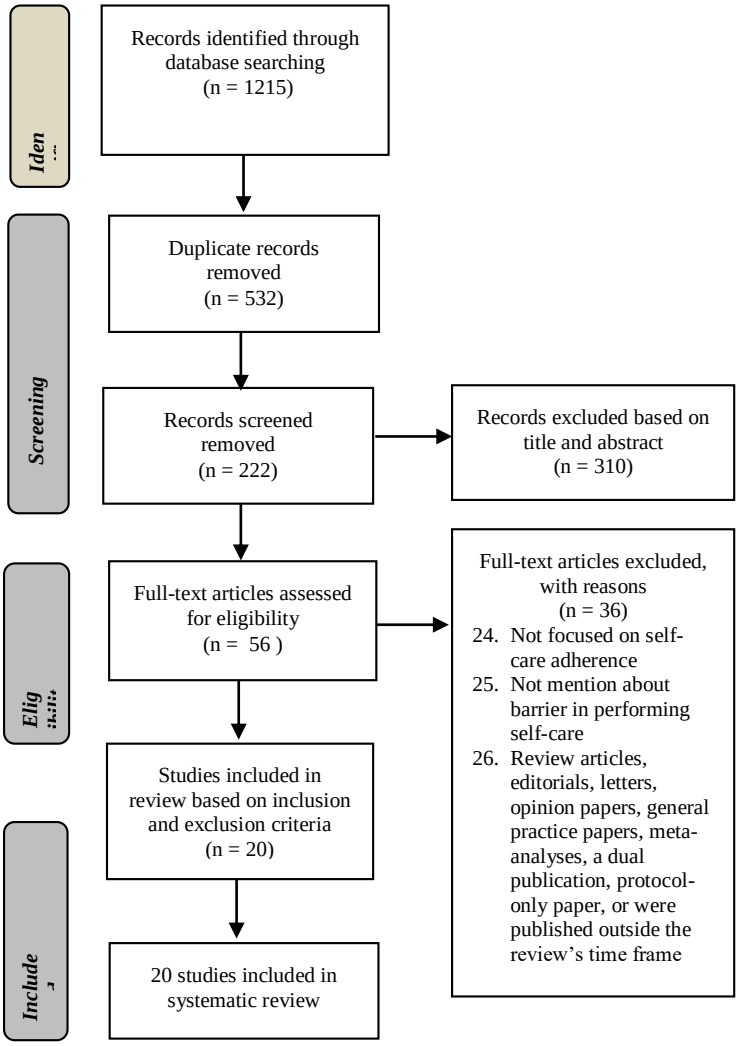

Figure 1. Flow Diagram

3.2 Study Characteristics

The studies reviewed in this article are 20 articles for self-care adherence in Diabetes Mellitus Type 2 patients. Research methods used by various articles ranged from qualitative studies with a phenomenological approach, case study, ethnography, and focus group discussion.

3.3 Result of Individual Studies

3.3.1 Information Barrier. Information barriers in patients with Diabetes Mellitus is a collection of relevant messages including the knowledge delivered related to self-care of Diabetes Mellitus which includes medication and glucose measurement, diet, activity, and foot care from health workers, advice from others, the media, etc. *[5]. A study conducted by Nelson et al., (2018)*

stated that information barriers that often occur in patients with Diabetes Mellitus includes the assumption that generic drugs are less effective than branded patent drugs and the disappointment felt when the treatment of diabetes does not have a fast effect.

Research of Woodcock, Gillam, & Frcp (2013) found that patients who knew about the condition of the illness and the complications that will be experienced. Most say they are afraid of comatose complications. In addition, most have received adequate information about Diabetes Mellitus Type 2 from doctors and nurses, but there was still a misperception about the information so that patients do not undergo self-care well. Patients stated the importance of ongoing care to treat diabetes. Nurses and doctors play an important role for that. Angelica et al. (2016) mentions Diabetes Mellitus patients have knowledge of Diabetes management. However, the knowledge possessed is very superficial and not applicative in their routines.

3.3.2 Motivation Barrier. In the study conducted by (Amico and Fisher, Fisher *et al.,* 2006) stated that adherence-related motivation refers to a personal and social motivation to follow one's regimen as prescribed. Personal motivation includes one's attitudes and beliefs about the consequences outcomes of both optimal and sub-optimal adherence. Social motivation includes perceptions of support for adherence behaviors from important others, as well as one's motivation to comply with their wishes.

This is in line with Rongkavilit *et al.* (2010) opinion that personal motivation includes positive or negative attitudes toward self-care compliance behaviors, perceived benefits of self-care, and perceived risks of self-care Diabetes Mellitus. Social motivation includes individual perceptions of social support from other people that are important for obedience and their desire to be obedient in carrying out self-care Diabetes Mellitus which includes Measurement of Glucose, Diet, Activity, and Foot Care.

Nelson *et al.* (2018) describe that feeling bored of consuming antidiabetic drugs is the most reported personal motivation barrier. In the Tristiana, Kusnanto, Widyawati, Yusuf, & Fitriyasari (2016) study mentioned the results of interviews conducted on April 18, 2014 at the Mulyorejo health center, it was found that 3 out of 4 patients stated that the patient was saturated with the routine they were doing that caused the patient to disobey their diet pattern and physical activity undertaken. Two patients say that they despair of suffering from Diabetes Mellitus, sometimes they do not want to eat because of fear of complications that will happen. A patient says to reduce the activity of gathering with his friends, a patient still would not accept if he was exposed to Diabetes Mellitus.

Social motivation can affect patients in performing self-care adherence. One of the supporting factors for patients performing self-care is family support. As stated by Mayberry & Osborn (2012), family support is essential in providing adherence effects to Type 2 Diabetes Mellitus patients. Costa (2012) in his research mentioned that partner and social-cognitive support is essential to adherence to SMBG in diabetic patients Mellitus Type 2. Halkoaho (2014) study found that people with type 2 diabetes thought the source of coping in the management of diabetes mellitus was self-acceptance of disease, adherence to self-care, knowledge of disease, and support from various parties including nurses.

3.3.3 Behavioral Skill Barrier. Behavioral skill barrier is an objective ability of individuals to adhere with task compliance and perceived self-efficacy to carry out self-care for Diabetes Mellitus. Obedience-related tasks include cues to take antihyperglycemic drugs and measure glucose, go on a diet, do activities, and perform foot care, strategies to minimize side effects every day, and strengthen self-compliance over time and in various different situations Liu *et al.* (2018) states that self-efficacy and coping strategies are factors that influence the compliance of patients with Diabetes Mellitus, stating that self-efficacy and coping strategies are factors that influence adherence to patients with Diabetes Mellitus.

Based on the review of the article, it can be argued that self-care therapy regimens for Type 2 Diabetes Mellitus in general are physical activity, diet, self-monitoring of blood glucose (SMBG), and glycemic control. However, most respondents did not adhere to the therapy regimen. Nelson *et al.* (2018) stated that the most frequently reported barriers to diabetes medication adherence in our sample were forgetting doses.

In Mogre, Abanga, Tzelepis, Johnson, & Paul (2017) research on adherence and factors associated with self-care behaviors in Diabetes Mellitus Type 2 patients in Ghana stated that dietary compliance, self-monitoring of blood glucose, and foot care were very low . Self-care is often done by patients was the exercise and measurement of blood glucose by health workers. Only 1 patient performed routine SMBG every day, 13.9% checked their legs daily and 9.6% who checked their shoes every day. The low rate of adherence to self-care is due to a low level of knowledge. Patients with low knowledge and women may need additional support to improve adherence to self-care behavior in patients with Type 2 Diabetes Mellitus.

A similar case occurred in Chourdakis & Kontogiannis (2014) study, which stated that the majority of patients (75.7%) reported regular nutritional intake but which were rich in fat. Most (90.3%) received prescribed medication, and 60.5% tested blood glucose concentrations accordingly but only 27.1% of the study population reported daily blood glucose levels. And only a third of patients are reported to have washed their feet every day for weeks. Thompson's (2014) study found that there was a difference between personal and cultural activity that affects activity for diabetes management.

4. Discussion

Diabetes Mellitus is a metabolic disease that cause its patients to need long life maintenance. Diabetes self-care is an important part of diabetes care. It is complex and involves major lifestyle changes that need to become a part of patient’s daily routine including self-monitoring blood glucose (SMBG), diet, physical activity, foot care, and taking prescribed medication. Diabetes self-care requires a high level of adherence to those lifestyle changes. However, most respondents did not adhere to the therapy regimen because of many factors that prevent patients from performing self-care.

Medication adherence is an important determinant of outcomes in patients with chronic diseases [14]. The Information Motivation and Behavioral Skill (IMB) model of adherence focuses comprehensively on the information, motivation, and behavioral skills factors that are

conceptually and empirically linked to adherence [6]. The model postulates that individuals are more likely to take health-related actions, such as diabetes self-care management behaviors, if they are well informed, highly motivated (personally and socially), and have adequate and appropriate behaviors, and thus, experience positive health outcomes [11]. So that in this case the Information Barrier, Personal Motivation Barrier, Social Motivation Barrier is estimated to influence the Behavioral Skill Barrier of Diabetes Mellitus patients in performing self-care. If behavioral skills can be done well, then Diabetes Mellitus patients can adhere to self-care.

Information barrier that affects patient adherence were diabetes knowledge, health education, and provider-patient communication. Motivation barriers such as health beliefs and social support are linked to adherence. Diabetes self-efficacy and coping strategies are identified as behavioral skill barriers that affect adherence in patients with Diabetes Mellitus. So, from this systematic review, the practical implication is it is confirmed that Information Motivation and Behavioral Skill Model of Adherence developed by Fisher et.al saying that information, motivation, and behavioral skill can affect adherence in patients. So, the outcome of this review is this model can be created as one of theoretical framework to develop nursing interventions in increasing self-care adherence in patients with Diabetes Mellitus.

This evidence-based review, while systematic, was not a meta-analysis, making it difficult to compare findings between studies. There is broad variability in baseline characteristics of the populations studied, which impairs the ability to generalize findings to other groups of individuals with diabetes. Another key limitation may be the systematic exclusion of study design. This study included some quantitative studies. It makes some information were not homogenous about barrier affecting self-care adherence in patient with Diabetes Mellitus.

5. Conclusion

The Information Motivation and Behavioral Skill (IMB) model of adherence focuses comprehensively on the information, motivation, and behavioral skills factors that are conceptually and empirically linked to adherence. It can be concluded that the information barrier which affects patient adherence were diabetes knowledge, health education, and provider-patient communication. Motivation barrier such as health belief and social support linked to adherence. Diabetes self-efficacy and coping strategies was identified as behavioral skill barrier that affects adherence in patients with Diabetes Mellitus.

Reference

[1] Liu N T, Holcomb J B, Wade C E, Darrah M I And Salinas J 2014 Evaluation Of Standard Versus Nonstandard Vital Signs Monitors In The Prehospital And Emergency Departments: Results And Lessons Learned From A Trauma Patient Care Protocol *J. Trauma Acute Care Surg.* **77** S121–6

[2] Yamashita T, Kart C S And Noe D A 2012 Predictors Of Adherence With Self-Care Guidelines Among Persons With Type 2 Diabetes : Results From A Logistic Regression Tree Analysis 603–15

[3] Nelson L A, Wallston K A, Kripalani S, Lauren M, Williamson S E And Mayberry L S 2018 Assessing Barriers To Diabetes Medication Adherence Using The Information-Motivation-Behavioral Skills Model *Diabetes Res. Clin. Pract.*

[4] Thompson M 2014 Occupations , Habits , And Routines : Perspectives From Persons With Diabetes 153–60

[5] Rongkavilit C, Naar-King S, Kaljee L M, Panthong A, Koken J A, Bunupuradah T And Parsons J T 2010 Applying The Information-Motivation-Behavioral Skills Model In Medication Adherence Among Thai Youth Living With HIV : **24**

[6] Fisher J D, Fisher W A, Amico K R And Harman J J 2006 An Information – Motivation – Behavioral Skills Model Of Adherence To Antiretroviral Therapy **25** 462–73

[7] Woodcock H, Gillam S And Frcp F 2013 ' A One-To-One Thing Is Better Than A Thousand Books ': Views And Understanding Of Older People With Diabetes 157–64

[8] Amico K R, Toro-Alfonso J And Fisher J D 2014 AIDS Care : Psychological And Socio-Medical Aspects Of AIDS / HIV An Empirical Test Of The Information , Motivation And Behavioral Skills Model Of Antiretroviral Therapy Adherence 37–41

[9] Costa V 2012 Partner Support , Social-Cognitive Variables And Their Role In Adherence To Self-Monitoring Of Blood Glucose In Type 2 Diabetes 81–7

[10] Halkoaho A 2014 Type 2 Diabetes Patients ' Perceptions About Counselling Elicited By Interview : Is It Time For A More Health-Oriented Approach ? 13–9

[11] Liu T, Wu D, Wang J, Li C, Yang R, Ge S, Du Y And Wang Y 2018 Testing The Information-Motivation- Behavioural Skills Model Of Diabetes Self-Management Among Chinese Adults With Type 2 Diabetes : A Protocol Of A 3-Month Follow-Up Study

[12] Mogre V, Abanga Z O, Tzelepis F, Johnson N A And Paul C 2017 Adherence To And Factors Associated With Self-Care Behaviours In Type 2 Diabetes Patients In Ghana 1–8

[13] Chourdakis M And Kontogiannis V 2014 Self-Care Behaviors Of Adults With Type 2 Diabetes Mellitus In Greece 972–9

[14] Kirkman M S, Rowan- M T, Levin R, Fonseca V A, Schmittdiel J A, Herman W H And Aubert R E 2015 Determinants Of Adherence To Diabetes Medications : Findings From A Large Pharmacy Claims Database 1–6

[15] Evon D M, Golin C E, Bonner J E, Grodensky C And Velloza J 2015 Adherence During Antiviral Treatment Regimens For Chronic Hepatitis C A Qualitative Study Of Patient-Reported Facilitators And Barriers **49** 41–50

[16] Rolnick S J, Pawloski P A, Hedblom B D, Asche S E And Bruzek R J 2013 Patient Characteristics Associated With Medication Adherence **11** 54–65

[17] Capoccia K, Odegard P S And Letassy N 2016 Medication Adherence With Diabetes Medication

[18] Amico K R, Mugavero M, Krousel-Wood M A, Bosworth H B And Merlin J S 2017 Advantages To Using Social-Behavioral Models Of Medication Adherence In Research And Practice

[19] Amico K R 2011 A Situated-Information Motivation Behavioral Skills Model Of Care Initiation And Maintenance (Simb-CIM): An IMB Model Based Approach To Understanding And Intervening In Engagement In Care For Chronic Medical Conditions

[20] Schwennesen N, Sociology M A, Researcher P D, Henriksen J E And Head D 2016 Patient

Explanations For Non-Attendance At Type 2 Diabetes Self-Management Education : A Qualitative Study

[21] Anon 2012 Family Support, Medication Adherence, And Glycemic Control Among Adults With Type 2 Diabetes **35** 1239–46

[22] Gask L, Ludman E And Schaefer J 2006 R □□□□□□□ P □□□□ Qualitative Study Of An Intervention For Depression Among Patients With Diabetes : How Can We Optimize Patient – Professional Interaction ? 231–42

[23] Angélica J, Dias A, Rodrigues R A, Sales Z N And Oliveira Z M 2016 Original Article Diabetes Melitus Clients ' Conceptions About The Treatment **10**

Appendix

Table 2. Table of Article Analysis

Title, Authors, & Time	N	Design	Data Collection	Main Result
An empirical test of the Information , Motivation and Behavioral Skills model of antiretroviral therapy adherence [8]	200	Mix Method	Interview and Questionnaire	• The IMB model of ART adherence hypothesizes that adherence-related information, motivation and behavioral skills are the critical determinants of adherence behavior. • Simply stated, even a well-informed or highly motivated individual will have difficulty achieving and sustaining optimal adherence if he or she lacks the objective skills required to acquire or self-administer medication or feels incapable of performing such behaviors.
Applying the Information-Motivation-Behavioral Skills Model in Medication Adherence Among Thai Youth Living with HIV: A Qualitative Study [5]	10	Qualitative	Interview	• Data support the utility of IMB as a potential framework for understanding ART adherence in this population. • However, data indicate a consideration to expand the motivation construct of IMB to incorporate youths' perceived familial and social responsibilities and the need to adhere to medications for short- and long-term well-being of self, family, and society in a context of Buddhist values. • These modifications to IMB could be relevant in other cultural settings with more collectivistic worldviews.
Adherence During Antiviral Treatment Regimens for Chronic Hepatitis C A Qualitative Study of Patient-reported Facilitators and Barriers [15]	21	Qualitative	Interview	Three broad themes emerged: (1) missing doses and dose timing errors; (2) facilitators of adherence; and (3) barriers to adherence.
Assessing barriers to diabetes medication	237	Quantitative		The most frequently reported barriers were forgetting doses,

adherence using the Information-Motivation-Behavioral skills model [3]				thinking brand name medicine works better than generic medicine, not seeing immediate benefit, and feeling burned out with taking diabetes medicine.
Testing the information-motivation behavioral skills model of diabetes self-management among Chinese adults with type 2 diabetes: a protocol of a 3-month follow-up study [11]	250	Quantitative	RCT	• The concepts from the IMB model can easily be translated into intervention components • The IMB model adequately captures essential concepts which have been well supported in the literature to improve DSM behaviors, including information (e.g., diabetes knowledge), motivation (e.g., social support) and behavioral skills (e.g., diabetes self-efficacy).
Patient Characteristics Associated with Medication Adherence [16]	750,000	Quantitative		Medication adherence for those with one condition was higher in males, Caucasians, older patients, and those living in areas with higher education rates and higher income. In the total population, adherence increased with lower comorbidity and increased number of medications. Substantial variation in adherence was found by condition with the lowest adherence for diabetes (51%) and asthma (33%).
Determinants of Adherence to Diabetes Medications: Findings From a Large Pharmacy Claims Database [14]	218,384	Quantitative	Cohort Study	Sixty-nine percent of patients were adherent. Adherence was independently associated with older age, male sex, higher education, higher income, use of mail order versus retail pharmacies, primary care versus nonendocrinology specialist prescribers, higher daily total pill burden, and lower out-of-pocket costs. Patients who were new to diabetes therapy were significantly less likely to be adherent.
Medication Adherence with Diabetes Medication A Systematic Review of the Literature [17]	169	Systematic Review		• One hundred ninety-six published articles were reviewed; 98 met inclusion criteria. Factors including age, race, health beliefs, medication cost, co-pays, Medicare Part D coverage gap, insulin use, health literacy, primary

			nonadherence, and early nonpersistence significantly affect adherence. • Higher adherence was associated with improved glycemic control, fewer emergency department visits, decreased hospitalizations, and lower medical costs. • Adherence was lower when medications were not tolerated or were taken more than twice daily, with concomitant depression, and with skepticism about the importance of medication. • Intervention trials show the use of phone interventions, integrative health coaching, case managers, pharmacists, education, and point-of-care testing improve adherence.
Advantages to Using Social-Behavioral Models of Medication Adherence in Research and Practice [18]			Social-behavioral models can assist research and practice by consolidating the multitude of reasons for non-adherence into superordinate factors that drive adherence.
An Information–Motivation–Behavioral Skills Model of Adherence to Antiretroviral Therapy [6]			There is consistent and convergent empirical support for the IMB model's assertions concerning the roles of adherence-related information, motivation, and behavioral skills in understanding and promoting HAART adherence as well as for the hypothesized interrelations among IMB model components.
A situated-Information Motivation Behavioral Skills Model of Care Initiation and Maintenance (sIMB-CIM): An IMB Model Based Approach to Understanding and Intervening in Engagement in Care for Chronic Medical Conditions [19]			The sIMB-CIM offers an approach to applying the IMB model to a dynamic behavior that requires specific attention to the multiple systems that simultaneously influence an individual's decisions to enter and stay in CMC medical care. However, future rigorous evaluation is needed to demonstrate the added benefit of such an approach.
Patient Explanations for	15	Qualitative Interview	Results of the study are personal

Non-Attendance at Type 2 Diabetes Mellitus Self-Management Education : A Qualitative Study [20]				reasons in the absence of Diabetes Self-Management Education because of illness and they feel it less useful activities. As for the external factors that affect people with Type 2 diabetes do not follow Diabetes Self-Management Education is location, time, and duration Diabetes Self-Management Education
Family Support, Medication Adherence, and Glycemic Control Among Adults with Type 2 Diabetes Mayberry & Osborn (2012)	61	Qualitative	FGD	Family support is very important in providing adherence effects to the care of people with Diabetes Mellitus Type 2.
Home Alone : The Experience of Women with Type 2 Diabetes who Are New to Intensive Control (Kathleen M. Rayman, 2004)	14	Qualitative	Interview	There are 2 types of patient : Engagement As many as 57% of respondents included in the Engage class. In this class, respondents follow the rules of self-care and are consistent in performing self-care as a lifestyle. Pre-engaged. (43%) In this class of respondents do not consider diabetes dangerous. They are not serious in performing self-care. They assume that diabetes care management is not difficult.
Occupations, habits, and routines: perspectives from persons with diabetes Thompson (2014)	8	Qualitative	Interview	There are four themes inferred: "Changes over time"; "What to eat"; "Habits and routines"; and "Family: Occupational impacts" There is a distinction between personal bustle and culture that affects activity for diabetes management.
Psychological Well-being in Patients with Type 2 Diabetes Mellitus in Puskesmas Mulyorejo Surabaya (Tristiana, Kusnanto, Widyawati, Joseph, & Fitriyasari, 2016)	7	Qualitative	Case Study	• Patients with type 2 diabetes experienced a process of transition from a healthy condition in a state hospital. • The transition process began with the loss of a cyclic response affects patients with type 2 diabetes to control yourself and make the right decision for self-care. • Self-control will make patients with type 2 diabetes are able to adapt and engage with new experiences that

				become a new habit for patients with type 2 diabetes • Self-Care will facilitate the patients with type 2 diabetes in adapting to internal and external environment and make patients with type 2 diabetes have a positive outlook in life.
Type 2 diabetes patients' perceptions about counselling elicited by interview: is it time for a more health-oriented approach? [10]	15	Qualitative	Interview	People with type 2 diabetes think the source of coping in the management of diabetes mellitus is self-acceptance of disease, adherence to self-care, knowledge of disease, and support from various parties including nurses.
Qualitative study of an intervention for depression Among patients with diabetes: how can we optimize Patient–professional interaction? [22]	25	Qualitative	Interview	Constraints in compliance with self-care patients with Type 2 Diabetes Mellitus is the patient's problems, difficulties in therapy, and inability to cope with the changes that occur after illness for so long.
'A one-to-one thing is better than a thousand books': views and understanding of older people with diabetes [7]	13	Qualitative	interview	• Patients know about the condition of the disease and complications that will be experienced. Most of them said they are afraid of the complications of coma. • In addition, most have obtained adequate information about Type 2 Diabetes Mellitus of doctors and nurses, but there are misperceptions about the information that the patient is undergoing treatment with good self. Patients expressed the importance of continuous treatment to deal with diabetes. Nurses and doctors play an important role for it.
Diabetes Mellitus Client's Conceptions about The Treatment [23]	11	Qualitative	interview	Patients with Diabetes Mellitus have knowledge of diabetes management. However, knowledge is very superficial and not applicable in their routines.

PAT-932

EFFECT OF LAVENDER AROMATHERAPY FOR REDUCING DYSMENORRHOE

Erika Agung Mulyaningsih

INTRODUCTION

Many women or teens experience discomfort during menstruation, one of which is dysmenorrhea. Dysmenorrheal is a severe pain that starts several hours before or together with the onset of menstruation and lasts for 48 to 72 hours (Reeder, 2011 in Purwati 2015). This pain results in someone feeling disturbed and uncomfortable about all their activities, this causes a person to experience difficulty walking, no appetite, nausea, vomiting and even fainting. Besides the pain of menstruation (dysmenorrhea) can also disrupt the concentration of learning and force sufferers to rest so they cannot follow the learning process. The incidence of dysmenorrheal in the world is very large, in 2011 in the United States the prevalence of dysmenorrheal pain was estimated at 45% -90%. About 15% of adolescents report menstrual pain at a severe level and cause not to attend school. While in Indonesia, 55% of women experience dysmenorrheal (Proverawati and Misaroh, 2009 in Gustina, 2015). Whereas in East Java the number of reproductive girls who were 10-24 years old was 56,598 people who experienced dysmenorrheal and came to health facilities by 11,565 people (1.31%) (BPS East Java Province, 2010)

Lavender essential oil is thought to be an adrenocortical stimulant that stimulates menstrual circulation and has anti-convulsive properties. lavender is also useful as a sedative, relieves pain and changes the perception of pain (Lavabree, 1990 in Sun Hee Han, 2012).

In practice women who experience dysmenorrheal do not know the treatment techniques to reduce pain that is felt more safely. Based on the background above, the formulation of the problem that arises in this study is "How the Effect of the Use of Lavender Aromatherapy on Decreasing Pain in dysmenorrhea.

METHODS

In this study, the authors used a pre-experimental one group pre-post-test design design. The population in this study were all adolescents of MAN Jombang Class X and XI who experienced dysmenorrhea with an average of 40 adolescents experiencing dysmenorrhea on April 16 to May 13, 2018. The sample in this study were some adolescents who experienced dysmenorrhea in MAN Jombang Class X and XI that met 36 inclusion and exclusion criteria.

The sampling technique used in this study is Purposive Sampling. For the independent variable this study is lavender aromatherapy. While the dependent variable is a decrease in the scale of menstrual pain. The data collection technique in this study was to use a checklist.

Data processing and analysis is done using a computer program. The calculation was carried out to determine the effect of lavender aromatherapy on decreasing the level of dysminorrhea pain in adolescents MAN Jombang Class X and XI using the Wilcoxon test…

RESEARCH RESULT

The research results obtained in Lavender Aromatherapy Against the Decreased Level of Dysmenorrhea Pain.

Table 1 shows that the majority of respondents with the 12-15 year age category were 25 people (69.4%). Almost all respondents with menstrual length category ≤ 1 week in adolescents as many as 20 people (55.6%). based on the menstrual cycle almost all respondents with the menstrual cycle category ≤ 28 days were 24 people (66.7%). Based on the duration of dysmenorrhea, almost all respondents with a duration of <3 days of dysmenorrhea were 30 people (83.3%). Based on the handling of dysmenorrhea all 36 respondents with the category of dysmenorrhea treatment were left alone (100%). Table 2 shows that most (88.9%) before being given an intervention using lavender aromatherapy were moderate pain as many as 32 people and severe pain as many as 3 people. After being given an intervention using lavender aromatherapy it was found that most moderate pain was

18 people and mild pain as many as 17 people.

Table 1 Frequency distribution of respondents' general data

No	General data	Frequency	**Percentage %**
1	**Age**		
	8-11	11	30.6
	12-15	25	69.4
2	**Duration of Menstruation**		
	≤ 1 week	20	55.6
	≥ 1 week	16	44.4
3	**Cycles of menstruation**		
	28 days	11	30.6
	>28 days	24	66.7
	3 days	1	2.8
4	**Early dysmenorrhea**		
	2-3 years after menarch	14	38.9
	>3 years after menarch	22	61.1
4	**Duration of Dysmenorrhea**		
	< 3 days	30	83.3
	>3 days	6	16.7
5	**Treatment of Dysmenorrhea**		
	Nothing	36	100.0
	Drugs	0	0,0

Primary data, 2018

Table 2: Frequency distribution of pain in dysmenorrhea of respondents before and after intervention in adolescents of MAN levels X and XI, from April 16th to May 13th 2018

No	*Pain scale of dysmenorrhea*	Before treatment		After treatment	
		f	%	f	%
1.	No pain	0	0	1	2.8
2.	Mild	1	2.8	17	47.2
3.	Moderate	32	88.9	18	50.0
4.	Severe	2	5.6	0	0
5.	Very severe	1	2.8	0	0

Source: Primary Data, 2018

Wilcoxon singned ranks tes : P :0.000 . Z -4,491

Based on the results of the analysis using the Wilcoxon test at the level of significance obtained Z count -4.491a> Z table -1.96 the asymp value of sig. (2-tailed) where z count ≥ z table which means that there is influence or probability value ρ = (0,000) lower than significant standard α = 0.05 or (ρ

<α) which means H1 is accepted, H0 is rejected which means there is influence The provision of lavender aromatherapy to reduce pain in dysmenorrhea in adolescents of Jombang MAN level X and XI.

DISCUSSION

Degrees of Pain in Dysmenorrhea In adolescents of MAN levels X and XI, before the aroma of lavender therapy is given

Based on the results of table 4.7 above it is known that most (88.9%) before being given intervention using lavender aromatherapy were mild pain in 1 person (2.8%), moderate pain as many as 32 people (88.9%) and severe pain as much as 2 people (5.6%) and very severe pain in one person (2.8%).

According to Anurogo (2009), the causes of menstrual pain and cycle disorders can vary. Can be due to a disease process (such as pelvic inflammation), endometriosis, tumors or abnormalities of the location of the uterus, hymen or vagina not perforated, and stress or excessive anxiety. However, the most common causes of menstrual pain and cycle disorders are thought to be due to the occurrence of hormonal imbalances and abnormalities in the reproductive organs. Degree of moderate menstrual pain, most commonly experienced by adolescents, usually this pain feels pain that spreads in the lower abdomen, requires rest and requires painkillers, sometimes disrupting the activities of daily living. This feeling of pain is due to an increase in uterine contractions, as stated by Chang E, that the onset of menstrual pain is caused by an increase in the levels of PGE2 and alpha PGF2 in the blood which results in an increase in contraction and distortion of the uterus. So that there is a decrease in blood flow and oxygen to the uterus which causes ischemia and increased sensitization of pain receptors.

According to researchers the pain that appears is different because each person has a different coping mechanism where adaptive coping patterns will make it easier for someone to deal with pain and vice versa, a maladaptive coping pattern will make it difficult for someone to deal with pain. Coupled with the experience of each person is different in feeling the pain Someone who has managed to overcome pain in the past, and now the same pain arises, then he will more easily overcome the pain.

Based on table 4.1, it can be seen that the characteristics based on menarche, most of the respondents with the 12-15 year age category were 25 people (69.4%)

The sexual maturity (menstruation, physical maturity) is caused, among others, by the individual's physical condition, race, ethnicity, climate, way of life, and environment. Physical conditions that are poorly maintained or the disease experienced by a teenage girl can slow the arrival of menstruation. Apart from that external stimuli such as: sex films, sex books or magazines, temptations, and stimuli from men can result in sexual reactions and also result in sexual maturity faster than children naturally (Guntoro, 2009).

Adolescents are individuals who are experiencing a transitional period that gradually reaches sexual maturity, experiences a change of soul from childhood to adulthood, and experiences economic changes from dependence to be relatively independent. Therefore, it is important for adolescents so that they understand the conditions of physiological changes that occur and various changes, so that adolescent women can know health problems that can be overcome by themselves and they also know when these conditions should be further examined by experts.

Based on table 4.2 it can be seen that the characteristics based on menstrual length almost entirely of respondents with menstrual length category ≤ 1 week in adolescents as many as 20 people (55.6%) and ≥ 1 week as many as 16 people (44.4)

The above is not in accordance with the statement expressed by Wiknjosastro (2005), At that time the endometrium was released, while the lowest hormone expenditure - minimum ovarian hormones. Endometrium consists of 3 layers.

Normally the menstrual cycle is influenced by many things, such as the state of the environment has never provided a stimulus to adolescents to feel excessive stress, adequate nutrition of food, daily

activities are not too heavy.

Based on table 4.5 it can be seen that the characteristics based on the duration of dysmenorrhea are almost entirely respondents with the old category

Women with severe dysmenorrhea have high levels of prostaglandin during the menstrual cycle, this high concentration occurs for 2 days from the menstrual phase (Cunningham, 2008 in Rakhma, 2012)

According to researchers the perceived duration of dysmenorrhea pain will be different depending on the coping mechanism of each person where adaptive coping patterns will make it easier for someone to deal with pain and vice versa maladaptive coping patterns will make it difficult for someone to deal with pain, coupled with the experience of each person in pain different, someone who has succeeded in overcoming pain in the past, and when this same pain arises, then he will more easily overcome the pain ..

Effects of Lavender Aromatherapy on Decreasing Pain in Dysmenorrhea In adolescents MAN levels X and XI, after lavender therapy is given

Based on the results of table 4.9 it is known that most (50%) after being given an intervention using lavender aromatherapy were moderate pain as many as 18 people (50%). And after being given an intervention using lavender aromatherapy as much as 3 people with severe pain and changed to 0 people (0%) who had severe pain.

Provision of non-pharmacological methods is very important for patients who do not respond well to medication or experience problems due to side effects and patients who do not want to take drugs (Valiani et al., 2010). Hot compresses or hot baths, massage, relaxation (aroma of lavender therapy), distraction of physical exercise, and sleep enough to relieve primary dysmenorrhea. Heat relieves ischemia by decreasing contractions and increasing circulation. Changing the diet by reducing salt and increasing the use of natural diuretics, such as asparagus or leaf soup, can help reduce edema and discomfort (Bobak et al., 2004). Another heat therapy that can be used to reduce pain because dymenorrhea is by attaching a chili patch containing capsicum oleoresin to the lower back for 6 to 8 hours on the first day to the third menstruation. The heat sensation caused reduces pain, and is uncomfortable in the lower back area, lower abdomen to the area around the inner thigh. (Mulyaningsih, 2-17). Matched by Powell (2017) that when we breathe lavender aromatherapy oil, the chemical compounds contained in the aromatherapy oil will enter the bloodstream. In the end these chemicals will enter the limbic system, which is the nerve tissue in the brain that controls our emotions. Therefore, aromatherapy can change the perception of pain and also improve a bad mood. Aromatherapy works by affecting the work of the brain, olfactory nerves that are directly related to the hypothalamus, the part of the brain that controls the gland system that regulates hormones that affect body activity, and affects the work of the limbic system associated with blood circulation. Therefore, besides lavender aromatherapy is used to overcome the problem of pain, lavender oil can also be used to treat digestive problems, menstrual disorders and others (Veeder, 2007)

Relaxation using the aroma of lavender therapy will make the whole body in a balanced state, in a state of calm but not asleep, and all muscles in a relaxed state with a comfortable body position, with the muscle muscle relaxed, will reduce the level of pain felt and the researcher believes that after giving lavender aroma therapy, there was a change in the level of dysmenorrhea pain as well as the condition of the respondent, where the scale of pain responders almost entirely decreased, and the condition of all respondents seemed more relaxed, and no longer showed symptoms of dysmenorrhea at first, such as pain in lower abdomen and spread to the back, nausea, vomiting, no appetite, sweating, difficulty walking and even fainting.

From the description above, according to the researcher that relaxation of lavender aromatherapy is very important to find and choose an effective and easy method to reduce the level of dysmenorrhoea pain, because in treating dysmenorrhea pain can not only be overcome by pharmacological techniques, but can be done with non-pharmacological treatment , an activity that is safe for all women, namely by giving lavender aromatherapy by inhaling aromatherapy in a closed

room ...

The Effect of Lavender Aromatherapy on Decreasing Pain in Dysmenorrhea In adolescents MAN levels X and XI

The results of calculations using the Wilcoxon signed test application obtained Z count -4.491a> Z table -1.96 asymp value sig. (2-tailed) where z count ≥ z table which means that there is influence or probability value ρ = (0,000) lower than significant standard α = 0.05 or (ρ <α) which means H1 is accepted, H0 is rejected which means there is influence The provision of lavender aromatherapy to reduce pain in dysmenorrhea in adolescents of Jombang MAN level X and XI.

Based on table 4.7, it was found that from 32 (88.9) respondents almost all of the respondents before being given the intervention experienced moderate dysmenorrhea pain and when after being given the intervention decreased to mild pain by 18 people (50%). And a small percentage of respondents with severe pain as many as 3 people before being given an intervention and after being given an intervention to 0 people (0%).

This is in accordance with the statement expressed by Dr. Powell (2017), when we breathe lavender aromatherapy oil, the chemical compounds contained in aromatherapy oil will enter the bloodstream. In the end these chemicals will enter the limbic system, which is the nerve tissue in the brain that controls our emotions. Therefore, aromatherapy can change the perception of pain and also improve a bad mood. Based on medical research that has been done, aromatherapy can reduce stress hormone cortisol levels, slow heart rate, relieve pain, reduce inflammation and reduce anxiety and depression. Proven in table 4.7 the pain scale has decreased mostly (88.9%) before being given intervention by using lavender aromatherapy is moderate pain as many as 32 people and changed to 18 people (50%) with moderate pain. And before being given an intervention by using lavender aromatherapy as much as 3 people with severe pain and changed to 0 people (0%).

According to researchers that dysmenorrhea is pain that appears in the lower abdomen, spreads around the waist, this pain appears together with the onset of menstruation and lasts for several hours. Where to reduce pain that can be helped by medical therapy and non-medical therapy, the expression is relaxation using the aroma of lavender. Relaxation of the scent of lavender therapy is very important to find and choose an effective and easy method to reduce the level of dysmenorrhea pain, because in treating dysmenorrhea pain can not only be overcome by pharmacological techniques, but can be done with non-pharmacological treatment

The response of each respondent to pain that is felt is different. If in table 4.7 that has been explained above that before being given the intervention the respondent experiences moderate pain and after being given the intervention becomes mild and there is a constant. Most likely when the researcher gave the intervention the respondent had not felt the peak of the pain of the dysmenorrhea so that after giving the intervention the pain remained and there was no change. This is consistent with the opinion of Dawood (2006), which states that menstrual pain is felt most intensely on the first or second day of menstruation (24-48 hours), consistent with the time of maximum prostaglandin release in menstrual blood.

Differences in the level of menstrual pain with the same intervention, but changes in pain levels differ can be caused by differences in respondents' perceptions of pain and efforts to relieve pain. One of them is a method that can be used to deal with the pain of dysmenorrhea including pharmacological treatment, non-pharmacology, and surgical treatment. In accordance with the theory of Kasper et al (2005), that treatment of dysmenorrhea can be done with pharmacological and non-pharmacological techniques. The pharmacological approach to dysmenorrhea is best treated with NSAIDs or normal contraception. NSAIDs work significantly more effectively than placebo. Drugs that include NSAIDs include ibuprofen, naproxen sodium, and ketoprofen. While other non-pharmacological approaches that can be applied to treat menstrual pain are relaxation with aroma therapy. This non-medication and non-aggressive method is recommended as an appropriate choice for reducing pain. Relaxation is a safe, non-aggressive, easy to do method, causing very few and reversible side effects. Relaxation techniques that can be used to reduce pain include relaxation

therapy with aroma therapy (Valiani et al., 2010).

Researchers argue that after giving lavender aroma therapy, there are changes in the level of dysmenorrhea pain scale and the condition of the respondent, where the level of pain scale of respondents almost entirely decreased, and the condition of all respondents seemed more relaxed, and not

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The results of the study on the effect of the influence of lavender aromatherapy on decreasing dysmenorrhea pain in adolescents of MAN Jombang level X and XI can be concluded as follows:

1. During pre-intervention, lavender aromatherapy mostly experiences moderate-scale menstrual pain.
2. While the post value of lavender aromatherapy interference has decreased the level of pain from moderate-scale pain to mild-scale menstrual pain.
3. There is an effect of the administration of lavender aromatherapy to decrease the pain of dysmenorrhea in adolescents of Jombang MAN level X and XI

Suggestion

1. Theoretical

This study can be used to deepen learning about midwifery counseling and care in adolescents who experience dysmenorrhea. The aroma of lavender therapy has proven to be an alternative to reducing pain without drug administration.

2. Practical

a. For Educational Institutions

Educational institutions can use the results of this research as material in community service, both the service of lecturers and students. Through health education activities for adolescents both in the school environment and outside of school.

b. For respondents

For the next respondent that the provision of lavender aromatherapy can be used as an alternative method in the future that is appropriate and safe to reduce menstrual pain.

c. For further researchers

For researchers then the selection of samples to be done using a randomization technique to reduce the risk of research bias. In this study, there is a need for other control or comparison groups, such as the use of music therapy, gymnastics, bathing in warm water, chili peppers and others.

Bibliography

Arikunto, S. 2006. *Procedure for research a practical approach*. Jakarta : Rineka Cipta.

Bobak, I. M., Lowdermik, D. L., dan Jensen M. D. 1995. *Hand book of Maternity Nursing* . Jakarta: EGC.

Chambers CT, Reid GJ, McGrath PJ, Finley GA. 2007. Self-administration of over-the-counter medication for pain among adolescents. *Arch Pediatr Adolesc Med* 2007;151:449–455. https://www.ncbi.nlm.nih.gov/pubmed/9158435 accessed February 2018

Dawood, M. Y. 2006. *Primary Dysmenorrhea Advances in Pathogenesis and Management*. Obstetrics And Gynecology. [serial online]. obgynresidents.stanford.edu/. https://www.ncbi.nlm.nih.gov/pubmed/16880317 accessed January 2018

Departemen Kesehatan Republik Indonesia.2004. *Survei Terpadu Mendukung Indonesia Sehat 2010*. Jakarta: Litbangkes Depkes R.I. http://ejournal.litbang.depkes.go.id/index.php/BPK/article/view/2061 accessed January 2018

Dharma, K, K. 2011.*Metodologi Penelitian Keperawatan*. Jakarta; Trans Info Media.

Erviana D, 2014. *Effect Of Counseling To Knowledge And Attitude Of Girls About Dismenore At Tenth Grade Of MAN JOMBANG 2014*. Nursing Journal of STIKES Insan Cendikia Medika Jombang. Vol 08

No.002 September 2014. http://digilib.stikesicme-jbg.ac.id/ojs/index.php/jip/article/view/118/108 accessed January 2018

Ganong, W. F. 2003. *Review of Medical Physiology, Twenty-First Edition*. New York: The McGraw-Hill Companies, Inc. https://emergencypedia.files.wordpress.com/2013/04/ganong-pdf.pdf accessed February 2018

Gustina T, 2015. *Relationship Between Age of Menarche and Duration of Menstruation with the incidence of Primary Dysmenorrhea in Young Women in Public High School 4 Surakarta.* [Skripsi]. Fakultas Ilmu Kesehatan. Universitas Muhammadiyah Surakarta. http://eprints.ums.ac.id/38652/17/NASKAH%20PUBLIKASI.oke.tina.pdf

Judha M,. Sudarti dan Fauziah A. 2012. *Theory of Labor Pain and Pain Measurement.* Yogyakarta: Nuha Medika.

Mansjoer, Arief. Triyanti K. Savitri R. Wardhani WI. Setiowulan W. Tiara AD. Hamsah A. Patmini E. Armilasari E. Yunihastuti E. dkk. *Kapita Selekta Kedokteran*. Edisi ke-3. Jakarta: Media Aesculapius FK UI. 2005. hlm 372-374.

Manuaba IBG., 2004. *Kepaniteraan Klinik Obstetri dan Ginokologi*. Edisi 2. EGC, Jakarta.

Maryunani, A (2010). *Pain of Labor.* Jakarta. CV. Trans Info Media.

Mulyaningsih, EA. 2017. Patch Capsicum Oleoresin for Reducing Dysmenorrhea. http://portal.lucp.net/uploadedfiles/article_pdfs/8dd386b4-9412-4c91-9632-09368f6e4bdc.pdf. Accessed Maret 2018

Proverawati A, Misaroh S., 2009. *Menarche Menstruasi Pertama Penuh Makna. Nuha Medika,* Yogyakarta; hal.79-107 & 125-128.

Purwanti Y, Sarwinanti. 2015. *Pengaruh Pemberian Aromaterapi Lavender Terhadap Tingkat Nyeri Disminorea Pada Remaja Sma Negeri I Kasihan Bantul Yogyakarta*. Kode Rumpun Ilmu : 371/Ilmu Keperawatan. November 2015. http://digilib.unisayogya.ac.id/1842/

Smeltzer, S. C. & Bare, B. G.. 2003. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing 10 th Edition.* Philadelphia: Lippincott Williams & Wilkins.

Sun-Hee Han. 2012. *Effect of Aromatherapy on Symptoms of Dysmenorrhea in College Students : A Randomized Placebo-Controlled Clinical Trial*. Vol. 12. The Journal of Alternative and Complementary Medicine. Accessed Februari 2018

Tamsuri, A. 2007. Concept ad treatment of Pain Jakarta: EGC

Valiani, Ghasemi, Bahadoran, & Heshmat. 2010b. *The Effects of Massage Therapy on Dysmenorrhea Caused by Endometriosis*. IJNMR. [serial on line]. ijnmr.mui.ac.ir/index.php/ijnmr/article/download/275/133. 15 November 2011]. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093183/

PAT-972

TOPICAL TREATMENT USED IN UREMIC PRURITUS : *A SYSTEMATIC REVIEW*

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ABSTRACT

Uremic pruritus remains a distressing symptom afflicting chronic kidney disease patients although the prevalence has decreased in recent years. It is most commonly described as a daily occurence of itch and associated with poor quality of life, poor sleep, depression, and mortality. Current study proposed treatment for pruritus in topical use are not well defined. This systematic review of the literature is aimed to understand alternative topical treatments carried out in clinical trials for uremic pruritus. Scopus, ScienceDirect, Cochrane Library, CINAHL, and PubMed databases were sistematically searched from their inception to February 2019 with keyword limit 'uremic pruritus', 'topical treatment', and 'chronic kidney disease'. Fifteen articles that met the inclusion criteria have been clustered into 5 categories : emollient, aromatherapy (essential oil), lotion, ointment, and cream. The results showed that topical treatments alleviate uremic pruritus symptom while some of them followed by adverse reactions and particularly showed negative outcomes. In conclusion, patients with uremic pruritus have several options to choose topical treatment for their skin problem, and the most used is aromatherapy from various essential oils. Furthermore, future studies should evaluate the efficacy of topical treatments, compared one another and report data related to its safety used.

Keywords ***:*** *uremic pruritus, topical treatment, chronic kidney disease*

1. Introduction

A large number of patients with progressive kidney disease receiving hemodialysis therapy suffer from pruritus [1]. Despite being an annoyance, uremic pruritus (UP) can adversely impact the quality of life (QoL) and medical outcomes. Many challenges faced uremic pruritus include the protean manifestations of UP, a poor understanding of the underlying pathogenesis, non-standardized diagnostic tools, and poorly designed treatment trials [2].

The Dialysis Outcomes and Practice Patterns Study (DOPPS) is an international longitudinal study of dialysis patients which showed that 41.7% of patients reported moderate to extreme pruritus [3]. The most recent sizeable study of the prevalence of uremic pruritus included the DOPPS III data specifically from Japan, which reported an overall incidence of moderate to extreme pruritus of 44% [1].

Yet there is still a limited understanding of its pathophysiology and many hypotheses have been raised in previous years. Several hypotheses including increased systemic inflammation [4]; dysregulation of serum PTH, calcium, phosphorus levels, precipitated calcium phosphate crystals, iron deficiency anemia, μ-receptor alteration and neuropathy have all been suggested to cause uremic pruritus [5,6].

Effective treatment options are limited because of a low number of randomized, placebo-controlled trials with most of them reporting only limited therapeutic success. In addition, several times in the past, reports on putative effective novel treatment options were followed by studies with contradictory results. The lack of effective treatment modalities also results from a still incomplete knowledge of the underlying pathophysiological mechanisms. This review highlights the recent clinical and experimental findings focusing on the pathogenesis and current treatment options of UP [7].

Although several small studies have examined a variety of interventions especially in topical treatments, the efficacy of this intervention and the optimal treatments remain poorly defined. According to the researchers' knowledge, no systematic review has been conducted to assess the effects of topical treatment on uremic pruritus patients. To address this important knowledge gap, we systematically reviewed the literature and summarized the evidence for the major interventions for the topical treatment of uremic pruritus.

2. Methods

2.1. Eligibility Criteria

The methods adopted for this systematic review are consistent with the guidelines detailed on the PRISMA checklist [8]. Clinical trials (controlled or not) and semi-experimental clinical trials that investigated the effect of topical treatments (emollient, aromatherapy, lotion, ointment and cream) on the hemodialysis patients (aged ≥ 18 years), with advanced chronic kidney disease (CKD; stage ≥ 3 or on hemodialysis therapy) applied by massage and simple topical methods and assess the outcomes (pruritus score, pruritus severity, pruritus distribution, sleep quality, emotional disturbance, skin condition and function, blood biochemistry, quality of life and treatment satisfaction) were included. Review studies, case reports, case series, letter to editors and descriptive studies were excluded. The target population were all hemodialysis patients.

2.2. Search Strategy

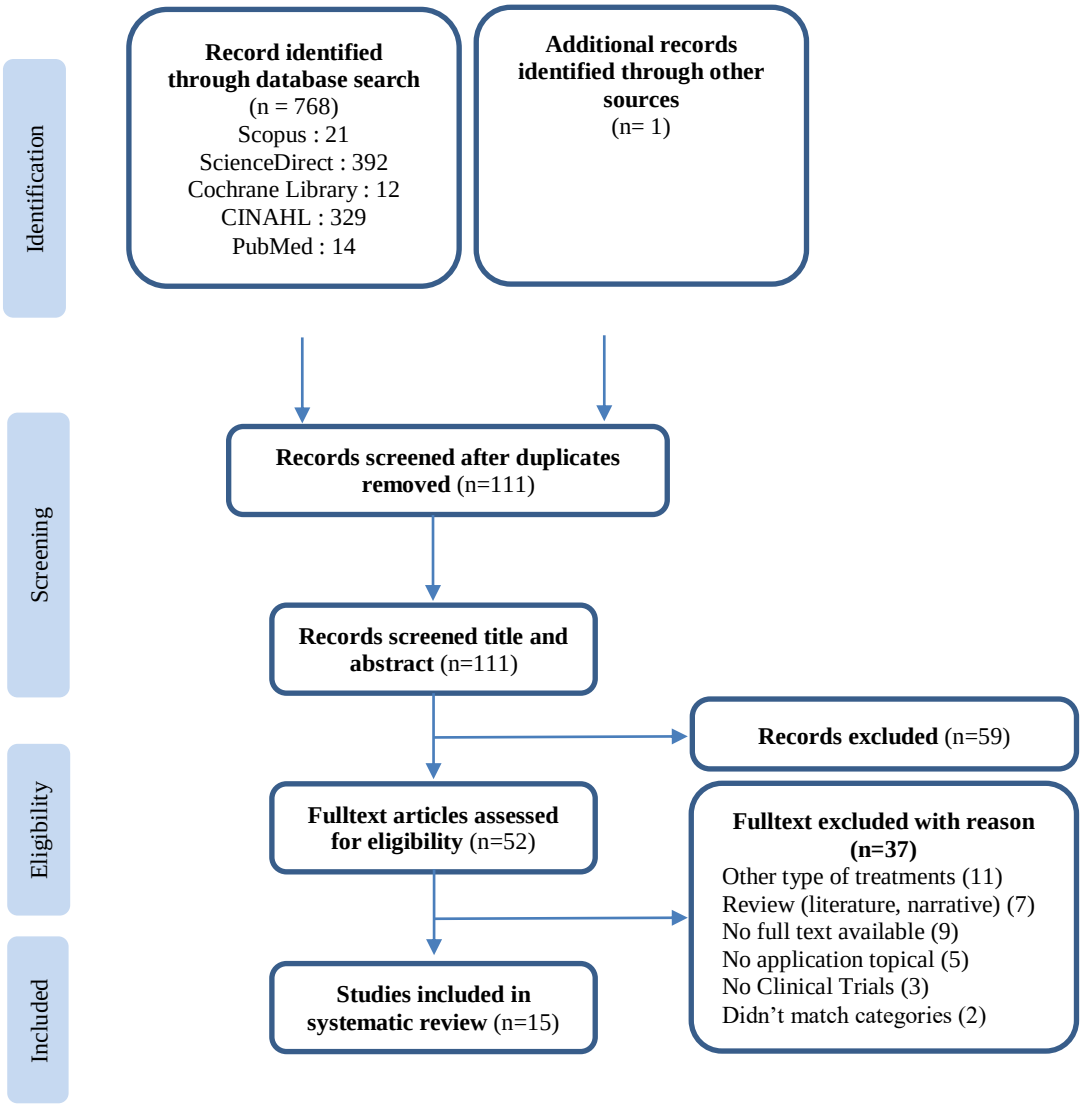
The searches were conducted by three independent researchers following consultation with a medical doctor, who gave advice in search strategy and the identification of search terms and treatment options. A combination of subject headings and MeSH terms was used as appropriate to cover the concepts of ‘uremic pruritus’, ‘chronic kidney disease’ and ‘topical treatment’. The electronic databases were searched from the inception of databases to March 8, 2019 and included international (Scopus, Science Direct, Cochrane Library, CINAHL, and PubMed). Only complete papers available in English were included. To ensure literature saturation, the reference lists of the included studies were studied and relevant reviews were identified through the search.

2.3. Selection of Studies and Data Extraction

The Prisma protocol was used to guide the systematic review, which is explain in Figure 1. The reviewers independently screened the titles and abstracts for eligibility adjusting to study protocol. The full text was then reviewed to confirm that the eligibility criteria were met and to extract the requisite information, which included the study characteristics (authors, year, design, sample), intervention details (comparison group, treatment groups, type of topical treatment, dose, treatment

frequency, administration method, duration per session, period of intervention) and measurements tools (outcomes, scale, comparison group, type of topical treatment and results) were also collected. Duplicate studies were removed. Reference lists of relevant articles were manually searched for any additional relevant studies.

Fig. 1 Flow diagram for trial selection and exclusion. Abbreviations: CINAHL, Cumulative Index to Nursing and Allied Health Literature;



Data extraction was performed in Microsoft Excel by 3 independent reviewers. The information gathered from each study included the following: title, first author, journal, year of publication, study population, period of intervention, characteristics of intervention and control, pruritus intensity measurement tool, pruritus intensity results pre- and post-intervention, and adverse drug reactions.

It was not explained how the ratio was determined of men and women in the sample population of each study. The range of samples varied between studies. Some studies provided incomplete information about the application of interventions such as administration of administration, route, dose, duration and frequency, time of application, and by whom the intervention was implemented.

The efficacy of the research results of each study was unclear, as evidenced by recommendations for use, not listed in the articles.

3. Results

3.1. Search Results and Study Selection

A total of 769 articles were retrieved from the initial search. Of the 111 non-duplicated studies in the title and abstract screening process, 59 were excluded because they had unrelated titles. Of the remaining 52 studies, 15 met the eligibility criteria. Of the 35 excluded studies, 11 used another type of treatment, 7 were review articles, 9 did not have the complete text, 5 were not applicable topically and 3 were descriptive studies and 2 could not be included in 5 categories [Fig. 1]. Table 1 is a summary of the studies.

3.2. Study Characteristics

The studies were conducted on 855 chronic kidney disease patients receiving hemodialysis therapy who suffer from mild, moderate and extreme pruritus. All the 15 included studies are a quasi-experimental design and are published in the English language [Table 1].

Characteristics of included studies are summarized in Table 1. The 15 trials included a total of 582 patients and examined 12 different types of topical treatment. Sample sizes ranged from 80 to 16 patients, with only 2 studies enrolling less than 20 participants.

All studies included adults 18 years or older. All 15 studies included hemodialysis patients. Seven studies measured uremic pruritus using a visual analogue scale; 2 studies using a verbal rating scale; 2 studies using quality of life questionnaire; 4 studies observed skin condition; 2 studies measured sleep quality; 1 study measured treatment satisfaction, 2 studies marked blood biochemistry and 6 studies using pruritus scale/score. Length of treatment varied across studies, but in general was short (range, 1 week to 8 weeks).

3.3. Topical Treatment Categories

All studies which from 12 types of topical treatment were clustered into five categories

Emollient. Two articles were studied in emollient to investigate the effects of baby oil [9] and emollient containing high water content [10] to uremic pruritus. One study using itching severity scale to measure pruritus severity[9]. Another one used various outcomes to be measured as pruritus severity, emotional disturbance, dry condition and blood biochemistry [10]. Overall, when emollient wascompared to placebo there was a statistically significant benefit in favor of the active treatment to reduce uremic pruritus while another outcomes emotional disturbance and skin condition.

Aromatherapy. Four studies examined the efficacy of aromatherapy to reduce uremic pruritus symptom. Four types of essential oil used in treatment uremic pruritus by topical application to skin, sweet almond oil[11], peppermint mixed with sunflower oi [12], lavender and tea tree oil diluted to almond and jojoba oil [13] and chia seed oil [14]. All studies measured pruritus severity using pruritus scale/scored questionnaire. All the aromas/oils given in range 1 drop to several milliliters. Overall, the aromas has statistically significant difference to control groups in alleviating uremic pruritus symptom.

Lotion. Three studies compared the effects of topical treatment in lotion preparation on uremic pruritus. Three types of lotion that used this treatment categories, dead sea mineral [15], pramoxine

[16], sarna and eurax lotion [17]. Of these, 2 studies measured pruritus severity using pruritus visual analogue scale. One of them measured some outcomes, skin condition, sleep disorder, treatment satisfaction and blood biochemistry [15]. For all, the results of lotion preparation for uremic pruritus were high significant impact in reducing symptom.

Ointment. Two studies explored the role of ointment to improved skin problem on uremic pruritus. Two kinds of ointment, capsaicin ointment [18] and tacrolimus ointment [19] that clustered to this treatment categories. Capsaicin 0,03% given daily while tacrolimus 0,1% given twice a day and all studies done for 4 weeks. The results of ointment preparation for uremic pruritus significant impact in reducing symptom in favor of capsaicin 0,03% meanwhile no significant difference with control group in tacrolimus 0,1% using and also tacrolimus had adverse drug reaction [warm sensation] which felt by more than half participants.

Cream. Four articles studied the used of topical treatment in cream preparation on uremic pruritus. There were three variety of this preparation in four articles study, capsaicin [20,21], sericin [22] and *gamma linoleic acid* [GLA]. All the cream given in range once to 4 times a day during range 2 to 6 weeks intervention. The level of pruritus was measured using VAS in 2 studies, VRS in 1 study and pruritus score in 1 study. Another outcomes also be measured for skin condition and quality of life. Overall, the result of studies statistically significant difference in favor of cream intervention to uremic pruritus severity, skin condition and part of quality of life. But there were adverse drug reaction in using sericin cream [erythema] and capsaicin [burning sensation, dryness and transient erythema] happened though in little mount.

4. Discussion

The main finding of our systematic review of treatments for uremic pruritus is that with the exception of the evidence for topical treatment in some types of preparation to burdensome symptoms in patients with chronic kidney disease receiving hemodialysis. This review of clinical trial articles found 15 relevant studies conducted on 855 hemodialysis patients suffering from uremic pruritus which could be clustered into five categories of preparation to simplify the alternative options therapy.

The most commonly used preparation categories that are used in the topical treatment of uremic pruritus was aromatherapy with various essential oils from at least 4 studies. Studies have shown a beneficial effect for essential oils to reduce pruritus in hemodialysis patients. Massage aromatherapy on women during delivery also has shown decreased levels of pruritus, it should be due to a similar duration per session and the design of the study. Most studies in this review measured pruritus severity using a visual analogue scale, pruritus score, verbal rating scale and skin condition in favor of topical treatment.

The studies showed a positive effect for aromatherapy on improvement of sleep quality in patients undergoing hemodialysis similar to the Cho, Karadag and Moeini studies on cardiac patients in ICUs this is due to similarities in methods of aromatherapy, duration per session, frequency of sessions, study design, used scale and type of used aroma [28, 29, 30]. Studies have demonstrated a positive effect of aromatherapy on depression in hemodialysis patients. In agreement of current a study conducted by Conrad shown a positive effect on depression of postpartum women [31], this is should be due to similar type of aroma and duration of aromatherapy per session.

Studies have shown a positive effect for aromatherapy on stress in hemodialysis patients

similar two systematic reviews which conducted by Kim and Hur Mh on middle-aged women and healthy adults, this was due to similarity in studies design, type of aromatherapy, and duration of aromatherapy [32,33]. The study that addressed quality of life showed a positive effect for aromatherapy on the quality of life in hemodialysis patients similar to a systematic review conducted by Fung on elderly patients with dementia. This was due to study design and the type of aromatherapies [34]. The only study found in this area indicated a positive effect of aromatherapy on a decrease in headaches in hemodialysis patients, in agreement of present results of a study that conducted by Cha on middle-aged women which shows a positive effect for aromatherapy on headache. [35] This was may be due to a dose of aromatherapy and design of study.

Despite a large trial literature examining multiple different interventions, the combination of flawed methodology, high risk of bias, small sample size, and study heterogeneity prevent the generation of robust treatment recommendations. High-quality studies are urgently needed to bridge this major gap between research output and identified patient priorities.

Some previous systematic reviews have attempted to evaluate individual treatments for uremic pruritus. The review have addressed the efficacy of acupuncture. Kim et al reviewed the literature regarding the effect of acupuncture on uremic pruritus. Six studies were included in the review, with various study designs including RCTs, uncontrolled observational studies, and a controlled clinical trial. The authors concluded that there was a lack of evidence to support the use of acupuncture for uremic pruritus.

This review study have addressed the efficacy of aromatherapy, emollient, cream, ointment and lotion preparation of topical treatment in hemodialysis patients included 15 studies. Another systematic review with a total of 44 articles: RCTs, quasi-RCTs, observational studies, open-label studies, and retrospective studies were included in Simonsen systematic review for treatment of uremic pruritus in general preparation. This review supported a trial of emollient containing high water content, capsaicin and sericin cream, dead sea mineral lotion, and other topical treatments [23].

Kim et al reviewed the literature regarding the effect of acupuncture on uremic pruritus. Six studies were included in the review, with various study designs including RCTs, uncontrolled observational studies, and a controlled clinical trial [24]. The authors concluded that there was a lack of evidence to support the use of acupuncture for uremic pruritus. The review supported omega-3 intake in patients with CKD with uremic pruritus. Gooding et al and To et al examined the literature with regard to capsaicin and ondansetron, respectively. Both reviews included varying causes of pruritus and were not exclusive to uremic pruritus.

Our analysis distinguishes itself from these previous studies in several important ways. First, we examined a broader range of treatments in order to better describe the full spectrum of trials evidence on the treatment of uremic pruritus. Second, we included only clinical trials (no descriptive) in our review. Such trials are the optimal study design for estimating treatment effects. This property is especially relevant when examining effects of therapy for a subjective symptom such as pruritus, in which the pathophysiology is not completely understood. We only included studies that used a well-validated tool for assessment of pruritus because otherwise it would be difficult to compare and generalize results across studies.

The systematic review conducted by Bouya et al [25] to determine the effect of aromatherapy on hemodialysis complications from the inception of the databases to 30 December 2017. A review

of the literature found 22 relevant studies conducted on 1087 hemodialysis patients. The most commonly used method was inhalation aromatherapy and the most common aroma used was lavender. Most studies have shown the beneficial effect of lavender on anxiety among patients undergoing hemodialysis [25].

The results of the reviewed studies demonstrate the beneficial effect of topical therapy on the pruritus and some related outcomes in hemodialysis patients with pruritus. The results showed that aromatherapy improved the quality of life in hemodialysis patients. The results of included studies suggest that dialysis health care team can use different topical therapy options (emollient, aromatherapy, lotion, ointment and cream) by using an appropriate dose (lavender, tea tree, sweet almond, dead sea mineral, chia seed, jojoba, peppermint, or sunflower oils; sericin, capsaicin, pramoxine, tacrolimus, GLA, etc.) as complementary therapies to reduce pruritus and related outcomes of dialysis (anxiety, sleep disturbances, depression, and stress) and improve the quality of life of hemodialysis patients as well as choice an appropriate dose and frequency of aromatherapy sessions in some complications due to limitation in number of studies required conducting more studies.

5. Conclusion

The results of the reviewed studies demonstrate the beneficial effect of topical treatment on uremic pruritus in hemodialysis patients. The results showed that aromatherapy is most common used for one of some types of the preparation, that alleviate uremic pruritus severity, repaired skin condition, and improved the quality of life in hemodialysis patients. Considering the complications and heavy cost of managing complications in patients undergoing hemodialysis, it appears that aromatherapy can be used as an inexpensive, fast-acting and effective treatment to reduce the complications in hemodialysis patients subject to further study to assure the safety and effectiveness of the procedures. As well choice an appropriate dose and frequency of topical treatment sessions in some complications due to limitation in number of studies required conducting more studies. The most important limitation of the present study was the variation of the topical treatment and doses used, which makes meta-analysis impossible for more accurate examination of the effect of the topical treatment on uremic pruritus.

References

[1] Kimata N, Fuller D S, Saito A, Akizawa T, Fukuhara S, Pisoni R L, Robinson B M and Akiba T 2014 Pruritus in hemodialysis patients : Results from the Japanese Dialysis Outcomes and Practice Patterns Study (JDOPPS) *Hemodial. Int.* 657–67

[2] Shirazian S, Aina O, Park Y, Chowdhury N, Leger K, Hou L, Miyawaki N and Mathur V S 2017 Chronic kidney disease-associated pruritus: Impact on quality of life and current management challenges *Int. J. Nephrol. Renovasc. Dis.* **10** 11–26

[3] Pisoni R L, Keen M L, Saran R, Mendelssohn D C, Young E W and Port F K 2006 Pruritus in haemodialysis patients : international results from the Dialysis Outcomes and Practice Patterns Study (DOPPS) *Nephrol. Dial. Transplant.* **21** 3495–505

[4] Mettang T, Dunst R, Stülten C, Kuhlmann U, Braun N, Kimmel M, Alscher D M, Pauli-Magnus C, Kiefer T, Machleidt C, Raub U and van der Kuip H 2005 The role of micro-inflammation in the pathogenesis of uraemic pruritus in haemodialysis patients *Nephrol. Dial. Transplant.* **21** 749–55

[5] Wang H and Yosipovitch G 2011 New insights into the pathophysiology and treatment of chronic itch in patien with End-stage renal disease, Chronic liver disease and Lymphoma *Int J Dermatol* **49** 1–11

[6] Chiu Y L, Chen H Y, Chuang Y F, Hsu S P, Lai C F, Pai M F, Yang S Y and Peng Y Sen 2008 Association of uraemic pruritus with inflammation and hepatitis infection in haemodialysis patients *Nephrol. Dial. Transplant.* **23** 3685–9

[7] Mettang T and Kremer A E 2015 Uremic pruritus *Kidney Int.* **87** 685–91

[8] Moher D, Liberati A, Tetzlaff J, Altman D G, Altman D, Antes G, Atkins D, Barbour V, Barrowman N, Berlin J A, Clark J, Clarke M, Cook D, D'Amico R, Deeks J J, Devereaux P J, Dickersin K, Egger M, Ernst E, Gøtzsche P C, Grimshaw J, Guyatt G, Higgins J, Ioannidis J P A, Kleijnen J, Lang T, Magrini N, McNamee D, Moja L, Mulrow C, Napoli M, Oxman A, Pham B, Rennie D, Sampson M, Schulz K F, Shekelle P G, Tovey D and Tugwell P 2009 Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement (Chinese edition) *J. Chinese Integr. Med.* **7** 889–96

[9] Guo S-E, Lin T-C, Liu C-F, Tsai J-C, Hsu H-T, Guo H-R and Lai Y-H 2011 Baby Oil Therapy for Uremic Pruritus in Haemodialysis Patients *J. Clin. Nurs.* **21** 139–48

[10] Okada K and Matsumoto K 2004 Effect of skin care with an emollient containing a high water content on mild uremic pruritus *Ther. Apher. Dial.* **8** 419–22

[11] Afrasiabifar A, Mehri Z and Hosseini N 2016 Efficacy of Topical Application of Sweet Almond Oil on Reducing Uremic Pruritus in Hemodialysis Patients: A Randomized Clinical Trial Study *Iran. Red Crescent Med. J.* **19**

[12] Abdelghfar S Z, Elsebae H A, Elhadry S M and Hassan A A 2017 Effect of Aromatherapy on Uremic Pruritus among Patients Undergoing Hemodialysis *IOSR J. Nurs. a nd Heal. Sci.* **6** 22–30

[13] Curcani M and Tan M 2014 The Effect of Aromatherapy on Haemodialysis Patients' Pruritus *J. Clin. Epidemiol.* **23** 3356–65

[14] Jeong S K, Park H J, Park B D and Kim I H 2010 Effectiveness of Topical Chia Seed Oil on Pruritus of End-Stage Renal Disease (ESRD) Patients and Healthy Volunteers *Ann. Dermatol.* **22** 143–8

[15] Boaz M, Shtendik L, Oron M, Portugal-Cohen M, Kohen R, Biro A, Cernes R, Barnea Z, Maor Z and Katzir Z 2009 A randomized controlled clinical trial comparing the efficacy of dead sea mineral-enriched body lotion versus two types of placebo in the treatment of cutaneous dryness, itching, peeling and tightness in hemodialysis patients (EDIT) *Nephron - Clin. Pract.* **113** 169–76

[16] Young T A, Patel T S, Camacho F, Clark A, Freedman B I, Kaur M, Fountain J, Williams L L, Yosipovitch G and Fleischer A B 2009 A pramoxine-based anti-itch lotion is more effective than a control lotion for the treatment of uremic pruritus in adult hemodialysis patients *J. Dermatolog. Treat.* **20** 76–81

[17] Tan C C, Wong K S, Thirumoorthy T, Lee E and Woo K T 1990 A Randomized, Crossover Trial of Sarna and Eurax Lotions in The Treatment of Haemodialysis Patients with Uraemic Pruritus *J. Dermatolog. Treat.* **1** 235–8

[18] Makhlough A 2010 Topical capsaicin therapy for uremic pruritus in patients on hemodialysis *Iran. J. Kidney Dis.* **4** 137–40

[19] Freedman B I, Yosipovitch G, Duque M I, Willard J and Fleischer A B 2005 Lack of efficacy of tacrolimus ointment 0.1% for treatment of hemodialysis-related pruritus: A randomized, double-blind, vehicle-controlled study *J. Am. Acad. Dermatol.* **52** 519–21

[20] Tarng, Der-Cherng; Cho, Yu-Lii; Liu, Han-Nan; Huang T-P 1996 Hemodialysis related pruritus: a double-blind, placebo-controlled, crossover study of capsaicin 0.025% cream *Nephron*

[21] Breneman D L, Scott Cardone J, Blumsack R F, Lather R M, Searle E A and Pollack V E 1992 Topical capsaicin for treatment of hemodialysis-related pruritus *J. Am. Acad. Dermatol.* **26** 91–4

[22] Aramwit P, Supasyndh O, Keongamaroon O, Siritientong T and Bang N 2012 Sericin cream reduces pruritus in hemodialysis patients: a randomized, double-blind, placebo-controlled experimental study *BMC Nephrol.* **13** 1

[23] Simonsen E, Komenda P, Lerner B, Askin N, Bohm C, Shaw J, Tangri N and Rigatto C 2017 Treatment of Uremic Pruritus: A Systematic Review *Am. J. Kidney Dis.* **70** 638–55

[24] Kim K H, Lee M S, Choi S M and Ernst E 2010 Acupuncture for treating uremic pruritus in patients with end-stage renal disease: A systematic review *J. Pain Symptom Manage.* **40** 117–25

[25] Bouya S, Ahmadidarehsima S, Badakhsh M, Balouchi A and koochakzai M 2018 Effect of aromatherapy interventions on hemodialysis complications: A systematic review *Complement. Ther. Clin. Pract.* **32** 130–8

[26] Cürcani M and Tan M 2014 The effect of aromatherapy on haemodialysis patients' pruritus *J. Clin. Nurs.* **23** 3356–65

[27] Chen Y C, Chiu W T and Wu M S 2006 Therapeutic Effect of Topical Gamma-Linolenic Acid on Refractory Uremic Pruritus *Am. J. Kidney Dis.* **48** 69–76

Table 1
Description of the study characteristics, outcome, measurement, interventions and results.

No	Title (Authors, Year)	Study Characteristic 1. Design 2. Sample	Outcome and Measurement	Intervention i) Experiment Group (EG) : type, dose, frequency and administration method, duration per session, total number of sessions, total duration of intervention ii) Control Group (CG)	Results
1.	*Effect aromatherapy on uremic pruritus among Patients Undergoing Hemodialysis* [12]	1. Quasi-experimental (pretest-posttest one control group design) 2. Hemodialysis patients N=30	1. Pruritus scale from VAS score 2. 5 Domain pruritus scale	Aromatherapy consists of mix between two oils includes peppermint oil and sunflower oil, administered by topical massage method, given 1–2 drops, 2x/day, given in 15–25 min per session, for total 6 session during 2 weeks	Significant positive effect of aromatherapy to Uremic Pruritus. Aromatherapy revealed that (33.3%) had mild pruritus and (66.7%) hadn't pruritus
2.	*Efficacy of Topical Application of Sweet Almond Oil on Reducing Uremic Pruritus in Hemodialysis Patients: A Randomized Clinical Trial Study* [11]	1. Quasi-experimental 2. Hemodialysis patients N= 60	1. pruritic score at one week and two weeks post-intervention 2. pruritic score questionnaire	(i) EG (n = 22): Sweet almond oil (certified as traditional medicine and with a registration number for the production license), 5-10 ml once a day for 2 weeks; (ii) CG2 (n = 20): no intervention	Significant difference in the mean of pruritus severity pre-intervention (19.63-11.67), one week post-intervention (12.22-11.33), and two weeks post intervention (7.27-5.74) ($P < 0.05$) in the test group.
3.	*The effect of aromatherapy on hemodialysis patients' pruritus* [26]	1. Quasi-experimental (pretest-posttest) 2. Hemodialysis patients N=80	1. Pruritus 2. PSS (modified scale of the Pruritus Score Scale)	(i) EG (n=40), received aromatherapy massage using lavender, tea tree, almond and jojoba oils 5% solution, three times a week, a six-week aromatherapy by the investigators during dialysis sessions three times a week for a period of 7–15 min for each region of the pruritus, given during 7–15 min each session, 18 times for 6 weeks (ii) CG (n=40), received normal nursing care	Highly significant positive effect on Uremic Pruritus after applying aromatherapy, whereas control group difference was not found to be statistically significant
4.	*Sericin cream reduces pruritus in hemodialysis patients: a randomized, double-blind, placebo-controlled experimental study* [22]	1. Quasi-experimental 2. Hemodialysis patients with moderate to severe pruritus, *N*= 47,	(1) Four measurements: weeks 0 (pretest), 2, 4, and 6; (2) skin condition: SD27 used to test skin hydration, redness, and pigmentation; (3) pruritus: VAS; (4) quality of life: QoL and KDQOL-SF	(i) EG : The 2 sides of the participants' bodies served as experimental and control groups for testing. A cream containing sericin was used for the limbs on one side; twice a day for 6 weeks; (ii) CG : whereas a placebo was used for the limbs on the other side;	(i) Experimental locations: improvement in severity of pruritus; skin demonstrated reduced reddening and pigmentation (weeks 2, 4, and 6); increased hydration (weeks 4 and 6); placebo reduced redness on the leg (week 6) (ii) QoL: only scores on the pain subscale dropped; (iii) KDQOL-SF: total scores did not change significantly

5.	*Babyoil therapy for uremic pruritus in hemodialysis patients* [9]	1. Quasi-experimental 2. Hemodialysis patients N=63	(i) Two measurements of severity of pruritus (ii) ISS	(i) EG1 (n = 30): low-temperature baby oil (10∘C to 15∘C) at least once a day for 15 min each time over 3 weeks; (ii) EG2 (n = 31): room-temperature baby oil (24∘C to 26∘C) at least once a day for 15 min each time over 3 weeks; (iii) CG (n = 32): routine care; (iv) this method focuses on increasing moisture, while cold may reduce nerve conduction, inflammation, and chemical stimuli	Severity of Pruritus: EG1 and EG2 improved significantly more than the CG did in total ISS scores. EG1 and EG2 did not differ from each other
6.	*Effectiveness of Topical Chia Seed Oil on Pruritus of End-stage Renal Disease (ESRD) Patients and Healthy Volunteers* [14]	1. Quasi-experimental 2. Hemodialysis patients N=16	1. skin functions, namely trans epidermal water loss and skin capacitance 2. 6-point itch scale	i) EG (n=), topical chia seed oil containing moisturizers as oil-in-water lotion formula with concentration 4% ii) CG (n=) moisturizers without chia seed oil were used as placebo	The score of satisfaction was improved from 2.0 (at 2 weeks) to 2.8 (at 8 weeks). Statistically significant improvement of skin dryness observed at 4 weeks after treatment and maintained. Significant alleviation in lichenified brownish patches on the right dorsum of foot
7.	*Topical Capsaicin Therapy for Uremic Pruritus in Patients on hemodialysis* [18]	1. Quasi-experimental 2. Hemodialysis patients N= 34,	1. Evaluation of itching 2. Total scoring of pruritus = (severity of pruritus × distribution of pruritus) + sleep disorder scoring	(i) EG (n=17), received Capsian 0.03% ointment (capsaicin 0.03%, Goldaru, Iran), (ii) CG (n=17), received placebo (prepared in the Pharmacology Institute of Mazandaran University of Medical Science)	There is significant difference in pruritus scores after each week (1,2,3 & 4) between two groups. Measurement test showed that decreasing in pruritus severity in the study group was more than that in the placebo group
8.	*A Randomized Controlled Clinical Trial Comparing the Efficacy of Dead Sea Mineral-Enriched Body Lotion versus Two Types of Placebo in the Treatment of Cutaneous Dryness, Itching, Peeling and Tightness in Hemodialysis Patients (EDIT)* [15]	1. Quasi-experimental 2. Hemodialysis patients with moderate pruritus, N= 78,	(1) Two measurements: before the experiment (week 0) and 2wk after the experiment (week 2); (2) skin condition: itching, dryness, peeling, and tightness; (3) sleep disorders: 0 to 4 points; (4) treatment satisfaction: 0 to 4 points; (5) blood biochemistry values: serum potassium, calcium, PTH, chemistry, liver	(i) EG (n = 25, completed by 21 people): lotion containing Dead Sea mineral and mud (DS) and moisturizing ingredients; (ii) CG1 (n = 25, completed by 20 people): lotion (containing moisturizing ingredients but not DS); (iii) CG2 (n = 28, completed by 24 people): lotion (containing neither moisturizing ingredients nor DS); (iv) usage method: twice daily (once after showering) for 3weeks; (v) the study did not show efficacy of Dead Sea mud	(i) Skin conditions of the 3 groups improved significantly in every category (itching, dryness, peeling, and tightness). The changes in the experimental intervention (Dead Sea mud lotion) and the other 2 groups (the control groups) did not differ significantly; (ii) the 3 groups did not change significantly in sleep or treatment satisfaction; (iii) pruritus, dryness, sleep disorders, and treatment satisfaction were correlated; (iv) blood biochemistry values: no change

			function tests, and C-reactive protein (CRP)		
9.	*A pramoxine-based anti-itch lotion is more effective than a control lotion for the treatment of uremic pruritus in adult hemodialysis patients* [16]	1. Quasi-experimental 2. Hemodialysis patients (N=28)	1. % decrease in average VAS 2. 10-cm VAS	(i) EG (n=14, Topical 1% pramoxine HCl) 2x/day on all affected areas for 4 weeks (ii) CG (n=14, bland emollient) (Cetaphil) 2x/ day for 4 weeks	Pramoxine: 61%; control: 12%. Statistically significant for pramoxine HCl to alleviate uremic pruritus
10.	*Therapeutic Effect of Topical Gamma Linolenic acid on refractory uremic pruritus* [27]	1. Quasi-experimental 2. Hemodialysis and peritoneal dialysis patients (N=17)	1. Median VAS (mm) at BL & post in paired analysis 2. 100-mm VAS, Questionnaire	(i) EG (n=11); GLA 2.2% cream 30 mL/day (titrated up) 1x/day for 2 weeks (ii) CG (n=11); Placebo 1x/day for 2 weeks	GLA: 75 BL, 30 post; Placebo: 72.5 BL, 67.5 post. Statistically significant different, in favor of GLA, but adverse drug reaction exist for GLA: erythematous skin reaction (5.9%)
11.	*Lack of efficacy of tacrolimus ointment 0.1% for treatment of hemodialysis-related pruritus: A randomized, double-blind, vehicle-controlled study* [19]	1. Quasi-experimental 2. Hemodialysis patients (N=22)	1. % reduction in itch post 2. 10-cm VAS	(i) EG (n=11) Tacrolimus 0.1% ointment) 3x/week by investigator and 2x/day by patient for 4 week (ii) CG (n=11) Vehicle control for 4 week)	Tacrolimus: 77%; Placebo: 79%. Statistically not significant for using tacrolimus to uremic pruritus patients, while exist the adverse drug reaction Tacrolimus: warm sensation (67%)
12.	*Effect of skin care with an emollient containing a high water content on mild uremic pruritus* [10]	1. Quasi-experimental 2. Hemodialysis patients with mild pruritus, n = 20,	(1)Three measurements: weeks 0 (pretest), 2, and 4; (2) pruritus: VAS; (3) emotional disturbance: VAS; (4) dry skin and scratches: assessed by 2 clinical physicians; (5) blood biochemistry values: WBC, eosinophilic leukocytes, hematocrit, RBC, Hb, platelets, total protein, potassium, calcium, uric acid	(i) EG (n = 10): hydrogel containing 20% natural ingredients (e.g., aloe vera and vitamin E) and 80% water was applied to the skin twice a day for 2 weeks before stopping for 2 weeks; (ii) CG (n = 10): none; (iii) blood flow, dialysate flow rates, and artificial kidneys of the patients were not changed during the experimental stage; no medication was used; (iv) aqueous gel contains high amount of water and could reduce itching	(i) Severity of pruritus: EG changed at week 2, differing from the CG; (ii) skin dryness: EG changed at week 2, differing from the CG; (iii) skin scratches: EG changed in both weeks 2 and 4 compared with week 0, differing from the CG; (iv) emotional disturbance: EG changed at week 2, differing from the CG; (v) blood biochemistry values: the 2 groups did not differ within each group or between the 2 groups at the 3 points
13.	*Hemodialysis related pruritus: a double-blind, placebo-controlled,*	1. Quasi-experimental 2. Hemodialysis	1. % responders (from severe or moderate to mild or none)	(i) EG (n=9, Capsaicin 0.025% cream to 1) affected site 4x/day for 4 weeks	Capsaicin: 82.4%. Statistically different in treatments %, in favor of capsaicin with

	crossover study of capsaicin 0.025% cream [20]	patients (N=19)	2. 4-point VRS	(ii) CG (n=10, Placebo to 1%) affected site 4x/day for 4 weeks	higher effect. But there is adverse drug reaction Capsaicin: local burning and/or stinging, cutaneous erythema
14.	*Topical capsaicin for treatment of hemodialysis-related pruritus* [21]	1. Quasi-experimental 2. Hemodialysis patients (N=21)	1. degree of itching 2. 4-point scale pruritus	(i) EG (n=10), received capsaicin 0.025% cream were applied to the preselected site four times daily for 6 weeks. (ii) CG (n=11), vehicle control	All noted an improvement in pruritus from moderate or severe at the prestudy evaluation to minimal or no pruritus bythe end of the first study week. But there was adverse drug reaction : burning sensation, dryness and transient erythema
15.	*A randomized, crossover trial of Sarna and Eurax lotions in the treatment of hemodialysis patients with uraemic pruritus* [17]	1. Quasi-experimental 2. Hemodialysis patients (N=31)	1. % responders for comfort 2. 4-point VRS, 100-mm VAS	(i) EG (n=15, Sarna lotion for 1 week) (ii) CG (n=15, Eurax lotion for 1 week)	Sarna: 76.7%; Eurax: 76.6% Statistically no different in treatment, while the adverse drug reaction is existing for Eurax: sparse itchy rash (3.2%)

PAT-976

BENSON RELAXATION INTERVENTION IN HEALTHCARE : A SYSTEMATIC REVIEW

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ABSTRACT

Benson relaxation is being used in a wide range of common physical and psychological problem conditions in treatment despite lack of consensus about their effectiveness in different patient categories. The aim was to systematically review the evidence of effectiveness benson relaxation in different patient categories. MEDLINE, PubMed, CINAHL, Ebsco, Elsevier ScienceDirect journals were identified from 2014 to 2019. Studies were reviewed and categorized based on the type of patient. We used PRISMA guidelines to assess the quality of the included reviews. The search produced 92 reviews: 15 were included, covering 17 unique RCTs and 8,683 unique individuals with various conditions. The evidence supports the use of benson relaxation to alleviate symptoms, both mental and physical, in the adjunct treatment of fatigue, acute and chronic pain, depression, sleep disturbance, and anxiety disorders in adults.

Keywords: benson relaxation, benson technique, benson relaxation training

1. Introduction

Pharmacological stress control methods are costly and usually accompanied complications. Recent research has focused on non-pharmacological techniques. Relaxation is one of most useful non-pharmacological techniques[1]. Relaxation technique as a kind of subjective stress management method decreased anxiety levels, mood disturbance, body discomfort, and autonomic nervous system's activity and at least it might affect the quality of sleep[2–5].

Herbert Benson MD, is the father of modern mind-body medicine. From the late 1960s onwards he demonstrated that the relaxation response brings about bodily changes that decrease heart rate, lower metabolism, decrease the rate of breathing and bring the body back into what is probably a healthier balance [6]. Benson's relaxation is one of the best muscular relaxations that effective on the pulse rate, respiratory function, and heart workload[7]. Benson's technique works by the alignment of the hypothalamus and decreasese the sympathetic and parasympathetic practices[8].

Benson technique creates a quiet environment that results in the reduction of muscle tension and increases the patients' attention. Benson relaxation is one of the most useful nonpharmacological techniques which reduce stress through impact on mental and physical conditions, depression, mood, anxiety, and self-steam[9,10].

Despite the expanding application of Benson relaxation, the evidence for their use and the appropriate indications are debated. The aim of this study is to provide a systematic overview of the effectiveness of Benson relaxation in different patient populations in order to identify the patient categories in which these interventions are indicated.

2. Research Methods

2.1. Inclusion and exclusion criteria

We performed a systematic overview of Benson relaxation. To be included the studies had to have the following characteristics: 1) randomized controlled trials or quasi experiment with Benson relaxation as the intervention 2) performed for treatment or prevention and 3) reporting any health outcome benefit. Unpublished dissertations and conference papers were excluded. As the aim of this study was to define indication areas, we did not restrict the search by patient population and number of RCTs reviewed.

2.2. Searching Strategy

Some Six electronic databases were searched: Proquest, CINAHL, Elsevier's Scopus, SpringerLink, ScienceDirect, PubMed. The databases were searched for advance search with English language publications using the following terms: "Benson AND Relaxation" or "Benson AND Technique" or "Benson AND training in combination with "RCT" or "randomized".

2.3. Study selection process

Reviews were independently selected by title and abstract by the authors. Any citation considered potentially relevant by at least one reviewer was retrieved in full text form in order to determine whether it met the selection criteria stated previously.

2.4. Data extraction and quality assessment

The systematic reviews were evaluated independently by the authors for both content and quality. They extracted data based on the PRISMA guidelines for systematic reviews[11]. If information was missing or data were incomplete, the authors of the review were contacted or the RCTs concerned were retrieved in order to give an overview as thorough as possible. To assess the quality of the systematic reviews, a checklist was created using the validated PRISMA guidelines[11]. Authors simplify assessment process with PRISMA as same as checklist that used in previous systematic review about mindfulness[12].

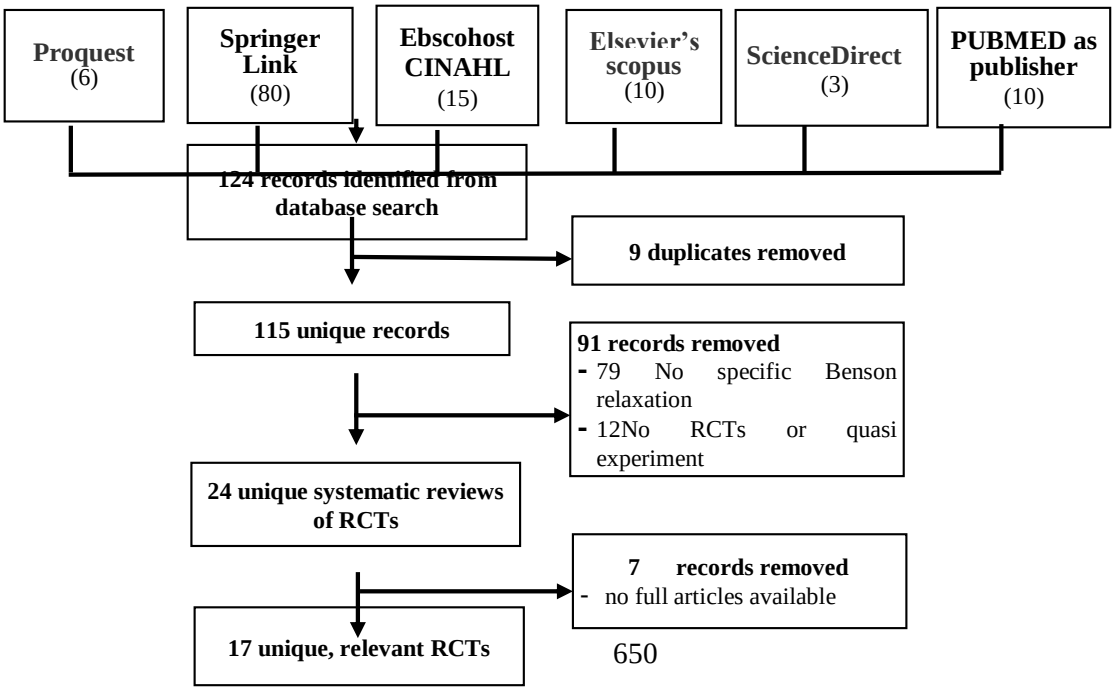

Figure 1. Flowchart.

Table 1. Quality assessment items based on the PRISMA criteria for systematic reviews

No	Questions	Item on original checklist
1	Was the objective of the review explicitly described with reference to the participants, interventions, comparisons, and outcomes (PICO)?	PRISMA item 4
2	Were study eligibility criteria (inclusion/ exclusion criteria) and study selection process reported?	PRISMA item 6+9
3	Was a comprehensive literature search performed?	PRISMA item 7
4	Was the search strategy reported for at least one database?	PRISMA item 8
5	Was a list of studies (included and excluded) provided?	
6	Was study selection and data extraction done by at least two independent authors	PRISMA item 10
7	Was the risk of bias of individual studies assessed and presented?	PRISMA item 12+19
8	Were also unpublished studies included (risk of publication bias)?	PRISMA items 15+22
9	If applicable, was the method for combining results appropriate?	PRISMA item 14+16
10	Were the strengths and limitations of the review addressed?	PRISMA item 25
11	Is the conclusion supported by the data, taking into account the quality of the studies?	PRISMA item 26
12	Were the findings interpreted independently of the funding source?	PRISMA item 27

2.5. Data synthesis

Intergroup comparison effects (improvement intervention vs control group) are reported unless otherwise mentioned. If the intergroup results were insignificant, we also looked at intragroup differences in order to see if the intervention had at least a pre-post effect (which is already incorporated in significant intergroup effects). The control group includes: wait list control (WL), treatment as usual (TAU) or active treatment (AT). The results are pooled by population to indicate what symptoms in these populations are amenable to Benson relaxation. Data synthesis was performed with random effects analysis. Furthermore, in order to be totally transparent, in the supplementary material a table is provided to show exactly the RCTs were included in this review.

3. Results

3.1. Study Selection

A total of 124 potentially eligible articles were identified, retrieved, and screened for potential inclusion. 9 articles were duplicate records. From the remaining 115 articles, 91 were excluded based on the abstract: 12 were not RCTs and 79 did not have Benson relaxation as intervention. Seven results were conference abstracts and not yet published. The full text of the remaining 17 articles was reviewed.

Table 2. Study characteristics.

Author (year)	Design	Population (number of Participants)	Intervention	Control intervention	Outcome measure
Hassanzadeh (2018)	RCT	Hemodialysis patients (105)	Benson relaxation	AT (Aromatherapy), TAU	Fatigue
Pasyar (2015)	RCT	Hemodialysis	Benson	TAU	Adherence,

		patients (86)	relaxation		Biomedical Markers
Poorolajal(2017)	RCT	Preoperatif patients (144)	Benson relaxatuon	TAU	Anxiety, Hemodynamic
Tahmasbi(2016)	RCT	patients undergoing coronary angiography (70)	Benson relaxatuon	TAU	Anxiety
Sajadi (2019)	RCT	Female nurse (72)	Benson relaxatuon	AT (systematic desensitization)	Anxiety
Araujo (2016)	RCT	Women with high-risk pregnancies (50)	Benson relaxatuon	TAU	Depression level
Seifi (2018)	RCT	Patients With Heart Failure (105)	Benson relaxatuon	AT (Nature Sound)	Fatigue
Masry (2017)	Quasi experiment	knee or hip replacement patients (100)	Benson relaxatuon	TAU	Night pain, sleep quality
Solehati (2015)	Quasi experiment	Post SC women (60)	Benson relaxatuon	TAU	Pain
Reig-Ferrer (2014)	RCT	Elderly (30)	Benson relaxatuon	WL	Psychological well-being, immune parameters
Mowla (2017)	Quasi experiment	Primary caregiver of children with chronic diseases (100)	Benson relaxatuon	TAU	QoL
Mahdavi (2017)	RCT	Hemodialysis patients (80)	Benson relaxatuon	TAU	Stress, Anxiety, Depression
Gorji (2014)	RCT	Hemodialysis patients (88)	Benson relaxatuon	TAU	stress, anxiety, pain perception
Calisi (2017)	RCT	Female Nurse (46)	Benson relaxatuon	WL	Anxiety, Depression, Well-Being, Work-Related Stress, Confidence
Barati (2016)	semi-experienced & practical research	Elderly (30)	Benson relaxatuon	AT (Jacobson relaxation, Combined exercises (Benson Relaxation+ Jacobson Relaxation))	elderly's depression, life quality
Kiani (2017)	RCT	Hemodialysis patients (105)	Benson relaxatuon	TAU	Anxiety
Paramban (2016)	Quasi-experimental design	Primigravid mothers (30)	Benson relaxation	TAU	Stress

TAU = treatment as usual ; WL = waiting list ; AT = active treatment

3.2. Data extraction and quality assessment

Characteristics of the study, patient population, intervention, control condition, and outcome measures of the 23 included reviews are shown in Table 2.The quality scores shown are those agreed upon after discussion. Nearly all reviews performed well on items related to the description of the objective, the literature search, and the study selection process (items 1–4). The list of included and excluded RCTs was not always complete (item 5). Although some reviews employed independent data extractors, many did not, and several were unclear about this item (item 6). Approximately half of the reviews assessed and presented the risk of bias of individual RCTs and the risk of publication bias (items 7 and 8)

Table 3. Quality assessment of included reviews.

Items	1	2	3	4	5	6	7	8	9	10	11	12
Hassanzadeh (2018)	+	+	+	+	+	+	-	-	+	+	+	+
Pasyar (2015)	+	+	+	+	+	+	-	-	+	+	+	?
Poorolajal(2017)	+	+	+	+	+	+	-	-	N/A	+	+	-
Tahmasbi(2016)	+	+	+	+	+	+	+	-	+	+	+	-
Sajadi (2019)	+	+	+	+	+	+	-	+	+	+	+	?
Araujo (2016)	+	+	+	+	+	+	-	-	N/A	+	+	+
Seifi (2018)	+	+	+	+	+	+	+	-	+	+	+	?
Masry (2017)	+	+	+	+	+	+	-	-	+	+	+	+
Solehati (2015)	+	+	+	+	+	+	-	+	+	+	+	?
Reig-Ferrer (2014)	+	+	-	-	+	+	-	+	N/A	+	+	?
Mowla (2017)	+	+	+	+	+	+	-	-	+	+	+	?
Mahdavi (2017)	+	+	+	+	+	+	-	?	+	+	+	+
Gorji (2014)	+	+	+	+	+	+	-	-	+	+	+	+
Calisi (2017)	+	+	+	+	+	+	?	-	N/A	+	+	+
Barati (2016)	+	+	+	+	+	+	-	-	+	+	+	?
Kiani (2017)	+	+	+	+	+	?	-	-	+	+	+	+
Paramban (2016)	+	+	+	+	+	+	-	-	+	+	+	+

+ = yes;? = unclear;— = no; N/A = not applicable

3.3. Synthesis of results

The results of the reviewed RCT's and quasi experiment are summarized below, categorized by patient population. 17 articles were included, with a total of 1301 participants. The categories are healthy population, hemodialysis patient, perioperative patient, cardiovascular disease patient, pregnant women, and elderly.

3.4. Benson relaxation and hemodialysis patient

The search identified five unique RCTs that show the benefit of Benson relaxation for hemodialysis patients. The first research shows inhalation of lavender essential oil to reduce the level of fatigue in the patients undergoing hemodialysis was more effective than that of the Benson relaxation method. This perspective supports the idea of using complementary and alternative medicine, especially aromatherapy by lavender essential oil, to reduce the level of fatigue[13].

On the other hand participants receiving BRT for eight weeks experienced significant improvement in dietary and fluid adherence, as well as changes in their biomedical markers, such as blood glucose

and White Blood Cell (WBC) count. The study also states that the differences between the control and BRT groups regarding the biomedical markers, such as BUN, PO4, and IWG, indicated that BRT was effective in increasing the dietary and fluid adherence in HD patients[14].

Benson's relaxation method in text, our findings confirmed the effect of relaxation on stress and anxiety with several studies and the recommendations are mostly emphasized on long-term, regular practice. The most effects of relaxation works through the decrease of metabolism and strengthening of heart contractions, respiration, and blood pressure; and release of epinephrine on the sympathetic system of a patient's physiological condition. Thus, by teaching the nurses can benefit the patients can by lower cost and prevent from extra problems as it is easy to use and teach to all levels of patients[1].

We found a high prevalence of stress, anxiety, and depression among patients on HD. Benson relaxation helped patients compared to those who did not receive any intervention. Meanwhile, the changes in stress scores were significant. There is growing evidence to evaluation of the influence of Benson relaxation as a cost-effective and safe technique on different chronic disease Improving and preventing the patients' psychological problems as well as other chronic disorders through applying nonpharmacological interventions[15].

The mean of hemodialysis patients' anxiety level mark changes was significantly higher in relaxation method group than the other group after the intervention. It can be concluded that results of the present and almost other similar studies indicates the effect of Benson's relaxation method on patients' anxiety level decrease. A difference in fatigue or anxiety level is sometimes observed in other studies or usefulness of these methods on anxiety is not shown; the reason of these differences may be searched among the effect of various factors like intervention duration, method, dose or density of essence, few samples, evaluation tool, enough sensitivity of tool, education, age and psychotic factors which makes the difference in results of these studies. At last the using Bensons relaxation method is recommended for similar clinical conditions to control patients' anxiety[16].

3.5. Benson relaxation and perioperative patient

The use of Benson's relaxation technique is a safe and inexpensive method that is associated with a beneficial effect on preoperative anxiety and the hemodynamic status in patients who are candidates for undergoing a various kinds of surgical procedures such as CABG, CAG, PCI, and general surgery. The investigations have shown that relaxing music can significantly reduce heart rate, respiratory rate, and myocardial oxygen demand[17].

There was an improvement in pain scores among the study group subjects at one day postoperative while there was a statistical significant difference was existed between study and control groups regarding pain intensity at 3rd postoperative day after implementation of Benson's relaxation technique. Regarding sleep quality the current study results showed that an improvement in sleep quality scores among study group subjects than control group subjects after implementing Benson relaxation technique at one day postoperative and 3rd postoperative day[18].

Benson relaxation had the greatest effect on reduction of pain intensity in women after caesarean section. While in recovery, pain reduction was due to Benson relaxation intervention. There was a decrease in pain intensity as 2.34 cm in the group given Benson intervention compared to the control group as 0.93 cm. Some other studies found that this relaxation technique is effective in reducing pain[19]

3.6. Benson relaxation and cardiovascular disease patient

Anxiety is a common problem associated with invasive medical procedures, especially in patients undergoing coronary angiography. As an intensifier at cardiovascular reactions, anxiety poses significant risk to the health of patients undergoing angiography. Benson's relaxation technique reduced the level of anxiety in patients of the intervention group before coronary angiography. Furthermore, this complementary technique had a positive impact on the vital signs of these patients, while it decreased the physiological parameters of the vital signs[20].

The Benson muscle relaxation and nature sounds interventions reduced fatigue among the patients with HF compared with the control group. However, no difference was observed between the 2 intervention groups with regard to the reduction of fatigue. In all groups, the reduction of fatigue was observed after the comparison of the results obtained before and after the interventions. Since all 3 groups also received routine care, the reduction of fatigue could be associated with routine care and medication. However, in the intervention groups more changes were found in the score of fatigue compared with the control group, which could be a result of the relaxation and nature sounds interventions. In the Benson muscle relaxation, the score of fatigue was reduced after the intervention more than the control group. Apart from psychological effects, relaxation affects the sympathetic system, which consequently decreases the heart workload and improves the cardiac output as a main reason for fatigue[21].

3.7. Benson relaxation and pregnant women

This study has shown that relaxation as a nursing intervention was effective at significantly decreasing the levels of depression of hospitalized women with high-risk pregnancies. This study has shown that relaxation as a nursing intervention was effective at significantly decreasing the levels of depression of hospitalized women with high-risk pregnancies[22].

Level of stress among primigravid mothers was significantly reduced after practicing Benson's relaxation therapy that there is significant difference in the stress scores before and after Benson's relaxation therapy hence the research hypothesis (H1) has been retained[6].

3.8. Benson relaxation and healthy population

Nursing staffs expose to a high level of anxiety. Based on our results, Benson's relaxation and systematic desensitization were effective methods for decreasing in the nurses' anxiety in both state and trait dimensions. Moreover, there was no significant difference between two intervention methods regarding state and trait anxiety. Nevertheless, the mean of changes in anxiety score was higher in the systematic desensitization. The staff in medical workplaces are exposed to a variety of stresses and high risk for anxiety disorders. Therefore, delay in primary prevention, early diagnosis, and control of anxiety disorder caused continually of psychological effects[8].

On busy inpatient units, nurses typically use highly technical equipment and experience unpredictable workloads, with ever-changing sets of circumstances that often need reprioritizing; essentially there is not enough time to complete the tasks of caring for a patient with multidimensional needs. These conditions reduce opportunities for the nurses to take breaks for rest or nourishment. In the short term, this stress may lead to physical and mental fatigue, and often hinders productivity and job performance[10].Nurses can be excellent role models for stress reduction techniques and wellness strategies if their belief systems include personal wellness. Conversely, not having the knowledge and skill of practicing personal wellness decreases the nurse's ability to teach patients stress-

reduction strategies. Holistic nurses who practice compassionate self-care may be more capable of providing their patients with compassion and loving kindness.

Chronic diseases leave a significant effect on not only the afflicted children but also their parents. Chronic diseases in children may also influence their parents' or primary caregivers' quality of life (QoL). According to the results of this study, the QoL among primary caregivers of children with chronic diseases was affected by the intervention. One can infer the parents were suffering from role limitations due to ensuing emotional problems[23].

3.9. Benson relaxation and elderly

The aging process involves a decline in immune functioning that renders elderly people more vulnerable to disease. In residential programs for the aged, it is vital to diminish their risk of disease, promote their independence, and augment their psychological well-being and quality of life. Benson's relaxation technique or "tranquilization technique" used here produced an improvement in the quality of life and a modulation of the immune parameters in a group of elderly people residing in a nursing home. Given that it is an easy and economical intervention, it could be useful as a health resource in residential settings where its daily practice could offer medium and long-term benefits for the health and well-being of older adults[9].

Various relaxation programs regularly have effect on decreasing the elderly's depression. So it expected that various relaxation techniques such as Benson & Jacobson is used as effective practices & safe supplement &also as a non-medical treatment alongside other common treatments to reduce depression. According to the recent research findings & previous researches cab be resulted that effectiveness of regular relaxation schedule is irrefutable to improve the elderly depression with using treatment methods. It is recommended that regular relaxation programs & appropriate care for the elderly should be considered alongside other plans[24].

4. Discussion

This review provides an overview of more trials than ever before and the intervention effect has thus been evaluated across a broad spectrum of target conditions, most of which are common stress response. Study settings in many countries across the globe contributed to the analysis, further serving to increase the generalizability of the evidence. Beneficial effects were mostly seen in mental health outcomes: depression, anxiety, stress and quality of life improved significantly after training in Benson relaxation. These effects were seen both in patients with medical conditions and those with psychological disorders, compared with many types of control interventions (WL, TAU or AT).

There are several benefits of adding Benson relaxation to usual treatment. First, Benson relaxation are easy to implement and they allow patients to take a more active role in their treatment[16]. Second, there is little emotional and physical risk involved[14]. Third, the costs are relatively low as one trainer can lead a rather large group and most exercises can be done at home without the help of external means[9]. However, they do require commitment in both adherence and time of the patient.

Aim of this review was to assess in which populations Benson relaxation are effective, and in which not. Most insignificant effects found were based on studies using outcome measures that are only indirectly affected by Benson relaxation therefore no definitive conclusions can be drawn for these outcome measures. According to psychological theory, stress is usually caused by an external

factor which evokes fear, anger, or other states of discontentment. Stress is also experienced proportionately; the larger the discrepancy between the actual and desired situation, the higher the level of stress[15]. Apart from the initiating event, individuals themselves tend to magnify stress by worrying about the cause and consequences of the event, which often evokes more stress than the event alone. Support for this theory of stress reduction by coping with psychological stress factors is found in the demonstrated physiological effects of Benson relaxation. Blood pressure, heart rate, respiration rate and oxygen consumption had been shown to respond favorably to Benson relaxation. Similar physiological effects are seen in the relaxation response, it activates the autonomic nervous system to release endorphins and serotonin, and the parasympathetic response influencing endocrine and immune responses[12]. From the explanation, we learn that Benson Relaxation to regulate some body process has good effects on decreasing stress and improve health quality.

As one of the aims was to identify how different patient populations respond to Benson relaxation, we included a heterogeneous group of populations. However, even when we categorized them by diagnosis, some reviews included very heterogeneous populations themselves. Excluding these would cause us to miss 12 unique RCTs, so we defined a category 'mixed population' representing heterogeneous patient populations. Although we tried to report their results as clearly as possible, interpretation of this group's effects is difficult. Also, though Benson relaxation were considered equal in approach, the small heterogeneity of interventions could have resulted in some bias towards the null, thereby strengthening the validity of our findings of consistent effects of these interventions.

Future research will benefit from creative strategies that measure placebo effects and non-specific effects, and distinguish these from actual effects. Nevertheless, the reviews included in our overview are methodologically strong and demonstrate that Benson relaxation are effective for certain conditions. Since the available evidence demonstrates that Benson relaxation exceeds WL control, future research should probably focus on comparison with active treatment. Further research should also look more into the mechanisms whereby these therapies are efficacious.

5. Conclusion

Based on the results of this review, it was concluded that although there is continued doubt in the medical world towards Benson relaxation, the evidence indicates that Benson relaxation are associated with improvements in depressive symptoms, anxiety, stress, quality of life, and selected physical outcomes in the adjunct treatment of cardiovascular disease, hemodialysis, acute pain, pregnancy, preoperative period especially pre and postoperative, other mental disorders in healthy adults and elderly.

References

[1]Mahdavi A, Ali M, Gorji H, Morad A and Gorji H 2013 Implementing Benson ' s Relaxation Training in Hemodialysis Patients : Changes in Perceived Stress , Anxiety , and Depression **5** 536–40

[2]Galvin J A, Benson H, Deckro G R, Fricchione G L and Ã J A D 2006 The relaxation response : Reducing stress and improving cognition in healthy aging adults $ 186–91

[3]Rambod M, Sharif F and Pourali-mohammadi N 2013 International Journal of Nursing Studies

Evaluation of the effect of Benson ' s relaxation technique on pain and quality of life of haemodialysis patients : A randomized controlled trial

[4]Rabin C, Pinto B, Dunsiger S, Nash J and Trask P 2009 Exercise and relaxation intervention for breast cancer survivors : feasibility , acceptability and effects **266** 258–66

[5]Gich I, Barthe E, Rovirosa A, Farru B, Casas F and Leo C 2007 A randomized trial of the effect of training in relaxation and guided imagery techniques in improving psychological and quality-of-life indices for gynecologic and breast brachytherapy patients **979** 971–9

[6]Paramban S, Bala S, J K S, Rao M V R and Veetil P K 2019 Effectiveness of Benson ' s Relaxation Therapy on Reduction of Stress among Primigravid Mothers **3**

[7]Dixhoorn J Van and White A 2005 Relaxation therapy for rehabilitation and prevention in ischaemic heart disease : a systematic review and

[8]Sajadi M, Goudarzi1 K, Khosravi S and Farmahini-Farahani, Molod Mohammadbeig A 2017 Benson ' s Relaxation Effect in Comparing to Systematic Desensitization on Anxiety of Female Nurses : A Randomized Clinical Trial

[9]Reig-ferrer A, Ferrer-cascales R, Santos-ruiz A, Campos-ferrer A and Prieto-seva A 2014 A relaxation technique enhances psychological well-being and immune parameters in elderly people from a nursing home : A randomized controlled study

[10]Calder, Calisi C 2017 The Effects of the Relaxation Response on Nurses' Level of Anxiety, Depression, Well-Being, Work-Related Stress, and Confidence to Teach Patients 1–10

[11]Moher D, Liberati A, Tetzlaff J, Altman D G and Group T P 2009 Preferred Reporting Items for Systematic Reviews and Meta-Analyses : The PRISMA Statement **6**

[12]Gotink R A, Chu P, Busschbach J J V, Benson H, Fricchione L and Hunink M G M 2015 Standardised Mindfulness-Based Interventions in Healthcare : An Overview of Systematic Reviews and Meta-Analyses of RCTs 1–17

[13]Hassanzadeh M, Kiani F, Bouya S and Zarei M 2018 Complementary Therapies in Clinical Practice Comparing the effects of relaxation technique and inhalation aromatherapy on fatigue in patients undergoing hemodialysis *Complement. Ther. Clin. Pract.* **31** 210–4

[14]Pasyar N, Rambod M, Sharif F, Rafii F and Pourali-mohammadi N 2014 Improving Adherence and Biomedical Markers in Hemodialysis Patients: The Effects of Relaxation Therapy *Complement. Ther. Med.*

[15]Gorji M A H, Davanloo A A and Heidarigorji A M 2014 The efficacy of relaxation training on stress , anxiety , and pain perception in hemodialysis patients **24**

[16]Kiani F, Ali M, Zadeh H and Shahrakipour M 2017 The effect of Benson ' s relaxation method on hemodialysis patients ' anxiety . **28** 1075–80

[17]Poorolajal J, Ashtarani F and Alimohammadi N 2017 Effect of Benson relaxation technique on the preoperative anxiety and hemodynamic status: A single blind randomized clinical trial *Artery Res.*

[18]Masry S E, Aldoushy E E and Abd N 2019 Effect of Benson ' s Relaxation Technique on Night Pain and Sleep Quality among Adults and Elderly Patients Undergoing Joints Replacement Surgery Effect of Benson ' s Relaxation Technique on Night Pain and Sleep Quality among Adults and Elderly Patients Undergoing Joints Replacement Surgery **7**

[19]Solehati T and Rustina Y 2015 Benson Relaxation Technique in Reducing Pain Intensity in Women After Cesarean Section **5**

[20]Tahmasbi H and Hasani S 2016 Effect of Benson ’ s relaxation technique on the anxiety of patients undergoing coronary angiography : A randomized control trial **3** 8–14

[21]Controlled A R, Trial C, Seifi L, Ghezeljeh T N and Haghani H 2018 Comparison of the Effects of Benson Muscle Relaxation and Nature Sounds on the Fatigue in Patients With Heart Failure **6** 27–34

[22]Araújo W S de, Romero W G, Zandonade E and Amorim M H C 2016 Effects of relaxation on depression levels in women with high-risk pregnancies: a randomised clinical trial *Rev. Lat. Am. Enfermagem* **24**

[23]Mowla F, Khanjari S and Inanlou M 2017 Journal of Pediatric Nursing Contribution of Benson ’ s Relaxation Technique and Brief Psycho-Educational Intervention on Quality of Life of Primary Caregivers of Iranian Children with Chronic Diseases1 **35** 65–71

[24]Barati S and Sarjuei Z 2016 Journal of Chemical and Pharmaceutical Research , 2016 , 8 (6): 100-103 Research Article The effects of Benson & Jacobson combined relaxation techniques on the elderly ’ s depression & life quality **8** 100–3

PAT-979

EFFECTIVENESS OF AROMATHERAPY AND HAND MASSAGE ON ANXIETY AND BLOOD PRESSURE IN HYPERTENSIVE PATIENTS : A SYSTEMATIC REVIEW

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ABSTRACT

Hypertension is systolic blood pressure equal to or above 140mmHg and or diastolic blood pressure equals or above 90mmHg. Stress and anxiety are the main risk factors for hypertension. Anxiety can stimulate the release of epinephrinehormone from the adrenal gland which can cause an increase in heart rate and narrowing of the blood vessels,to which it can increase blood pressure.Non-pharmacological treatment can be perfromed using aromatherapy and hand massage to determine changes in anxiety levels in hypertensive patients. In journal articles with Quasi-experimental, Randomized Controlled Trial (RCT), and non-randomized controlled design, cross-sectional and intervention studies were taken through a search tool with a database called Scopus, Pub med,Science direct using the PICO framework method. A total of 15 articles were selected according to the inclusion criteria involving 14,406 participants. Significantly, aromatherapy and hand massage had a positive effect to reduce anxiety levels in hypertensive patients. Systematic review is considered sufficient to know the effectiveness of aromatherapy and hand massage on reducing the anxiety and blood pressure levels in hypertensive patients. However, a systematic review assessment which focused on RCT research articlesis required to determine the effectiveness of aromatherapy and hand massage.

Keywords: aromatherapy, hand massage, anxiety, blood pressure

1. Introduction

Hypertension is the most common cardiovascular disease and is a major risk factor for global disease load (World Health Organization, 2017). Hypertension is a condition in which systolic blood pressure (SBP) ≥ 140mmHg or diastolic blood pressure (DBP) ≥ 90mmHg (Lili yang et al., 2018). Hypertension is a global challenge with high levels of morbidity and mortality. Hypertension is multifactor resulting from the influence of a combination between genetic and environmental factors. Modified risk factors of hypertensive patients who experience high emotions are the increase of developing mental health disorders, especially anxiety and depression. Anxiety is a significant cause of increased blood pressure and is an independent predictor of hypertension (Sharma et al 2016). According to Kretchy et al (2014) hypertensive patients have symptoms of anxiety, stress and depression and show the influence of negative emotions on the treatment of hypertension. Anxiety is the main response to stressors. In hypertensive patients, anxiety symptom is in the stage of the disease process. Anxiety factor can affect the severity of hypertensive patients. Anxiety is a form of unpleasant emotions, which can increase patients' psychological and physiological effects including abnormal heart rate, blood pressure (BP), heart output, and heart rate which can cause severe procedural complications and worsen CHD symptoms (Lijuan Mei et al.,

2015). Hypertension can be treated by pharmacological or non-pharmacological methods. Pharmacological treatment is long-term, used in treating hypertension in the form of diuretics, beta blockers, ACE inhibitors, angiotensin II receptor blockers, and vasodilators. Non-pharmacological treatment is used as a complement for pharmacological treatment. Thus, blood pressure can be controlled and maintained (Hikayati et al., 2012). Non-pharmacological treatment uses aromatherapy and hand massage to determine blood pressure changes and anxiety in hypertensive patients.

2. Method

2.1. Literature Search Strategy

The literature used in this Systematic review was obtained through 3 (three) electronic databases, namely: Scopus, Pubmed and Science Direct which published between 2006 and 2018.

The keywords used in the article search technique were "Aromatherapy", "Hand massage", "Anxiety", and "Blood pressure".

2.2. Inclusion and Exclusion Criteria

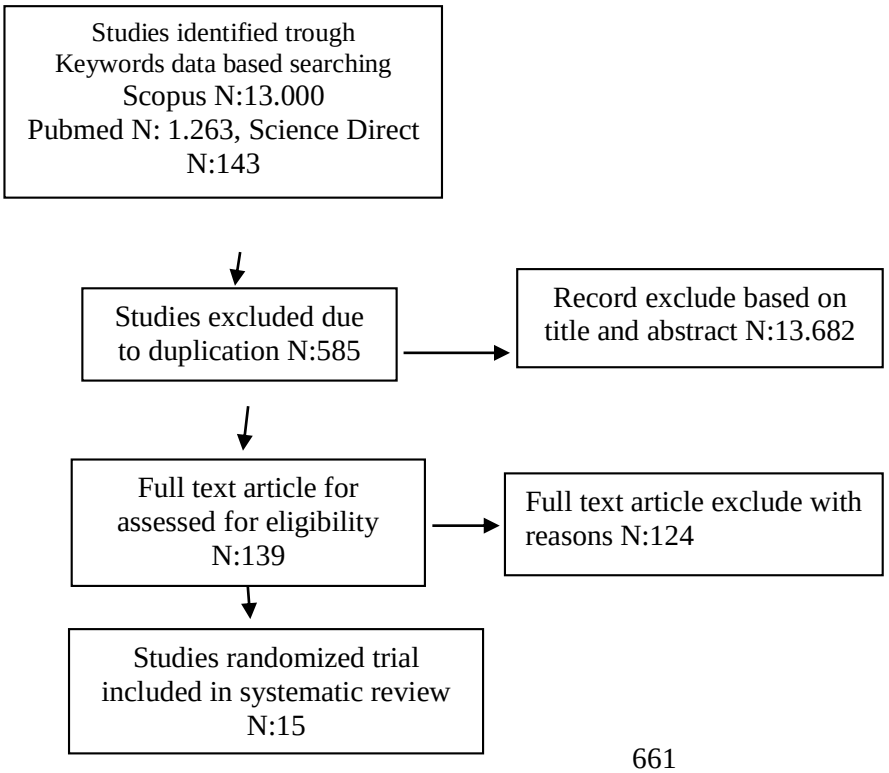
3.4.1. Design of the Study

The design of the study which became the inclusion criteria on this Systematic Review was *anxiety* and published in English.

3.4.2. Population

Population in this Systematic Review includes:

1. All studies indicated patients who received aromatherapy interventions and hand massage with or without a control group
2. Men and women > 25 years old
3. Finding the effect of aromatherapy and hand massage on anxiety in hypertensive patients



2.3. Intervention

Various types of aromatherapy interventions and hand massages which affected anxiety and blood pressure against various types of related diseases.

2.4. Clinical Results

The main result as well as the main objective of this systematic review was to know the effect of aromatherapy interventions and hand massage on anxiety and blood pressure. The studies contributed to this research were used without any limitation of time for the duration of the intervention.

2.5. Studies Selection

The standard applied to select the studies as suggested in the systematic review method guide was PRISMA. The steps were as follows:

1. Removal of duplication
2. Independent examination for titles, abstracts and keywords and removing irrelevant quotes according to inclusion criteria
3. If the title and abstract seemed to meet the inclusion criteria and in accordance with the objectives of the systematic review, the next step was selecting the journals with full text
4. The final step was selecting journals which used aromatherapy and hand massage to reduce bias.

2.6. Data Extraction

The data was extracted from each study which met the requirements. The extracted data included the characteristics of aromatherapy and hand massage toward anxiety, characteristics of results and summary of results.

2.7. Data Analysis

The studies were grouped according to the effects of aromatherapy and hand massage on anxiety. If possible, the studies were then grouped by time, follow-up and control group type.

3. Results

3.1 Literature Search and Studies Selection

In figure 1, in summarizing the search results and selecting the studies, this research adopted PRISMA guidelines (Liberati et al. 2009). The selection of journals based on the keywords used resulted in 14,406 potentially relevant studies, 585 duplications were deleted and 13,682 titles and abstracts found were traced. A total of 139 studies with full text were obtained with 124 studies excluded because they did not meet eligibility criteria, namely did not use English, not intervention. Eventually, 15 studies were selected for systematic review.

3.2 Population

The samples of 15 studies used in this systematic review indicated that the minimum number of the sample was 14 women with ages ranging from 18-20 years to parasympathetic autonomic activity, while the highest number of samples is 891 in hypertensive patients.

Patients with following conditions were involved as samples in this research: Hypertension,

Dementia, Coronary Angiography, Acute Coronary Syndrome, myocardial infarction, patients who would undergo surgical procedures, disorders of parasympathetic nerve activity.

3.3 Clinical Result Measures

Research indicated that result measures used to assess anxiety were: DASS (Depression Anxiety Scale), MMSE (Mini Mental State Examination), HARS (Hamilton Anxiety Rating Scale), VAS (Visual Analog Scale), SRAS (Self Rating Anxiety Scale), STAI (State AND Trait Anxiety Inventory) and AAS (Average Anxiety Score)

3.4 The Effect of Aromatherapy and Hand Massage on Anxiety

3.4.1. Aromatherapy

Inhaling essential oils has a direct and sustained effect on blood pressure during the day, and stress reduction. Essential oil has a relaxing effect to control hypertension (Kim et al., 2012). SAS scale can evaluate anxiety levels in hypertensive patients as much as 12% (Tie et al.2006). According to Zahra et al, (2014) Aromatherapy inhalation with lavender aroma could reduce anxiety in patients with myocardial infarction. Thus, health care providers, especially nurses, can use this inhalation scent to improve anxiety management after myocardial infarction.

3.4.2. Hand Massage

Hand massage effectively relieves anxiety without side effects among patients with coronary angiography (May et al., 2015). Hand massage is a simple, comfortable massage, and done with relaxation. For people who are experiencing stress, having difficulty maintaining a personal relationship with others, hand massage may be beneficial to reduce pain because it has a relaxing effect and reduces anxiety (kunikata et al., 2012). According to Nayoung et al (2015) hand massage and music therapy can reduce anxiety and improve sleep quality in elderly women.

4. Discussions

The researchers conducted a systematic review using RCT design, Cross sectional, non-random, and quasi-experimental to determine the effect of aromatherapy and hand massage on anxiety. Fifteen studies were examined to know the relationship between aromatherapy and hand massage. There are several important findings regarding the effectiveness of aromatherapy and hand massage, including:

4.1. Aroma therapy

Aromatherapy is a therapeutic use of essential oils from plants. Essential oils can be absorbed into the body through the skin or the olfactory system. Olfactory stimulation results in changes in physiological parameters such as blood pressure. According to Zahra et al (2014) after administration of aromatherapy, anxiety in the experimental group was significantly lower than the control group. There was a decrease in salivary cortisol levels of 0.02 µg / dL from 0.16µg / dL to 0.14µg / dL.

4.2. Hand Massage

Hand massage on autonomic activity and anxiety decreased significantly by ($P < 0.01$) (Kunikata et al 2012). Hamilton anxiety score in hand massage group showed that there was a significant decrease of ($P < 0.1$). After filling out the DASS -21 questionnaires, most (72.5%) of the

hypertensive patients were aware of the symptoms of complications regarding psychological symptoms, mild to severe depressive symptoms, anxiety 70% and 10% stress.

5. Conclusion

Aromatherapy and hand massage are complementary therapies which can be performed to reduce anxiety in hypertensive patients. In addition to pharmacological therapy, this therapy can be used as an adjunct to treat hypertensive patients.

References

Brand, L. R. *et al.* (2013) 'The Effect of Hand Massage on Preoperative Anxiety in', *Association of Registered Nurses*. Elsevier Ltd, 97(6), pp. 708–717. doi: 10.1016/j.aorn.2013.04.003.

Choi, N. (2015) 'The Effects of Hand Massage Using Aroma Essential Oil and Music Therapy on Anxiety and Sleeping for Elderly Women in the Sanatorium', 7(5), pp. 151–158.

Coe, P. (2006) 'Changes in Blood Pressure After Various Forms of Therapeutic Massage : A Preliminary Study', 12(1), pp. 65–70.

Ernst, E., Fsb, F. and Frcped, F. (2012) 'Aromatherapy for treatment of hypertension ':, 18, pp. 37–41. doi:10.1111/j.1365-2753.2010.01521.x

Fu, C., Moyle, W. and Cooke, M. (2013) 'A randomised controlled trial of the use of aromatherapy and hand massage to reduce disruptive behaviour in people with dementia'.Id, O. and Id, O. (no date) 'No Title', pp. 0–2. doi: 10.1111/jan.13722

Kim, I. *et al.* (2012) 'Essential Oil Inhalation on Blood Pressure and Salivary Cortisol Levels in Prehypertensive and Hypertensive Subjects', 2012. doi: 10.1155/2012/984203.

Komori, T. *et al.* (2018) 'Anti-stress effects of simplified aroma hand massage', 10, pp. 31–34. doi: 10.4081/mi.2018.7619.

Kretchy, I. A., Owusu-daaku, F. T. and Danquah, S. A. (2014) 'Mental health in hypertension : assessing symptoms of anxiety , depression and stress on anti-hypertensive medication adherence', pp. 4–9.

Kunikata, H. *et al.* (2012) 'The effects measurement of hand massage by the auto-nomic activity and psychological indicators', pp. 206–212.

Press, D. (2015) 'Association between anxiety and hypertension : a systematic review and meta-analysis of epidemiological studies', pp. 1121–1130.

Seyyed, H. *et al.* (2018) 'Complementary Therapies in Clinical Practice Effect of hand and foot surface stroke massage on anxiety and vital signs in patients with acute coronary syndrome : A randomized clinical trial', *Complementary Therapies in Clinical Practice*. Elsevier Ltd, 31, pp. 126–131. doi: 10.1016/j.ctcp.2018.01.012.

Sharma, S. K. and Sawhney, V. (2016) 'AWARENESS , STRESS , ANXIETY,AND DEPRESSION AMONG HYPERTENSIVE PATIENTS ATTENDING CARDIAC OUTPATIENT DEPARTMENT IN A SUPER SPECIALTY HOSPITAL', 9(5), pp. 62–64.Trial,

A. R. C. (2015) 'Effectiveness of Chinese Hand Massage on Anxiety Among Patients Awaiting Coronary', 0(0), pp. 1–8. doi: 10.1097/JCN.0000000000000309.

Xiao, J. *et al.* (2015) 'The Tripartite Model for Assessing Symptoms of Depression and Anxiety Psychometric Properties of the Chinese Version of the Mood and Anxiety Symptoms Questionnaire in Patients With Essential Hypertension', 30(6), pp. 522–528. doi: 10.1097/JCN.0000000000000193.

Najafi, Z. *et al.* (2014) 'The Effects of Inhalation Aromatherapy on Anxiety in Patients With Myocardial Infarction : A Randomized Clinical Trial', 16(8). doi: 10.5812/ircmj.15485.es

PHP-502

PEER GROUP SUPPORT AND HEALTH EDUCATION ON SELF CARE BEHAVIOUR IN DIABETES MELLITUS PATIENTS

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ABSTRACT

Diabetes mellitus is a metabolic disease that requires the complexity of therapy so that it requires self-management to control blood sugar. This study aims to determine of Peer Group Support (PGS) and health education on self-care behaviour in type II Diabetes Mellitus (DM). This research was a quantitative study with a quasi-experimental design, used two group design with pretest and posttest design. The sample was 28 respondents using total sampling method. They were divided into two groups by simple random sampling. The first group attended PGS for 4 meetings, the second group was only given counselling about DM for 4x. Measurement of Self care Behaviour using SDSCA (Summary Diabetes Self Care Activities), was carried out 2x pre and post-intervention. The results showed that there were differences in Self-care Behaviour in diabetes between peer group support and health education groups (p = 0.009). PGS is influential on the management of type 2 DM patients (p
= 0,000). It is expected that the health centre to form a special cadre for DM patients and for further research to use a larger sample with stress management modification for sufferers.

Keywords: diabetes mellitus, health education, peer group support, self care behaviour

1. Introduction

Diabetes is one of the most common chronic disorders that affect large numbers of human at all social and economic level, greatly increases the risk of cardiovascular diseases, and is the primary cause of death [1]. Patients with diabetes should be able to adapt to dietary changes, physical activity, medication and to manage stress. Patients are required to interact effectively with health care systems, family members and friends to provide support in managing the disease [2]. Peer support interventions attempting to address metabolic, treatment adherence, behavioral, knowledge and psychosocial outcomes have shown varying success[3].

Factors that affect the high blood sugar levels in patients are age, lack of physical activity and less understanding of the disease so that blood sugar levels can be controlled[4]. Diabetes mellitus affected almost 150 million people worldwide, and in the year 2025, the number of diabetic people is estimated to increase until 300 million. Meanwhile, other researchers in other studies estimated that in the year 2030 the number of diabetics will rise up to 366 million people from 171 million people in 2000[5]and it is predicted that the developing countries have their contribution which that

70 % of diabetic people are living there [6]. Indonesia is one of the developing countries, where the prevalence of diabetes mellitus is also increasing rapidly [7].

Diabetes as a chronic disease with the most complications requires independence from patients in managing their illness. If the patient is not able to independently consciously from himself then the possibility of disease is difficult to control[8]. One of the main aspects of diabetes care is self-care because self-care can improve patient health, reduce medical expenses and complications. Self-care describes the behavior of individuals who are carried out consciously and self-focused[9]. Diabetes self-care includes diet, medication adherence, regular exercise, monitoring of blood glucose levels and foot care[10].

Health education and support by groups of people with chronic diseases or peer group support (PGS) can reduce health behavior problems, reduce depression and contribute to improving the management of independent diabetes. The success of PGS is related to the sense of togetherness and sharing of life experiences with fellow DM people. Without the PGS, people with DM will feel alone, feeling that there is nothing they can share with their illness and no one understands themselves because only he feels that[11]. Support in peer provided through participation in groups can help patients manage their disease, especially managing diabetes self-care. This study aims to determine of *Peer Group Support* (PGS) and health education on the self -care behaviors in type II Diabetes Mellitus (DM).

2. Research Methods

This research study was quasi-experimental with a pre- and post-test design that was conducted in a developing Public Health Center in South Sulawesi, Indonesia, from July to December 2018.

According to the number of patients in the public health center where the sample calculation was conducted, 94 participants should be included to achieve 90% power, with a 1-sided level of 0.01 and a 10% - 15% anticipated drop-out rate [12]. The patients with diabetes type 2 were totally sampled; 18 participants were allocated to the PGS group and 18 participants were allocated to the Health Education (HE) group. For the final outcome analysis, we excluded six participants on the basis of the participants' request (n = 5) and due to incomplete returned instruments (n = 3), thereby leaving 14 participants for both groups (Fig. 1). The inclusion criteria were type 2 diabetes patients for at least one year, who had the commitment to take part in the complete study, and those who were fully alert and capable of reading and writing. The patients with ulcers decubitus and who were over 65 years of age were excluded because these conditions can disrupt their activities.

The respondent’s characteristic data served as an instrument for obtaining an overview of the factors related to self-care behavior. The data, which includes age and phone number, was collected using a participant characteristic questionnaire. The self-care behavior (SCB) scores was measured pre- and post-intervention for both groups using the Expanded Version of the Summary Diabetes Self Care Activities (SDSCA).

The SDSCA is a standard self-report scale to assess diabetes self-management. Ten items assessed the frequencies of specific self-management activities during the previous week; an additional three items assessed smoking. The respondents marked the numbers of days (0–7) on which the indicated behaviors were performed. The item scores could be averaged to the five subscales. All scale scores ranged from 0 to 7 with higher scores suggesting better self-management. The SDSCA has shown adequate reliability and validity in English [13]as well as for the German

samples[14]. In this study, the reliability coefficients were observed as follows (Cronbach's α; stratified by scale): general diet 0.89, exercise 0.74, blood-glucose testing 0.78 and foot care 0.72[13,15]. These tools were also translated into Bahasa Indonesia with a Cronbach's alpha coefficient of 0.79, which indicates high consistency.

The researchers recruited patients with type 2 diabetes according to the inclusion criteria and then allocated them either to the PGS group or to the health education group. Recruitment and intervention for the PGS group was conducted first until the desirable sample quote was achieved, followed by the recruitment and intervention of the participants for the health education group. This sampling method was applied to avoid data contamination and to ensure that the sample size was appropriate for the power analysis.

The aim and procedure of the study was explained to the patients and those who agreed to participate signed an informed consent form. The researcher then explained to the participants how to fill in the PGS and health education information. Furthermore, the group that taught PGS before the intervention were given the PGS guidelines. In the PGS group, there were two peer supporters that were diabetic patients who had been able to control the disease.

The peer supporters attended two-morning training sessions which were conducted by the research team. The sessions focused on the basics of type 2 diabetes and the issues relating to working within groups and confidentiality. Peer support meetings were held in the general practice premises at a convenient time for the practice staff, peer supporters and participants. The practices offered various daytime or early evening sessions, depending on the patients' preference. There was also a "frequently asked questions" (FAQs) system. That is, at the end of each session, the group fed back questions to the research team who compiled written answers based on the feedback from all groups. The FAQs from all groups were combined and sent back to the groups for the next session. Both interventions were given four times each week. The researchers measured the outcomes two times, namely before the intervention (pre-test), and four times after the interventions (post-test).

The data entry and statistical analysis was performed using the SPSS 21.0 statistical software package. The data was presented using descriptive and analytical statistics. Chi-square and independent t-test were used for the homogeneity test of the participants' characteristics between groups[16] in which a p value > 0.05 was considered to be similar between the group characteristics. The data obtained was analyzed using a paired t-test and independent t-test with a significant level of $\propto < 0.005$.

3. Results

Eighteen participants were in the PGS group and 18 participants were in the health education group. Four participants in the PGS group and health education group dropped out during the intervention (Figure 1). The characteristics of the participants at baseline have been presented in Table 1, showing that the two arms were balanced and similar statistically.

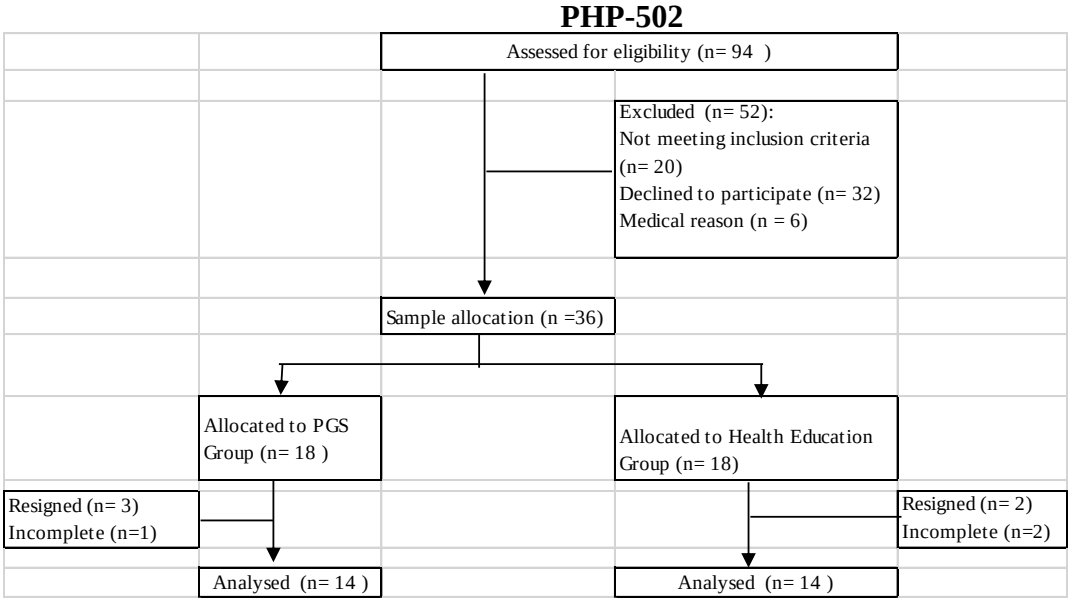

Figure 1. Study flow.

Table 1. The characteristics of the participants (n = 28).

Variables	PGS		Health Education		P Value
	n	%	n	%	
Age in years (Mean, SD)	50.53	6.32	50.08	7.13	0.106
Sex					0.564
Male	2	7.1	5	17.9	
Female	12	42.9	9	32.1	
Level of education					1.000
High School	8	28.6	9	32.1	
University	6	21.4	5	17.9	
Employment					1.000
Employer	4	14.3	6	21.4	
Employee	3	10.7	2	7.1	
Unemployed	7	25.0	6	21.4	
BMI categories					0.875
Underweight	1	3.6	4	14.3	
Normal	10	35.7	10	35.7	
Overweight	2	7.1	0	0.0	
Obesity	1	3.6	0	0.0	
Duration of illness					0.986
1-3 years	3	10.7	1	3.6	
> 3 years	11	39.3	13	46.4	
Marital status					1.000
Single	3	10.7	2	7.1	
Married	9	32.1	10	35.7	
Widow/widower	2	7.1	2	7.1	

Note: Statistically significant $\alpha \leq 0.05$ using an independent t-test & Chi-square test

Table 2. SCB score between the PGS group and health education group (*Mean of total score* ± *SD*).

Time	PGS	Health Education	Mean difference (95% CI)	*t* value	*P* value
Pre-test	52.40 ± 0.64	52.54 ± 0.61	0.14	0.674	0.698
Post-test	64.14 ± 0.89	60.71 ± 0.82	3.98	7.221	0.001

Table 2 shows the description of the differences in self-care behavior. A significant difference was found between the PGS group and the HE group with a mean difference of 3.98 (99% CI, P = 0.001). These results indicate that PGS more effectively improved the self-care behavior of the patients 4 times after the intervention.

Table 3. SCB score differences based on the SCB domains before and after the completion of Peer Group Support and health education (*Mean* ± *SD*).

SCB Domain	Peer Group Support (n=14)	Health Education (n=14)	*t* value	*P* value
General diet	3.02 ± 0.54	2.51 ± 0.56	3.556	0.042
Exercise	4.12 ± 0.67	2.99 ± 0.14	5.211	0.001
Blood-glucose testing	1.61 ± 0.28	1.02 ± 0.21	1.428	0.322
Foot care	3.08 ± 0.33	2.01 ± 0.36	3.209	0.021

Note: Statistically significant at an $\alpha < 0.005$ with Independent t-test.

Table 3 shows the measurement of the SCB score difference based on the SCB domains. The scores for the exercise domains were the highest.

4. Discussion

The majority of the participants in all groups were female with an age of 50 years and over. The duration of illness in all groups was almost equal. This indicates that this problem might be more prevalent among females than males. The youngest participant was 43 years, which is much younger than in the Western Urban China population[17]where the youngest diabetic patient was 60 years old (range of 60 – 79 years). The participants' education levels were almost equal in the two groups as the most appropriate statement to compare the impact of the intervention strategy among the two groups[14,18]. Most of the study participants (68 %) in the two groups were married. This situation is expected, as their family can support and motivate the participants in doing the self-care behavior which will lead to increase the patients' adherence to following the program.

Before conducting the study, the respondent's commitment was asking. Therefore, among the two groups, there are eight respondents has dropped out for the intervention. The reason that the respondents could not continue the intervention was because there were families who had died and who had to go out of the area for 2 weeks. There were also those who had dropped out because they followed their husband who had suddenly migrated outside of the area.

Based on the results, the support from both the groups and their peers is more effective at increasing the self-care behavior in the PGS group that received it four times. This was better than those who only received health education. The researchers concluded that PGS significantly increases the self-care behavior in patients with type 2 diabetes mellitus. A study conducted in China found

that peer support in primary care can enhance knowledge, improve self-efficacy, and decrease BMI, systolic blood pressure, diastolic blood pressure and both fasting and 2-hour post-prandial blood glucose [19]. Besides that, peer support also reported that it can improve the clinical outcomes that include the HbA1C, cholesterol concentration, systolic blood pressure and wellbeing score [15]. Another study with another patient found that with breast cancer, peer support can provide a higher quality of life compared to others [18].

The highest score in the SCB level based on domain in this study before both of the interventions was observed as being focused on exercise. Exercise is an easy thing for the respondent to do. The respondents only need to jog or walk every morning for about 30 minutes and without spending much money. In addition, there are a lot of programs available from public health centers that are near to their home. They have taken part in joint exercises every week.

Both PGS and health education are effective at improving self-care behavior. Besides that, both of them can enhance the knowledge of the participants. This is supported by the previous study in that knowledge can be improved through training and education and the educational model involving the active role of the participants. This results in improving their knowledge significantly and steadily as a basis for their behavior changing [20].

In the PGS group, there were 2 volunteers serving as support for the respondents who still poor at diabetes self-care. With the presence of volunteers who were able to manage their disease well, they are expected to be able to have a vicarious experience. Vicarious experience is a way to improve the management of independent diabetes from the experience of success that has been shown by others. It is a role in peer group support that is used as modeling for carrying out an action. Modeling is generally weaker than personal success when carrying out actions (enactive attainment). With a model that can be imitated and supported, the patient finds it easier and is more motivated to follow the behavior of the model.The success of PGS is related to the sense of togetherness and the sharing of life experiences with others [4]. With the existence of PGS, the patients can feel a sense of togetherness with the others who have the same condition as themselves. They can learn of the solutions to the problems that they experience so then their self-care behavior can improve.

This study has several limitations and shortcomings, such as the implementation of PGS, which is one group of PGS for as many as 14 participants. The groups should have been made where there were eight or nine people in one group. This happened because of the limited number of participants and teams of nutritionist and pharmacists from the developing public health center. In anticipation of these limitations, the researchers provided the PGS implementation and taught it directly in order to assist the participants with filling out the self-care behavior questionnaires and the list of the respondent's problems. This was to allow them to discuss it with the teams and volunteers. Additionally, the researchers presented two volunteers to facilitate the 14 respondents so then they could accommodate the questions and discussions from the respondents.

5. Conclusions

PGS is more effective at improving the self-care behavior in patients with diabetes mellitus than health education. The results of this research can be used as a reference in the treatment of diabetes self-management. This is because PGS is a social treatment that is easily performed by nurses, family, health educators and patients. Therefore, PGS can be used as a preferable standard procedure. This research can be continued with a larger sample and over a longer period of time than

in the present study.

References

[123] Miselli V M D, Trento M Ms P and Porta M M D P 2012 Group Care for Type 2 Diabetes: The Turin Experience *Diabetes Spectr.***25** 79–84

[124] King D K, Glasgow R E, Toobert D J, Strycker L A, Estabrooks P A, Osuna D and Faber A J 2010 Self-efficacy, problem solving, and social-environmental support are associated with diabetes self-management behaviors *Diabetes Care***33** 751–3

[125] Tang T S, Ayala G X, Cherrington A and Rana G 2011 A Review of Volunteer-Based Peer Support Interventions in Diabetes *Diabetes Spectr.***24** 85–98

[126] Heisler M, Vijan S, Makki F and Piette J D 2010 Diabetes control with reciprocal peer support versus nurse care management: a randomized trial *Ann Intern Med***153** 507–15

[127] Wild S, Roglic G, Green A, Sicree R and King H 2004 Global prevalence of diabetes: estimates for the year 2000 and projections for 2030 *Diabetes Care***27** 1047–53

[128] Ebrahim S and Smith G D 2001 Exporting failure? Coronary heart disease and stroke in developing countries *Int J Epidemiol***30** 201–5

[129] Sutanegara D and Budhiarta A A 2000 The epidemiology and management of diabetes mellitus in Indonesia *Diabetes Res Clin Pr.***50 Suppl 2** S9-s16

[130] Yin J, Wong R, Au S, Chung H, Lau M, Lin L, Tsang C, Lau K, Ozaki R, So W, Ko G, Luk A, Yeung R and Chan J C N 2015 Effects of Providing Peer Support on Diabetes Management in People With Type 2 Diabetes *Ann. Fam. Med.***13 Suppl 1** S42–9

[131] Weiler D M and Crist J D 2009 Diabetes Self-management in a Latino Social Environment *Diabetes Educ.***35** 285–92

[132] Tewahido D and Berhane Y 2017 Self-Care Practices among Diabetes Patients in Addis Ababa: A Qualitative Study *PLoS One***12**

[133] Ghorob A, Vivas M M, De Vore D, Ngo V, Bodenheimer T, Chen E and Thom D H 2011 The effectiveness of peer health coaching in improving glycemic control among low-income patients with diabetes: protocol for a randomized controlled trial *BMC Public Health***11** 208

[134] Lwanga SK L S 1991 *Sample size determination in health studies* (Geneva: World Health Organization)

[135] Toobert D J, Hampson S E and Glasgow R E 2000 The summary of diabetes self-care activities measure: results from 7 studies and a revised scale *Diabetes Care***23** 943–50

[136] Kamradt M, Bozorgmehr K, Krisam J, Freund T, Kiel M, Qreini M, Flum E, Berger S, Besier W, Szecsenyi J and Ose D 2014 Assessing self-management in patients with diabetes mellitus type 2 in Germany: validation of a German version of the Summary of Diabetes Self-Care Activities measure (SDSCA-G) *Health Qual. Life Outcomes***12** 185

[137] Smith S M, Paul G, Kelly A, Whitford D L, O'Shea E and O'Dowd T 2011 Peer support for patients with type 2 diabetes: cluster randomised controlled trial *BMJ***342** d715–d715

[138] Pallant J 2013 *SPSS survival manual* (England: Open University Press)

[139] Huang M, Zhao R, Li S and Jiang X 2014 Self-Management Behavior in Patients with Type 2 Diabetes: A Cross-Sectional Survey in Western Urban China *PLoS One***9**

[140] Taleghani F, Babazadeh S, Mosavi S and Tavazohi H 2012 The effects of peer support group on promoting quality of life in patients with breast cancer *Iran. J. Nurs. Midwifery Res.***17** S125–30

[141] Zhong X, Wang Z, Fisher E B and Tanasugarn C 2015 Peer Support for Diabetes Management in Primary Care and Community Settings in Anhui Province, China *Ann. Fam. Med.***13 Suppl 1** S50–8

[142] Fenwick E K, Xie J, Rees G, Finger R P and Lamoureux E L 2013 Factors Associated with

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Knowledge of Diabetes in Patients with Type 2 Diabetes Using the Diabetes Knowledge Test Validated with Rasch Analysis *PLoS One***8**

PHP-503

BODY ALTERATION OF PATIENTS WITH TUBERCULOSIS WHO GET MEDICATION AT THE PUSKESMAS

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ABSTRACT

Patient with Tuberculosis who already experience 6 months of treatment may felt body alteration. The study was aimed to illustrate the body alteration of Tuberculosis patients who get medication at the Puskesmas. The design used cross sectional. The samples were 141 tuberculosis patients who got medication at the Puskesmas in Blitar which was selected by simple random sampling. The variables were height, weight, urine color, feeling of boring related to the medication and willingness to stop drinking the medication routinely. The data was collected in the patient's house on August - November 2018. The data was collected by instruments of height gauge, weights, and interview form. The data were analyzed descriptively. The results have shown the most changes were in the physical such as the weight loss, the red urine, and nausea. The patient's nausea causes a decrease in intake and has an impact on the patient's weight that goes down. It is important for nurses in Puskesmas to provide medical services and information through health education before the first medication.

Keywords: tuberculosis, body alteration, puskesmas

1. Introduction

The eradication of tuberculosis in Indonesia has been an intention and aim since 2011 [1], but positive new tuberculosis patients found through x-rays and sputum examinations are always going to be there. New patients receive intensive medication at the Puskesmas for a minimum of 6 months and they periodically perform a sputum examination as part of their ongoing evaluation. Patients with tuberculosis getting their medication at the Puskesmas are given additional food that aims to maintain their nutritional status and increase their endurance during medication.

Tuberculosis patients feel the weight losses every time that they measure their weight before taking the medicine at the Puskesmas. Weight and height is an important measure to use to assess body mass index, so then their proper nutritional needs can be determined. Health workers always record these results in the patient's medical record, but they never evaluate the physical and emotional alterations. Physical alterations and the feelings of patients due to medication also do not get the attention of the health workers. The alterations that appear, for example, can include a thin body and feelings of being bored while taking the medication. The purpose of the study was to illustrate the alterations in the bodily condition of the tuberculosis patients who get their medication at the

Puskesmas.

2. Material and methods

The design used was a cross-sectional approach. The researcher sampled as many as 141 tuberculosis patients who were receiving medication from the Puskesmas in Kabupaten and Kota Blitar who were selected through simple random sampling. The variables included height, weight, urine color, the feeling of boring related to the medication and the willingness to stop drinking the medication. The place of the data collection was at the patients' homes between August and November 2018. The data was collected using instruments; the collection tools were height gauges, weights and interview forms. The data was analyzed descriptively.

3. Results

The study results have been presented in Tables 1 and 2.

Table 1. Characteristics of the tuberculosis patients in Kabupaten and Kota Blitar on August – November 2018 (n = 141)

Description	Age (years)	Height (cm)	Weigh t (kg)	BMI	Chest (cm)	Waist (cm)
Minimum	15	141	30	11.02	60	53
Maximum	87	177	78	31.64	96	92
Average	48.98	159.30	47.38	18.61	75.26	68.83
Standard deviation	16.43	7.38	8.49	3.16	7.26	7.24
Skewness	-0.02	-0.01	0.19	0.33	0.41	0.63
Kurtosis	-0.71	-0.77	0.67	1.38	0.23	1.51

Table 2. Body alteration of tuberculosis patients in Kabupaten and Kota Blitar on August – November 2018 (n = 141)

No.	Alteration and feelings of the patient	f	%
1	Patient's perception of body condition:		
	a. Very thin	31	21.99
	b. Thin	99	70.21
	c. Normal	10	7.09
	d. Obese	1	0.71
2	BMI category:		
	a. Underweight	68	48.22
	b. Normal	71	50.35
	c. Overweight	1	0.71
	d. Obese	1	0.71
3	Urine color:		
	a. Red	116	82.27
	b. Not red	25	17.73
4	Nausea:		
	a. Yes	55	39.01
	b. No	86	60.99
5	Feeling bored the medicine:		
	a. Yes boring	16	11.35
	b. Not boring	123	87.23
	c. Not filling	2	1.42
6	Thinking to stopped of medication:		
	a. Yes want to quit	13	9.32
	b. Do not want to quit	126	89.36
	c. Not filling	2	1.42

4. Discussion

The lowest age found among the tuberculosis patients was 15 years old (Table 1) and they had been living with their family. Four patients (2.84%) were adolescents aged 15 - 18 years who had a high school level of education, according to the guidelines of *Pengendalian Tuberkulosis di* Indonesia (Tuberculosis Control in Indonesia)[2][3]. The parents of the adolescent patients suffered from tuberculosis three years ago and were now cured. This situation illustrates that transmission easily occurs between family members. However, the prevention of transmission is also easy for the families to do. The families have five tasks in terms of health, namely recognizing health problems, deciding to choose what actions to take, caring for their sick family members, modifying the environment for their sick family members, and utilizing health care facilities [4]. The main task of the families who have family members suffering from TB is to prevent transmission, to increase immunity by immunization, to provide adequate nutrition, to create an environment that can break the chain of transmission, and to support the patient care at the Puskesmas[5][6]. The families' task where there are family members suffering from tuberculosis are to recognize the symptoms of a cough if it does not heal for two weeks, weight loss, night sweats, and a reduced appetite [7]. This task is in line with the role of protecting the family members, namely by preventing and medicating the tuberculosis patients. The family tasks need to be supported by knowledge and their attitude [8].

The analysis results (Table 1) illustrates that the body mass index of the TB patients was

normally distributed and that there were no outliers, therefore the quantitative analysis can be continued[7][9]. The body mass index of the tuberculosis patients was largely in the thin and normal category, according to the patient's perception of their own condition (Table 2) which is that they felt very thin, thin and normal. Perceptions of the bodily condition are according to the patient's feeling that their weight has decreased. Body mass index and the patient perception of their bodily condition is not a barrier to being medicated, although medication failure (death) has occurred in patients who are underweight [3].

The interview results about the nutrition given by the family to the patients were adequate, in that they were being given carbohydrates, vegetables, proteins sourced from eggs, freshwater fish, beef and chicken. The family statement was supported by the Puskesmas' nurse's statement, in that every month they have been given an additional protein meal in the form of canned milk as much as 1 kg from the Puskesmas. The purpose of supplementary feeding was to maintain the patient's immune system during the giving of the medication. The role of the family was to prevent a decrease in the body mass index and to prevent medication failure by providing adequate nutrition [1][10].

During the course of taking the tuberculosis medication, the patient's urine becomes red and they may feel nauseous (Table 2). These changes are the side-effects of Isoniazid (INH), Rifampin (RIF), Pyrazinamide (PZA) and Ethambutol (Myambutol)[11]. Urine discoloration and nausea have been realized by the patients and families because they (patients and families) already have been receiving health education from the Puskesmas nurses before starting the medication. The health education for the families results in an increase of the patient's vitality by the use of traditional herbal from the temulawak rhizome, which can increase lymphocytes [12] and act as a bactericidal [13]. The family said that the patients were also given ginger processed drinks every day to increase their vitality.

The treatment received by the tuberculosis patients causes boredom and they think about stopping the medication (Table 2). Such feelings and thoughts are caused by the medication at around 6 - 9 months. The patients who are not bored and who do not think of stopping their medication are larger than those who are bored. The interview results from the patients who are bored are where the patients must be careful with their behavior. For example, when eating and drinking in public areas. The patients who are not bored say that the disease needs to be treated so then it does not spread to people around them or to their colleagues [14][15].

5. Conclusion

Body alteration is (1) where the body becomes thin, there is red urine and nausea, and (2) a few of the tuberculosis patients were feeling tired of taking the medication and they were thinking of stopping taking the drugs. The bodily alterations and feelings of the patients must be a concern of the Puskesmas nurses who provide the medication. The patients must be given health education before the first dose of medication.

References

[143] Kemenkes RI 2011 *Strategi Nasional Pengendalian Tb Di Indonesia 2010-2014* (Indonesia)
[144] USAID 2017 Pengendalian Tuberkulosis di Indonesia | U.S. Agency for International Development
[145] Yen Y-F, Chuang P-H, Yen M-Y, Lin S-Y, Chuang P, Yuan M-J, Ho B-L, Chou P and Deng

C-Y 2016 Association of Body Mass Index With Tuberculosis Mortality: A Population-Based Follow-Up Study. *Medicine (Baltimore).***95** e2300

[146] Suprajitno 2004 *Asuhan Keperawatan Keluarga: Aplikasi dalam Praktik* ed Monica Ester (Jakarta: EGC)

[147] Ali A and Katz D L 2015 Disease Prevention and Health Promotion: How Integrative Medicine Fits. *Am. J. Prev. Med.***49** S230-40

[148] Kemenkes RI 2017 Terapkan Germas Dan Pendekatan Keluarga Untuk Temukan Dan Obati Kasus TB

[149] Hansson K N and Hansson S 2011 Skewness and Kurtosis: Important Parameters in the Characterization of Dental Implant Surface Roughness—A Computer Simulation *ISRN Mater. Sci.***2011** 1–6

[150] Yermi, Ardi M, Tahmir S and Pertiwi N 2018 Knowledge and Attitudes with Family Role in Prevention of Pulmonary Tuberculosis in Maros, Indonesia *IOP Conf. Ser. J. Phys. Conf. Ser.***1028** 12001

[151] Velasco F and Verma S P 1998 Importance of Skewness and Kurtosis Statistical Tests for Outlier Detection and Elimination in Evaluation of Geochemical Reference Materials *Math. Geol.***30** 109–28

[152] Samal J 2017 Family perspectives in the care and support of tuberculosis patients: An Indian context *J. Assoc. Chest Physicians***5** 67

[153] Disease Branch C *Tuberculosis and You A Guide to Tuberculosis Treatment and Services How TB Is Diagnosed*

[154] Dewi M, Aries M, Hardinsyah, Dwiriani C M and Januwati N 2014 Pengetahuan Tentang Manfaat Kesehatan Temulawak (Curcumaxanthorrhiza.) Serta Uji Klinis Pengaruhnya pada Sistem Imun Humoral pada Dewasa Obes *J. Ilmu Pertan. Indones.***17** 166–71

[155] Yumas M 2016 Diversifikasi Manfaat Rimpang Temulawak sebagai Komponen Aktif terhadap Bakteri Streptococcus Mutans pada Pembuatan Permen Kesehatan *J. Ris. Teknol. Ind.***6** 1

[156] Churchyard G, Kim P, Shah N S, Rustomjee R, Gandhi N, Mathema B, Dowdy D, Kasmar A and Cardenas V 2017 What We Know About Tuberculosis Transmission: An Overview. *J. Infect. Dis.***216** S629–35

[157] Wulandari A A, Nurjazuli M and Sakundarno A 2015 Faktor Risiko dan Potensi Penularan Tuberkulosis Paru di Kabupaten Kendal , Jawa Tengah Risk Factor and Potential of Transmission of Tuberculosis in Kendal District, Central Java *J. Kesehat. Lingkung. Indones.***14** 7–13

PHP-525

SUMMARY GUIDANCE FOR DAILY PRACTICES AS AN EFFECTIVE WAY TO PREVENT FOOT ULCERS

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ABSTRACT

Summary Guidance for Daily Practice (SGFDP) is a media used to discuss and share knowledge to prevent foot ulcer in patients with Type 2 Diabetes Mellitus (T2DM). The aim was to know the influence of applying SGFDP to fasting blood glucose levels and foot care behavior. The study was quasi-experimental utilizing a pretest-post-test with a control group design. The sample obtained was 232 respondents through consecutive sampling. The data collected using observation sheets and the Nottingham Assessment of Functional Footcare (NAFF) questionnaire. The results were analyzed using the Wilcoxon and Mann-Whitney tests. The results showed a significant influence from SGFDP on foot care behavior. The application of SGFDP as an approach to prevent foot ulcers in patients with T2DM by discussing and sharing knowledge, and utilizing a foot ulcer prevention simulation with foot exercises. Sharing information and the attention given by the nurses in the form of regular meetings can increase patient knowledge and induce behavior changes in the DM patients to encourage them to take positive actions such as maintaining their diet and doing physical activities.

1. Introduction

Diabetes mellitus (DM) is a metabolic disease characterized by an increase in blood sugar levels. This occurs due to abnormalities in insulin secretion, insulin action or both [1]. DM is one of the most chronic diseases experienced by people in the world. DM patients are susceptible to nerve and vascular damage which can result in a loss of the protective sensation in the legs, poor circulation, biomechanical changes in leg and skin trauma [2]. The impact that can occur if it is not treated can occur because the development of ulcers is known in diabetic patients to be preceded by a history of trauma (neuropathy) or vasculopathy[3]. DM-related complications are a major cause of morbidity and mortality, and they have a serious impact on the quality of life of the patients[4]. Foot ulceration and subsequent lower limb amputation are common and serious chronic complications for DM patients [2].

It is estimated that in 2035, the global prevalence of DM will increase to nearly 600 million [5]. In Indonesia, DM patients are known to have increased from 1.1% in 2007 to 2.1 percent in 2013. The province of East Java, with the prevalence of DM based on a doctor's diagnosis and symptoms, is 1.2% and 1.6% respectively [6].The four main objectives of service providers include health promotion, disease prevention, patient care and meeting the patient's needs. The management of DM patients in the physical aspect with early education is about DM, the monitoring of routine blood sugar levels, diet, how to use the health facilities, physical exercise and the importance of foot care [7]. The role of the nurses is to prevent the risk of ulcers related to DM through education, demonstration and monitoring about foot care.

SGFDP is a summary of suggested guidelines for daily practice summarizing the essence of the prevention and management of foot problems in DM patients as part of a more complete guide on foot care consisting of the identification of risky feet, the inspection and routine checking of feet at risk, health education for patients regarding foot care, routine footwear care and identification and the handling of pre-ulcer signs in DM patients that can be performed in the daily health services[3]. This summary is intended for health care providers around the world who are involved in treating diabetics. The purpose of the research was to determine the influence of applying SGFDP on fasting blood glucose levels and foot care behavior.

2. Research methods

a. 2.1.Research design, population, sample, and variables

The design was quasi-experimental with a pre-post-test control group design. The population in this research consisted of all outpatients with DM in 3 Primary Health Services. The samples obtained totaled 232 respondents (116 in the treatment group and 116 in the control group) with consecutive sampling. This research was conducted at Palembang in South Sumatera from October 9th - December 20th 2018. The inclusion criteria in this research were 1) low risk DM patients, 2) a DM history of more than 10 years, 3) can communicate verbally well, and they are able to read and write and 4) taking DM therapy in the form of oral subcutaneous therapy. The exclusion criteria were 1) patients with DM who experienced cognitive impairment and 2) DM patients with foot ulcers. The independent variable was the application of SGFDP and the dependent variables were fasting blood glucose levels and foot care behavior.

b. 2.2.Instruments

SGFDP used the modules as form of media to give to the respondents. The module of SGFDP consists of information about DM, diet, the behavior of people with DM, foot care behavior with exercise and psychosocial education to reduce stress in DM patients. The instrument focused on fasting blood glucose levels was an observation sheet and foot care behavior was measured using the NAFF questionnaire by [8], which was modified by [9] and translated into the Indonesian language. The number of questions totaled 27 using a Likert scale with a score of 0-3. We obtained a range of scores from 0 to 81; the higher the score, the better the DM foot care behavior. This questionnaire was tested for validity and reliability with a Cronbach's alpha value of 0.720.

c. Research procedures and analysis

This research was carried out in collaboration with the existing program activities in the primary health service in order to increase the knowledge of the DM patients through empowerment and health education. The research has passed the ethical review and obtained aEthical Approval certificate No. 208/UN2.F12.D/HKP.02.04/2018 issued by the Health Research Ethics Committee of Faculty of Nursing Science, Universitas Indonesia. The research was conducted in the treatment group by providing SGFDP with select modules at 3 meetings over 3 weeks. The first week was to provide health education about DM and the screening of the respondents with the risk of foot ulcers. The second week was explained as the ideal diet and behavior of people with DM, and the third weeks was on teaching prevention of foot ulcers through a demonstration of foot exercises and monitoring. The control group was given information about DM through a module that had been

made by the researcher. The data was analyzed busing IBM SPSS Statistic 24. The statistical analysis used a Wilcoxon Signed Rank and Mann-Whitney U test. The confidence interval was 95% with alpha (α) = 0.05.

3. Results

The characteristics of the respondents in Table 1 shows that the majority of the respondents in both groups were in the age group of the elderly and that the majority were female. The last level of education for both groups was high school and the majority of respondents in both groups did not work. The majority of the income in the control and treatment groups was >2.6 million. The majority of the respondents in the control group had had DM for 14-15 years and the treatment group had had DM for 10-13 years.

Table 1. Characteristics of the respondents in the control and treatment groups of patients with DM (n=232)

Characteristic	Control Group		Treatment Group	
	n	%	n	%
Age				
Adult (30-40 year)	16	13.8	27	23.3
Elderly (41-50 year)	100	86.2	89	76.7
Sex				
Male	44	37.9	50	43.1
Female	72	62.1	66	56.9
Education				
Elementary School	19	16.4	23	19.8
Junior High School	26	22.4	39	33.6
Senior High School	54	46.6	46	39.7
University	17	14.7	8	6.9
Work				
Does not work	72	62.1	85	73.3
Private	26	22.4	23	19.8
Government employees	18	15.5	8	6.9
Average income				
<1.5 million	43	37.1	39	33.6
1.5-2.5 million	28	24.1	32	27.6
>2.6 million	45	38.8	45	38.8
Long suffer from DM				
10 – 13 years	49	42.2	83	71.6
14 – 15 years	67	57.8	33	28.4

The results of the analysis of fasting blood glucose in the control and treatment groups at the pre-test and post-test showed that all of the respondents had differences in the mean and std. deviation. The results of the data obtained using the Wilcoxon Signed Ranks test on fasting blood glucose in

the pre-test and post-test of the control group showed no change in the results between the pre-test and post-test of the respondents. The test results showed p>0.05 which was 0.11, which means that there was no significant difference. The treatment group showed p<0.05 which was equal to 0.013, which means that the pre-test and post-test in the treatment group had significant differences. The results of the post-test carried out using the Mann-Whitney U test on fasting blood glucose data in the control and treatment groups was 0.836 which equals p>0.05. It can be concluded that there were no significant differences in the results of the post-test data in the control and treatment groups (Table 2).

Table 2. Distribution of blood glucose and foot care behavior in the control and treatment groups of patients DM (n=232)

Variables	Control Group		Treatment Group	
	Pretest	Posttest	Pretest	Posttest
Glucose				
Mean ± SD	47 ± 29.153	72 ± 29.396	29 ± 8.344	.9 ± 14.62
Wilcoxon Signed Rank Test	0.11		0.013	
Mann-Whitney U Test		0.836		
ıre Behavior				
Mean ± SD	3 ± 7.489	28 ± 9.878	)2 ± 7.889	42 ± 8.254
Wilcoxon Signed Rank Test	0.274		0.003	
Mann-Whitney U Test		0.001		

)5 (Wilcoxon Signed Rank Testand Mann-Whitney U Test)

The results of the foot care behavior analysis in the control and treatment groups in the pre-test and post-test showed that all of the respondents had differences in the mean and std. deviation. The results of the data obtained using the Wilcoxon Signed Ranks test on foot care behaviornint the pre-test and post-test of the control group showed no change in the results between the pre-test and post-test of the respondents. The test results showed p>0.05, which was 0.274 which means that there was no significant difference. The treatment group showed p<0.05, which was equal to 0.003, which means that the pre-test and post-test in the treatment group had significant differences. The results of the post-test foot care behavior data using the Mann-Whitney U Test in the control and treatment groups were 0.001 which means p<0.05. It can be concluded that there were significant differences in the results of the post-test data between the control and treatment groups (Table 2).

4. Discussion

The SGFDP approach explains the basic principles of the prevention of foot problems in DM patients[3] and it seeks to prevent ulcers in patients at risk wih DM by providing integrated and adequate foot care[10]. Prevention bases in the Guidance For Daily Practice (SGFDP) include risky feet identification, risky inspection and routine foot checks, patient health education about foot care, appropriate footwear care and the identification of pre-ulcerative signs.

One risk factor of DM was age, especially for those older than 40 years. This is because at that age, there is an increase in glucose intolerance[11]. In old age, bodily functions are physiologically decreasing because the aging process causes a decrease in insulin secretion or resistance. Therefore the body's ability to control high blood glucose is not optimal. The aging process causes a decrease in insulin secretion or resistance, resulting in a macroangiopathy, which can affect the decrease in blood circulation, one of which is in the large or medium blood vessels in the legs.

Gender is one of the factors associated with the occurrence of DM, where women who have experienced menopause tend to be more insensitive to insulin. Diabetes in general, for men, comes faster than it does for women. Women can be protected from diabetes until they reach menopause because of the influence of the female hormone estrogen, which is a reproductive hormone that helps to regulate blood sugar levels in the body. The results of a study conducted by [12]showed a higher prevalence of the incidence rate of T2DM in women than in men. Women are more at risk of developing diabetes because physically, women have a greater chance of increasing their body mass index. Post-menopausal monthly cycle (premenstrual syndrome) syndrome makes the distribution of body fat more easily accumulated due to the hormonal processes, so therefore women are more at risk of developing T2DM[4].

Education level has an important role in increasing the knowledge of DM. The majority of the residents did not know about DM. Knowledge can have an important role in the prevention of DM in the community. Education can influence a person, including a person's behavior and lifestyle, especially in reference to motivating people to participate in developments. In general, the higher the education level of someone, the easier it is for them to receive information[13].

The respondents who suffered from DM needed to do more physical activities. In T2DM, exercise plays a major role in regulating blood glucose levels. Muscle contractions have properties such as the production insulin and increasing the permeability of the membrane to glucose in the contracting muscle[1]. At the time of exercise, insulin resistance is reduced, whereas insulin sensitivity increases when inactive. This is not a permanent effect. Therefore, exercise must be carried out continuously. Physical activity can be in the form of diabetic foot exercises. Exercise is very beneficial for improving blood circulation, losing weight and improving insulin sensitivity as it will improve the glucose levels in the blood.

Hyperinsulinemia (10fEU/ml) can cause atherosclerosis, which has an impact on vasculopathy which makes the legs prone to DM ulcers[15]. In addition, it is often accompanied by an increase in triglyceride and plasma cholesterol levels which will result in poor blood circulation to the tissue, which appears in the decrease of the dorsalis pedis artery pulse (<60 x/m) and decreased ankle brachial index (<0.9), resulting in ulcers that usually start from the tip of the leg[14]. All of the respondents in this study had suffered from DM for more than 10 years. Foot ulcers are especially common in DM patients who have suffered with the disease for 10 years or more. If their uncontrolled blood sugar levels are not seen to, then this will result in vasculopathy and neuropathy.

Physical activity is included in this research in the form of DM foot exercises. Physical activity increased the sensitivity of the insulin receptors in the active muscles [16]. The main problem that occurs in T2DM is the occurrence of insulin resistance which causes glucose to not enter the cells. When a person engages in physical activity, there will be a muscle contraction which will eventually make it easier for glucose to enter the cell [17]. This means that when a person is engaged in physical activity, it will reduce the level of insulin resistance and this will eventually reduce their blood sugar

levels. There are other factors that influence blood sugar levels. In addition to SGFDP implementation, there are several things that cause one's blood sugar to rise, namely a lack of exercise, an increased amount of food consumed, increased stress and emotional factors, weight gain and age, and the impact of treatment from drugs, such as steroids [18].

The driving factor was the factor obtained from the closest person to the patient and the social support given to the individual, such as their family, friends and teachers, and especially in this case, the health workers who can strengthen the behavior of SGFDP management. With the support provided by the closest people to them, it is expected to encourage behavior change in the patients [19]. In terms of the prevention of injury in T2DM patients, foot care behavior is carried out in accordance with SGFDP, which consists of the identification of risky feet, the inspection and routine examination of risky feet, health education for patients about foot care, routine foot care and the identification of pre-ulcer signs in DM patients [20].

The level of education of a person is very influential on any changes in attitude and behavior related to healthy living. Higher levels of education will make it easier for a person or community to absorb information and to implement it in their daily behavior patterns and lifestyle, especially in terms of health. Based on the information obtained by the researchers through questioning the respondents, the respondents said they always tried to maintain good foot care behavior in accordance with the principles of SGFDP so then further foot injuries can be prevented.

This is because of the intervention given by the researchers in the form of SGFDP through daily practice guidance that explain the basic principles of the prevention of foot problems in DM patients to prevent ulcers in patients at risk who have DM. Foot problems in DM are one of the more serious complications. Foot problems are the main source of suffering and costs for the patients and they also place a considerable financial burden on health care and on society in general. Strategies include prevention, patient education and close foot monitoring [3].

DM Patients with peripheral neuropathy also have a history of foot ulceration or lower limb amputation, foot deformity, poor foot hygiene and inappropriate or inadequate footwear. Furthermore, routine inspections and checks of at-risk feet should be conducted at least once a year to identify those at risk of foot ulceration. Patients who have any of the risk factors must be examined more frequently. These include a history of ulcers, previous amputations, end-stage kidney disease, social isolation, access to poor health care, walking without using a pedestal and a regular foot examination concerning vascular status, skin, footwear and an assessment of neuropathy[10].

Health education for patients about foot care is presented in a structured, organized and repeated manner, both verbally and through media channels. This plays an important role in preventing foot problems. Patients with DM must learn how to recognize potential foot problems and they must be aware of the steps that they must take when problems arise. One of the sports recommended for people with DM is foot exercises[9]. Gymnastic foot stretches aims to smooth the blood circulation that is disrupted. This is because leg exercises can strengthen the leg muscles. This is in accordance with [22], who stated that DM foot exercises aim to improve blood circulation so then the nutrients can get to the tissues smoother. It can also strengthen the small muscles, calf muscles and thigh muscles, and overcome the limitations of joint motion that often experienced by DM patients. This is supported by theories involving endoneuria blood flow, increased nitric oxide synthesis and increased Na + / K + -ATPase activity with given training efforts [23].

Regular footwear, improper footwear and barefoot walking with insensitive feet are the main causes of foot ulceration. Patients with a loss of sensation should be taught about protection and the appropriate use of footwear so then the use of footwear at any time, both inside and outside the room, is paired with the identification of pre-ulcer signs in DM patients characterized by redness or pain [3].

The limitations in this study were that it was limited in terms of the time available and the intervention in the treatment group was for 3 weeks. Patient changes and any developments will be more visible if the intervention is carried out over a longer time period.

5. Conclusion

SGFDP explains the basic principles of preventing foot problems in patients in a manner that can be carried out in a session once a week and re-evaluated after 3 weeks by discussing, sharing knowledge and undergoing foot ulcer prevention simulation using foot exercise. Sharing information and the attention given by the nurses with regular meetings can increase patient knowledge and behavior changes in the DM patients to encourage them to take positive actions. This was proven to prevent foot injury in patients with T2 DM. SGFDP can be done regularly to train the DM type 2 patients to maintain a good lifestyle including good food, a balanced diet, exercise and regular activities. The next researchers could improve the treatment of SGFDP based on culture and by evaluating the qualitative results.

References

[158] Kusnanto, *Asuhan Keperawatan pada Klien dengan Diabetes Mellitus Pendekatan Holistic Care*. Surabaya: AUP, 2017.

[159] L. Fan, "Examining the Feasibility , Acceptability and Effects of a Foot Self-Care Educational Intervention in Adult Patients with Diabetes at Low Risk for Foot Ulceration by," University of Toronto, 2012.

[160] N. C. Schaper, J. J. Van Netten, J. Apelqvist, B. A. Lipsky, and K. Bakker, "Prevention and management of foot problems in diabetes: A Summary Guidance for Daily Practice 2015, based on the IWGDF guidance documents," *Diabetes Res. Clin. Pract.*, vol. 124, pp. 84–92, 2017.

[161] Y. L. Hsieh, F. H. Lee, C. L. Chen, M. F. Chang, and P. H. Han, "Factors Influencing Intention to Receive Examination of Diabetes Complications," *Asian Nurs. Res. (Korean. Soc. Nurs. Sci).*, vol. 10, no. 4, pp. 289–294, 2016.

[162] C. P. Shearman and M. Rawashdeh, "Foot complications in patients with diabetes," *Surg.*, vol. 34, no. 4, pp. 192–197, 2016.

[163] Badan Penelitian dan Pengembangan Kesehatan, "Riset Kesehatan Dasar (RISKESDAS) 2013," *Lap. Nas. 2013*, pp. 1–384, 2013.

[164] PERKENI, *Konsensus Pengelolaan dan Pencegahan Diabetes Melitus tipe 2 di Indonesia 2015*, vol. 1. 2015.

[165] N. . Lincoln, K. . Radford, F. . Game, and W. . Jeffcoate, "Education for secondary prevention of foot ulcers in people with diabetes: A randomized controlled trial," *Diabetologia*, vol. 51, pp. 1954–1961, 2008.

[166] D. S. R. Putri, K. Yudianto, and T. Kurniawan, "Perilaku Self-Management Pasien Diabetes Melitus (DM)," vol. 1, no. April 2013, pp. 30–38, 2013.

[167] P. R. C. S.A Bus, D.G. Armstrong, R.W. Van Deursen, J.E.A.Lewis, C.F Caravaggi, "IWGFD guidance on footwear and offloading interventions to prevent and heal foot ulcers in patients with diabetes," *Diabetes. Metab. Res. Rev.*, vol. 32, no. 30, pp. 13–23, 2016.

[168] S. Chai *et al.*, "The effect of diabetes self-management education on psychological status and

blood glucose in newly diagnosed patients with diabetes type 2," *Patient Educ. Couns.*, vol. 101, no. 8, pp. 1427–1432, Aug. 2018.
[169] R. Martis, C. A. Crowther, E. Shepherd, J. Alsweiler, M. R. Downie, and J. Brown, "Treatments for women with gestational diabetes mellitus: an overview of Cochrane systematic reviews," *Cochrane Database Syst. Rev.*, Aug. 2018.
[170] A. Wawan and M. Dewi, *Teori dan Pengukuran Pengetahuan*. Yogyakarta: Nuha Medika, 2010.
[171] S. Waspadji, *Komplikasi Kronik Diabetes: Mekanisme Terjadinya Diagnosis dan Strategi Pengelolaan*. Jakarta: FK UI, 2006.
[172] N. Rachmawati, N. Safitri, D. K, M. J. Keperawatan, F. Kedokteran, and U. Diponegoro, "Gambaran Kontrol dan Kadar Gula Darah pada Pasien Diabetes Melitus di Poliklinik Penyakit Dalam RSJ Prof. Dr. Soerojo Magelang," vol. 01, pp. 1–8, 2015.
[173] M. Albargawi, J. Snethen, A. Al Gannass, and S. Kelber, "Relationship between person ' s health beliefs and diabetes self-care management regimen," *J. Vasc. Nurs.*, pp. 1–6, 2017.
[174] B. Jankowska-Polaska, A. M. Fal, I. Uchmanowicz, M. Sen, J. Polanski, and D. Kurpas, "Influence of organized diabetic education on self-control and quality of life of patients with type 2 diabetes," *Int. J. Diabetes Dev. Ctries.*, vol. 35, pp. 79–87, 2015.
[175] R. Iljaž, A. Brodnik, T. Zrimec, and I. Cukjati, "E-Healthcare For Diabetes Mellitus Type 2 Patients – A Randomised Controlled Trial In Slovenia E-Zdravstvena Oskrba Bolnikov S Sladkorno Boleznijo Tipa Ii – Randomizirana Kontrolirana Raziskava V Sloveniji," vol. 56, no. 3, pp. 150–157, 2017.
[176] Nursalam, *Metodologi Penelitian Ilmu Keperawatan*, 4th ed. Jakarta: Salemba Medika, 2016.
[177] A. Yamin, C. Windani, and M. Sari, "Relationship of Family Support Towards Self-Management and Quality of Life of Patients with Type 2 Diabetes Mellitus," vol. 6, pp. 175–182, 2018.
[178] khompak M. Titis KurniawanWipa sae-sia, "Effect of a Self-Management Support Program on Diabetic Foot Care Behaviors," *Int. J. Res. Nurs.*, vol. 4, no. 1, pp. 14–21, 2013.
[179] P. D. Mariana Angela Rossaneis, Maria DCFLH, Maria DFM, Sonia SM, "Foot ulceration in patients with diabetes : a risk analysis We ' re transforming ...," *Br. J. Nurs.*, vol. 26, no. 6, 2017.
[180] S. L. Brand and D, "Evaluation of the effect of nurse education on patient-reported foot checks and foot care behaviour of people with diabetes receiving haemodialysis," *Diabet. Med.*, vol. 33, no. 2, pp. 204–207, 2016.

PHP-540

FACTOR ANALYSES THE IMPLEMENTATION OF THE PERCEPTORSHIP CULTURE IN THE HOSPITAL : SYSTEMATIC REVIEW RESEARCH IN THE HEALTH CONCERN

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ABSTRACT

Perceptorship is a learning method that involves more experience in conveying their knowledge to someone who is less experienced. Perceptorship is a very important part of a hospital organization that is applied during new employee orientation, mutation and rotation, as well as guidance for school students who undergo field work practices. The purpose of this study is to analyze factors that affect implementation of perceptorship in the hospital and to give recommendation of monitoring and evaluation perceptorship as well. The Journal had searched towards multiple database: DOAJ, Sage, Proquest, Medline, Google Scholar, Science Direct. It used limited time in June 2013 to September 2018. From 1517 article, only 15 articles that suitable with the inclusion criteria. Systematic reviews obtained from 15 medical journals showed various factors that influence the application of perceptors in hospitals.

Keywords: perceptorship, health, hospital area, systematic review

1. Introduction

Preceptorship is a learning method that involves those with more experience conveying their knowledge to someone who is less experienced[1]. The preceptor becomes a model or role model in preceptorship activities while simultaneously providing expert advice to the preceptee. In the preceptorship process, there is encouragement, guidance, support, and advice to help the preceptees in their organizational development and personal development. Preceptorship is in the form of advice relating to practices in the workplace including role models in one-to-one groups and organizations[2]. Preceptorship is a very important part of a hospital organization that is applied during new employee orientation, mutation and rotation, as well as in the guidance for school students who undergo fieldwork practices.

In the implementation of preceptorship, there are often various obstacles including unrecognized receptors, guidance schedules that not match with the work time of the preceptor, unbalanced preceptor-preceptee ratios, a lack of understanding of the learning methods, and a bad working environment. Based on the research at the University of Newcastle, new nurses admitted that they were stressed when it came to adapting, namely due to a lack of communication with the health team in their new workplace. New nurses, after completing the orientation period, still needed support through the program of preceptorship and this increased the retention of new nurses by 29% (from 60% to 89) and by 9.5% it decreased the nursing vacancies[3].

Preceptors in hospitals need to carry out an evaluation of the implementation because there are still problems with the guidance system, such as the preceptor ratio with the preceptee, the requirements as a supervisor and besides that, it requires an increase in the quality and competency of the preceptor to produce competent preceptees.

This study was aimed at analyzing the factors that influence the implementation of preceptorship in the hospital.

2. Research Methods

The literature search was carried out using several major databases such as PROQUEST, ScienceDirect, DOAJ, SAGEPUB, MEDLINE, and GOOGLE SCHOLAR by entering the keywords preceptorship, health, hospital area, and systematic review. The papers were critically reviewed and the relevant data was extracted and synthesized using an approach based on Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). The time limit used was June 2013 to September 2018. From the 1,517 articles obtained, only 15 articles met the inclusion criteria. The inclusion criteria for the articles were 1) that they had a RCT research design, 2) that they mentioned the factor variables that influence preceptorship, 3) that the sample was made up of health workers in a hospital and 4) that the parameters assessed included the intensity of applying the preceptorship.

From the 15 literature items, various factors have been found to influence the application of preceptorship, among others, including the level of education, preceptor experience, partnership, learning methods and work environment. The parameters used to measure the application of patient safety goals were obtained through questionnaire instruments, checklist observation sheets and interview sheets.

3. Results

3.1 Level of education

Burke et al[4] explained the problems that arise in the guidance process of undergraduate students in hospitals, namely the use of language and instruments that are less objective in evaluating student competencies. Chang et al[5] suggested that the use of portfolio applications can easily be accessed by the nursing undergraduate students. The ease of access makes the students motivated by and within the preceptorship process. Carmel et al[6]explained that for postgraduate students, their care should be focused on guidance to increase their self-confidence and specific competencies in accordance with the specialization of the program. Colleen et al[7] explained how to organize and prioritize work, communication and leadership for postgraduate students.

3.2 Preceptor's experience

Lee-Hsieh et al[8] explained the experience of preceptors in developing the Clinical Teaching Behavior Inventory (CTBI) instrument. The instrument is very effective when applied in a nursing student preceptorship. Adam et al explained the experience of the preceptor in carrying out the homecare process as applied in the learning process. This is very useful for the preceptee because it provides a real picture of the process of providing nursing care based on the experience of the preceptor.

3.3 Partnership

Blegen et al[9] explained that preceptors and preceptees must establish good partnership relationships so then they can have an effective period of mutual time throughout the preceptorship process. Chen and Lou[10] explained that the strategy of guidance in a multidimensional manner is done by adding guidance time to the course at a certain point in time. Forneris and Peden-McAlpine[11] explained that a good relationship in reference to preceptorship can encourage the preceptee to think critically, discuss, ask questions and increase their curiosity about the material that has been delivered.

3.4 Learning methods

Lazarus[12] described the effectiveness of the Five Minute Preceptor and SNAPPS learning methods in the context of the feedback learning method by evaluating the learning outcomes in the preceptorship process. Omer et al[2] explained that mentoring can increase the confidence and independence of the preceptee when it comes to developing themselves in the learning process. Kowalski and Cross[13] explained that residency programs can improve their leadership skills and the ability to communicate effectively with the nursing students.

3.5 Work environment

Hyrkas and Shoemaker[14] explained that commitment, rules and discipline in the work environment had an effect on the preceptorship process when it came to forming good habits in the preceptee. Chen et al[15] explained that the process of collaboration between health workers in the work environment can provide learning and allow for training in collaborative actions for the preceptee. Mwafulirwa[16] explained that the existence of a delegation and supervision process in the work environment can provide the preceptee with the chance to conduct monitoring and evaluation as well as the chance to create follow-up plans for the actions taken.

4. Discussion

The preceptee education level influences the guidance and preceptorship process. The preceptors must be able to analyze the competencies that must be achieved by the preceptees so then they can optimize their abilities, creativity, and innovation during the preceptorship period[4][5][6][7].

Based on the research, it can be seen that the experience of the preceptor is very influential on the learning process during the preceptorship. For this reason, someone who is a preceptor is expected to have work experience according to their field or expertise for at least 2 years in a row so then they can integrate their knowledge and experience into the preceptorship process[8].The partnership establishes good relations through the preceptorship so then it can have a positive impact on the learning process. This can increase curiosity in the preceptee's understanding[9][10][11].

Creativity in the context of the learning method has a positive impact on the preceptorship process. The various learning methods that can be applied include coaching, mentoring, Five Minute Receptor, SNAPPS and residency[12][13]. The work environment has a positive impact on the preceptee when it comes to forming a conducive work environment as a good provision if they become employees in the company[14][15][16].

5. Conclusion

The systematic review obtained from 15 medical journal articles showed the various factors that influence the application of preceptors in hospitals. The factors include the level of education, experience, support, guiding model and work environment. The type of instrument that is often used is the Clinical Teaching Behavior Inventory (CTBI).

References

[181] Marks-Maran D, Ooms A, Tapping J, Muir J, Phillips S and Burke L 2013 A preceptorship programme for newly qualified nurses: a study of preceptees' perceptions *Nurse Educ. Today***33** 1428–34

[182] Omer T Y, Suliman W A, Thomas L and Joseph J 2013 Perception of nursing students to two models of preceptorship in clinical training *Nurse Educ. Pract.***13** 155–60

[183] Kelly J and McAllister M 2013 Lessons students and new graduates could teach: A phenomenological study that reveals insights on the essence of building a supportive learning culture through preceptorship *Contemp. Nurse***44** 170–7

[184] Burke E, Kelly M, Byrne E, Chiardha T U, Mc Nicholas M and Montgomery A 2016 Preceptors' experiences of using a competence assessment tool to assess undergraduate nursing students *Nurse Educ. Pract.***17** 8–14

[185] Chang C-P, Lee T-T and Mills M E 2017 Clinical nurse preceptors' perception of e-portfolio use for undergraduate students *J. Prof. Nurs.***33** 276–81

[186] Haggerty C, Holloway K and Wilson D 2013 How to grow our own: An evaluation of preceptorship in New Zealand graduate nurse programmes *Contemp. Nurse***43** 162–71

[187] Capper C A and Green T L 2013 Organizational theories and the development of leadership capacity for integrated, socially just schools *Handb. Educ. Leadersh. equity Divers.* 62–82

[188] Lee-Hsieh J, O'Brien A, Liu C-Y, Cheng S-F, Lee Y-W and Kao Y-H 2016 The development and validation of the Clinical Teaching Behavior Inventory (CTBI-23): Nurse preceptors' and new graduate nurses' perceptions of precepting *Nurse Educ. Today***38** 107–14

[189] Blegen M A, Spector N, Ulrich B T, Lynn M R, Barnsteiner J and Silvestre J 2015 Preceptor support in hospital transition to practice programs *J. Nurs. Adm.***45** 642–9

[190] Chen C and Lou M 2014 The effectiveness and application of mentorship programmes for recently registered nurses: a systematic review *J. Nurs. Manag.***22** 433–42

[191] Forneris S G and Peden-McAlpine C 2009 Creating context for critical thinking in practice: the role of the preceptor *J. Adv. Nurs.***65** 1715–24

[192] Lazarus J 2016 Precepting 101: teaching strategies and tips for success for preceptors *J. Midwifery Womens. Health***61** 11–21

[193] Kowalski S and Cross C L 2010 Preliminary outcomes of a local residency programme for new graduate registered nurses *J. Nurs. Manag.***18** 96–104

[194] Hyrkäs K and Shoemaker M 2007 Changes in the preceptor role: re-visiting preceptors' perceptions of benefits, rewards, support and commitment to the role *J. Adv. Nurs.***60** 513–24

[195] Chen A K, Rivera J, Rotter N, Green E and Kools S 2016 Interprofessional education in the clinical setting: A qualitative look at the preceptor's perspective in training advanced practice nursing students *Nurse Educ. Pract.***21** 29–36

Mwafulirwa H K 2016 Perceptions of registered nurses and nurse educators on the adequacy of an education module in preparing nursing graduates for the role of clinical teaching in Malawi

PHP-563

DEVELOPMENT OF NURSING COST AND NURSING SERVICE WEIGHTS FOR MALAYSIA DIAGNOSIS RELATED GROUP (MY-DRG®) IN A TEACHING HOSPITAL IN MALAYSIA

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ABSTRACT

Traditionally the hospital costing and charging system in Malaysia do not present the value of nursing care provided to patients during their stay in the hospital. The aim of study is to develop the nursing costs and service weights for Universiti Kebangsaan Malaysia Medical Centre (UKMMC) using the casemix system, MY-DRG®. Two methods of calculation that are nursing hours and unit cost of nursing per patient per day of stay were used. A cross sectional descriptive study was conducted among discharges from 2009 to 2012 using retrospective data obtained from the casemix database. A combination of step-down costing and activity based costing method for hospital costing was used. A total of 85,042 discharges were grouped into 704 MY-DRG®. The hospital data were obtained from five departments: Finance, Human Resource, Nursing Management, Maintenance and Health Information, UKMMC. Total cost of nursing services for each group of MY-DRG® was calculated and the costing data was trimmed using lower trim point and high trim point method. The results showed that cost of nursing services is higher in calculation of nursing cost based on nursing hours compared to cost per patient per day of stay. The outcome of this study is both methodologies can be implemented and recommended to the health policymaker.

Keywords: nursing cost, nursing service, malaysia diagnosis related group

1. Introduction

Nursing services are known to be the largest component in inpatient care [1]. Nursing care is also a continuous activity that never stops. It begins with the patient's admission until the patient can be discharged from the hospital. It is a 24-hour service with a heavier nursing workload during the day compared to at night. The nurses spend almost 60% of their time with patients in critical wards and 54% in the medical and surgical wards [2]. Furthermore, the contribution of the nurses was found to constitute about 30% of the overall hospital costs and 44% of the nursing care cost for the inpatients [3]. The traditional method of hospital payment based on the 'room and board' rate gave the impression that the amount of nursing care is equally distributed among all patients, causing the cost of nursing care to become an unseen variable [4]. Taking into consideration the major contribution of nursing services in patient care, in addition to the current rise of hospital costs and limited healthcare resources, nursing researchers began to study the relationship between nursing services

and nursing cost [5], [6]. Many countries worldwide have progressively conducted nursing cost calculations with variations in the study samples and study output [7].

Currently, the healthcare billing system in Malaysia is inadequate in terms of estimating the economic value of nursing services. This is because the traditional costing method based on room rates or by the patient's age category (adults or children), and the patient's length of stay has been used to charge for the nursing services. This type of charge neglects the severity or complexity of the patient's illness when in fact, the severity or complexity of the patient's illness is directly related to the cost of care as more nursing care may be needed. Therefore, the traditional costing method could result in either an under- or over-charging of nursing services, which could ultimately give rise to improper hospital reimbursement. A study by Welton and Fischer compared the hospital charges based on 'room and board' charges and based on nursing service intensity respectively. Welton and Fischer's study found that charges which were based on nursing service intensity was found to be more accurate and thus reduced the risk of underestimating the nursing cost [8]. Another factor which may influence the hospital cost and charges is the use of highly qualified Registered Nurses (sometimes nurses holding a Bachelor's Degree) in providing patient care. Using over-qualified nurses may raise the nursing costs, as payment for a Registered Nurses' salary will contribute to a higher portion of the hospital budget. This was also proven by Welton and Fischer, who discovered the differences in relation to cost of using services from a mixed category of nurses. The contribution of Registered Nurses on salary and hours of care is high which can be as high as 25.5% of the hospital expenditures annually [9]. This is in line with the findings of a study by Mark et al., which stated that the costs increased when many Registered Nurses were hired in the hospital [10]. Nonetheless, although the salary of Registered Nurses was high and found to contribute to the high cost of treatment, experienced and educated nurses are highly important for a positive patient outcome [11].

The definition of the cost of nursing services has multiple meanings, according to the methodology used and the results produced[12]. Nursing cost can be determined or measured in several ways such as nursing cost per patient, per patient day, per patient care hour, per acuity-adjusted patient day, per Diagnosis Related Group (DRG), an average nursing wage, nursing hours or per visit [12], [13], [14]. A casemix system is a new approach used to calculate based on the different types of DRG. Service weights were used to measure the common resources consumed by the patients in each DRG group [15]. For example, a DRG with a service weight of 4.0 is a service that consumed quadruple times more resources than DRG with a service weight of 1.0 [16]. It is useful to obtain information on budget spent for patients in different DRG groups[17]. Other similar terms in relation to service weights are, service intensity weights, service cost weights and relative weights [18], [19], [16]. Nursing intensity weight (NIW) was created to adjust the relative weights for each DRG for hospital reimbursement and for the adjustment of the payment system so as to reflect the nursing resources [16], [20]. Relative weights have been used to construct the payment based on DRG using the formula mean cost of a DRG compared with the mean cost for all DRG[1]. Cost weight is also defined as the average cost of the DRG level compared to the average cost across all DRG groups [15]. Specific components of cost weight are known as service weights or ratios. They are used in nursing, laboratory and radiology costs [21].

There were limited studies in Malaysia, which determined the cost weights for services. The pharmacy service weights were determined by Ali Jadoo et al. (2015) and found that the pharmacy service weights ranged between 3.78 and 11.80 [22]. In a recent study by Roszita et al. (2016) on

laboratory and radiology service weights, the laboratory service weights were between 1.6896 to 5.9609, while the radiology service weights ranged between 1.6336 and 2.8461 [23]. Internationally, a study by Knauf et al. (2006) found that cardiology cases have an average NIW of 3.11 and orthopedic cases have an average NIW of 2.26 [1]. Apart from reporting merely the crude cost weights, it is also crucial to determine if there was any 'overestimation' or 'underestimation' of the cost weights. Overestimation occurs when the estimated cost weight is higher than the actual cost weight. Conversely, underestimation is when the estimated cost weight is lower than the actual cost weight [21]. The general objective of this study was to estimate the nursing resources used by the inpatients by linking the calculation of the nursing cost with the Malaysia Diagnosis Related Group (MY-DRG®) casemix system.

2. Research Methods

2.1 Study population and designs

This study is an economic evaluation study that employed a cross-sectional descriptive study design conducted entirely at the Universiti Kebangsaan Malaysia Medical Centre. In 2002, UKMMC became the first medical centre in Malaysia to introduce the casemix system for managing their patients. The main purpose of its development was to enhance the quality and efficiency of hospital services. UKMMC uses the MY-DRG® grouper, which is the customized version of the United Nations University (UNU)-Case Based Group (CBG) casemix system[25]. MY-DRG® is a patient classification system that belongs to the casemix system that is being used in Malaysia. All of the discharges in the casemix system database from 2009 to 2012 were included as the study subjects. The total study subjects comprised of 90,581 discharge cases and they were grouped into 708 MY-DRG®.

2.2 Data collection tool

Hospital information data from 2011 were used and compiled to complete the costing template. This information was essential to assist in the calculation of the nursing cost and nursing service weights. Five departments of UKMMC were involved and the hospital information data required was as follows. From the Finance Department, there was the the total of the expenditure of purchased items for the last five years, in addition to the operating costs and annual staff salary. The Nursing Management Department looked into the number of nurses. The Human Resources Department involved the number of staff. For Health Information, there was the number of inpatient days, the number of discharges, the number of outpatients and the average length of the stay (ALOS). The Maintenance Department provided the hospital floor area.

2.3 Data analyses

The data was gathered and input into a database using SPSS version 22 for the costing and statistical analyses. The advanced statistical analysis using multiple linear regression was carried out to determine the factors that might influence the nursing cost. All analyses were done using IBM SPSS version 22 and a p value of <0.05 was considered to be statistically significant.

2.4 Costing analyses

Costing method using a combination of step-down and activity-based costing were carried out to obtain the nursing cost and nursing service weights. Nursing hours were used as a basic component in the calculation of the nursing cost. There were eight steps to follow in order to develop the nursing cost:

2.4.1 Method one: calculation of nursing cost using nursing hours.

Step 1: Calculation of nursing hours per year per nurse
Step 2: Calculation of nursing hours per patient per day of stay of each cost centre (medical, surgical, obstetrics & gynecology, pediatrics)
Step 3: Data trimming using the L3H3 method
Step 4: Calculation of the nursing hours for each MY-DRG®
Step 5: Calculation of the mean nursing hours for each MY-DRG®
Step 6: Calculation of the nursing service weights per MY-DRG®
Step 7: Calculation of the hospital nursing based rate (HNBR)
Step 8: Calculation of the nursing cost per MY-DRG®

2.4.2 Method two: calculation of nursing cost using unit cost of nursing per patient per day of stay.

Step 1: Calculation of the cost of nursing per patient per day of stay
Step 2: Calculation of the mean nursing cost per MY-DRG®
Step 3: Calculation of the nursing cost MY-DRG®
Step 4: Calculation of the nursing service weights for MY-DRG®

3. Results

3.1 Patient characteristics

The data was obtained from the retrospective data analysis of the discharged inpatients in the casemix system database of UKMMC. The data was trimmed using a low trim point and a high trim point (L3H3) to determine the inliers (MY-DRG® within the standard length of stay), in addition to noting any outliers (MY-DRG® with the non-recommended standard length of stay) based on ALOS for each MY-DRG®. As a result, there were 85,042 ‘inliers’ with 704 MY-DRG® included in the study. The remaining cases were identified as ‘outliers’ comprising 5,539 cases. Many discharged inpatients were within the age range of 20-29 years (21.2%; 18,071/85,042), followed by 30-39 years (17.6%; 14,967/85,042), <10 years (13.4%; 11,370/85,042) and 60-69 years (12.5%; 10,600/85,042). There were more female inpatients (59.4%; 50,497/85,042) compared to male inpatients (40.6%; 34,545/85,042). The mean length of stay for the inpatients was 5.3 (5.52) days.

The majority of inpatients treated in UKMMC were from medical (58%; 49,353/85,042), followed by surgery (22%; 18,767/85,042), obstetrics & gynecology (O&G) (19%; 15,985/85,042) and the least case type was from the pediatrics discipline (1%) (937). The discharged inpatient cases were also categorized into several severity levels. The distribution of the cases according to severity showed that out of 85,042 cases, 48,149 (56%) of the inpatient cases treated in UKMMC were severity level I, despite UKMMC's nature as a teaching hospital to manage more complex patients. Subsequently, there were 25,278 cases (30%) from severity level II and 11,615 (14%) from severity level III. Discharged inpatients in the casemix system database were coded according to body system

called casemix main group (CMG). Based on the distribution of CMG from 2009 to 2012, the highest frequency CMG for discharged inpatients of this study was CMG 'O' (Deliveries groups), totaling 15,985 cases (19%). Accordingly, CMG 'W' (Female reproductive system groups) was the second highest CMG with 8,842 cases (10%) and least CMG was from CMG 'T' (Substance abuse & dependence groups) 62 cases (0.07%).

3.2 The nursing cost and nursing service weights according to discipline

3.2.1 The nursing cost and nursing service weights for medical. The top five highest nursing cost and nursing service weights in the medical discipline have been identified in Table 1. As apparent in the table, four of the cases were from CMG F (Mental health and behavioral group). The table below also shows that method 1 had a higher nursing cost compared to method 2.

Table 1. Nursing cost and nursing service weights for medical – comparisons of method 1 and 2

MY-DRG® code	MY-DRG® description	Method 1		Method 2	
		Nursing cost (MYR)	Nursing service weights	Nursing cost (MYR)	Nursing service weights
F-4-13-II	Bipolar disorders including mania - moderate	6,129	4.9871	5,311	4.3604
F-4-10-I	Schizophrenia - mild	5,252	4.2737	4,787	3.9301
F-4-10-II	Schizophrenia – moderate	4,949	4.0272	4,763	3.9104
F-4-13-I	Bipolar disorders including mania - mild	4,737	3.8549	4,270	3.5055
F-4-16-I	Dementia and other organic brain disturbances including mental retardation - severe	4,301	3.9980	3,903	3.2043

3.2.2 The nursing cost and nursing service weights for surgery. The top five highest nursing cost and nursing service weights in the surgical discipline consisted of different types of cases, all of which were from severity level III. It is notable from table 2 that the MY-DRG® group with the highest nursing cost and nursing service weight was G-1-11-III (Ventricular shunt - major). The table below also showed that method 1 had a higher nursing cost compared to method 2.

Table 2. Nursing cost and nursing service weights for surgery - comparison of methods 1 and 2

MY-DRG® code	MY-DRG® description	Method 1		Method 2	
		Nursing cost (MYR)	Nursing Service weights	Nursing cost (MYR)	Nursing service weights
G-1-11-III	Ventricular shunt - major	9,694	7.8880	8,532	7.0046
M-1-03-III	Spinal fusion procedure - major	8,120	6.6074	7,047	5.7857
U-1-20-III	Other ear nose mouth & throats operations - major	7,974	6.4890	6,953	5.7083
J-1-20-III	Simple respiratory system operations - major	7,111	5.7865	6,264	5.1426
G-1-10-III	Craniotomy - major	6,831	5.5584	5,926	4.8657

3.2.3 The nursing cost and nursing service weights for obstetrics & gynecology (O&G). The top five highest nursing costs and nursing service weights for O&G have been listed in Table 3. As apparent in the table, the highest nursing cost and nursing service weight was in MY-DRG® group O-6-10-III (Caesarean section - major). The table below also shows that method 1 had the higher nursing cost compared to method 2.

Table 3. Nursing cost and nursing service weights for O&G – comparison of methods 1 and 2

MY-DRG® code	MY-DRG® description	Method 1		Method 2	
		Nursing cost (MYR)	Nursing service weights	Nursing cost (MYR)	Nursing service weights
O-6-10-III	Cesarean section - major	2,515	2.0467	1,457	1.1959
O-6-10-II	Cesarean section - moderate	2,019	1.6430	1,152	0.9459
O-6-11-I	Vaginal delivery with fallopian destruction &/or dilation & curettage - minor	1,741	1.4172	1,002	0.8225
O-6-10-I	Cesarean section - minor	1,738	1.4149	981	0.8057
O-6-11-II	Vaginal delivery with fallopian destruction &/or dilation & curettage - moderate	1,676	1.3640	957	0.7861

3.2.4 The nursing cost and nursing service weights for pediatrics. The top five highest nursing cost and nursing service weights according to pediatrics have been listed in Table 4. The nursing cost and nursing service weight were the highest among the cases that were grouped under MY-DRG® P-8-08-II (Neonate birth weight>2499 grams with respiratory distress syndrome & congenital pneumonia - moderate). The table below also shows that method 1 had a higher nursing cost compared to method 2.

Table 4. Nursing cost and nursing service weights for pediatrics - comparison of methods 1 and 2

MY-DRG® code	MY-DRG® description	Method 1		Method 2	
		Nursing cost (MYR)	Nursing service weights	Nursing cost (MYR)	Nursing service weights
P-8-08-II	Neonate birthweight >2499 grams with respiratory Distress syndrome & congenital pneumonia – moderate	1,300	1.0582	1,003	0.8234
P-8-15-I	Neonate birthweight >2499 grams with aspiration syndrome - mild	1,255	1.0218	978	0.8025
P-8-16-II	Neonate birthweight >2499 grams with congenital/perinatal sepsis - moderate	1,254	1.0206	978	0.8025
P-8-17-III	Neonate birthweight >2499 grams with complex operation - severe	1,192	0.9702	912	0.7486
P-8-14-I	Neonate birthweight >2499 grams with complex congenital	1,116	0.9084	858	0.7045

abnormalities - mild

3.2.5 Comparison of nursing cost from method 1 and method 2. Table 5 below shows the results of the analysis using a paired-sample t-test. There was a statistically significant difference in nursing cost for (method 1 using nursing hours = 1230.500, SD = 913.284) compared to nursing cost (method 2 using cost per patient per day = 1220.949, SD = 907.662), t (85041) = 7.495, p<0.001 (two-tailed). The mean difference in nursing cost was 9.552 with a 95% interval ranging from 7.054 to 12.051.

Table 5. Comparison of methods 1 and 2 for nursing costing

	Data	N	Mean Nursing cost	Std. Deviation	t	df	Sig. (2-tailed)
Nursing cost	Method 1 (Using nursing hours)	85042	1230.500	913.284	7.495	85041	0.00
	Method 2 (Using cost of nursing per patient per day)	85042	1220.949	907.862			

4. Discussion

The main objective of this study was to develop the nursing costs and nursing service weights to enable the nursing department to estimate the nursing resources used by the inpatients, using the casemix MY-DRG® hospital classification tool used by UKMMC. This study is the first of its kind in Malaysia. This study provided two approaches in the calculation of the nursing costs and nursing service weights. Throughout this study, the greatest challenge faced was in the calculation of the nursing costs using method one, which was the calculation of the nursing costs based on nursing hours, in which it was very time-consuming as several approaches were required to obtain accurate results. There is ample evidence from the previous studies to show that there are different kinds of methods that can be used for nursing costing. Riewpaiboon et al. (2007) and Negrini et al. (2004) suggested that a variation in results might be obtained from the different costing methods, depending on the requirements and interests of the users [24], [25]. Although the diversity of costing methods may create some confusion among the researchers in choosing the most suitable or appropriate one [25], the differences in the methodologies may also benefit by giving a wider choices for the users to pick from.

In the other study, CMG was used to determine the variability of nursing hours [26]. CMG was also used to compare the cost weight between per diem (per day) and according to the nursing workload [21]. In this study, two methods were used for the costing analysis. The first method was based on average nursing hours per MY-DRG® to obtain the nursing cost and nursing service weights. On the other hand, in the second method, the calculation was based on the cost of nursing per patient per day of their stay. The findings showed that each method produced different nursing costs and nursing service weights. This concurred with several previous studies, which showed that different nursing costs come from different methods and study samples. Ultimately, the

methodologies used in this study have their own strengths, such as the development of the nursing cost and nursing service weights wholly based on MY-DRG®. In addition, the type of costing analysis applied in this study was a combination of the step-down and activity-based costing approach. As demonstrated, this is a new approach in the costing of nursing services. To the extent of the researcher's review, there has been no study conducted so far using a combination of step-down and activity-based costing linking nursing costing information within the casemix system.

In this study, there were 85,042 of cases grouped into 704 MY-DRG® from 2009 to 2012. The strength of this study was in its ability to analyze the information from a large sample of 85,042, making it feasible to estimate the nursing cost and nursing service weights for almost all MY-DRG® groups in UKMMC. The total of the study samples was quite similar to a study done by Gong et al. (2004) describing Chinese hospital activity using the Australian casemix Diagnosis Related Group (DRG) [27]. In the study by Gong et al., there were 84,028 records which were grouped into 529 DRGs involving three public hospitals in Chengdu over a year [27]. It was realized at the time that there was a lack of previous nursing studies done on costing analysis in relation to the casemix system or DRG. The trimming process in this study was based on the low trim point and high trim point (L3H3) method. There are two types of 'outlier' (an unusual case): the inpatient's length of stay which was much longer or shorter than the average (a stay outlier) or a cost that was much more or much less than the average for that group (a cost outlier) [27]. Pertaining to this study, the stay outlier was chosen to be used in the trimming process.

From the 85,042 cases, the majority of patients 50,497 (59.4%) were female while there were only 34,545 (40.6%) male patients. This may be due to the common cases of the case main groups (CMG) being from CMG O (Deliveries groups) and CMG W (Female reproductive system groups). The descriptive analysis showed that the the majority of cases were female within the age group of 20-29 and 30-39, classified as severity level I and II (pregnancy and child birth). It was also revealed that episiotomy was the second top ten highest frequency for procedures (below routine chest x-ray). O&G cases were not included in the level I highest cost. In addition, vaginal deliveries were classified at the lowest cost. The findings from the descriptive analysis involved the following positive assumptions: that these cases are primigravidas or elderly primips which require admission; that their very short LOS is to do with the specific care for normal deliveries and that most if not all nurses working in the delivery rooms and postnatal wards are midwifery trained. This contributes positively to the short LOS. This is in line with a study done by Saperi et al. (2005) to determine the complexity of cases in UKMMC, which found that the majority of cases at severity levels I and II were from pregnancy, childbirth and puerperium cases[28]. The numbers of inpatients according to age group were 20 to 29 years old (21.2%), 30 to 39 (17.6%), below 10 years old (13.4%), elderly 60 to 69 years old (12.5%) and 50 to 59 years old (10.8%). The average length of stay for the inpatients was 5.3 (5.52) days. The average length of stay could not be compared due to differences in the methodology of the studies such as the sample characteristics and study settings. The majority of inpatient cases in UKMMC were from the medical discipline, in which 58% were from severity level I cases. Most of these cases were schizophrenia, bipolar disorders, dementia, childhood mental disorders etc. These cases recorded the highest LOS for severity level I (mean LOS of 20.81). There are at least two factors that could influence the long LOS. Firstly, the cases could have been referred from other hospitals at a fairly severe stage. Secondly, there is also a probability that the majority of the nurses are not trained in mental health nursing and there is also the fact that there are fewer doctors trained

in psychiatry compared to other specialized areas. Based on the distribution of psychiatrists in Malaysia according to the state in 2018, the total number of psychiatrists in Malaysia was 410, which is only 0.02% of the Malaysian population [29]. Furthermore, Douzines et al. (2012) stated that the highest LOS could also be influenced by medical problems related to psychiatric inpatients [30]. For example, arterial hypertension commonly occurs in a patient with bipolar disorder and endocrine or metabolic diseases for schizophrenia patients. This finding is consistent with a study done by Amrizal et al. (2005) on costing the cardiology cases where the findings showed that cases of medical cardiology were higher (86.5%) than surgical cardiology (13.5%) [31]. The higher cases were from severity level I compared to severity levels II and III [31].

Diagnoses and procedures are vital in the casemix system. The most common procedure done on the inpatients was a routine chest x-ray. A chest x-ray is a common investigation required in the early assessment of several cases and it is also used as part of a routine investigation for pre-operative cases and for patients 35 years old and above. The procedure may require being done more than once, such as where there is a respiratory problem or in hemodynamically unstable cases. The most common diagnosis was spontaneous vertex delivery. There were a number of cases in CMG O (Deliveries groups) and CMG W (Female reproductive system groups). The results of the study also showed that the highest number of cases in UKMMC was from O-6-13-I (Vaginal delivery - mild) to the amount of 6,045 cases.

There is high variability in the nursing time between Diagnosis Related Groups [15]. Evidence also proven that nursing activities are highly heterogeneous within Diagnosis Related Groups [32]. Pertaining to this study, the result of both methodologies showed that this study could determine the variability of nursing cost and nursing service weights for every MY-DRG®. In method one, the variability of nursing activities within MY-DRG® was presented using the variability of nursing hours per case in each MY-DRG® that was involved in step two (calculation of nursing hours per patient per day of stay of each discipline) assisted by the length of the stay. This finding was supported by the study done by Jenkins & Welton (2014), who found that variations in the nursing hours for similar patients were between 0.36 to 13 hours for 247 Diagnosis Related Groups [14]. Both authors used the nurse and patient database as a measurement tool for nursing time. In method two, the cost of nursing per patient per day of their stay was used as a basic requirement to obtain the nursing cost per MY-DRG®. Thus the limitation of this method was that the variability of nursing cost was limited per MY-DRG®. Both methods provided the variability of nursing cost and nursing service weights across the 704 MY-DRG® comprised of 85,042 cases. However, some studies may have other views on using DRG to calculate the nursing cost. Mølgaard (2000) argued that determining the extent to which DRG system reflects the nursing cost can be steep[33]. Similarly, Finkler (2008) suggested that DRG is not an appropriate approach to determine the nursing intensity or the variability of the nursing resources consumed by each patient, which was strongly supported by Welton et al. (2009) who stated that the use of an average cost instead of a 'patient-specific' cost would be not feasible to measure the actual nursing care time or cost differences [5], [34].

Both methodologies employed by this study used the length of stay as the cost driver to differentiate the nursing cost for each MY-DRG®. This type of method is strongly supported by Schreyögg et al. (2006), who stated that the allocation of hospital costs to cases could use the length of stay as an allocation base when there are no other specific allocation criteria [19]. In some studies, the use of nursing activity was the most preferable rather than the length of stay in reflecting the

variability of nursing resources consumed by the patients[7]. The authors further stated that when using the calculation model based on the length of stay and not on the nursing activities, this would lead to more homogenous groups. This is as most of significant part of variation was not being measured. Even though some of the patients had a similar diagnosis across the DRG groups, they might required different needs related to nursing care [35]. Although the use of the nursing activity database has been found useful (Welton, Zone-Smith & Fischer 2006; Welton et al. 2009), such databases may not be feasible in this study because the nursing database has yet to be kept and recorded. This is because the nursing information is based on nursing care time and the resources used for each inpatient [16], [34].

Although the calculation of the nursing cost in this study used average nursing hours and nursing costs, the study findings could actually reveal the variability of nursing costs within MY-DRG® for specific case types, namely medical, surgery, pediatric and O&G cases. This information is essential compared with differentiating the nursing cost within and between similar nursing units or wards for each patient. In contrast, Tillet & Senger (2011) stated that there are different demands of the nursing services from unit to unit and from patient to patient[36]. Correspondingly, the evidence has suggested that nursing care and nursing cost are highly variable within and across similar units[37].

The findings from this study would enable nursing to distinguish between the nursing cost and nursing service weights for every MY-DRG®. MY-DRG® is a more powerful approach in that the study results were able to show the variability of nursing care based on nursing service weights that determined the differences in the nursing workload among the different types of illnesses and severity level. This methodology could be applied by the local healthcare settings because of the nursing data that records the nursing hours of the nursing services done for every inpatient. The advantage of linking the nursing cost and DRG system was that nursing costs are a more applicable nursing cost that can be determined further by the severity level of the patient. Unfortunately, the majority of hospitals in Malaysia have yet to officially implement the casemix system in their hospital management. Therefore, the other option for hospital costing is to impute data using a computerized costing system that is highly accurate but higher in cost[5]. In other developed countries such as the United States, the nursing database is readily available for use as a source of information to determine the economic value of nursing care [34].

Direct and indirect nursing services provided to the patients in the different types of nursing services were also not determined at this stage. Some of the studies used classifications such as value and non-value nursing to differentiate between the types of nursing care [2]. As stated by Chiang (2009), the nursing care activities performed for the patients consisted of direct care and indirect care. Direct care is easily determined based on the hours of care, but not the indirect nursing care, such as telephone calls, documentation or meeting with doctors and the family. This is since the estimated times spent on those activities was and is challenging to measure [12]. Thus, the direct and indirect nursing care for patients could only be estimated. The standard nurses working hours were comprised of direct and indirect nursing care for the patient. On the other hand, Penner (2013) described that ‘hours per patient day indicates the amount of direct nursing care time that an inpatient requires per day [38]. The second method of nursing costing was more straightforward as it required fewer steps to follow compared to the first method. It began with determining the nursing cost per patient per day, furthering the statement that the nursing cost between MY-DRG® groups was differentiated according to the ALOS of each MY-DRG®. The choice of method depends on the requirement of the

user, and whether they are to use the higher or lower rate of nursing cost for their settings. Since method one tends to produce higher nursing costs, the results presented can be re-evaluated and re-adjusted by recalibrating the nursing cost and nursing service weight.

Besides, both methods have successfully developed the nursing cost based on MY-DRG®. As viewed by Laport et al. (2008), the nursing cost could still be developed without using DRG based on two approaches, namely the calculation of nursing costs using the average nursing cost per patient per day and a calculation based on the nursing workload [15]. Contrary to this, Wilson et al. (1988) commented that the inconsistent methodology used might produce problems when making the comparison [39]. Through the observation of the results, it was anticipated that there would be some differences between the nursing cost and nursing service weights developed using nursing hours and cost per patient per day of their stay.

When comparing both methods, it showed that the method of calculation using nursing hours consistently gave a higher nursing cost compared to method two, which used cost per patient per day of their stay. The first method to obtain the nursing cost was derived from the nurses' working hours a year based on their standard working hours a month. Nursing hours per patient per day of their stay is the basic component of the calculation. Any overtime, extra duties and annual leave was excluded from the calculation. Although both methods can be used due to the rising of hospital services nowadays, the one with the higher estimation may be appropriate to use for hospital reimbursement purposes.

In general, the results of the nursing costs and nursing service weights from the surgery discipline were higher compared to other disciplines such as medical, O&G and pediatrics. The higher nursing cost and nursing service weight across the surgical discipline were because the patients may need more nursing interventions, both pre-operatively and post-operatively. For instance, pre-operatively, they may require an immediate x-ray, lab investigations, a blood transfusion and rigorous preparation physically before an operation including shaving, the cleaning of specific areas, an intravenous drip and drug administration. Post-operatively, in the acute phase, the patients may need frequent observation such as taking their vital signs and monitoring the wound for bleeding so as to prevent post-operative complications. Post-operatively, for most major surgeries, the patients are nursed in bed for at least 1 to 2 days depending on the severity. During this time, all of their hygiene needs will be taken care of. This was agreed on by Welton, Zone-Smith & Fischer (2006), who stated that the increased level of severity indicates the increase in the level of nursing intensity [16]. Furthermore, Knauf et al. (2006) stated that the scoring of nursing intensity was usually the highest in two peak times; admission or surgery [1].

This study has identified that CMG F (Mental health and behavioral groups) had higher nursing costs and nursing service weights compared to other MY-DRG® across the medical disciplines and case-types. CMG F also had longest length of stay with a mean length of stay of 16.50 (11.41) days with the maximum length of stay being 63 days compared to other CMGs. The findings are supported by Wilson et al (1988), who stated that length of stay is typically different in different parts of the country [39]. This was as suggested by a study done by Auffarth et al. (2008), comparing psychiatric inpatients stay in the United States and in a German hospital [40]. The result from the study by Auffah et al. stated that the average inpatient stay for mental health patients was shorter in the United States compared to Germany. This was due to the cultural differences and diversity of the health system [40]. Furthermore, mental health patients have a longer length of stay as they have a

more chronic condition compared to acute cases. Therefore, there are not much nursing interventions or procedures that need to be done unless they are in the acute stage of illness.

In the calculation of the nursing costs using method one, the nursing cost was higher due to the nursing hours. Nursing activities for mental health patients are more focused on observing, monitoring behavior and documenting the necessary information throughout their hospitalization. Furthermore, both methods of calculation are involved in the use of their length of stay data. Thus the resulting nursing cost is prone to be higher in mental health cases. Cases from the caesarean section and in terms of vaginal delivery were among the highest nursing costs. This was agreed on by Welton, Zone-Smith & Fischer (2006), as differences in nursing hours occurred for the cesarean section, where the average nursing hours were 6.1 and for vaginal delivery, 5.2 nursing hours per day of nursing care was the average [16].

The difference in nursing hours was expected as a surgical procedure may require more nursing interventions such as an assessment, the administration of an analgesic and wound care. Results from pediatrics showed that P-8-08-II (Neonate birth weight >2499 grams with respiratory distress syndrome & congenital pneumonia - moderate) was higher in terms of nursing cost compared with the other departments. The results in this study were difficult compared with other studies; for example, Knauf et al (2006) defined pediatric DRG groups as neonates who were dying within one day, who had been transferred < 5 days of birth and who had a birth weight < 750 grams [1].

5. Conclusions

Nursing has a major function in the management of patient care. This study provides results in the form of nursing costs and nursing service weights for every MY-DRG® of the casemix system, UKMMC. The findings of this study also indicate that the nursing costs and nursing resources consumed by inpatients across the different MY-DRG® can be successfully determined using the casemix system. The results showed that the cost of nursing services was higher when the calculation of the nursing costs was based on nursing hours (method one) compared to a cost per patient per day of their stay (method two). The outcome of this study is that both methodologies can be implemented and recommended to the health policymaker.

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References

[196] Knauf RA, Ballard K, Mossman PN and Lichtig LK. Nursing cost by DRG: nursing intensity weights. *Policy, Politics and Nursing Practice* 2006*;* **7**(4):281-9.

[197] Upenieks VV, Akhavan J, Kotlerman J, Esser J. and Ngo MJ. Value-added care: a new way of assessing nursing staffing ratios and workload variability. *The Journal of Nursing Administration* 2007; 37(5):243-52.

[198] Kane NM. & Siegrist RB. Understanding Rising Hospital Inpatients: Key Components of Cost and the Impact of Poor Quality. 2002. https://www.researchgate.net/.../265568685_Understanding_Rising_Hospital_Inpatient_... [accessed16 April 2017]

[199] Jenkins, PA. Nursing Cost Per Acute Care Episode – exploring relationships Using Patient Level Data. Thesis Doctor of Philosophy. University of Colorado 2013.

[200] Finkler, SA. Measuring and accounting for the intensity of nursing care. is it worthwhile? *Policy, Politics and Nursing Practice* 2008; 9(2):112-7.

[201] Rutherford MM. The how, what, and why of valuation and nursing. *Nursing Economic* 2008; 26**(**6):347-83.

[202] Pirson M, Delo C, Pierdomenico LD, Laport N, Biloque V. and Leclercq P. Variability of nursing careby apr-drg and by severity of illness in a sample of nine belgian hospitals. *BMC Nursing* 2013*;*12 (26).

[203] Welton JM. and Fischer MH. Nursing intensity billing. *The Journal of Nursing Administration* 2006; 36(4):181-8.

[204] Welton JM. Hospital nursing workforce costs, wages, occupational mix, and resource utilization. *The Journal of Nursing Administration (JONA)* 2011*;* 41(7/8):309-14.

[205] Mark BA, Lindley L. and Jones CB. Nurse working conditions and nursing unit costs. *Policy, Politics and Nursing Practice* 2009*;* 10(2):120-8.

[206] Storfjell JL, Omoike O. and Ohlson S. The balancing act. Patient care time versus cost. *The Journal of Nursing Administration (JONA)* 2008*;* 38(5):244-9.

[207] Chiang B Estimating nursing costs - a methodological review. *International Journal of Nursing Studies* 2009*;* 46:716-22.

[208] Finkler SA. & Graf CM. *Budgeting Concepts for Nurse Managers.* 3rd ed. Philadelphia: W.B. Saunders Company. 2001.

[209] Jenkins P. and Welton JM. Measuring direct nursing cost per patient in the acute care setting. *The Journal of Nursing Administration* 2014; 44(5):257-62.

[210] Laport N, Sermeus W, Vanden Boer G. and Van Herck P. Adjusting for nursing care case mix in hospital reimbursement: a review of international practice. *Policy, Politics and Nursing Practice* 2008*;* 9(2):94-102.

[211] Welton JM, Zone-Smith L. and Fischer MH. Adjustment of inpatient care reimbursement for nursing intensity. *Policy, Politics and Nursing Practice* 2006*;* 7(4):270-280.

[212] McKinley S. Casemix Update: Australian Critical Care Costs and Service Weights Part 1. Australian Critical Care 1995; 8(4):10-13.

[213] Graf CM, Millar S, Feilteau C, Coakley PJ. and Erickson JI. Patients' needs for nursing care: beyond staffing ratios. *The Journal of Nursing Administration* 2003; 33(2):76-81.

[214] Schreyögg J, Tiemann O. and Busse R. 2006. Case Accounting to Determine Prices: How Well do Prices Reflect Costs in the German DRG-system? *Health Care Management Sciences*

2006; 9(3):269-279.

[215] Keepnews DM. Nursing Intensity and Hospital Payment. *Policy, Politics and Nursing Practice* 2006; 7(4):237-239.

[216] Botz CK, Sutherland J. and Lawrenson J. Cost Weight Compression: Impact of Cost Data Precision and Completeness. *Health Care Financing Review/Spring* 2006; 27(3):111-122.

[217] Ali Jadoo SA, Aljunid SM, Zafar A. and Dexter VD. Development of MY-DRG Casemix Pharmacy Service Weights in UKM Medical Centre in Malaysia. *DARU Journal of Pharmaceutical Sciences* 2015; 23:14.

[218] Roszita I. Malaysia Diagnosis Related Group (MY-DRG®): Membangunkan Pemberat Perkhidmatan Sistem Casemix untuk Ujian Makmal Diagnostik dan Prosedur Radiologi di Pusat Perubatan Universiti Kebangsaan Malaysia. *Tesis Dr Falsafah, Jabatan Kesihatan Masyarakat,* Universiti Kebangsaan Malaysia 2016.

[219] Riewpaiboon A, Malaroje S. and Kongsawatt S. 2007. Effect of Costing Methods on Unit Cost of Hospital Medical Services. *Tropical Medicine and International Health.* 12(4): 554-563.

[220] Negrini D, Kettle A, Sheppard L, Mills, G H. and Edbrooke D I. 2004. The Cost of a Hospital Ward in Europe: Is There a Methodology Available to Accurately Measure the Costs? *Journal of Health Organization and Management.* 18(3): 195-206.

[221] Cockerill, R., O'Brien Pallas, L., Bolley, H. and Pink, G. 1993. Measuring Nursing Workload for Case Costing. *Nursing Economic$.* 1(6): 342-349.

[222] Gong Z, Duckett, S J, Legge, D G. and Pei L. 2004. Describing Chinese Hospital Activity with Diagnosis Related Groups (DRGs). A Case Study in Chengdu. *Health Policy.* 69(2004): 93-100.

[223] Saperi, B S, Zafar A, Amrizal M N. and Syed Aljunid. 2005. Complexity of Cases in Hospital UKM, Malaysia. *Malaysian Journal of Public Health Medicine.* 5(Supplement 2): 3.

[224] Guan N C, Lee T C, Francis B, Yen T S. 2018. Psychiatrists in Malaysia: The Ratio and Distribution. *Malaysian Journal of Psychiatry*.

[225] Douzenis A, Seretis D, Niks S, Nikolaidau P, Papadopoulou A, Rizos E N, Christodoulou C, Tsopelas C, Mitchell D. and Lykouras L. 2012. Factors Affecting Hospital Stay in Psychiatric Patients: The Role of Active Comorbidity. *BioMed Central (BMC) Health Service Research.* 12(166): 1-9.

[226] Amrizal M N, Rohaizat Y, Zafar A, Saperi S. and Aljunid, S M. 2005. Casemix Costing in Universiti Kebangsaan Malaysia Hospital. A Top Down Approach: Cost Analysis for Cardiology Cases. *Malaysian Journal of Public Health.* 5(Suppl. 2): 33-34.

[227] Pirson M, Delo C, Di Pierdomenico L, Biloque V, Martins D, Eryuruk U. and Leclercq P. 2011. Analysis of the Variability of Nursing Care by Pathology in a Sample of Nine Belgian Hospitals. *BioMed Central (BMC) Health Services Research. From 27th Patient Classification Systems International (PCSI) Working Conference.* 1(Supplement): A11.

[228] Mølgaard, E. 2000. Calculation of Nursing Costs in Relation to the DRG-system. https://perswww.kuleuven.be/~u0010801/downloads/drgnursingloadmvg.pdf [15 April 2017]

[229] Welton J M, Zone-Smith L. and Bandyopadhyay D. 2009. Estimating Nursing Intensity and Direct Cost Using the Nurse-Patient Assignment. *The Journal of Nursing Administration.* 39(6): 276-284.

[230] Kirby KK. Hours Per Patient Day: Not the Problem. Nor the Solution. *Nursing Economic$* 2015*;* 33(1):64-6.

[231] Tillet J. & Senger P. 2011. Determining the Value of Nursing Care. *The Journal of Perinatal & Neonatal Nursing.* 25(1): 6-7.

[232] Welton J M. 2006. Policy and Politics. Paying for Nursing Care in Hospitals. *Advanced Journal of Nursing.* 106(11): 67-69.

[233] Penner S J. 2013. *Economics and Financial Management for Nurses and Nurse leaders.* 2nd Ed. New York: Springer Publishing Company.

[234] Wilson L, Prescott PA. and Aleksandrowicz L. Nursing: a major hospital components. *Health Service Research* 1988; 22(6): 773-96.

[235] Auffarth I, Busse R, Dietrich D. & Emrich H. Length of psychiatric inpatients stay: comparison of mental health care outlining a casemix from hospital in germany and the united states of america. *German Journal of Psychiatry* 2008; 11(2): 40-4.

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A TIME-MOTION STUDY IN INTENSIVE CARE UNIT USING DIRECT CARE NURSING TOOL

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ABSTRACT

The objective of this study was to describe time-motion and comparisons of spending time between senior and junior nurses use the direct care tool during nursing action in intensive care unit. This study was conducted during three months for 34 professional nurses. Six investigators directly observed and measured of time on each nursing direct care action that applied by the nurses. There were 40 types of direct care nursing were observed from 30 nurses. The most common nursing direct care in the intensive care unit was an invasive procedure such as injection and inserting an intravenous needle. The longest mean time of duration is personal (bathing) with an average time of 14.33 minutes. The shortest average duration of time is respiratory procedure for use of a nebuliser with a mean time of 1.43 minutes. So based on the study, the minimum nursing hours per patient day is 365 minutes (6.08 hours) and the maximum time is 542 minutes (9.03 hours) per day with direct-care mean score is 495 minutes (7.82) hours per day. Spending time was not significantly different between senior and junior nurses in time motion (p.02).

Keywords: time motion study, intensive care unit

1. Introduction

Nursing management consists of two important parts, including nursing leadership and the management of patient care [1]. A time motion study is one of the components involved in the management of patient care [2]. Taylor explained that time motion studies can be described as detailed observations of the time that is needed to perform specific tasks [3]. For example, there was nursing direct care and indirect care (called nursing action). Organizing health services which include nursing actions is very complex, thus demanding that the health workers follow standards of knowledge and science [4]. Good standards that are followed by the productivity of health staff will create quality nursing care [5]. Time motion is one measure of the performance achievement that is based on set standards. Nurses are the spearhead of patient care. This represents a crucial and limited resource; the effectiveness and efficiency of the nurses is important in the promotion of safe patient care and hospital quality performance. Types of clinical department include pediatrics or surgery;

they are significantly associated with the demands on the health care staff [6]. One of the various types of nurses includes emergency nurses that usually work in the emergency or high care rooms such as an Intensive Care Units. Spending time in the high care unit is challenging, where the nurses have to struggle to devote time to critical patients. It is argued that complex nursing care can cause a heavy nurse workload. As a result, they may neglect part of the nursing actions [1]. On the other hand, a study by Orique, Patty and Woods found that there was no significant relationship between nurse workload and missed nursing care [7]. This study conducted a time and motion study to investigate an evidence-based concept on how high care unit nurses spend their time and the differences in spending time between the senior and junior nurses.

2. Method

The study was conducted on an Intensive Care Unit (ICU) for three months in a hospital in Indonesia. Six professional students who were characterized participated in the study. They undertook an observation of each shift rotation in the research unit. The observation was undertaken on 30 nurses who contributed a substantial amount of care. To measure the patients' demand of nursing care, we applied a time motion study form. First, we identified all nursing actions in the ICU using a daily log form. Second, based on the list of direct nursing care, we made a list of the time motion study observation sheets that consisted of some of the nursing actions, then plus the observation time and motion study. The observation sheet was comprised of six components of direct care nursing action (DCNA): 1) observation and monitoring that provided nine DCNAs, 2) self-care which consisted of eight DCNAs, 3) diet, food and drink which consisted of seven DCNAs, 4) medication which consisted of seven DCNAs, 5) somatic therapy which consisted of five DCNAs and 6) health education which consisted of four DCNAs. To keep a representative sample of the patients, we involved all of the patients in ICU in the intensive care acuity system. We determined all high care nurses regarding the requirements of their training and especially their competency. The data was analysed using the Statistical Package of v. 20 (IBM SPSS). The categorical data was provided as a distribution. The continuous variables have been summarized as means. They were analyzed using the dependent t test as a measure of the comparison of the time spent between the senior and junior nurses. The comparison was conducted based on all DCNAs that have been collected and calculated on the total time required.

3. Results

A total of 30 nurses were observed in the Intensive Care Unit (ICU). The observation was applied to the nurses who provide direct nursing care services (direct care) to the patients. A number of 34 patients were used during the observation.

Table 1. Profile of the nurses

	F	%
Ages		
18-40	25	73
40-61	9	27
Gender		
Male	11	31
Female	23	69
Education		
Diploma	17	50
Bachelor	17	50
Length of work		
≤ 15 years	29	85
>15 years	5	15
Training		
5-8 times	18	52
>8 times	16	48

Table 1 showed that the majority range of the participants' for age were 18-25 (73%). There were more females (69%) than males and the length of work was always less than 15 (85%) years. It can be seen in the table that the nurse should have training requirements. Almost 50% of the nurses had intensive care unit nursing care training.

Table 2. Profile of the patient's intensive care

	F	%
Ages		
18-40	17	48.5
41-60	18	51.5
Gender		
Male	15	43
Female	20	57
Length of stay		
Min	9	
Max	16	
Mean	12	

Table 2 shows the profile of the patients in the intensive care unit. All acuity patient classifications have been provided for the total and intensive care. As can be seen in Table 2, the patients' characteristics described the ages of the patients as being more than 41 years old at 48.5%, while those less than 40 years old made up 51.5%. Females made up 43% and males made up 57%. Next, the length of the stay of the patients was for a minimum of 9 days, a maximum of 16 days and an average of 12 days.

A list of the daily logs of the nursing actions that were observed by the professional nurses included injecting, counting of infusion drops, calculating fluid balance, personal hygiene like bathing the patients, measuring blood pressure and other vital sign examinations, providing medication and giving health education. The distribution of the DCNA spend time can be seen in Table 3.

Table 3. Direct care nursing action distribution in intensive care

CDNA	Mean	Min	Max
Personal hygiene	14.33	4	39
Oxygenation	3.00	3	3
Injection of medicine	3.00	2	3.6
Suction	2.31	2	5
Extubating	3.6	3	5
Wound care	7.00	3	14
Take blood sample	12.00	3	20
Diagnostic examination	12.66	11.7	20
Oral hygiene	3.00	1	5
Syringe pump application	2.50	1	3
Tracheostomy care	7.83	4	16
ECG examination	3.58	2	5
Infuse pump application	2.67	1	4
NGT management	3.40	3	4
Bronchial washing	2.71	2	4
Heating Up	9.50	5	14
X-Ray Preparation	2.33	1	12
NGT application	5.50	5	6
Replacing infusion flabotle	1.00	1	1
Colostomy Care	3.20	3	4
Replacing DC	6.00	5	7
Infusion fluid observation	1.29	1	2
Replacing of bandages	3.33	2	4
Infusion remove	3.67	2	7
Remove IV needle	10.40	8	15
Nebulizer therapy	1.43	1	2
Nursing supervision	13.50	12	19
Feed the patient	2.25	2	3
New patient hand over	13.40	14	16
Apply computer monitor	4.25	4	5
Family Heath Education	12.30	10	14.00
Blood Pressure measurement	3.02	2.7	3.5
Health assessment	11.22	9.20	12.00
Heart rate and temperature	2.02	2.5	3.05
Fluid Balance	13.20	12.20	14.03

Table 3 shows that there were 35 types of direct nursing care in the intensive care unit. In the table, we have also provided the mean, minimum, and maximum nursing action spending time.

Table 4. Distribution of direct care nursing spend time

Distribution	Times
Maximum direct care nursing	14.33 minutes
Minimum direct care nursing	1.43 minutes
Maximum direct care nursing	9.03 hours per day
Minimum direct care nursing	6.08 hours per day
Mean score direct-care	7.82 hours per day

It can be seen in Table 4 that the longest mean time of duration was for personal hygiene (bathing) with an average time of 14.33 minutes. The shortest average duration of time was the respiratory procedure for the use of a nebuliser with a mean time of 1.43 minutes. Based on the study, the minimum nursing hours per patient in a day was 365 minutes (6.08 hours) and the maximum time was 542 minutes (9.03 hours) per day with the direct-care mean score being 495 minutes (7.82) hours per day.

Table 5. Spending time between the senior and junior nurses

Group	Mean	Sd	t	Sig
Senior	5.8415	5.492	.038	.970
Junior	5.7955	5.420		

Table 5 describes that the group means between the senior and junior nurses are statistically different. On the other hand, the value in the "Sig. (2-tailed)" row is more than 0.05 where, looking at the group statistic table, we can see that the nurses who had junior experience were doing the same as the senior nurses in terms of spending time. This study found that there were no significant differences regarding spending time that was compared that resulted in $t = 0.038$, $p = 0.970$.

4. Discussion

As seen in the two tables above (Tables 1 and 2), the number of nurses is 30 while the average number of patients per day is 12. This shows that the number of nurses who provide nursing care to patients with intensive acuity is not balanced. A study found that staffing patterns may not balance when achieving patient outcomes in an intensive pediatric care setting with a high acuity patient level [8]. It can be reported that there are an average of 12 patients (71%) out of 17 beds available in the ICU per day (see table 2). It could indicate that there needs to be more activities and services in the inpatient care from the nurses. The results of the analysis of the average patients per day in the ICU can be categorized as high care. It is recommended that the ideal value for the average number of patients is no more than 85% per day [9],[10].

There were 35 types of Direct Nursing Action (DNA) that were observed and listed based on the daily logs in this study. Other studies found that the majority of the nursing staff spent the most time on direct care interventions, particularly in the domain of basic physiological care like personal hygiene and fluid requirements [11],[12]. Within one working day, the intensive care nurses spent an time of 469.50 minutes or 7.8 hours providing nursing services directly to their patients. Huber explained that on average, it took eight hours for the nurses to provide direct nursing care to the patients in the intensive care category [9]. Direct care activities in the intensive care unit tend to be complex, but the workload could be handled by nurse practitioners such as professional nurse students (senior student), where they commonly helped by checking vital signs, suctioning, positioning the patients, replacing the infusion bottles and providing nutrition through a Naso Gastric Tube (NGT). The direct nursing care activities that should be carried out by the nurses are thus reduced.

As can be seen in the results of the senior and junior nurse comparisons, there were no significant differences between them. The majority of the nurses spent their time with the intensive

care patients, which did not change. The work patterns commonly applied functional methods. A study conducted by Westbrook et al found that there was no multidisciplinary care team work among the health staff in nursing care [11],[13]. The task time distribution was similar; the junior nurses tended to do simple tasks and the senior nurses did the more complex tasks. However, the average time spent was not significant different. Looking at the direct care nursing categories of the junior and senior nurses, 'services that were not differences', which may due to the similar complexity of the tasks between both of them. This also may be caused by the frequency distribution of patient classification according to the bed occupation rating.

Another reason for this is that it may be due to the distribution of the patients in intensive and total care (89%) with an average of 10 patients per day. For intermediate care, there is was a mean of 2 patients per day. This is because the ICU has a focus on dealing with critical patients whose conditions are unstable and who thus require extra supervision and treatment [10], [14] such as patients with severe trauma, post-major surgery and who are experiencing critical complications of various diseases.

Direct care such as medication tasks have been observed in this study. However, indirect care like professional communication that consumed a lot of time was not considered to be observed in direct care nursing actions. Mendoza and Heredero suggested that both digital and manual communication is very important to develop institutional relationships [15]. In this study, this may improve nursing action services. In the nursing professional relationship, communication is required in the sustainable nursing process [16].

References

[236] Giltinane, C.L., 2013. Leadership styles and theories. *Nursing Standard*, *27*(41).

[237] Sinsky, C., Colligan, L., Li, L., Prgomet, M., Reynolds, S., Goeders, L., Westbrook, J., Tutty, M. and Blike, G., 2016. Allocation of physician time in ambulatory practice: a time and motion study in 4 specialties. *Annals of internal medicine*, *165*(11), pp.753-760.

[238] Conti, R.F., 2013. Frederick Winslow Taylor. *The Oxford Handbook of Management Theorists*, p.11.

[239] Permenkes, 2016.,DepartemenKesehatan. StandarTenagaKeperawatan di RumahSakit. Jakarta.

[240] American Diabetes Association, 2015. Standards of medical care in diabetes—2015 abridged for primary care providers. *Clinical diabetes: a publication of the American Diabetes Association*, *33*(2), p.97.

[241] Van Oostveen, C.J., Gouma, D.J., Bakker, P.J. and Ubbink, D.T., 2015. Quantifying the demand for hospital care services: a time and motion study. *BMC health services research*, *15*(1), p.15.

[242] Orique, S.B., Patty, C.M. and Woods, E., 2016. Missed nursing care and unit-level nurse workload in the acute and post-acute settings. *Journal of nursing care quality*, *31*(1), pp.84-89.

[243] Rogowski, J.A., Staiger, D.O., Patrick, T.E., Horbar, J.D., Kenny, M.J. and Lake, E.T., 2015. Nurse staffing in neonatal intensive care units in the United States. *Research in nursing & health*, *38*(5), pp.333-341.

[244] Huber, D., 2013. *Leadership and nursing care management*. Elsevier Health Sciences.

[245] Sudra, R.I., 2010. StatistikRumahSakit. *GrahaIlmu. Yogyakarta*.

[246] Tuinman, A., de Greef, M.H., Krijnen, W.P., Nieweg, R.M. and Roodbol, P.F., 2016. Examining time use of Dutch nursing staff in long-term institutional care: a time-motion

study. *Journal of the American Medical Directors Association*, *17*(2), pp.148-154.
[247] Westbrook, J.I., Duffield, C., Li, L. and Creswick, N.J., 2011. How much time do nurses have for patients? A longitudinal study quantifying hospital nurses' patterns of task time distribution and interactions with health professionals. *BMC Health Services Research*, *11*(1), p.319.
[248] Hermans, G. and Van den Berghe, G., 2015. Clinical review: intensive care unit acquired weakness. *Critical care*, *19*(1), p.274.
[249] Larsson, C., Wågström, U., Normann, E. and ThernströmBlomqvist, Y., 2017. Parents experiences of discharge readiness from a Swedish neonatal intensive care unit. *Nursing open*, *4*(2), pp.90-95.
[250] Lacayo-Mendoza, A. and Pablos-Heredero, C.D., 2016. Managing relationships and communications in higher education efficiently through digital social networks: The importance of the relational coordination model. *Dyna*, *83*(195), pp.138-146.
[251] Nursalam, M., 2014. ManajemenKeperawatan. *Jakarta: SalembaMedika*.

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FACTORS RELATED TO IMPLEMENTATION CLINICAL RESPONSE OF EARLY WARNING SCORE IN A PRIVATE HOSPITAL OF CENTRAL INDONESIA

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ABSTRACT

Early Warning Score is an early detection system that deterioration the patient's condition which aims to prevent worsening of the patient's condition. Based on observation that have been made, there is a incompatibility with implementation of the clinical response and the Standard Operating Procedure that has been determined. The purpose of this study was to analyse the factors related to the implementation of the Early Warning Score at a Private Hospital in Central Indonesia. This research was conducted using a quantitative descriptive correlational method with cross sectional design. A total sampling technique was applied by recruiting 55 nurses. Factors related to implementation clinical response EWS were measured using questionnaire and non behavioural observation with record analysis. Chi-Square test was applied to identify the correlation of the factors. The result of this study revealed that there was no relationship environmental factor (p=0.261), workload factor has no relationship (p=0.818), equipment availability factor has no relationship (p=0.276), and knowledge factor has no relationship (p=0.276).

Keywords: early warning score, implementation factor of early warning score, clinical response

1. Introduction

An Early Warning is an assessment standard for monitoring changes in the physiology that consists of six parameters for documentation consisting of the vital signs of the adult patient and any additional oxygen use. The score of the National Early Warning Score (NEWS) counted from the seven elements were recorded. If the score of NEWS is high, then there are more major physiological changes being experienced by the patients. More major changes in the physiology from outside the normal range have made the physiological condition of the patients worse [13].

When the patient's condition worsens, then the nurse must do an intervention that is also known as a clinical response. The phenomenon found from the observation from January until April 2018 done in a Private Hospital in Central Indonesia found that some nurses did not conduct a clinical response EWS according to the Standard Operating Procedure determined by the hospital.

Gordon and Beckett [5] conducted an audit on the documentation on the Scottish Early Warning Score System (SEWS) for the night shift and found that only 21% of the night shift graph was completely and had correctly documented SEWS. The 55% from the graph had no calculations

and 21% of the results from the graph had the wrong calculations. The observation of the parameters often ignored respiration frequency, temperature and neurological status. The same result was obtained by Kolic, Crane, McCartney, Perkins and Taylor from 70 patients that were in care in the ward; between 18,9% had the correct EWS score [7].

Rose and Clarke said that the intervention given by the health staff was often incorrect and in some cases, the health staff even neglected EWS, causing a high workload [12]. Besides their workload, according to Philips Healthcare, the clinical response implementation of EWS was influenced by other factors such as the environment, knowledge and the decreased awareness of the nurses about how important vital sign monitoring is. Some of the study results made the researcher realize that some of the factors can affect the implementation of the clinical responses to EWS [11]. Based on the phenomenon found, this study aims to analyze the factors related to the implementation of the Early Warning Score in a Private Hospital in Central Indonesia.

2. Methods

This study was a quantitative research with a correlational design. The sample population of this research consisted of nurses who worked in one of the wards. The sample used for this study consisted of 55 respondents using the total sampling method. The respondents for this study must have followed the EWS training and not been on leave. The instrument for this study consisted of a questionnaire that was modified and developed by researcher. The researcher modified the questionnaire using a pilot study. The pilot study was conducted to determine how suitable the condition of the hospital was. The questionnaire consisted of 37 statements and used a Likert scale that consisted of the workload factor, environmental factor, knowledge factor and equipments availability factor. Furthermore, this study also conducted a record's analysis using an observation sheet that was arranged according to the operational standard procedure clinical response of the Early Warning Score (EWS). Based on the validity test and reliability test, we obtained an r Alpha for knowledge of 0,701 and the result showed that the questionnaire was valid and reliable with an r Alpha $\geq$ 0,70. This study is related to human research, so the researcher had to conduct an ethical review. This study underwent an ethical review and was approved by the Research Ethical Committee Faculty of Nursing Pelita Harapan University letter No. 006/RCTC/EC/R/SHMN/V/2018.

The retrieval of the data was conducted from 2nd – 15th July after we had approached the respondents in the Hospital and gave them an informed consent form which explained the purpose of the study. After the respondents agreed to be respondents and they had given their informed consent, the respondents answered a questionnaire and the researcher conducted a documentation study for each of the respondents with the view of integrating their notes and the observation sheet. The respondent's questionnaire was answered and then collected. It was checked, and then it was computerized for analysis.

The data analysis done consisted of univariate and bivariate analysis. Univariate analysis aims to view the frequency distribution of each of the variables. Bivariate analysis used the Chi-square test to view the relationship between the environmental factor, workload factor, knowledge factor and equipment availability factors with the clinical response implementation in a Private Hospital in Central Indonesia.

3. Results

This study results showed that for sex, the majority of nurses on the wards in a Private Hospital in Central Indonesia were female. Based on the age of the nurses, for age range, the majority were early adults (26-35 years). Based on the education of the nurses, having a diploma degree was the majority education. Based on the length of work, the majority had worked for 1-5 years in the Private Hospital in Central Indonesia. For the percentage of the characteristics of the respondents, the results can be seen in Table 1 below.

Table 1. Respondent Characteristic's of the Clinical Response Implementation of EWS in a Private Hospital in Central Indonesia

Category	Frequency (n)	Percentage (%)
Sex		
Female	49	89,1
Male	6	10,9
Total	55	100
Age		
Teenager (17-25 years)	7	12,7
Early Adult (26-35 years)	46	83,6
Adult (36-45 years)	2	3,6
Total	55	100
Education Degree		
Diploma (DIII)	28	50,9
Bachelor	3	5,5
Ners	24	43,6
Total	55	100
Length of Working		
<1 years	4	7,3
1-5 years	43	78,2
>5 years	8	14,5

Total	55	100

Table 2. Data of the Clinical Response Implementation of EWS in a Private Hospital in Central Indonesia

Category	**Frequency**	**Percentage (%)**
Clinical response implementation of EWS		
Accordance of SOP	30	54,5
No Accordance of SOP	25	45,5
Total	55	100

Table 2 shows the results of the analysis which indicates that 55 nurses were the respondents for this study. The nurses who implement the clinical response according to standard operational procedures of EWS according to the hospital made up 30 respondents (54,5%) while 25 respondents (45,5%) did so but not according to the standard operational procedure EWS set up by the hospital.

Table 3. Frequency distribution of the factors related to the implementation of EWS in a Private Hospital in Central Indonesia

Variable	Total (n)	Percentage (%)
Environment Factor		
Conducive	23	41,8
No Conducive	32	58,2
Total	55	100
Workload Factor		
Light workload	35	63,6
Heavy workload	20	36,4
Total	55	100
Equipment Availability Factor		
Adequately	21	38,2
Inadequately	34	61,8
Total	55	100
Knowledge Factor		
Good	21	38,2
Poor	34	61,8
Total	55	100

Based on Table 3, the results of the environment factor showed that 32 respondents (58,2%) were categorized as not being in a conducive environment and that 41,8% were categorized as being in a conducive environment. The distribution frequency result for the workload showed that most of the 35 respondents (63,6%) were categorized as having a light workload and 20 respondents (36,4%) were categorized as having a heavy workload. The distribution results of the equipment availability factors showed that 21 respondents (38,2%) were categorized as having adequate equipment and 34 respondents (61,4%) were categorized as not having adequate equipment.

Table 4. The relationship between the environmental factor with the clinical response implementation of EWS in a Private Hospital in Central Indonesia.

		No accordance of SOP		Accordance of SOP		p-value
		N	%	N	%	
Environment	Conducive	13	56,5	10	43,5	0,261
	Not Conducive	12	37,5	20	62,5	
	Total	25	45,5	30	54,5	

Based on Table 4, it can be known that there is no relationship between the environmental factor with the clinical response implementation of EWS in a Private Hospital in Central Indonesia (p value = 0,261).

Table 5. Relationship between the workload factor with the clinical response implementation of EWS in a Private Hospital in Central Indonesia.

		No accordance of SOP		Accordance of SOP		p-value
		N	%	n	%	
Workload	Light	15	42,9	20	57,1	0,818
	Heavy	10	50	10	50	
	Total	25	45,5	30	54,5	

Based on Table 5, it can be known that the nurses' workload has a p value = 0,818. This means that the results showed there to be no relationship between the workload with the clinical response of the implementation of EWS in a Private Hospital in Central Indonesia.

Table 6. The relationship between the equipment availability factor with the clinical response implementation of EWS in a Private Hospital in Central Indonesia

		No accordance of SOP		Accordance of SOP		p-value
		N	%	n	%	
Equipment Availability	Adequately	12	57,1	9	42,9	0,276
	Inadequately	13	38,2	21	61,8	
	Total	25	45,5	30	54,5	

Based on Table 6, the conclusion was obtained that equipment availability has no relationship with the clinical response of the implementation of EWS because the p value = 0,276.

Table 7. Relationship between the knowledge factor with the clinical response of teh implementation of EWS in a Private Hospital in Central Indonesia

		No accordance of SOP		Accordance of SOP		p-value
		N	%	n	%	
Knowledge	Good	12	57,1	9	42,9	0,276
	Poor	13	38,2	21	61,8	
	Total	25	45,5	30	54,5	

Based on Table 7, it can be known that there is no relationship between the nurses' knowledge with the clinical response of the implementation of EWS in a Private Hospital in Central Indonesia.

4. Discussion

The monitoring of the Early Warning Score is an important thing that must be done by a nurse because the Early Warning Score (EWS) is an initial step for the detection of a signal worsening patient condition. When the patient's condition gets worse, the nurses need to have a clinical response. In fact, the implementation given by the nurses frequently is not exact and sometimes for some of the cases, the nurses neglected doing EWS because of their heavy workload. Although EWS is important, but there are some factors that can contribute to adverse events that happen to patients where there is a worsening of their physiology such as the environment, workload, equipment availability and knowledge.

4.1. Environment Factor with the Implementation of a Clinical Response

The results of the univariate analysis showed that 32 respondents (58,2%) categorized the work environmental factor as not being a conducive environment. The results of the bivariate analysis using a Chi-Square test showed there to be no relationship between the environmental factor with the implementation of a clinical response EWS in a ward in a Private Hospital in Central Indonesia. This study was therefore not in accordance with the theory because p value = 0,261. This can happen because observation study by researcher showed the hospital has light exposure and room arrangement supported for monitoring of EWS. Furthermore, security staff always standby to maintain serene rooms as the patients can be affected by stress, annoying feelings and a burnout in the nurses that can affect the implementation of a clinical response [4].

The result of study was not in accordance with Abdullah in that the physical environment or work environment was focused on everything around the employees (facilities and infrastructure) that influence the employees when carrying out the tasks that are the employee's responsibility [1].

The results are supported by the documentation study that showed that 58,2% agreed about the environment not being conducive. The implementation of a clinical response in the ward in a Private Hospital in Central Indonesia can work because the ward has enough lighting and because they have arranged the room in order to do monitoring. More specifically, Anggraeny said that a comfortable, safe, and conducive working environment is one of the most important things for hospital management to consider as part of an effort to increase the quality of nursing care [3].

4.2. Workload Factor with Implementation Clinical Response

The results of the univariate analysis showed that 35 respondents (63,6%) assumed that the workload of the nurses was categorized as a light workload. Based on the bivariate analysis of the workload factor, the results showed that there was no relationship between the nurses' workload with the implementation of a clinical response EWS with a p value 0,818 as evidenced by the Chi-Square test. This can be happen because of the even distribution of tasks equally in the wards in the Private Hospital in Central Indonesia. Workload factors also affect nursing care quality, especially susceptible nurses where they have concerns about patient safety such as the patient fall incident rate, decubitus and medication errors [8]. The distribution of the tasks equally meant that the nurses could arrange their time and assume responsibility of the tasks that given. Other than that, the amount of patients handled by the nurses in the Private Hospital in Central Indonesia was no more than seven patients, where seven patients are the maximum amount that can be handled by a nurse [8].

4.3. Equipment availability with the Implementation of the Clinical Response

Based on the bivariate analysis, it was found that equipment availability factor also had no relationship with the implementation of a clinical response EWS in a Private Hospital in Central Indonesia. This is because the p value that was obtained by the Chi-Square test was 0,276. No relationship was found between the equipment availability factor with the implementation of a clinical response of EWS. This can happen because the equipment for the assessment of EWS is always available in every nursing station such as a thermometer, stethoscope, sphygmomanometer, and an oximeter. Equipment availability can be factor that supports the implementation of a clinical response EWS in a hospital [6].

Equipment availability is supportive of the implementation of nursing care. Infrastructure, human resources and a lack of equipment will inhibit care giver quality [9]. Lacking equipment or lacking drugs when need can affect the handling of the patient and this can impact on patient condition. This is because the response time of the nurse is made slower [3].

4.4. Knowledge factor with the Implementation of a Clinical Response

The knowledge level of the nurses about EWS is still in the poor category according to the univariate analysis. The p value knowledge factor 0,276 means that there is no relationship between the knowledge factor with the implementation of the clinical response EWS. This result can be affected by the nurses in the ward getting regular training, having their knowledge evaluation about EWS every three months and if the hospital did an audit of the EWS implementation every month. The training aspect and evaluation can be affected by the knowledge that the nurses have [2].

Knowledge is close related to education level and degree. It is expected that the high education level of a person means that they will have extensive knowledge [10]. The quality and performance of a nurse related to giving nursing care is affected by knowledge [9].

The limitation of this study is a lack of references such as articles, journals, and text books that support the results of the study, specifically about the factors related to the implementation of a clinical response EWS in Indonesia. The data obtained was mostly from abroad and it was not specifically about the factors involved in the implementation of a clinical response.

5. Conclusion

In summary, the implementation of a clinical response EWS influences some of the factors such as knowledge, workload, equipment and the environment. This study showed there to be no relationship between the four factors with the implementation of a clinical response EWS. The results of this study describe the implementation of a clinical response EWS where the method used was observation. Therefore for future research about the implementation of EWS, there needs to be a larger population and more behavioral observations. This is so then the results of this study can be completely accurate.

References

[252] Abdullah D 2014 Pengaruh Hubungan Interpersonal dan Lingkungan Kerja Terhadap Kepuasan Kerja Karyawan PT Sinjaraga Santika Sport Kadipaten

[253] ACSQHC 2017 *National consensus statement: essential elements for recognising & responding to acute physiological deterioration* (Sydney: Australian Commission on Safety and Quality in Health Care)

[254] Anggraeny R L 2017 Hubungan Lingkungan Kerja Perawat dengan Pelaksanaan Dokumentasi Asuhan Keperawatan di Bangsal Dewasa RSUD Panembahan Senopati Bantul (*Skripsi Program Sarjana*)

[255] Applebaum D, Fowler S , Fiedler N, Osinubi O and Robson M 2010 The Impact of Environmental Factors on Nursing Stress, Job Satisfaction, and Turnover Intention (*Journal of Nursing Administration*) p 323–328

[256] Gordon C F and Beckett D J 2011 Significant deficiencies in the overnight use of a Standardised Early Warning Scoring system in a teaching hospital (*Scottish Medical Journal)* p 56(1), 15-18

[257] Health Quality and Safety Commission 2015 *Learning from Adverse Events : Adverse events reported to the Health Quality & Safety Commission 1 July 2014 to 30 June 2015* (Wellington: Health Quality & Safety Commission)

[258] Kolic I, Crane S, McCartney S, Perkins Z, and Taylor A 2015 Factors affecting response to National Early Warning Score (NEWS) (*Resucitation Journal)* p 90, 85-90

[259] Liu L F, Lee S, Chia P F, Chi S C, and Yin Y C 2012 Exploring the Association Between Nurse Workload and Nurse-Sensitive Patient Safety Outcomes Indicators (*The Journal of Nursing Research)* p 20(4), 300-310

[260] Mosadehrad A M 2014 Factors Affecting Medical Service Quality (*Iranian J Publ Health)* p 43, 210-220.

[261] Pangestuti R D, Paramita N M, Purwono and Heri A 2016 Nursing Early Warning Scoring System (H Sayogo and I Fauzi Eds.) (*Lentera Jiwa)* p 18

[262] Philips Healthcare 2012 *Well-implemented Early Warning Scores can help Rapid Response Teams in improving outcomes* Retrieved February 18, 2018 (https://www.usa.philips.com/b-dam/b2bhc/us/topics/early-warning-scoring/RapidResponseTeam_white_paper_452296285921_LR.pdf)

[263] Rose L and Clarke S P 2010 Vital Signs : No longer a nursing priority? (*The American Journal of Nursing)* p 110, 11

[264] West of England Academic Health Science Network 2016 *Implementing the National Early Warning Score (NEWS)* Retrieved February 15, 2018 (Wwest of England Academic Health Science Network: https://www.weahsn.net/wp-content/uploads/NEWS_toolkit_njd_19Apr2016.pdf)

PHP-572
DISCHARGE PLANNING IMPROVING THE INDEPENDENCE LEVEL IN ACTIVE DAILY LIVING AMONG POST-OPERATIVE HIP FRACTURE PATIENTS

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ABSTRACT

This study aimed to examine the effectiveness of discharge planning on patients with a hip fracture in Malaysia. A randomized controlled trial was conducted involving 58 patients aged 50 and above (intervention=29, control=29) in the orthopedic wards of Hospital Melaka, Malaysia. Those in the intervention group received discharge planning which was comprised of health education activities in the form of pamphlets and oral lessons within 24 hours of admission up until discharge while the control group only received the routine discharge practice. The outcomes measured were the duration of their stay in the ward, the date of readmission and their fall rates and daily activity after one month post-discharge. The data was analyzed using the Mann-Whitney U and Chi-square tests. The findings showed that the intervention group had a shorter duration of stay in the ward ($U=254.00$, $p=0.008$) and a higher level of independence in daily activities than the control group ($U = 205.00$, $p = 0.001$). The control group resulted in 100% of the subjects not being capable of being independent in their daily living compared to 75.9% in the intervention group ($p= 0.005$). Therefore the discharge planning focuses on the health education component needs that are to be considered for practice.

1. Introduction

Hip fractures are common among the elderly. It is well known that this incidence often occurs in this population due to osteoporosis and falls [1].Globally, the average age of the elderly when they get a hip fracture is between 75 and 79 years old [2]. However, in Malaysia, the occurrence of this fracture was reported to be as early as 50 years old and above in every 90 per 100,000 adult population in 1997 [3]. Most of the hip fracture cases in Malaysia were due to falling [4]. According to Lee and Amir [5], the probability of a hip fracture increases to more than 100% for every 10 years after turning 50 years old.

Hip fracture is considered serious because it can affect the quality of life of the elderly [6].The main treatments for the hip fracture are surgeries such as the dynamic hip screw, hemiartoplasty or total hip arthroplasty [1]. However, elderly patients with a hip fracture often require a long stay on the ward and readmission within three months after discharge due to the failure of the rehabilitation process [7] and recurrent falls [8]. Most importantly, the majority of patients are not able to perform at least one activity of daily living (ADL) after surgery [9].

Discharge planning is crucial for the hip fracture patients as they need continuous care in order to maintain and improve their health status even after being discharged from the acute care phase in the hospital [10]. Health education, the critical component in the discharge planning, helps these patients to adapt to the transition process from the hospital to their home [11]. It also provides ideas to the patients and their family on how to continue with the health care after discharge [12]. Previous studies have shown that elderly patients who had their discharge planned since the first day of their admission had a shorter hospital stay, a reduced rate of readmission and fall and increased ADL after discharge [8]. In addition, the patients were also found to be able to maintain their independent functioning status in ADL after they were discharged [13].

However, the effectiveness of the discharge planning on the hip fracture patients in Malaysia is unknown because the previous studies were conducted in other countries such as Taiwan [14]. Furthermore, most of the previous studies have only included hip fracture patients aged 60 years old and above [10] whereas in Malaysia, the hip fracture incidence occurs as early as age 50 [3]. Therefore, this study was conducted to examine the effectiveness of the discharge planning in Malaysian patients. The objective of the study was to examine the differences in the length of hospital stay, the readmission and fall rate and the ADL between the elderly patients who received discharge planning and those who did not receive it.

2. Research Methods

2.1. Design

This study was conducted using the randomized controlled trial design. It involved two groups; the intervention and control group. The intervention group was provided with discharge planning whilst the control group continued with the routine practice of discharge where the nurses only provided the patients with a leaflet that contained the do's and don'ts after the surgery before they were discharged.

2.2. Participants

All of the patients admitted to the orthopedic wards in Hospital Melaka (Ward D1, D2, D3 and D4) diagnosed with a hip fracture were included in this study if they were aged 50 years old and above, if they were able to communicate in the Malay language and had Malaysian citizenship, if they had undergone either a total/hemi arthroplasty or if they had a dynamic hip screw and if they had family to take care of them at home after they were discharged. However, they were excluded if they had been diagnosed with dementia and were staying in the intensive care unit after the surgery. This study was approved by two ethics committees; Universiti Kebangsaan Malaysia Medical Center (Reference No: UKM PPI/111/8/JEP-2017-664) and the Ministry of Health, Malaysia (Reference No: KKM.NIHSEC/P17-2003(6)).

2.3. Intervention

The patients in the intervention group were given a leaflet developed by Murphy *et al* [15] within 24 hours after they were admitted to the ward. The leaflet contained information about hip fractures, the different types of surgery, the patients' expectations after the hip surgery and post-surgery self-care. The information in the leaflet was also explained orally to the patients by the researcher. The explanation took 15 minutes for each patient. The health education was given again over the phone based on the patient's request when the patient was still not yet discharged from the hospital. The researchers' contact number was given to the patients for this purpose.

2.4. Measure

The outcomes measured in this study were the length of the hospital stay, the rate of readmission and fall, and ADL within a month after discharge. All of the measures were obtained from the patient's medical report except for the ADL, which was obtained through a phone call using The Barthel Index questionnaire [8].The author reported that the questionnaire had a result of 0.89 and 0.95 for the test and retest reliability between the rates respectively. It consisted of 10 items with a 5-point Likert scale response format. The total score for all items was between 0-20. A total high score indicated that the patient could perform the ADL independently. The total score was also categorized as follows: 0 to 3, high dependent; 4 to 7, full dependent; 8 to 12, moderate dependent; 13 to 19, low dependent and 20, independent [16]. The reliability of the questionnaire for the current study was α 0.949.

2.5. Sample size

The calculation of the sample size for this study was conducted using a two mean formula and this was based on the average of 8 and a standard deviation (SD) of 10.39 from the previous study [8]. Through this calculation, a total of 52 people were required for this study; 26 for the intervention group and another 26 for the control group. However, in order to overcome the possibility of a reduction in the sample size due to attrition, the total number of the samples required was 58 people (additional 10%).

2.6. Randomization

Patients who met the eligibility criteria were given an explanation of the study as well as the study information sheet. If the patient was interested in participating, then a written consent form was obtained from the patient. All consenting patients were then divided into the control or intervention group according to the number that they received in a sealed envelope (n = 29 Intervention, n = 29 Control).

2.7. Data Analysis

Data was analyzed using IBM SPSS version 21. A Chi-square test was conducted to examine the difference in the subjects' demographic and clinical characteristics between the intervention and control groups. Due to non-normal distribution of the data, the Mann-Whitney test was used when comparing the length of their hospital stay, the rate of readmission and falls and ADL between the intervention and control group. On the other hand, descriptive analysis was performed to describe the level of dependency in the ADL for each group. This was followed by a Chi-square test to examine the difference in the level of dependency between the two groups. Prior to this test, the five categories of dependency level were collapsed into two categories (dependent vs. independent) due to an insufficient number of samples in some of the cells. P value<0.05 was used to determine the significant findings.

3. Results

A total of 58 eligible patients agreed to participate in this study. The retention rate of the study samples was 100% as none of them withdrew throughout the study (Figure 1). The demographic characteristics of the study samples have been presented in Table 1. In both groups, the majority of the subjects were aged 70 years old and above, were a widow or widower and were not working. The majority had also attended primary/secondary school and had an income ≤RM1000. On the other hand, the intervention group had more male (51.7%, n=15) and Malay subjects (75.9%, n=22) whereas in the control group, most of the subjects were female (72.4%, n=21) and Chinese (58.6%, n=17). The results of the comparative analysis indicates that the subjects between the two groups were not significantly different in all of their demographic characteristics (p>0.05) except for the race variable (X^2 = 14.724, p = 0.001). Based on the Cohen table [17], the size of this difference is large (phi = -0.669).

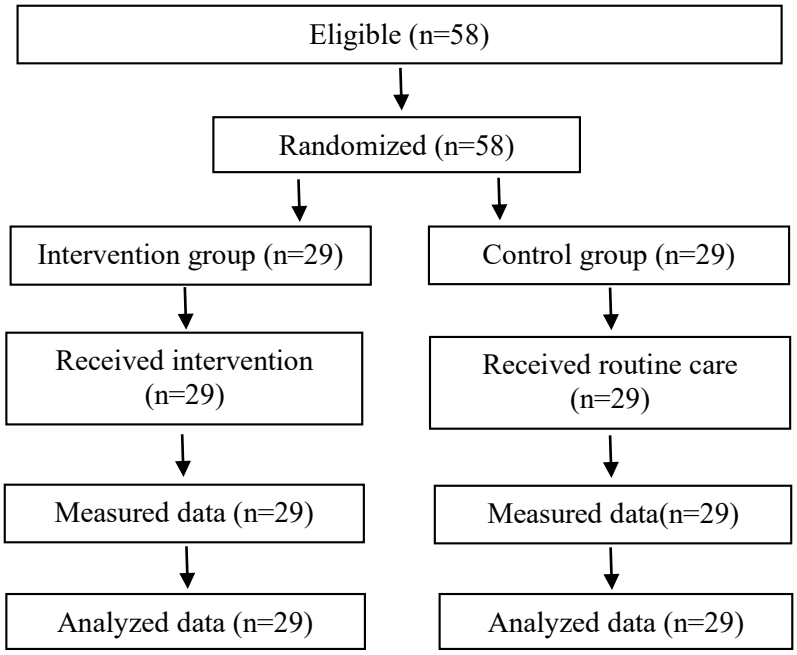

Figure 1. Recruitment and retention of the samples.

Table 1. Demographic Characteristics.

Variables	Intervention (n=29) n (%)	Control (n=29) n (%)	X^2	*p*
Age				
50-69 years old	7(24.1%)	6(20.7%)	0.099	0.753
70 and above	22(75.9%)	23(79.3%)		
Gender				
Male	15 (51.7%)	8 (27.6%)	0.2334	0.675
Female	14 (48.3%)	21 (72.4%)		
Race				
Malay	22 (75.9%)	8 (27.6%)	14.724	0.001*
Chinese	4(13.8%)	17 (58.6%)		
Indian and other	3(10.3%)	4 (13.8%)		
Level of education				
No school	10 (34.5%)	7 (24.1%)	0.749	0.387
Primary or secondary	19 (65.5%)	22 (75.9%)		
Marriage status				
Married	11 (37.9%)	9 (31.0%)	0.305	0.581
Widow/widower	18 (62.1%)	20 (69.0%)		
Occupational Status				
Working	2 (6.9%)	1 (3.4%)	0.352	0.553
Not working	27 (93.1%)	28 (96.6%)		
Self/family income				
≤RM1000	20 (69.0%)	24 (82.8%)	1.506	0.220
>RM1000	9 (31.0%)	5 (17.2%)		

*= Significant

Table 2. Clinical Data**.**

Variables	Intervention (n=29) n (%)	Control (n=29) n (%)	X^2	*p*
Chronic disease				
Hypertension/heart disease	21 (72.4%)	24 (82.8%)	0.892	0.345
Other diseases	8 (27.6%)	5 (17.2%)		
Types of fracture				
Outer capsule	11 (37.9%)	9 (31%)	0.305	0.581
Inner capsule	18 (62.1%)	20 (69%)		
Injury mechanism				
High impact	4 (13.8%)	1 (3.4%)	1.970	0.160
Low impact	25 (86.2%)	28 (96.6%)		

Table 3. Length of stay, re-admission, falls and ADL.

Variables	Intervention (N=29)		Control (N=29)		*U*	*p*
	Mean rank	Median	Mean rank	Median		
Length of hospital stay	23.76	9.00	35.24	10.00	254	0.008*
Readmission	28.50	0.00	30.50	0.00	391.	0.154
Fall	28.50	0.00	30.50	0.00	391.	0.154
ADL	36.93	16.00	22.07	12.00	205	0.001*

* = Significant

Table 4. Level of Dependency in ADL

ADL	Intervention (n=29) n (%)	Controlled (n=29) n (%)
Highly dependent	0(0%)	1(3.4%)
Fully dependent	3(10.3%)	4(13.8%)
Moderate dependent	3(10.3%)	13(44.8%)
Low dependent	16(55.2%)	11(37.9%)
Independent	7(24.1%)	0(0%)

Table 5. The differences in the level of dependency in ADL

Variables		N	ADL		*p*
			Dependent n (%)	Independent n (%)	
Group	Intervention	29	22(75.9%)	7(24.1%)	0.05*
	Controlled	29	29(100%)	0(0%)	

*Significant

Table 2 shows the clinical data of the subjects in this study. The majority of the subjects in both groups had hypertension/heart disease, had fractured the inner capsule and had been injured in a low impact mechanism. However, the number of the subjects with hypertension/heart disease, inner capsule fracture and with a low impact of injury was higher in the control than in the intervention group. However, there were no statistically significant differences of the clinical data between the groups ($p > 0.05$).

As shown in Table 3, the length of the hospital stays for the intervention group were lower (Mean rank = 23.76; Md = 9.00) than that of the control group (Mean rank = 35.24; Md = 10.00) and this difference was found to be significant ($U = 254$, $p = 0.008$). The effect size of the difference was 0.34, indicating that the difference was moderate [17]. Similarly, the subjects in the intervention group were more independent in performing their ADL (Mean rank = 36.93; Md = 16.00) than the subjects in the control group (Mean rank = 22.07; Md = 12.00). The difference was also statistically significant ($U = 205$, $p = 0.001$). Based on Cohen's table [17], this difference was moderate (0.44). On the other hand, the readmission and fall rates were not significantly different between the two groups ($p > 0.05$).

The findings for the level of dependency in ADL categories have been presented in Table 4. The intervention group had more subjects who were independent (24.1%; n = 7) and with low dependence (55%; n = 16). In contrast, the control group had more subjects with moderate dependence (44.8%; n=13), fully dependent (13.8%; n=4) and highly dependent (3.4%; n=1). None of the subjects in the

control group reported being independent in their ADL. Table 5 shows that there was a significantly greater number of subjects who were independent in the ADL in the intervention than in the control group ($p = 0.005$). The phi value was -0.370, which indicates a moderate size of difference based on the Cohen table [17].

4. Discussion

The results showed that elderly patients with a hip fracture who received the discharge planning had a significantly shorter length of hospital stay and a higher independence level in ADL than the control group. When the level of ADL was categorized as dependent vs. independent, a significantly larger number of the patients in the intervention than the control group reported that they were independent in their ADL. On the other hand, all patients in the control group were not independent in their ADL. However, the significance difference between the two groups in this study was not found for the rate of readmission and fall.

This study found that the discharge planning was effective at shortening the length of hospital stay in elderly patients with a hip fracture in Malaysia. This finding is similar to the finding in previous studies [8]. As with Huang and Liang [8], this study provided a leaflet containing information on the hip fracture, the types of surgery and post-surgery, and self-care of the hip bone surgery to the subjects soon after they were admitted to the hospital. According to Walker [19], written information about and the expectations after surgery along with personal care encourages the patients' involvement in their post-surgery self-care. As a result, this may have allowed the subjects of the intervention group in this study to start their ambulatory process earlier and thus they were discharged earlier.

Previous studies have also shown that the discharge planning reduced the rate of readmission in elderly patients with a hip fracture [8]. In contrast, this study did not find a similar result. In this study, the rate of the readmission for the intervention and control groups was two and zero respectively. Although the rate was different, it was not significant. This could be due to the small sample size. According to Grove, Burns and Gray [20], with a large sample size, the ability of the statistical test to detect a significant difference is high even if the size of the difference is small.

Unlike the readmission rate, the finding for the fall rate in this study is similar to that of the previous studies that did not find there to be a significant difference between the intervention and control group [21]. In this study, there were no incidences of fall reported by the subjects in the control and intervention group respectively. As for the rate of readmission, the non-significant difference in the fall rate between these groups may also be due to the small size [22].

Providing health education is an important component of discharge planning as it facilitates the patients being independent in their ADL after discharge [14]. Previous findings have demonstrated that patients who received discharge planning had higher independence level in ADL than the patients who did not receive discharge planning[23]. These findings are consistent with the current study. Previous studies also reported that a greater number of patients who received the discharge planning were independent in performing their ADL compared to those who did not have their discharge planned. This finding is also similar to that of the previous studies [18].What is surprising in this study is that all subjects in the control group were dependent on others for their ADL whereas in previous studies, there were patients who were independent in the ADL too [14]. This difference may be explained by the fact that the ADL in this study was measured a month after the discharge whereas the previous studies made the measurement three months after discharge. Without discharge planning, the control group in this study may need a longer time to be independent in their ADL.

It should be noted, however, that discharge planning in this study only focused on the implementation stage (health education) without the other stages (assessment, diagnosis and prescription)[24]. Therefore, the leaflet was general and not individualized according to the patients' needs. Furthermore, the follow up stage was conducted within one month after the patients were discharged whereas Fukui et al. [25] suggests that a longer period between 6 months to 1 year is

required in order to see the patients' progress. In addition, the study had a small sample size which may have caused the study power to detect the significant difference to be weak [26].

Nevertheless, it is recommended that the discharge planning should be introduced and practiced by the nurses when caring for elderly patients with a hip fracture who had undergone a surgery. In order to do this, the nurses' knowledge on discharge planning should be strengthened by their nursing organization. This is required as strong knowledge may enhance the nurses' skills and efficiency in handling the patients' discharge planning [27]. The head or clinical nurse should provide workshops related to discharge planning for all nurses in order to enhance their understanding of the interdisciplinary relationships [28]. A sufficient number of nurses, however, is needed to implement the discharge planning.

In addition, a similar study using a larger sample size is warranted. This study also needs to be performed for longer period starting with the assessment stage so then the health education content can be given according to individual needs. The patient's readmission and fall rate and ADL should be measured in the various stages – 3 months, 6 months and 1 year - in order to see the differences in the achievement of ADL after the surgery. Furthermore, the inclusion of other dependent variables such as the mortality rate and quality of life are also recommended in order to examine the wider impact of discharge planning.

5. Conclusion

The study found that the discharge planning was effective at shortening the length of the hospital stay and it also increased independence in the ADL. Therefore, discharge planning should be considered to be integrated into the nursing practices. However, future research involving a larger sample size and all stages of discharge planning as well as other dependent variables that, when conducted for a longer period, are warranted to examine the effectiveness of the discharge planning.

References

[265] SolomonLWarwick D and Nayagam S 2010 Apley's system of Orthopaedics and Fracture (9th edition). London:Hodder Arnold.

[266] Johnell O and Kanis J A 2006 An estimate of the worldwide prevalence and disability associated with osteoporotic fractures. Osteoporosis International17:1726– 1733.

[267] Lee J K and KhirA S M 2007 The incidence of hip fracture in Malaysians above 50 Years of age: variation in different ethnic groups. International Journal of Rheumatoid Disease13(6): 531

[268] National Orthopeadic Registry Malaysia (NORM) 2009 Annual Report of National Orthopaedic Registry Malaysia (Norm) Hip Fracture. https: //www.crc.gov.my/wp-content/ uploads/documents/hip_norm.pdf

[269] Lee J K and Amir S M K 2010. The incidence of hip fracture in Malaysians above 50 years of age; variation in different ethnic groups. APLAR Journal of Rheumatology10:300-305.

[270] Adibhajbaghery M and Abbasinia M 2013 Quality of Life of the Elderly after Hip Fracture Surgery: A Case –Control study. Journal of Caring Sciences2(1): 53-59. http://journals.tbzmed.ac.ir/JCS

[271] Hahnel, J Burdekin H and Anand S 2009 Re-admissions following hipfracture surgery. Ann R CollSurgEngl91:591-595.

[272] Huang T T and Liang S H 2005 A randomized clinical trial of the effectiveness of a discharge planning intervention in hospitalized elders with hip fracture due to falling. Journal of Clinical Nursing14: 1193-1201.

[273] Shyu Y I L Liang J Wu C CSu J Y Cheng H S Chou S W Chen M C Yang C Tand Tseng M Y 2010 Two –Year Effects of Interdisciplinary Intervention for Hip Fracture in Older Taiwanese. Journal American Geriatrics Society58(6): 1081-1089.

[274] Khayyal H Al Geneidy M E Ibrahim H and Kassem M 2016 Effect of Implementing a discharge plan on functional abilities of geriatric patient with Hip Fracture. Journal of Education and Practice7(5):42-52.

[275] Lin C J Cheng S J Shih S C Chu C H and Tjung J J 2012 International Journal of Gerontology Discharge Planning. International Journal of Gerontology6: 37- 240.

[276] Pellett C 2016 Discharge Planning Best Practice in transition of Care. Discharge Planning report. London: The Queen Institute.
[277] Nosbusch M Weiss E and Bobay L 2011 An integrated review of the literature on challenges confronting the acute care staff nurse in discharge planning. Journal of Clinical Nursing20(5-6):754-774.
[278] Lin P C Wang, C H Chen C S Liao, L P Kao S F and Wu H F 2009 To evaluate the effectiveness of a discharge planning programme for hip fracture patients. J ClinNurs18(11): 1632-1639.
[279] MurphyS ConwayC McGrath N B O'Leary B O'Sullivan M P& O'Sullivan D 2011 An intervention study exploring the effects of providing older adult hip fracture patients with an information booklet in the early postoperative period. Journal of Clinical Nursing20(23-24): 3404-13. https://www.ncbi.nlm. nih.gov/pubmed/ 21762425 [18 July 2011].
[280] Dimech J Agiusm D Attard, A Bonnici L Fiorini, H Grixti J Muscat,VSchembri L and Sultana D 2009 An evaluation of in-patient respite care at St. Vincent de Paul Residence. MaltaMedical Journal21(02): 18-21.
[281] Cohen J 1988. Statistical power analysis for the behavioral sciences hlm. 2nd Edisi Hillsdale. NJ: Lawrence Earlbaum Associates.
[282] Stenvall M Olofsson, B Nyberg, L Lundström M and Gustafson Y 2007 Improved performance in activities of daily living and mobility after a multidisciplinary postoperative rehabilitation in older people with femoral neck fracture: a randomized controlled trial with 1-year follow-up. Journal of Rehabilitation Medicine39(3): 232- 238. http: //dx.doi.org/ 10.2340/ 16501977-0045 [8 November 2006].
[283] Walker J A 2013 What is the effect of preoperative information on patient satisfaction? British Journal of Nursing16(1):27-32.
[284] Grove S K Burns N and Gray J R 2013. The practice of nursing research: Appraisal, synthesis, and generation of evidence (7th ed.). St. Louis, MO: Elsevier Saunders.
[285] Crotty M Unroe, K Cameron I D Miller M Ramirez G and Couzner L 2002 Rehabilitation interventions for improving physical and psychosocial functioning after hip fracture in older people. Cochrane Database Syst Rev20 (1): CD007624.
[286] Faber J and Fonseca L M 2014 How sample size influences research outcomes. Dental Press J Orthod19(4):27-9.
[287] Beaupre L Cinats, J G Senthilselvan, A Scharfenberger A Johnston D W and Saunders L D 2005 Does standardized rehabilitation and discharge planning improve functional recovery in elderly patients with hip fracture?.ArchPhysMedRehabil86:2231-2237.
[288] McKeeham K M and Coulton C J 1985 A system approach to program development for continuity of care in hospital. In: Continuity of Care: Advancing the Concept of Discharge Planning. (McClelland K, Kelly K, Buckwalter K, eds). Grune& Stratton Orlando FL:79-92.
[289] FukuiK KaneujiA Sugimori T IchisekiTMatsumoto T andHiejima Y 2015 Clinical assessment after total hip arthroplasty using the Japanese Orthopaedic Association Hip-Disease Evaluation Questionnaire.J Orthop12(Suppl 1): S31–S36.
[290] Burns N Gray J and Grove S 2017 The Practice of Nursing Research, Appraisal, Synthesis and Generation of Evidence. Ed. ke-7. USA: Elsevier Saunder.
[291] Waring J Marshall F Bishop S Sahota O Walker, M Currie G Fisher R and Avery T 2014 An ethnographic study of knowledge sharing across the boundaries between care processes, services and organisations: the contributions to 'safe' hospital discharge. Health Services and Delivery Research 2(29).
[292] Reddick B and Holland C 2015 Reinforcing discharge education and planning. Journal of Nursing Management 46(5):10-14 https://journalslww.com/nursingmanagement /Citation/2015/05000/ Reinforcing discharge education and planning.3.aspx.[May 2015].

PHP-580

VARIOUS SELF EFFICACY BENEFITS PROGRAM IN BIOLOGICAL, PSYCHOLOGICAL, AND SOCIAL ASPECTS OF PATIENT WITH TYPE 2 DIABETES MELLITUS : A SYSTEMATIC REVIEW

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ABSTRACT

There are various benefits found in type 2 diabetes patients using self efficacy, one of which is related to quality of life and glycemic control. We analyzed some of the literature related to self efficacy in type 2 diabetes starting from the biological, psychological and social aspects. Literature search through databases uses the PRISMA approach from: Scopus, SageJournal, Proquest, and Pubmed limited for the past 6 years; from 2014 to 2019 and 12 articles were selected from 168 articles found. This systematic review found five programs combined with self efficacy, namely DSME, Self care behavior, self-care management, HbA1c control management and behavior modification. Most of the results of the study showed the impact of self-efficacy intervention programs to increase HRQoL, decrease HbA1c, level diet and self-care behavior. The recommended that educational interventions be carried out to improve patients'self-efficacy to better deal with stress in their lives.

Keywords: education, self efficacy, intervention program, diabetes mellitus type 2

1. Introduction

Diabetes is a chronic condition that is associated with a number of severe complications that represents public health. It has a substantial burden that affects all age groups throughout the world. As many as 30 million people worldwide were diagnosed with diabetes in 1988. In 2000, the prevalence of diabetes increased to 150 million, with the International Diabetes Federation (IDF) estimating the prevalence of diabetes as 371 million in 2012[1]. The complexity of diabetes mellitus and its complications affects the working life of the patients, in addition to their interpersonal relationships, social activities, physical and mental status, and thus it can damage their quality of life[2].

Quality of life relates to an individual's sense of well-being, which naturally arises from a person's subjective evaluation of the positive and negative aspects of his life related to "their goals, expectations, standards, and problems. This is a broad concept that is complexly influenced by a person's physical health, psychological state, personal beliefs, social relations and their relationships with prominent features of their environment ”[3].

For several years, the self-management of structured peer support programs for chronic diseases have been given as a means of strengthening activation, understanding the patients' own role

in the care process and having the knowledge, skills and confidence to take on that role[4]. Peer support refers to the support of someone whose knowledge comes from their own experience with specific conditions. The World Health Organization considers this particular support promising as an effective approach to diabetes management. Face-to-face programs are one of the most important peer support models with the Chronic Disease Self Management Program (CDSMP) developed by the University of Stanford to be one of the most widely used[5].

One of the key factors involved in achieving active self-care is self-efficacy, which is a construct of social cognitive theory that focuses on one's self-confidence in carrying out the behavior given. Several studies have documented the relationship between self-efficacy and social care diabetes cognitive theory which also emphasizes the interaction between individual factors and the environment in shaping behavior[6],[7]. More and more research shows that self-care behavior affects glycemic control. But only a few patients do full self-care behavior according to the recommended level. It is important for diabetes that service providers must understand the factors that influence self-care behavior[1],[8].

2. Methods

2.1 Search strategies and study selection

This systematic review use a PRISMA review (Figure 1). The literature search was conducted in four databases such as Scopus, SageJournal, Proquest, and Pubmed with limited results for the last 6 years from 2014 to 2019. The key words used in the literature search were self-efficacy, self-care management and type 2 diabetes mellitus.

2.2 Types of studies

This systematic review aimed to identify the various benefits obtained in type 2 diabetes patients using self-efficacy. Many of the research studies that have been conducted with various types of research methods are cross-sectional predominantly. There were also quasi-experimental methods and RCTs used.

2.3. Criteria for inclusion and exclusion

The inclusion criteria for this article were articles that use English and that describe self-efficacy programs for the self-care management of patients with type 2 diabetes mellitus.

2.4. Participants, Interventions, Comparisons, Results and Study Design (PICOS)

The feasibility of the study was assessed using the PICOT approach: the participants were patients with type 2 diabetes mellitus, the intervention used programs combined with self-efficacy, namely DSME, self-care behavior, self-care management, HbA1c control management and behavior modification. The results looked at the increased HRQoL, decreased HbA1c , level of diet and self-care behavior.

3. Results

The total articles collected were 12. After reviewing the results, we found 5 programs combined with self-efficacy, namely DSME, self-care behavior, self-care management, HbA1c control

management and behavior modification.

3.1 Self-efficacy (knowledge, understanding, skill, and behaviors self management)

A 1-year prospective cohort study was conducted in diabetes tertiary hospital clinics affiliated with universities in Bangkok between April 2010 and July 2011. The initial group of 594 diabetic patients recruited for the study used a three-step approach. First, using the information in the medical records, the clinical patients were examined at the time of their visit if they met the inclusion criteria (having type-2 diabetes mellitus, being treated with insulin, age> 20 years). The exclusion criteria were having more than five comorbid conditions, being pregnant or lactating, using contraceptive pills, being infected with HIV, having a psychiatric illness and refusing participation [9].

Second, eligible patients went through random selection using random numbers. Finally, the patients were selected voluntarily and gave consent. The recruitment process took about 4 months to complete After the informed consent of the patient was obtained (month 0), the patients in both groups were followed every 3 months for the year at the end of months 3, 6, 9 and 12. In addition to month 0's self-efficacy test, the interview self-efficacy questionnaires were repeated at the 3-monthly visits of 3, 6 and 9 respectively. Using the pre-design information sheets, the data on AE and near misses in the periods 1-3, 4-6, 7-9 and 10-12 Months were collected at each 3, 6, 9 and 12 visits. At each visit, the patients were interviewed by a nurse from a different clinic and by staff trained on the research objectives, methods, patient rights, self-efficacy questionnaire and the application information sheet about AE [10].

During the 1 year follow-up period, there were 47 AE reports and 367 almost failed from within both groups. In the low self-efficacy group, around 39 AEs were reported, equal to 2.12 events per 100 person-months. With the exception of one case that experienced two AEs in months 7-9 and months 10-12 months, the rest of the group only experienced one event in more than a year. The distribution of incidents was quite level because there were 11, 8, 11 and 9 events in months 0–3, 4–6, 7–9 and 10-12, respectively. Nearly 80% of events occur at home, while only 18% occur in public places. Nearly 43% occurred after dark, between 10:00 a.m. and 6:00 a.m. The program first presented with dizziness (14.6%), fainting (12.7%) and syncope (7.0%). After an emergency or hospital visit, the most common diagnosis was hypoglycemia (84.6%), followed by hyperglycemia (7.7%). Other diagnoses included diabetic ketoacidosis and severe hypoglycemia. About 16 cases were received (41.0%). There was no permanent disability or death [1].

3.2 Relationship between self-efficacy, self-care behavior and glycemic control

The participants were given a set of DMSES-Malay Language and SDSCA-Melayu Version questionnaires. Clear written and oral instructions were given about how to fill in the questionnaire. They were asked to circle or check which option suited them the most. The participants were encouraged to seek clarification from the investigators at any time if there were questions. They were also reminded to answer the questionnaire themselves rather than getting help from their accompanying family members. The participants were given a pen to fill out a questionnaire in the corner of the clinic equipped with tables and chairs. The researchers ensured that the participants did not interact with each other when answering the questionnaire. On average, the participants needed about 10 to 20 minutes to complete the questionnaire. After it was finished, they submitted the questionnaire to the investigators who then examined the responses for completeness [8].

420 patients with T2DM were approached and invited to enter the study room. Of these, 22 patients (5.2%) refused to participate and 58 patients (13.8%) did not qualify to enter the study because they did not meet the inclusion and / or exclusion criteria. Therefore the level of recruitment for this study was 81%, giving a total of 340 patients who met the requirements with T2DM who completed the questionnaire [8].

This study showed a high average self-efficacy score (7.33) and the participants were found to be the most effective at tasks related to drug intake and they were the least efficacious at testing their blood glucose. This finding is comparable with the studies conducted in a hospital setting in Malaysia which showed an average self-efficacy score of 7.57 where the highest score was for drug intake. In contrast, the study population was the least effective at meal plans [11].

Similar findings were found in a Jordanian study that showed an average self-efficacy score of 7.26 with the highest score for efficacy focused on taking medication. The participants were least confident when doing physical activity. A possible explanation for the highest self-efficacy being for drug intake is that this is a direct task that does not require much effort to do. A low self-efficacy score when conducting blood glucose testing in our study population highlights the need to educate patients about blood glucose self-monitoring (SMBG) to increase their self-efficacy at performing the task [12].

3.3 Efficacy of the self-management education program

The intervention consisted of a 2.5-hour workshop once a week for 6 consecutive weeks. The group consisted of 8 to 15 people per participating center. All of the workshops were facilitated by two leaders, one of whom was diabetic or an adult caregiver with T2MD. The other was a health care professional. Ordinary care for T2DM is mainly provided by professional primary care and diabetes education is usually offered by the nurses individually [5].

The n = 594 individuals were recruited randomly to the intervention (n = 297) and the control group (n = 297). Overall, n = 62 participants were lost to the follow-up. Learning took place between September 2011 and December 2014, with 80% of the participants attending at least 4 sessions. The participants had an average age of 63.9 years and 59.8% were men. The average time since the diagnosis of the disease was 9.9 years. The two study groups had similarities in terms of age, time from diagnosis and comorbidity, but a higher percentage of men were observed in the intervention group. In the beginning, 45% of participants had HbA1c levels of ≥ 7%, while levels of ≥8% were seen in 18% of the samples; 2 years after the follow-up, no significant differences were observed between the intervention and control groups in terms of the changes in HbA1c or in the secondary cardiovascular outcomes such as blood glucose that controlled both pressure and cardiovascular risk [5].

After a 2-year follow-up, no differences were found in the HbA1c evolution between the patient interventions and controls. Likewise, there were no effects seen in other clinical outcomes, such as the risk of heart disease. In addition, a downward trend was observed in primary care and emergency department visits, with the intervention group presenting lower values than the controls. The consumption of drugs also declined in the intervention group. The intervention significantly strengthened the patient's self-efficacy, specifically related to disease control. The only habitual diet presented little but fruit consumption had no clinically significant difference. The participants

reported high satisfaction with the program [13].

4. Discussion

This systematic review aimed to identify articles focused around self-efficacy programs for patients with type 2 diabetes mellitus. The reason for conducting this systematic review was related to type 2 diabetes mellitus as a major cause of chronic morbidity and mortality worldwide. The treatment of type 2 diabetes mellitus requires a process that is long; the patients need good self-management strategy to manage the disease. We need to know what self-efficacy intervention programs we can use to manage the disease. From the results of a review of 12 articles, all of them showed that self-efficacy intervention programs had a positive impact on type 2 diabetes mellitus patients. Most of the results of the study showed that the impact of the self-efficacy intervention programs improved blood sugar control and quality of life, and increased the level of physical activity, self-efficacy, skills and knowledge related to self-management. These results were obtained from 4 articles relating to improving quality of life [10,14–16]. There were 4 articles that explained the improvement of self-management skills and knowledge. There were 4 articles that explained the effects of lifestyle changes (increased physical activity and exercise performance) [2,8,17,18]. This result was obtained from 2 articles related to the decline in the publication of exacerbations and hospitalization.

5. Conclusion

The self-intervention program can be used as an effort to improve self-management skills for controlling HbA1c and improving the quality of life of patients with type 2 diabetes mellitus. The role of nurses in this case is as educators and facilitators in implementing self-efficacy interventions. Nurses are expected to be able to provide good education about self-efficacy in patients with type 2 diabetes mellitus including the treatment of diseases based on adequate coping behavior, including controlling blood sugar, activity and diet. The patients should actively participate in applying self-efficacy to their disease.

References

[293] Sirikamonsathian B, Sriratanaban J, Hiransuthikul N and Lertmaharit S 2013 Self-efficacy in diabetic care and occurrence of adverse events in an ambulatory setting *Int. J. Qual. Heal. Care***25** 673–81

[294] Engel-Yeger B, Darawsha Najjar S and Darawsha M 2017 The relationship between health related quality of life and sensory deficits among patients with diabetes mellitus *Disabil. Rehabil.***0** 1–7

[295] Messina R, Rucci P, Sturt J, Mancini T and Fantini M P 2018 Assessing self-efficacy in type 2 diabetes management: Validation of the Italian version of the Diabetes Management Self-Efficacy Scale (IT-DMSES) *Health Qual. Life Outcomes***16** 1–9

[296] Mankan T, Erci B, Bahçecioğlu Turan G and Aktürk Ü 2017 Turkish validity and reliability of the Diabetes Self-Efficacy Scale *Int. J. Nurs. Sci.***4** 239–43

[297] Gamboa Moreno E, Sánchez Perez Á, Vrotsou K, Arbonies Ortiz J C, Del Campo Pena E, Ochoa De Retana Garcia L, Ángeles Rua Portu M, Piñera Elorriaga K, Zenarutzabeitia Pikatza A, Urquiza Bengoa M N, Sanz Echave R, Méndez Sampedro T, Oses Portu A,

Gorostidi Fano L, Aguirre Sorondo M B and Rotaeche Del Campo R 2013 Impact of a self-care education programme on patients with type 2 diabetes in primary care in the Basque Country *BMC Public Health***13** 1–12

[298] Gao J, Wang J, Zheng P, Haardörfer R, Kegler M C, Zhu Y and Fu H 2013 Effects of self-care, self-efficacy, social support on glycemic control in adults with type 2 diabetes *BMC Fam. Pract.***14** 2–7

[299] Rwegerera G M, Moshomo T, Gaenamong M, Oyewo T A, Gollakota S, Rivera Y P, Masaka A, Godman B, Shimwela M and Habte D 2017 Health-related quality of life and associated factors among patients with diabetes mellitus in Botswana *Alexandria J. Med.***54** 111–8

[300] Tharek Z, Ramli A S, Whitford D L, Ismail Z, Mohd Zulkifli M, Ahmad Sharoni S K, Shafie A A and Jayaraman T 2018 Relationship between self-efficacy, self-care behaviour and glycaemic control among patients with type 2 diabetes mellitus in the Malaysian primary care setting *BMC Fam. Pract.***19** 1–10

[301] The Diabetes Control and Complications Trial Research Group 2001 The Impact of Blood Glucose Self- Monitoring on Metabolic Control and Quality of Life in Type 2 Diabetic *Diabetes Care***24**

[302] Huang M, Zhao R, Li S and Jiang X 2014 Self-management behavior in patients with type 2 diabetes: A cross-sectional survey in western urban China *PLoS One***9**

[303] Al-Khawaldeh O A, Al-Hassan M A and Froelicher E S 2012 Self-efficacy, self-management, and glycemic control in adults with type 2 diabetes mellitus *J. Diabetes Complications***26** 10–6

[304] Sharoni S K A and Wu S F V 2012 Self-efficacy and self-care behavior of Malaysian patients with type 2 diabetes: A cross sectional survey *Nurs. Heal. Sci.***14** 38–45

[305] Erdem E and Korda H 2014 Self-management program participation by older adults with diabetes: Chronic disease self-management program and diabetes self-management program *Fam. Community Heal.***37** 134–46

[306] Gamble E, Parry-Strong A, Coppell K J, McBain L, Bingham L J, Dutton L, Tapu-Ta'ala S, Smith R B W, Howells J, Metekingi H and Krebs J D 2017 Development of a structured diabetes self-management education program specific to the cultural and ethnic population of New Zealand *Nutr. Diet.***74** 415–22

[307] Kav S, Yilmaz A A, Bulut Y and Dogan N 2017 Self-efficacy, depression and self-care activities of people with type 2 diabetes in Turkey *Collegian***24** 27–35

[308] Alipour A, Zare H, Poursharifi H, Aerab Sheibani K and Afkhami Ardekani M 2012 The intermediary role of self-efficacy in relation with stress, glycosylated haemoglobin and health-related quality of life in patients with type2 diabetes *Iran. J. Public Health***41** 76–80

[309] Saad A M J, Younes Z M H, Ahmed H, Brown J A, Al Owesie R M and Hassoun A A K 2018 Self-efficacy, self-care and glycemic control in Saudi Arabian patients with type 2 diabetes mellitus: A cross-sectional survey *Diabetes Res. Clin. Pract.***137** 28–36

[310] ALAboudi I S, Hassali M A, Shafie A A and Saleem F 2016 Self-efficacy, self-care behaviours and glycaemic control in type 2 diabetic patients in Riyadh, Saudi Arabia *J. Public Heal.***24** 281–90

[311] Ridderstråle M, Evans L M, Jensen H H, Bøgelund M, Jensen M M, Ericsson Å and Jendle J 2016 Estimating the impact of changes in HbA1c, body weight and insulin injection regimen on health related quality-of-life: A time trade off study *Health Qual. Life Outcomes***14** 1–10

PHP-600

FEMALE STUDENT BEHAVIOR TO THE INFESTATION OF PEDICULUS HUMANUS CAPITIS IN ISLAMIC BOARDING SCHOOL

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ABSTRACT

Infestation of ectoparasites, especially insect infestations is a factor that can threaten the health of the community, one of which is Pediculus humanus capitis. In Indonesia many occur in school children who live in dormitories. This study aimed to identify correlation between female student behavior and infestation *Pediculus Humanus Capitis*. One of the modern islamic boarding school in the district of Banjar, South Kalimantan province was chosen as the place of research. The study design used cross sectional. The sample total of 211 second grade junior high school students in boarding schools selected by total sampling. The questionnaire used was the KAP (knowledge, attitude, practice) adaptation questionnaire that had obtained permission and had been tested by experts, will be analysed by Pearson correlation test. The result was the infestation of *Pediculus Humanus Capitis* experienced by female student was corelated by the level of knowledge of female student *Pediculus Humanus Capitis* with $p<0.05$, and was influenced also by the practice of female student in personal and environmental hygiene with $p<0.05$. The incidence of infestation of *Pediculus Humanus Capitis* in the islamic boarding school is influenced by the knowledge and practice of female student.

Keywords: pediculusu humanus capitis, behavioral, female student

1. Introduction

Infestations of *Pediculus Humanus Capitis* can threaten the health of the community[1]. *Pediculus Humanus Capitis,* known as head lice, usually cause interference for adults and especially school children[2]. Pediculus humanus capit is generally spread through direct transition, such as with by head contact with an infected person, or by contact with clothes, hair combs, hats, towels, or other personal items as an agent[3]. Diseases caused by the infestation of *Pediculus Humanus Capitis* are still categorized as overlooked diseases, and many are found throughout the world, especially in developing and poor countries[4][5]

Epidemiologically, the spread of pediculus humanus capitis is more common among children, especially school children living in hostels. This risk behavior is influenced by the habits of children in maintaining personal and environmental hygiene, and inadequate hostel facilities. Pediculus humanus capitis occurs throughout the world, according to the Center for Disease Control and Prevantion (CDC) in the United States. Their data shows that 6-12 million people are infected each year[6]. In developed countries such as Norway, the incidence of *Pediculus Humanus Capitis* at

97.3% occurs in elementary school children[7]. Pediculus humanus capitis is generally common in school children around the world, according to the latest data that reported that more than 12 million girls, especially in the age range of 3-11 years, had experienced an infestation of *Pediculus Humanus Capitis*. The highest prevalence (59%) was found in developing countries and tropical countries[8]. The incidence of infestation of *Pediculus Humanus Capitis* in Indonesia was found in many school children.

This study conducted a preliminary study of 20 female students who had all experienced an infestation of *Pediculus Humanus Capitis*. The average student experienced an infestation of pediculus humanus capitis when entering Islamic boarding schools. Based on the results of the interviews with the female students on the incidence of infestation by *Pediculus Humanus* Capitis, it was foun that it was because of the behavior of the female students, their lack of knowledge and because of the habits of the female students such as borrowing accessories that are personal like a comb or hair band, the habit of the students to wear a headscarf when their hair was still wet, and some of the students said that they often wet their hair but that they did not use shampoo.

The infestation of *Pediculus Humanus Capitis*can leads to psychological disorders in teenagers, namely shame, isolated inferiority, fear, and even frustration due to the stigma of people who consider *Pediculus Humanus Capitis* to be synonymous with poor hygiene, poverty, and a lack of attention from the parents of the sufferers[10]. The psychological impact caused by this disease can affect the quality of their sense of self, both in performance and in the learning achievements of the students who are infested[12].

Nursing actions carried out to prevent the occurrence of infestations of *Pediculus Humanus Capitis* are namely by increasing the behavior of the students related to prevention. It is hoped that the students can change their behavior so then they can prevent the infestation of *Pediculus Humanus Capitis* in Islamic boarding schools. One way to do that is by fostering the confidence and intentions of the female students related to clean and healthy behaviors[13]. This study aimed to determine the relationship between the behavior of the female students in terms of the prevention and treatment of infestation with the incidence of infestation of *Pediculus Humanus Capitis*.

2. Research Methods

This study utilized a cross-sectional design using primary data. The data collection was conducted during February 2019. The population was made up of all female students who were in grade 2 in a junior high school in Pondok Pesantren Darul Hijrah Puteri Martapura Banjar District, South Kalimantan, with a total sample of 211 people who fit the inclusion and exclusion criteria. The female students were grade 2 juniors aged 13-15 years who were at a boarding school. This research was conducted by asking the students to agree to be respondents, and then by giving them an explanation of the research and an informed consent form. This study used a questionnaire consisting of knowledge and behavior. This questionnaire was copied and modified from the KAP (knowledge, attitude, and practice) questionare following the details of the framework provided by Lazarus. It consisted of 27 questions; 15 questions were about knowledge and 12 were about practice. The answer choices used were true and false. The questionnaire that was carried out was tested to determine the validity using the Pearson product moment test. Bivariate analysis was used in this study to determine the relationship between the behavior of the incidence of infestation by *Pediculus Humanus Capitis* and the Pearson correlation test was used to determine the relationship between

knowledge and the incidence of infestation *Pediculus Humanus Capitis*, and the presence of female practices on the incidence rate of infestation *Pediculus Humanus Capitis*.

3. Results

Table 1 Variable analysis

Variable	Frequency	Percent (%)	Commulative Percent (%)	Category
Dependant				
Infestation of *Pediculus Humanus Capitis*	8	3,8	3,8	1 time
	49	23,2	27,0	2 times
	39	18,5	45,5	3 times
	22	10,4	55,9	4 times
	93	44,1	100,0	Countless
Independent (Behavioral)				
Knowledge	20	9,5	9,5	Deficient
	80	37,9	47,4	Moderate
	111	52,6	100,0	Good
Practice	99	46,9	46,9	Deficient
	59	28,0	74,9	Moderate
	53	25,1	100,0	Good

Table 1 presents that the incidence rate of the infestation of *Pediculus Humanus Capitis* an it indicates that it was dominated by countless categories of 44.1%. Student behavior including knowledge about the understanding, prevention and treatment of *Pediculus Humanus Capitis* was dominated by the good category, which was 52.6% while the moderate category was 37.9%. The practice of female students in preventing the infestation of *Pediculus Humanus Capitis* as well as of maintaining personal hygiene and the cleanliness of the room (hostel) was dominated by the poor category at 46.9%.

Tabel 2. Results of the Pearson correlation test on the infestation of *Pediculus Humanus Capitis* with knowledge

		Infestation of pediculus humanus capitis	**Knowledge**
Infestation of *Pediculus Humanus Capitis*	Pearson Correlation	1	.496**
	Sig. (2-tailed)		.000
	N	211	211
Knowledge	Pearson Correlation	.496**	1
	Sig. (2-tailed)	.000	
	N	211	211

*sig < 0,05 shows the significance

Table 2 presents the relationship between knowledge with *Pediculus Humanus Capitis* infestation events that had a correlation of sig <0.05 (.000).

Tabel 3. Results of the Pearson correlation test on the infestation *Pediculus Humanus Capitis* with practice

		Infestation of pediculushum anuscapitis	Practice
Infestation of pediculus humanus capitis	Pearson Correlation	1	-.176*
	Sig. (2-tailed)		.010
	N	211	211
Practice	Pearson Correlation	-.176*	1
	Sig. (2-tailed)	.010	
	N	211	211

*sig < 0,05 shows significance

Table3 presents that the relationship between knowledge and *Pediculus Humanus Capitis* infestation events is sig <0.05 (.010).

4. Discussion

Knowledge is the result of knowing from someone after doing in the form of sensing through smell, taste and touch. Human knowledge is obtained through the senses[14]. Knowledge is the result of knowing and this happens after people have sensed an object[15]. There are six stages in the creation of knowledge, namely: knowing, understanding, application, analysis, synthesis and evaluation. In this case, the female students know about *pediculus humanus capitis* and how to transmit it, and they understand the forms of transmission. However, the female students have not yet been able to apply their understanding of *pediculus humanus capitis.* This is because the female students are still unable to practice a conductive environment to non-transmission because of the situation or condition not being supportive. Many factors influence a person's knowledge. The first factor is the education factor. Knowledge generally can be obtained from the information conveyed by the parents, so the parents' education has a strong influence on the knowledge gained by the female students about pediculus humanus capitis. Employment, regarding the work of the parents of the female students, is very influential on the process of accessing the information needed by the female students about *pediculus humanus capitis*. There are also socio-cultural factors, culture and habits in Islamic boarding schools that can affect the knowledge, perceptions and attitudes of the female students towards the prevention of *pediculus humanus capitis*. Based on the previous research, an increase in knowledge can change a person's attitude when they are conducting preventative practices in reducing the incidence of infestation of *Pediculus Humanus Capitis*[8]. A person's knowledge about *Pediculus Humanus Capitis* also influences the treatment and prevention of a person's risk of being infected with *Pediculus Humanus Capitis*[16]. Providing health education can also increase one's knowledge about *Pediculus Humanus Capitis*[13]. In a study where it was found that the knowledge was good enough about *Pediculus Humanus Capitis*, there were still many infestations due to their lack of attention to the health of the skin, especially the scalp[7]. It can be concluded that the good knowledge about *Pediculus Humanus Capitis* that is obtained by a person is very influential in terms of preventative medicine and in the prevention of the risk of *Pediculus Humanus Capitis* infestation. However, not all who have good knowledge understand the health of the skin, especially

the scalp, so they still experience infestation.

The female students' personal practices also affect the frequency of the occurrence of infestations of *pediculus humanus capitis*, as evidenced by the habits of the students who borrow and lend personal items. Human behavior comes from impulses that exist while encouragement is an effort to meet the needs that exist in humans. Human behavior does not occur sporadically (arising and missing at a certain moment), but there is a sense of continuity between one act and the next [14]. Moreover, practices are one of the factors that can cause an infestation of *Pediculus Humanus Capitis*. Based on the research conducted by Yinklang (2018), they stated that increasing knowledge can change a person's attitude in doing prevention practices to reduce the incidence rate of infestation of *Pediculus Humanus Capitis*. Personal hygiene practices are also an important key in determining the spread of *Pediculus Humanus Capitis*, such as increasing the knowledge so then it can change the practices of maintaining cleanliness. Maintaining personal hygiene includes the frequency of washing their hair, using shampoo, the habit of combing their hair, the habit of changing their headgear (veil) and changing their bedding; poor habits referring to the aforementioned can be a cause of infestation of *Pediculus Humanus Capitis*. Environmental hygiene also greatly affects infestation, such as a humid environment and a hot room temperature, which can cause the development and infestation of *Pediculus Humanus Capitis*[17].

The habits of teenage children who live in a dormitory, sometimes involving a group of peers (peer goroup) as a container for adjustment, often results friendship, which is the hallmark of the nature of the interactions – there is a certain closeness. The assumption is that the personal belongings of one's friends are legitimate if borrowed, which are used together with their group mates, and that it is common to consider so. The results of the previous studies indicated that the behavioral factors refer to where you are able to control your behavior but where you are not supported by the surrounding environment, such as having dorm roommates who still likes to borrow personal items, friends who do not want to treat pediculus humanus capitis, those who borrow a pillow or blanket, and those who maintain a less clean environment around the dormitory. The previous research states that personal hygiene behavior is an important key to determining the spread of infestation of *pediculus humanus capitis*[18].

5. Conclusion

Based on the statement above, there was a relationship between the behavior consisting of knowledge and the practices of female students on the incidence of infestation by *Pediculus Humanus Capitis*pitis in the boarding school of Darul Hijrah Puteri Martapura. This was due to the behavior of the female students regarding their personal hygiene and the cleanliness of the environment. Teachers and health workers are expected to develop a health promotion strategy based on this research for the inspection and prevention of an infestation of *Pediculus Humanus Capitis*so so then the incidence of infestation by *Pediculosis* in boarding schools may be reduced.

References

[312] Saghafipour A, Nejati J, Zahraei-Ramazani A, Vatandoost H, Mozaffari E and Rezaei F 2017 Prevalence and risk factors associated with head louse (Pediculus humanus capitis) in Central Iran *Int. J. Pediatr.***5** 7553–62

[313] Andresen K and McCarthy A M 2009 A policy change strategy for head lice management *J.*

*Sch. Nurs.***25** 407–16

[314] Abd El Raheem T A, El Sherbiny N A, Elgameel A, El-Sayed G A, Moustafa N and Shahen S 2015 Epidemiological Comparative Study of Pediculosis Capitis Among Primary School Children in Fayoum and Minofiya Governorates, Egypt *J. Community Health***40** 222–6

[315] Esy Maryati et all 2018 Relationship between Risk Factors and Pediculus humanus capitis Infestation in Children at Orphanages in Pekanbaru **1** 73–80

[316] Zulinda A, Yolazenia Y and Zahtamal Z 2017 Faktor-Faktor yang Mempengaruhi Kejadian Pedikulosis Kapitis pada Murid Kelas III, IV, V Dan VI SDN 019 Tebing Tinggi Okura Kecamatan Rumbai Pesisir Pekanbaru *J. Ilmu Kedokt.***4** 65

[317] Nutanson I, Steen C J, Schwartz R A and Janniger C K 2008 Pediculus humanus capitis: an update *Acta Dermatovenerol Alp Panon. Adriat***17** 147–59

[318] Birkemoe T, Lindstedt H H, Ottesen P, Soleng A, Næss Ø and Rukke B A 2015 Head lice predictors and infestation dynamics among primary school children in Norway *Fam. Pract.***33** 23–9

[319] Yingklang M, Sengthong C, Haonon O, Dangtakot R, Pinlaor P, Sota C and Pinlaor S 2018 Effect of a health education program on reduction of pediculosis in school girls at Amphoe Muang, Khon Kaen Province, Thailand *PLoS One***13** 1–15

[320] Nihayah Lukman, Yunita Armiyanti & D A 2018 Hubungan Faktor-Faktor Risiko Pediculosis capitis terhadap Kejadiannya pada Santri di Pondok Pesantren Miftahul Ulum Kabupaten Jember The Correlation of Risk Factors to the incidence of Pediculosis capitis on Students in Pondok Pesantren Miftahul Ulum, Je **4** 102–9

[321] Feldmeier H and Heukelbach J 2009 Epidermal parasitic skin diseases: a neglected category of poverty-associated plagues *Bull. World Health Organ.***87** 152–9

[322] Gratz N G and Organization W H 1997 Human lice: their prevalence, control and resistance to insecticides: a review 1985-1997/by Norman G. Gratz *Human lice: their prevalence, control and resistance to insecticides: a review 1985-1997/by Norman G. Gratz*

[323] Feldmeier H, Lesshafft H, Baier A, Guerra H and Terashima A 2013 Prevalence and risk factors associated with pediculosis capitis in an impoverished urban community in Lima, Peru *J. Glob. Infect. Dis.***5** 138

[324] Moshki M, Zamani-Alavijeh F and Mojadam M 2017 Correction: Efficacy of peer education for adopting preventive behaviors against head lice infestation in female elementary school students: A randomised controlled trial (PLoS ONE (2017) 12:1 (e0169361) DOI: 10.1371/journal.pone.0169361) *PLoS One***12** 1–13

[325] Notoatmodjo S 2010 Konsep Perilaku Kesehatan Dalam: Promosi Kesehatan Teori & Aplikasi edisi revisi *Jakarta: RinekaCipta*

[326] Notoatmodjo S 2012 Promosi Kesehatan Perilaku Kesehatan *Jakarta: Rineka Cipta* 20–40

[327] Heukelbach J and Ugbomoiko U S 2011 Knowledge, attitudes and practices regarding head lice infestations in rural Nigeria *J. Infect. Dev. Ctries.***5** 652–7

[328] Sanei-dehkordi A, Soleimani-ahmadi M and Zare M 2017 Head Lice Infestation (Pediculosis) and Its Associated Factors among Primary School Girls in Sirik County , Southern Iran **5** 6301–9

[329] Gutiérrez M M, González J W, Stefanazzi N, Serralunga G, Yañez L and Ferrero A A 2012 Prevalence of Pediculus humanus capitis infestation among kindergarten children in Bahía Blanca city, Argentina *Parasitol. Res.***111** 1309–13

PHP-612

BEHAVIOR USING GADGET IN CHILDREN AGES 3 TO 5 YEARS

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ABSTRACT

The gadget is a tool that has many uses that contain various applications and information about everything, this technological advancement makes someone able to spend hours in front of the gadget screen. Currently the use of gadgets is not only for adults but also for children. This study aims to identify the use of gadget in children aged of 3 to 5 years. This research is descriptive exploratory research design with a sample of 184 respondents children aged 3 to 5 years in the area of the village of Jawa, South Kalimantan. Data collection using a questionnaire Adult Involvement In Media Scale (AIM) adaptation that had obtained permission and had been tested by experts. The data taken are attitudes and time use of gadgets. The result attitude of parents in the use of gadgets to children was 69.8% including the adequate category and 87.5% children spent more than one hour a day with a gadget. Parents should have rules for using gadgets in children to prevent health problems or addiction to gadgets.

1. Introduction

A gadget is an object or tool that is created specifically with the aim of helping things to become easier and more practical. Examples of gadgets include laptops, smartphones, ipad and tablets [1]. Gadgets are not only used by adults, but they are now also used by young children under the age of five (Rideout, 2013). Fun gadget applications and programs have become friends for children. According to the research by[2], the result of their study was that children can spend their time in front of the screen for 4 hours per day. This is contrary to the opinion of [3] which states that children should only be in front of a screen <1 hour every day. Children aged 3 to 5 years should do social activities together with thir peers, family members and the surrounding environment[4].

In 2014, according to the Indonesian Ministry of Communication and Informatics (KEMKOMINFO), gadget usage in Indonesia is high, based on the survey results that 98% of internet users are children and adolescents. A study in Kuwait and the US revealed that children use mobile devices jointly with their parents or close family [5]. The results of the study shows that as many as 90% of parents download special applications for their children[6]. Based on an experimental study conducted in Martapura city focused on 20 parents of children aged 3 to 5 years old in the area of South Kalimantan, a total of 85% of preschoolers spend more than 1 hour every day on gadgets and as many as 15% of children use gadgets during the holidays.

Parents need to limit the gadget use of their children. An excessive use of gadgets may lead to addiction. Gadgets addiction in children can be seen from several signs such as tantrums when asked

to stop playing gadget, not responding to parent's calls, and academic performance decreases because the child is no longer interested in the school learning material [7]. The purpose of the study was to find out the usage duration of gadgets in children and the parents' knowledge of gadget use in children aged 3 to 5 years.

2. Material and Method

This study was a descriptive exploratory study and the data was collected through cluster sampling[8]. The rsearch was done at *Kampung Java* in South Kalimantan. As many as 184 participants consisting of mothers and their children were involved in the research. Parents or children with limitations such as speech and hearing impairments and psychological disorders were not included in this study. The research participants were given questionnaires related to knowledge and the duration of gadget use.

The independent variable was the parent's behavior related to gadget usage in children and the dependent variable was gadget usage in children aged 3 to 5 years. The researcher explained the purpose of the study going forward. The researcher asked for their willingness to become respondents and they then asked the parents to answer the questionnaire given to them. This research obtained a letter of ethical research No. 1274-KEPK Faculty of Nursing, Universitas Airlangga.

3. Results

Table 1. Results in terms of knowledge

Respondent's answer	n	(%)
Right	160	86.95
Wrong	24	13.05
Total	184	100

Table 1 shows that the parents' knowledge about the use of gadgets in children aged 3 to 5 years has been included in the good category because 86.95% or 160 respondents answered the questions correctly.

Table 2. Results for the time using the gadget

Usage duration	**n**	**%**
1 jam	26	14.1
>1 jam	158	85.9
Mean		2.6 jam/hari
Minimum		1 jam/hari
Maximum		6 jam/hari

Table2 shows that gadget usage for children aged 3 to 5 years is dominated by >1 hours usage (85.9%). Fewer children use gadgets for under an hour (14.1%)

4. Discussion

The parent's knowledge influences the care of the children with the process of growing and educating children, provide protection and care for children. The parents need to have knowledge about the gadget safe duration for children. In this study, most of the parents have good knowledge, but the duration of the use of gadgets in children is for more than 1 hour a day. This is because the parents consider gadgets to be a form of technology that is hard for children to avoid. Sometimes the screen time restrictions made by the parents means that they have to face their child crying. This drives the parents to provide gadgets to their children despite their knowledge about the benefits of gadget time restriction. The determination of a complete attitude is influenced by the knowledge, thoughts, beliefs, and emotionak state of a person. The factors that can influence attitudes are socio-cultural conditions[10]. A way to measure or assess one's knowledge is to use a scale or questionnaire[11].

The parents must consider how much time is allocated to playing with gadgets in children aged 3 to 5 years old. The ideal duration for preschoolers to use gadgets is 30 minutes up to 1 hour a day[12]. The American Academy of Pediatrics recommends no gadget use for children aged of 0 to 3, while children aged 3-5 years should be given a limit of around 1 hour per day. This goes up to 2 hours per day for children aged 6-18 years. However, Indonesian parents mostly let their children use gadgets 4 - 5 times more than is recommended. The parents should be aware that screen time in children can affect their health[13]. The health effects that can occur in children under the age of 5 include obesity[14]. Social and emotional development is also influenced by the use of gadgets because the children feel comfortable in front of the gadget so the children forget about the surrounding environment[15].

5. Conclusion and Suggestion

The parents' behavior related to gadget usage, especially knowledge in children, was good but the screen time for children aged 3 to 5 years was dominated by more than an hour per day. It was expected that parents and public health workers have a strategy in terms of health promotion about the impact that can be caused by the extensive use of gadgets at an early age.

Parents must have rules about how much time allowed is allocated for the use of gadgets by children aged 3 to 5 years. The parents' knowledge of the use of gadgets is a a good basis for making decisions and determining the actions against problems.

References

[330] Iswidharmanjaya D 2014 *Bila Si Kecil Bermain Gadget*

[331] Oliemat E, Ihmeideh F and Alkhawaldeh M 2018 The use of touch-screen tablets in early childhood: Children's knowledge, skills, and attitudes towards tablet technology *Child. Youth Serv. Rev.***88** 591–7

[332] Strasburger V C, Donnerstein E and Jordan A B 2012 C h i l d ren , A d o l e s c e n t s , a n d t h e Media : Health Effects Media TV New technology Internet Cyberbullying Sexting Media literacy *Pediatr. Clin. NA***59** 533–87

[333] Genc Z 2014 Parents' Perceptions about the Mobile Technology Use of Preschool Aged Children *Procedia - Soc. Behav. Sci.***146** 55–60

[334] McCloskey M, Johnson S L, Benz C, Thompson D A, Chamberlin B, Clark L and Bellows L

L 2018 Parent Perceptions of Mobile Device Use Among Preschool-Aged Children in Rural Head Start Centers *J. Nutr. Educ. Behav.***50** 83-89.e1
[335] Dashti F A and Yateem A K 2018 Use of Mobile Devices: A Case Study with Children from Kuwait and the United States *Int. J. Early Child.***50** 121–34
[336] Patterson G R, DeBaryshe B D and Ramsey E 2017 A developmental perspective on antisocial behavior *Developmental and Life-course Criminological Theories* (Routledge) pp 29–35
[337] Nursalam 2017 *Metodologi Penelitian Ilmu Keperawatan : Pendekatan Praktis* (Jakarta: Salemba Medika)
[338] Gentile D A, Reimer R A, Nathanson A I, Walsh D A and Eisenmann J C 2014 Protective effects of parental monitoring of children's media use a prospective study *JAMA Pediatr.***168** 479–84
[339] Notoatmojo S 2012 *Promosi Kesehatan dan Perilaku Kesehatan* (Rineka Cipta)
[340] Azwar S 2011 Sikap Manusia: Teori & Pengukurannya *Yogyakarta: Pustaka Pelajar*
[341] Education P 2001 American academy of pediatrics **108**
[342] Brown A and Smolenaers E 2018 Parents' Interpretations of Screen Time Recommendations for Children Younger Than 2 Years *J. Fam. Issues***39** 406–29
[343] Ponti M, Bélanger S, Grimes R, Heard J, Johnson M, Moreau E, Norris M, Shaw A, Stanwick R, Van Lankveld J and Williams R 2017 Screen time and young children: Promoting health and development in a digital world *Paediatr. Child Health***22** 461–8
[344] Suhana M 2018 Influence of Gadget Usage on Children ' s Social-Emotional Development **169** 224–7

6. Appendiks

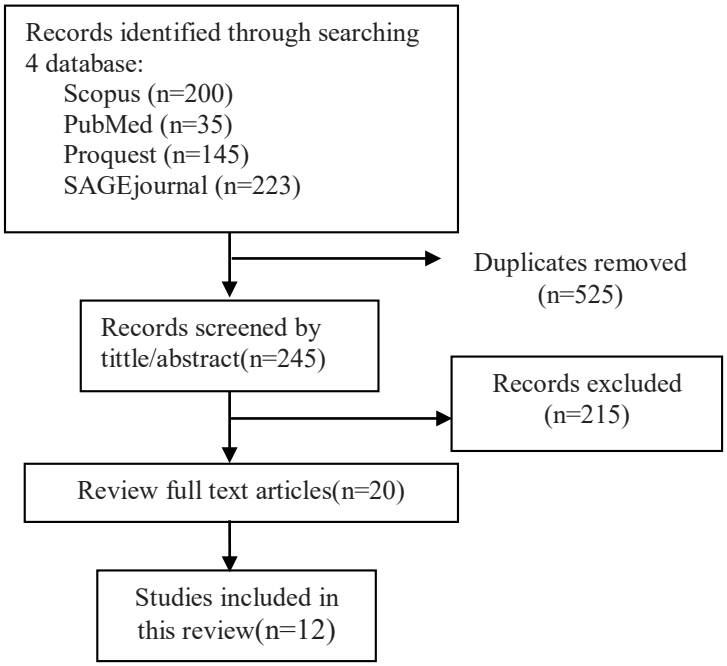

Figure 1. PRISMA flow diagram

Table 1. studies that form the basis of systematic reviews

Author	Type of study	Partisipants	Interventions	Outcomes
[1]	A prospective cohort study	n=157 group low self-efficacy n=153 group high self-efficacy	• Self-efficacy (knowledge, understanding, skill, and behaviors self management)	1. In DM patients with high self-efficacy, the incidence of errors in insulin use is lower than DM patients with low self-efficacy. 2. There is an influence between giving education about self-efficacy in patients with DM, compared with patients who are not given education
[6]	Cross sectional	n=137	• Diabetes self-care • Self-efficacy • Social support • Glycemic control	1. Diabetes self care has a direct effect on glycemic control 2. Self-efficacy and social support do not directly influence glycemic control
[15]	Cross sectional	n=200	• Self-efficacy • Self care activities	1. There is a positive correlation between self-efficacy and self-care activities (diet, exercise, and general self-care, foot care, medication) 2. There is a negative correlation between depression and self care activities (diet, exercise, and general self-care, foot care, medication)
[18]	A cross-sectional, descriptive study	n=75	• Self-efficacy • self-care behaviours • glycaemic control	1. Glycemic control in men is better than in women, when undergoing combination therapy participants experience poor glycemic control. 2. The total value of self-efficacy affects diabetes self-care significantly. 3. Self-efficacy in regulating the blood glucose has a strong influence on glucose control.
[8]	a cross-sectional study	n=340	• self-efficacy • self-care behaviour • glycaemic control	1. There is a positive relationship between self-efficacy and self-care behavior. 2. The high value of self-efficacy is associated with good glycemic control.
[2]	Quasi eksperimen	N=115 (n control=22, n=93)	• Ability to discriminate • Adult Sensory Profile (AASP)	1. No significant differences were found between patients with control of diabetes mellitus and healthy groups with qualities of any life domain 2. Patients with uncontrolled glycemic levels report a lower quality of life compared to

				patients with controlled diabetes mellitus 3. Patients with uncontrolled glycemic quality of social life were significantly lower compared to patients with diabetes mellitus
[19]	qualitative	n=8	• Multiple daily insulin injection treatment regimens	1. Changes in HbA1c levels, insulin regimens and body weight are likely to be affected by HRQoL for diabetic patients. 2. A simple treatment regimen (fewer injections) will lose weight and will have a positive impact on HRQoL
[4]	Descriptive	n=319	• the Diabetes Self-Efficacy Scale	1. The diabetes self-efficacy scale is a reliable, valid instrument for determining patient self-efficacy and providing appropriate care. 2. It can be suggested to investigate and evaluate the consistency of the scale by applying it to sample groups representing different socio-economic levels.
[17]	A cross sectional	n=123	• Self-efficacy, • self-care • glycemic control	1. Self-efficacy is associated with higher levels of diet, exercise, blood sugar. Self-management behavior and use of oral hypoglycemic drugs (OHA) were significant independent predictors of glycemic control of HbA1c <7% (53 mmol / mol). 2. The findings can serve to help doctors have a better understanding of the extent to which they have an influence on self-management behavior, which will ultimately lead to better glycemic control and thus can increase HbA levels 1c.
[5]	RCT	n=297	• Efficacy of a self-management education programme • Primary care to patients with type 2 diabetes	1. Decreased HbA1c is difficult to obtain in adequately controlled patients. On the other hand, increasing awareness of one's illness can increase disease control self-efficacy. 2. These findings, accompanied by a reduction in drug consumption and the level of use of health care, highlight that ordinary care will benefit by incorporating certain aspects of SDSMP.
[16]	Cross sectional	n=80	• Self-efficacy	1. The impact of stress on blood sugar and quality of life related to patient health can be influenced by their self-efficacy 2. Educational interventions are carried out to improve patients'

				self-efficacy to better deal with stress in their lives
[3]	cross-sectional	n=165	• self-efficacy • validation management diabetes	1. Higher levels of self-efficacy in lifestyle management were found in patients diagnosed at least 1 year to 15 years and aged> 65 years and the poorest efficacy found in men <65 years. 2. The results support the validity and reliability of IT-DMSES. This scale can be used in clinical research and practice to monitor type 2 self-management diabetes over time.

PHP-614

SCREENING BASED ON ANDROID WITH FRAMINGHAM RISK SCORE FRAMEWORK IN PATIENTS WITH CORONARY HEART DISEASE RISK (CHD): SYSTEMATIC REVIEW

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ABSTRACT

In Indonesia, early or preventive detection of carciovascular heart disease (CHD) is largely ignored. Health workers are more focused on treatment and rehabilitation measures. The Framingham Risk Score (FRS) prediction model is used, to predict the occurrence of cardiovascular events in 10 years later. The purpose of this systematic review is to find out the effectiveness of screening based on android in patients with CHD risk. The literature searches for several major databases such as scopus, pubmed, and science direct databases from 2012 - 2018 were search for the relevant keyword. All included studies were access base on (1) randomized controlled trials, (2) cohort studies and (3) cross sectional. 13 out of 150 papers were included. An increase in adherence to patients after obtaining an android application. Framingham Risk Score is very sensitive to determine the risk of coronary heart disease in 10 years later for men and women. In conclusion, android-based screening can be used as a reference for early detection of coronary heart disease in 10 years later. Independent screening applications in patients can increase independence and reduce disability and mortality rates in patients with CHD risk for 10 years later.

Keywords: screening, android, framingham risk score, coronary heart disease

1. Background

Coronary heart disease (CHD) is a leading cause of death and disability worldwide [1] Globally, heart disease causes 31% (7.4 million) of deaths among those with CHD [2]. Coronary Heart Diseases (CHD) are widely accepted to be the most serious health care problems in developed countries [3]. The estimation of risk can theoretically be used to raise the population's awareness of CHD, which is that it causes a significant burden of morbidity and mortality. It is necessary to communicate the CHD risk efficiently in a public health setting[4]. However, the situation in primary care is not the same, particularly concerning the choice of methods used for calculating or classifying cardiovascular risk [3].

The Framingham risk score (FRS) is a simplified and common tool for the assessment of the risk level of CAD over 10 years [5]. FRS is the most applicable method for predicting a person's chance of developing cardiovascular disease (CHD) in the long term. This is because the risk score gives an indication of the likely benefits of prevention [5]

The current CHD screening application is widely used and it has a significant impact on early detection and improving quality of life. It can support the patients in their self-care and drug management. The patients can also access their electronic health records on their mobile devices, and they are activated and empowered to participate more in their own health care and in the management their long-term conditions[6]. We aimed, in this study, to find out the effectiveness of screening patients with a CHD risk.

2. Methods

The author searched the Scopus, Science Direct and Springerlink databases with the keywords "Screening", "Android", "Framingham Risk score" and "Coronary Heart Disease" and obtained 150 articles. The search was done by limiting the articles to 2012 - 2018 in terms of publication.

The inclusion criteria created by the authors were as follows:

1) Patients do not have a CHD history
2) Screening based on the Framingham risk score
3) Android application
4) Quantitative studies with a randomized controlled trial, cohort or cross-sectional design

The exclusion Criteria were as follows:

1) Patients who have been hospitalized
2) Early detection using a clinical examination
3) Qualitative studies.

3. Results

Figure 1 shows the literature search method. The search engines found 150 articles that were then selected based on the topic and research variables to find 185 appropriate articles. They were then re-selected according to the research variables to get 96 articles. Re-selection using the inclusion criteria narrowed it down to 13 articles. We then performed a critical appraisal to review the content, design and research method.

The research in this systematic review was diverse and taken from various countries. Two studies were conducted in Iran (15%) and Malaysia (15%). The studies conducted in China totaled three (23%) and there was one each in Europe, Australia, America, Spain and Japan. One study (7.6%) used a Randomized Control Trial design study and only five studies (38.4%) used a Cross-sectional Study design. Seven studies (54%) used a Cohort design study.

The sample size varied from 174 people to 73,277 people. One research study focused on android applications and 12 other studies focused on the Framingham risk score for patients with coronary heart disease risk in order to predict of coronary heart disease (CHD). One study focused on improving treatment adherence and cardiovascular lifestyle[7]. Eleven other studies focused on examining the risk of coronary heart disease using the Framingham risk score framework for the prediction of coronary heart disease in the next 10 years. One study focused on comparing the Framingham risk score and WHO[8].

There are many similarities between the studies that focus on a CHD risk assessment using the Framingham risk score framework. [9] compared the Framingham risk score before and after calibration to find out the different functions and to assess the utility of the framework. This was

confirmed by the research of [5], who conducted an evaluation of the Framingham risk score for measuring the risk of heart disease in patients with metabolic syndrome. Whereas the research of[10] sought to determine which metabolic syndrome fully reflects the CHD probability of the next 10 years based on the Framingham risk framework

Culture can also influence the differences in the research results. Some researchers have tried to compare this [11] by assessing the risk of CHD in multiethnic groups between Asian and Caucasian women. Individuals have also examined the performance of FRS in the Middle East[4] as well as[12], who examined the validity, convergence and sensitivity of FRS in diabetic patients in China. Because FRS was first performed on Caucasian ethnicities, some researchers wanted to examine its effectiveness if it was carried out in ethnic Asian, Mongoloid and Middle Eastern countries.

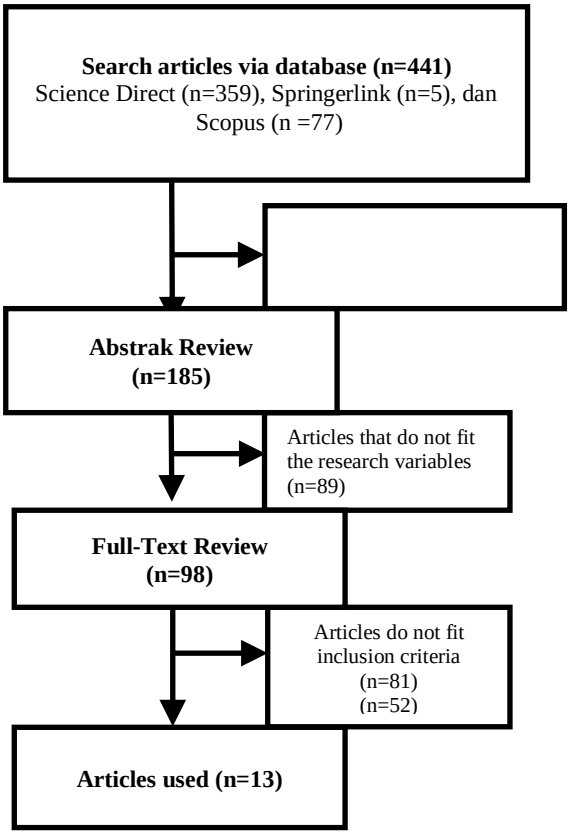

Figure 1 - Review of the literature method

Apart from ethnicity, the underlying problem affecting CHD is socio-economic. Predicting the risk of cardiovascular disease (CHD) in low-income urban residents in metropolitan Malaysia is one example of this[13]. Whereas[14]perfected this by exploring the correlation between socio-economic status and lifestyle on the incidence of CHD.

The development model of the Framingham risk score to improve the sensitivity of early CHD predictions was carried out by [15]. [16] compared the FRS (Framingham Risk Score) and Suita score (prediction model of Japanese CHD) because of reports of low FRS capabilities related to predicting coronary heart disease (CHD) in Asian populations.

4. Discussion

The Framingham risk score is a framework used for predicting heart disease in the next 10 years. Many countries have conducted research to test the framework. Standard risk factors (age, systolic blood pressure (SBP), total and high-density lipoprotein cholesterol, smoking and diabetes melitus) were measured at baseline and they are significantly related to the incidence of CHD [4]

His study[4] stated that the Framingham CHD framework is effective in terms of the ranking of individuals and that it can be used to measure risk and guide in terms of preventive care.

But in a population-based study of older adults, the Framingham risk score poorly discriminated between persons who experienced a CHD event and those who did not [9]. The overall Framingham risk score was significantly greater in men than in women, $P<0.001$, whereas this opposed the events during follow-up [3]. This was also confirmed by the study of[9] stating that traditional risk factors remain the best predictors of CHD events.

This is similar to the results of a study by [3] which stated that in both sexes, there is a difference in sensitivity but that the level of sensitivity is greater in women than in men. The results were in contrast with [10], which states that FRS has better results in men than women.

[11] examined the sensitivity of FRS in men and women in Asia, which stated that Asian women have a lower risk of CHD compared to Caucasian women.

Previous studies have also found there to be a lower performance of risk prediction based on the FRS associated with increasing age, but they didn't examine how CHD risk prediction might be improved among older adults. [9]. The performance of the FRS may be worse in the very old, with adults aged 85 years or older. In the present analysis among older adults, the FRS underestimated the absolute CHD risk, particularly in women [9].

Although FRS is a useful framework for predicting the risk of CHD, it also has several limitations that should be considered before applying its results to a population. First of all, the FRS is an estimation framework and it cannot be used as part of a medical examination. Secondly, because of the under-representation of a young population in the original cohort, the FRS may be an imprecise tool in this population. Thirdly, the FRS did not include several other potential CHD risk factors like a family history of CHD or diabetes [5]

This caused [16] to try to compare FRS with Suita. The result was that there were differences in the scores of the two, which were superior in terms of scoring in the Japanese population in terms of predicting the risk factors for the next 3 years. Whereas CHD risk predicted using Framingham is more sensitive when it comes to distinguishing the clinical risk groups in China [12]

The Malaysian studies concluded that health care expenditures, which are costs related to other diseases, and a loss of productivity due to CHD would worsen the situation of low-income urban populations[13]. Thus, public health professionals and policy makers must make a great effort to formulate public health policies and community-based interventions to minimize the possibility of high CHD mortality and morbidity among the residents of low-income cities by making CHD predictions as early as possible.

e-Health solutions have been shown to improve self-management, adherence to lifestyle modification, and medical therapy [7]. Smartphone apps have the potential to address the complexity of non-adherence behavior regarding both medical treatment and lifestyle modifications [7].

Finally, further information concerning the interventions and their results could be obtained by evaluating the changes in the CVR in both older persons (with a high risk and different levels of RF) as well as in younger persons (with a low risk but certain levels of 'treatable' RF) [3]. Although smartphones as a medium to improve health are still relatively new in the world of health, there have been many studies and significant results that show that they improve adherence and create positive life changes in patients[7].

It is expected that in the future, developing countries can take preventive measures against coronary heart disease by developing smartphone applications so then they can reduce mortality, morbidity and maintenance costs in hospitals.

5. Conclusion

The Framingham risk score is a framework for predicting CHD in the next 10 years. While there are pros and cons regarding its sensitivity between men and women, the Framingham risk score can be used globally. It is expected that future technological developments will be able to shift CHD to the digital era by using an Android smartphone so then FRS can reach more people. Mortality and morbidity can also be prevented by improving the preventive measures.

References

[345] Park L G, Howie-esquivel J, Chung M L and Dracup K 2014 Patient Education and Counseling A text messaging intervention to promote medication adherence for patients with coronary heart disease : A randomized controlled trial *Patient Educ. Couns.***94** 261–8

[346] Herring L Y, Dallosso H, Chatterjee S, Bodicoat D, Schreder S, Khunti K, Yates T, Seidu S, Hudson I and Davies M J 2018 Physical Activity after Cardiac EventS (PACES) – a group education programme with subsequent text-message support designed to increase physical activity in individuals with diagnosed coronary heart disease : study protocol for a randomised controlled tr 1–13

[347] Artigao-rodenas L M, Carbayo-herencia J A, Divisón-garrote J A and Gil- V F 2013 Framingham Risk Score for Prediction of Cardiovascular Diseases : A Population-Based Study from Southern Europe **8** 1–10

[348] Bozorgmanesh M, Hadaegh F and Azizi F 2011 Predictive accuracy of the ' Framingham ' s general CVD algorithm ' in a Middle Eastern population : Tehran Lipid and Glucose Study 264–73

[349] Jahangiry L, Farhangi M A and Rezaei F 2017 Framingham risk score for estimation of 10-years of cardiovascular diseases risk in patients with metabolic syndrome 0–6

[350] Honeyman E, Varnfield M and Karunanithi M 2014 Interventional Cardiology Mobile health applications in cardiac care **6** 227–40

[351] Johnston N, Bodegard J, Jerström S and Åkesson J 2017 Effects of interactive patient smartphone support app on drug adherence and lifestyle changes in myocardial infarction patients : A randomized study *Am. Heart J.***178** 85–94

[352] Selvarajah S, Kaur G, Haniff J, Chee K, Guat T, Graaf Y Van Der and Bots M L 2014 Comparison of the Framingham Risk Score , SCORE and WHO / ISH cardiovascular risk prediction models in an Asian population ☆*Int. J. Cardiol.***176** 211–8

[353] Rodondi N, Locatelli I, Aujesky D, Butler J and Vittinghoff E 2012 Framingham Risk Score and Alternatives for Prediction of Coronary Heart Framingham Risk Score and Alternatives for Prediction of Coronary Heart Disease in Older Adults

[354] Zhou J, Gao Q, Wang J, Zhang M, Ma J, Wang C, Chen H, Peng X, Hao L and Wang J 2018 Comparison

of coronary heart disease risk assessments among individuals with metabolic syndrome using three diagnostic definitions : a cross-sectional study from China

[355] Welborn T A, Thompson P L, Maycock B R, Kerr D A, Lee A H, Bertolatti D, Clark K M, Naheed R and Della P R 2014 Cardiovascular disease risk score prediction models for women and its applicability to Asians 259–67

[356] Jiao F F, Lo C, Lam K, Fung C and Mcghee S M 2014 Comparison of four cardiovascular risk prediction functions among Chinese patients with diabetes mellitus in the primary care setting **I** 1–9

[357] Su T T, Amiri M, Hairi F M, Thangiah N, Bulgiba A and Majid H A 2015 Prediction of Cardiovascular Disease Risk among Low-Income Urban Dwellers in Metropolitan Kuala Lumpur , Malaysia **2015**

[358] Liao C and Lin C 2018 Life Course Effects of Socioeconomic and Lifestyle Factors on Metabolic Syndrome and 10-Year Risk of Cardiovascular Disease : A Longitudinal Study in Taiwan Adults 1–15

[359] Liu Y, Li Q, Chen S, Wang X, Zhou Y, Tan N and Chen J 2018 A Simple Modified Framingham Scoring System to Predict Obstructive Coronary Artery Disease

[360] Hirai H, Asahi K, Yamaguchi S, Mori H and Satoh H 2019 New risk prediction model of coronary heart disease in participants with and without diabetes : Assessments of the Framingham risk and Suita scores in 3-year longitudinal database in a Japanese population 1–16

PHP-621

THE ROLE OF ENGAGEMENT FOR DECREASING TURNOVER INTENTION: A SYSTEMATIC REVIEW

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ABSTRACT

Engagement is an important aspect of organizational effort which can make employees express themselves physically, cognitively, and emotionally while working. "Engaged" employees will show how much they truly fulfill their job role and it is hoped that this will reduce turnover. This systematic review aims to examine the role of engagement to reduce turnover intention. The search was conducted in five databases, namely Scopus, ScienceDirect, PubMed, Emerald, and Researchgate using keywords 'engagement', 'turnover intention', and 'intention to stay'. The search identified 15 relevant articles published between 2014-2018. The result shows that engagement decreases turnover intention directly and as a mediator. Nine articles explained engagement as fully mediating role to reduce turnover. Variables that fully mediated by engagement are job characteristics, self-efficacy, job satisfaction, respect, decisional involvement, job and personal resources, psychological capital, training satisfaction, and person-organization fit. However, psychological capital and job satisfaction also acted as mediation between engagement and turnover intention. This study suggests that engagement can be used as a strategy to reduce turnover rates because engaged employees will continue to immerse themselves in work so that they have a little negative thinking such as leaving the organization.

Keywords: engagement, turnover intention, intention to stay, employee

1. Introduction

A stable workforce in an organization becomes a competitive tactic that is expected to be more vital in the future. Turnover among employees will always be a popular research topic among management researchers[1]. Employee turnover is still a global problem within organizations. A high turnover rate can result in a decrease in organizational competitive advantage, staff morale, work productivity, and the work quality of the employees[2]. Employee turnover also results in a loss of direct and indirect costs in the company, which can result in poor reputation, productivity, and organizational effectiveness. Direct cost losses usually relate to recruitment costs, training costs, and costs due to position vacancies, and indirect costs are associated with the increasing workload on the coworkers and the negative image of being a reputable company with high employee turnover[3]. Because of the negative impact caused by turnover in employees, it is necessary to find a way to keep employees in the organization.

Some studies report that one way to reduce turnover intention is by increasing engagement. Engagement is an important aspect of organizational effort which can make the employees express themselves physically, cognitively, and emotionally while working[4]. Work engagement describes the psychological condition of positive people who feel satisfied with their work. They feel very involved in their work, and this will have a positive effect on improving their mental and physical health and work performance, and this can reduce absenteeism and the turnover rate[5]. Engaged employees who have a positive energy will always be immersed in their work and so they will not have time to think negatively on matters like leaving the organization. The issue is in accordance with the theory of engagement where work will determine how long the employee lives in the organization. If the employee is doing the work then he will not intend to leave the organization at that time[1].

Based on the description of the background, the purpose of the current study was to systemically review and synthesize the evidence of the role of engagement to decrease employee turnover intention.

2. Research Methods

2.1. Search strategy

Systematic searches were carried out in the following databases: Scopus, Science Direct, PubMed, Emerald, and Researchgate. An extensive search for articles published from 2014 to 2018 was conducted. The keywords included ‘engagement,' ‘turnover intention,' and ‘intent to stay.' The search was done using a combination term of Boolean terms AND quotes. The research must use cross-sectional methods, longitudinal studies and a literature review of design reviews in order to answer the research questions. Additionally, only studies written in English were used for the current study.

2.2. Selection criteria

An article was included if it met the following criteria: 1) including research that discusses the influence or role of engagement on the turnover intention of employees, 2) measurements of engagement, 3) measurements of turnover intention, 4) original research and 5) including the employees as system users or study subjects. There was no limit as to the type of work and location of the data collection for the participants because the focus of the search was the influence or role of engagement. An article was excluded if it met the following criteria: 1) the results of the study do not explain the role of engagement on turnover intention and 2) they were theses, abstracts, or parts of a conference process.

2.3. Data extraction

The following data elements were extracted: author, year, country, theoretical framework, study design, sample, measurement, scoring, reliability, validity, analysis and the results of the study and whether it was significant or not significant. We extracted the outcomes used to evaluate the

effectiveness of the engagement for decreasing turnover intention. In the case of disagreement, differences were resolved through a discussion with all of the authors.

3. Result

3.1. Selection of studies

The search resulted in a total of 5,957 studies: 195 from Scopus, 55 from PubMed, 1117 from Science Direct, 25 from Researchgate and 4590 from Emerald. Of these, 47 manuscripts were relevant to engagement and turnover intention and they were screened using the inclusion criteria. The review process for the selected articles developed in three stages, including the title review, abstract review, and full-text review. Fifteen studies were maintained after screening for quality. All of the studies were quantitative. The retrieval and screening process has been summarized in Figure 1.

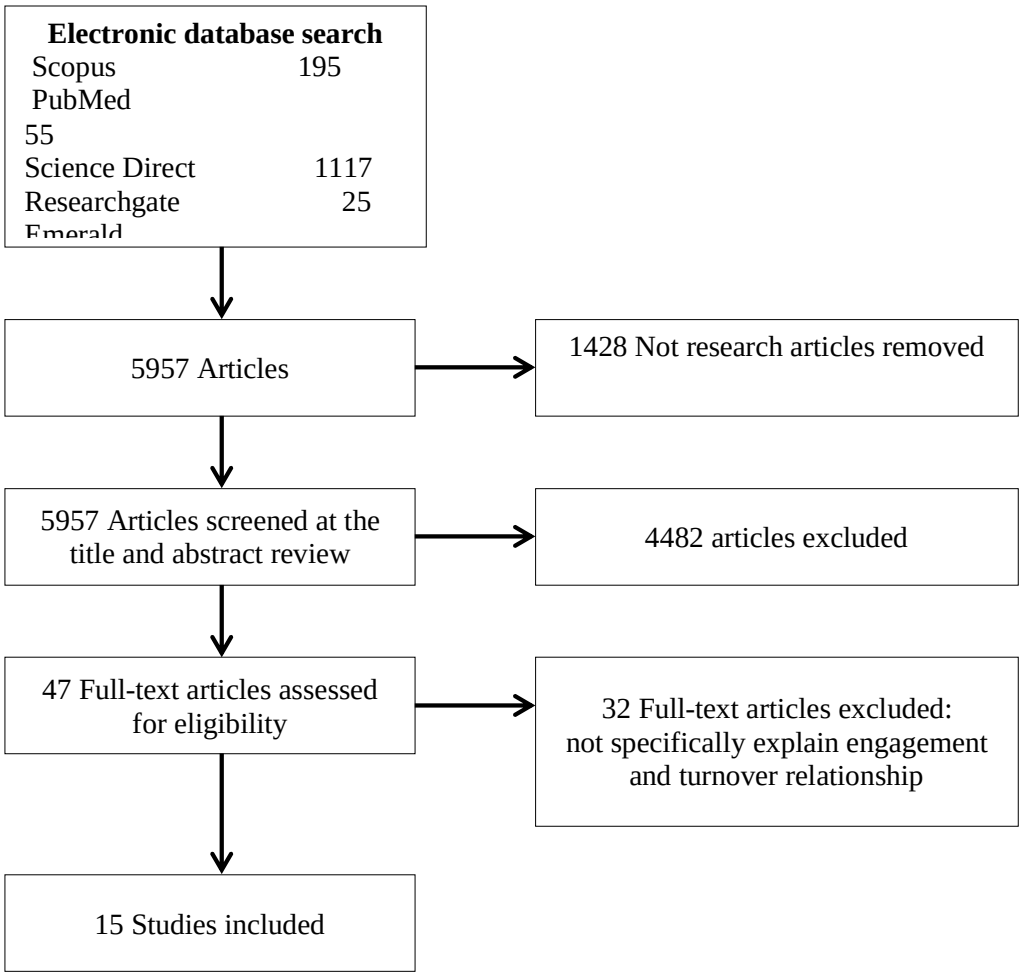

Figure 1. Search and retrieval process

3.2. Characteristic of the included study

The studies were limited to the range between 2014 and 2018. Three studies were published in 2015, 2 studies were published in 2016, 4 studies were published in 2017 and 6 studies were published in 2018. The design used for all of the studies was quantitative. Cross-sectional studies dominate quantitative studies. For the data sources, questionnaires were conducted for all studies. Three different measurement tools were used to measure engagement. The most commonly used measuring instrument was the Utrecht Work Engagement Scale (UWES) made by Schaufeli et al. in 2002 and 2006. There were two versions of UWES used in the 12 studies namely UWES with nine scoring items[1] [2] [5-11] and one with 17 items[12-14], although 1 study did not report using UWES by any method of scoring[15]. The UWES instruments in several studies had been translated into languages that were in accordance with the country of study[5] [6] [12] [13]. Other instruments used to measure engagement were HR Solutions "Sweet 16" made by HR Avatar Soutions in 2012[3] and the Work Engagement questionnaire[16]. Cronbach's alpha for the engagement tools ranged from 0.70 - 0.94. Three studies did not report on the validity[6] [13] [16] and 1 study not report the reliability[16]. Fourteen different tools were used to measure turnover intention by the employees. Cronbach's alpha for the turnover of the intention tool ranged from 0.70 to 0.96. Three studies did not report any validity tests[6] [13] [16], and five studies did not report any reliability testing[3] [7] [11] [13] [16].

Ten studies were conducted in hospital settings[3] [5-9] [12-14] [16], 4 studies were conducted in industrial areas[1] [2] [10] [11], and 1 study took place in a hotel[15]. Fourteen studies were held in multiple places[1-3] [5-13] [15] [16], and only 1 study was held in a single place[14]. The sample population came from various workplaces in this study. There were nurse participants in 10 studies[3] [5-9][12-14] [16], industrial employee participants in 4 studies[1] [2] [10] [11], hospital employee participants in 1 study[3], and hotel employee participants in 1 study[15]. In 1 study, it combined registered nurses and nurse managers[7], and in another study, it combined nurses and registered and patients[5]. The total population in this study was 24362 people consisting of 11745 nurses, 12436 employees and 181 patients. The place of research was across various countries, namely China[12], Uruguay[6], Spain[6], Japan[7], New Zealand[8], Italy[5], the United States[3], Portugal[13], North American[15], Iran[14], Cyprus[16], India[1], Malaysia[2] [10], and Australia[9]. One study did not explain in what country the research was conducted[11]. See Appendix for the characteristics of the included studies.

3.3. Theoretical frameworks

The theoretical framework was used and elaborated on to underlie the research across the 14 studies, whereas in one study, it was not described using the theoretical framework[3]. Eight different theoretical framework models were used throughout the studies, namely the Job Demand-Resources Model developed by Bakker, Demerouti, & Schaufeli in 2003[11], Bakker & Demerouti in 2007[2] [6] [8] [14], Bakker and Demerouti in 2008[16] and Bakker and Demerouti in 2011[13], thte Social Cognitive Theory developed by Bandura in 1986[5], the Career Adaptability Theory

that was developed by Savickas in 1997[15], the Social Exchange Theory that developed by Blau in 1964[2] [9] [10], the Cognitive Dissonance Theory developed by Festinger in 1957[9], the Field Theory developed by Lewin in 1951[10], Organizational Support Theory developed by Kurtessis, Eisenberger, Ford, Buffardi, Stewart, & Adisin in 2017[11], and the Causal Turnover Model developed by Price & Muller in 1981[13]. All of the above theoretical frameworks underlie how engagement affects turnover. In one study, the theoretical framework came from the review literature that discussed the nurse's intention to stay in the workplace and it did not explain in detail what the underlying theories were[7].

3.4. Study results

Research studies have identified that engagement plays a role in reducing turnover intention. Eight studies identified that engagement decreases turnover intention directly[1] [2] [5] [7–9] [14–16], 12 studies explained that engagement can also reduces turnover indirectly[2] [3] [5] [6] [8–14] [16], and in 3 studies it was explained that the role of engagement can be strengthened by other variables to reduce the turnover that is strengthened by job satisfaction [11] [15] and psychological capital (PsyCap)[1]. The role of engagement indirectly is namely as a mediator between the other variables and turnover intention. Engagement can act as a mediator partially and full mediator. The variables that are fully mediated by engagement to reduce turnover include the job characteristics[12], self-efficacy[8], greater emotional demands[8], mission fulfillment[3], respect[3], decisional involvement[13], job resources[14], personal resources[14], psychological capital[16], training satisfaction[2] and organization fit[10]. The variables that are partially mediated by engagement to reduce turnover include the work environment[12], social support[6], psychological contract fulfillment (job content and social atmosphere)[9], organizational support development[11]and managerial support[11].

4. Discussions

In conducting the systematic review, 15 of the studies evaluated how the role of management was to reduce employee turnover intention. From this systematic review, we tried to show that there is a positive role from engagement from within fifteen articles that met the criteria of adversity to reduce the turnover intention rate. The results of the studies showed that the role of engagement directly made the employees more involved and focused on their work to the point where they did not have time to think about leaving their jobs. Engagement can provide a positive and satisfying work experience, and it can also create positive thoughts and effects resulting in the condition of good health and increased work effort, where positive experiences and thoughts can produce positive performance, make the employers feel more valued, and reduce the possibility of them leaving the organization[17] [18]. Engagement can also reduce burnout, which can trigger turnover intention. In previous studies work engagement was negatively correlated with burnout[19]. Independent relationships are shown through burnout and engagement, where increasing job involvement and reducing fatigue levels can be used as a strategy to reduce turnover intention[7]. One of the things that keeps employees at work is where and when they feel valued

and involved in their workplace. Engagement can generate positive thoughts and work enthusiasm for employees so then fatigue diminishes and employee performance increases. The company will involve their employees more, which will affect the employees choice to stay in the workplace.

The second finding from this systematic review was that engagement plays a role as a mediator between the independent variables involved in decreasing turnover intention. This can happen if the variable can reduce turnover by influencing work engagement. For example, an engagement that mediates the role of job resources to minimize turnover intention[14]. This refers to the model made by Bakker and Demerouti, where the model explains that job resources can influence organizational outcomes by influencing work engagement[20]. Job resources have a component consisting of physical, psychological and social aspects. Good company organizations or organizations that can reduce work demands and physiological and psychological costs achieve their work goals functionally and trigger growth, learning, and personal development[21].

Further research by Bakker and Demerouti suggests that job resources can trigger motivation that leads to engagement which can improve performance, where engagement is directly able to reduce turnover intention[14]. Motivation in work is one aspect that can keep the employees in the workplace, and this motivation can be triggered through work resources. Employees who have a high motivation at work will automatically have good performance and high engagement so their intention to change jobs will decrease.

The latest finding from this systematic review is that engagement is reinforced by other variables when it comes to reducing turnover. This can occur if the variable has a positive correlation with increasing engagement and if it negatively correlates to turnover intention. For example, psychological capital can strengthen the role of engagement to reduce turnover intention[1], wherein this study it has been proven that psychological capital has a positive correlation with engagement and a negative correlation with turnover. It is based on the previous empirical studies which revealed that psychological capital is a component of personal resources that can provide a form of work engagement. Bakker and Leiter (2010) suggested that psychological capital has been proposed by Swetman and Luthans to be used as a fundamental resource that can increase productivity in the workplace[1]. The self-efficacy that forms psychological capital is the strong belief of the employees to do their jobs and to overcome obstacles in their work[1]. Employees who believe in their ability to channel energy to meet the demands of work will have the motivation to immerse themselves in their work and not think of leaving their jobs[22]. High psychological capital will make the employees motivated to work hard and to improve their performance and success in their workplace so then they will be more involved in their work and thus reduce their desire to leave the job.

5. Conclusion

The study result shows that engagement has an important role at helping to reduce turnover rates among employees. Here are three ways how engagement plays a role in reducing turnover intention. First, engagement can reduce turnover intention directly without intermediary variables. Secondly, engagement also plays a role in mediating between other variables to reduce intentional

intention where engagement can act as a full mediator and partial mediator, and the last is that engagement will be strengthened by the other variables to reduce turnover intention. Engagement can provide a positive and satisfying work experience, and create positive thoughts and effects with the conditions of good health and increased work effort where positive experiences and thoughts can produce a positive performance, make the employers more valued, and reduce the possibility of them leaving the organization [17] [18]. Therefore, engagement can be used as one of the strategies in the organization to help employees become more involved in their work so then they do not think about leaving the organization. Employees are valuable human resource assets of the company.

References

[361] Gupta M and Shaheen M 2017 Impact of Work Engagement on Turnover Intention : Moderation by Psychological Capital in India *Bus. Theory Pract.***18** 136–43
[362] Memon M A, Salleh R and Baharom M N R 2016 The link between training satisfaction, work engagement and turnover intention *Eur. J. Train. Dev.***40** 407–29
[363] Collini S A, Guidroz A M and Perez L M 2015 Turnover in health care : the mediating effects of employee engagement *J. Nurs. Manag.***23** 169–78
[364] Kahn W A 1990 Psychological Conditions of Personal Engagement and Disengagement at Work *Acad. Manag. J.***33** 692–724
[365] Simone S De, Planta A and Cicotto G 2018 The role of job satisfaction , work engagement , self-e ffi cacy and agentic capacities on nurses ' turnover intention and patient satisfaction *Appl. Nurs. Res.***39** 130–40
[366] Shemueli R G, Dolan S L, Ceretti A S and Nuñez P 2015 Burnout and Engagement as Mediators in the Relationship between Work Characteristics and Turnover Intentions across Two Ibero-American Nations *Stress Heal.*
[367] Eltaybani S, Noguchi-Watanabe M, Igarashi A, Saito Y and Yamamoto-Mitani N 2018 Factors related to intention to stay in the current workplace among long- term care nurses : A nationwide survey *Int. J. Nurs. Stud.***80** 118–27
[368] Moloney W, Boxall P, Parsons M and Cheung G 2017 Factors predicting Registered Nurses' intentions to leave their organization and profession: A job demands-resources framework. *J. Adv. Nurs.***74** 864–75
[369] Sheehan C, Tham T L, Holland P and Cooper B 2018 Psychological contract fulfilment , engagement and nurse professional turnover intention fulfilment *Int. J. Manpow.*
[370] Memon M A, Salleh R, Nordin S M, Jun-Hwa C, Ting H and Chuah F 2018 Person-organisation fit and turnover intention: The mediating role of work engagement *J. Manag. Dev.***37** 285–98
[371] Kumar M, Jauhari H, Rastogi A and SIvakumar S 2017 Managerial support for development and turnover intention: roles of organizational support, work engagement and job satisfaction *J. Organ. Chang. Manag.***31** 135–53
[372] Wan Q, Li Z, Zhou W and Shang S 2018 Effects of work environment and job characteristics on the turnover intention of experienced nurses: The mediating role of work engagement *J. Adv. Nurse***74** 1332–41
[373] Marques-pinto A, Jesus É H, Maria A, Cruz O, Fronteira I and Roberto M S 2018 Nurses ' Intention to Leave the Organization : A Mediation Study of Professional Burnout and

Engagement *Span. J. Psychol.***21** 1–10

[374] Shahpouri S, Namdari K and Abedi A 2015 Mediating role of work engagement in the relationship between job resources and personal resources with turnover intention among female nurses *Appl. Nurs. Res.*

[375] Lu L, Lu A C C, Gursoy D and Neale N R 2016 Work engagement , job satisfaction , and A comparison between supervisors and line-level employees *Int. J. Contemp. Hosp. Manag.***28** 737–61

[376] Karatepe O M and Avci T 2017 The effects of psychological capital and work engagement on nurses ' lateness attitude and turnover intentions *J. Manag. Dev.***36**

[377] Schaufeli W B and Bakker A B 2004 Job demands , job resources , and their relationship with burnout and engagement : a multi-sample study*J. Organ. Behav.***25** 293–315

[378] Saks A M 2006 Antecedents and consequences of employee engagement *J. Manag. Psychol.***21** 600–19

[379] Schaufeli W B, Bakker A B and Salanova M 2006 The Measurement of Short Questionnaire A Cross-National Study *Educ. Psychol. Meas.***66** 701–16

[380] Bakker A B and Demerouti E 2007 The Job Demands-Resources model : state of the art *J. Manag. Psychol.***22** 309–28

[381] Hobfoll S E 2002 Social and Psychological Resources and Adaptation *Rev. Gen. Psychol.***6** 307–24

[382] Xanthopoulou D, Bakker A B, Demerouti E and Schaufeli W B 2007 The Role of Personal Resources in the Job Demands-Resources Model *Int. J. Stress Manag.***14** 121–41

Appendix

The characteristics of the included studies

Author (yr)/ country	Theoretical framework	Study Design	Sample	Measurement / Instruments	Scoring	Reliability Cronbach's α	Validity	Analysis	Result
Wan, Q *et al* (2018)/ China	Job Demand Resources Model (JD-R Model) (Bakker & Demerouti, 2007)	Quantitative	778 experienced nurses	Farh's turnover intention scale (Farh, 1998)	Not reported	0,81	Prior Research (Zhang &Gan, 2005 ;Dail &Yang, 2004;Wang&Li, 2011)	Structural equation modeling(SEM)	Work engagement (WE) partially mediated between the work environment and turnover intention. WE fully mediated between job characteristic and turnover intention
				Chinese version UWES (Zhang & Gan, 2005)	17 items	0,70			
				Chinese version Job Diagnostic Survey (Dail & Yang, 2004)	15 items	0,94			
				Chinese version Practice Environment Scale (Wang & Li, 2011)	31 items	0,91			
Shemueli, R G *et al* (2015)/ Spain-Uruguay	JD-R Model (Bakker & Demerouti, 2007)	Quantitative	316 nurses Uruguay 502 nurses Spain	Turnover Intention Scale (Arsenault *et al*, 1991)	3 items	0,92-0,94	Not reported	Multiple structural equation modeling (MSEM)	Work engagement partially mediated between social support and turnover intention
				Shirom-Melamed Burnout Measure (Shirom & Melamed, 2006)	12 items	0,95-0,96			
				Spanish version of UWES (Schaufeli *et al*, 2002)	9 items	0,92-0,93			
				Social support scale (Dolan *et al*,1992)	12 items	0,82-0,84			
				Work overload scale (Karasek *et al*, 1998)	4 items	0,82-0,85			

Eltaybani, S *et al* *(*2018)/ Japan	From literature review nurse intent to stay	Quantitative	3128 staff nurses, 257 nurses manager	Question about nurse intent to stay Japanese Burnout Scale (Kubo & Tao, 1994) UWES-9 (Schaufeli *et al*, 2006) Japanese vers SSS-8 (Gierk *et al*, 2014) Nurses perceptions of the quality care process	Not report 17 items 9 items 8 items 18 items	Not reported 0,86 0,92 0,81 0,92	Chi-square Pearson's correlations	Multilevel logistic regression analysis	Higher work engagement can decrease nurses' turnover intention
Moloney, W *et al* (2017)/ New Zealand	JD-R Model (Bakker & Demerouti, 2007)	Quantitative	2876 registered nurses	Intent to leave (Dotson *et al*, 2014) Malach-Pines Burnout Measure Scale (Malach-Pines, 2005) UWES-9 (Schaufeli *et al*, 2006) Job-demands scale (Hasselhorm *et al*, 2008) Emotional demands (Jong *et al*, 1999) Work-life interference (Macky & Boxall, 2014) Supervisor and colleague supooort (Heidjen, 2003) Organizational support (Wayne *et al*, 1997) Work Design Questionnaire (Morgeson & Humprey, 2006) Professional development(New Zealand Nurse Organisation, 2011) PyCap Qustionnaire	3 items Not reported 9 items 5 items 4 items 6 items 4 items 3 items 3 items 2 items	>0,70	Ensured by generating survey items based on the literature, testing a measurement model before the structural model	Structural equation modeling(SEM)	Higher engagement can decrease turnover intention. Higher engagement mediated between greater emotional demands and turnover intention. Higher engagement mediated between greater self efficacy and turnover intention

				(Luthans *et al*, 2007) Value congruence (Dotson *et al*, 2014) Pay- NEXT Study Group research (Hasselhorn *et al*, 2003) Effort-reward Imbalance (Siegrist *et al*, 2004)	6 items 3 items 1 item				
Simone, S D *et al* (2018)/ Italy	Social Cognitive Theory (Bandura, 1986)	Quantitative	194 nurses, 181 patients	Italian version job satisfaction measure II (De Simone *et al*, 2014) Italian version UWES (Balducci *et al*, 2010) Nurses' self-efficacy (Consiglio *et al*, 2014) Italian adaptation hospital turnover intention (Galletta *et al*, 2011) Italian version NSNS (Pirelda *et al*, 2015)	5 items 9 items 15 items Not reported 17 items	0,92 0,89 0,90 0,72 Not report	Pearson correlation	Correlation analysis Path analysis	Work engagement can decrease turnover intention. Work engagement fully mediated between job satisfaction and turnover intention.
Collini, S A *et al* (2015)/ USA	Not Reported	Quantitative	5443 hospital employees	HR Solutions "Sweet 16' (Avatar HR Solutions, 2012) Climate diversity Respect Mission fulfillment Turnover rate	6 items 2 items 4 items 1 item Not report	0,91 0,84 0,73 Not report Not report	Correlation	Regression	Engagement fully mediated between respect and turnover intention. Engagement fully mediated between mission fulfillment and turnover intention
Pinto, A. M *et al* (2018)/	Causal Turnover Model (Price & Muller,	Quantitative	2235 nurses	RN4Cast Nurse Survey (Sermeus et al., 2011). PES-NWI	2 items	Not report	Not reported	SEM CFI TLI SRMR	Job engagement fully mediated between

Portuguese	1981), JD-R Model(Bakker&Demerouti, 2011)			(Lake, 2002) Portuguese version Maslach Burnout Inventory Human Service Survey (Jesus *et al*, 2014) Portuguese version UWES (Pinto *et al*, 2015) Turnover assessed with a dichotomous Yes/No item	8 items 22 items 17 items Not report	0,70-0,80 0,80-0,87 0,94 Not report		WRMR RMSEA	nurses' decisional involvement and turnover intention
Lu *et al* (2016)/ North American	Career Adaptability Theory (Savickas, 1997)	Quantitative	859 employees	UWES (Schaufeli *et al*, 2002) Job satisfaction (Hartine&Ferrll's, 1996) Turnover intention (Boshoff & Allen's, 2000)	Not report 5 items 3 item	0,74-0,83 0,73 0,73	Prior study	ANCOVA	Work engagement can decrease turnover intention. Job position affecting work engagement intended to reduce turnover
Shahpouri S *et al* (2015)/ Iran	JD-R Model (Bakker & Demerouti, 2007)	Quantitative	208 female nurses	UWES (Schaufeli et al, 2002) Personal reources (Nguyen & Nguyen, 2011) Spector's job satisfaction questionnaire Karask's job content questionnaire Organizational justice (Niehof & Moirman (1993) Turnover intention (Kelloway *et al*,1999)	17 items 13 items 4 items 8 items 18 items 4 items	0,92 0,80 0,74 0,74 0,94 0,96	Prior Study	Structural equation modeling(SEM)	Work engagement can decrease turnover intention. Work Engagement fully mediated between personal resources and turnover intention. Work Engagement fully mediated between job resources and turnover intention
Karatepe, & Avci, T	JD-R Model (Bakker &	Quantitative	212 nurses	Psychological Capital questionnaire	Not report	Not report	Not report	Structural equation	Work engagement (WE)

(2017)/ Cyprus	Demerouti, 2008)			Work Engagement questionnaire Lateness attitude & turnover intention questionnaire				modeling(SEM)	can decrease turnover intention. WE fully mediated between PsyCap on lateness attitude and turnover
Gupta M & Shaheen M (2017)/ India	JD-R Model (Bakker & Demerouti, 2007)	Quantitative	228 industrial employees	UWES-9 (Schaufeli *et al*, 2006) Turnover Intention (Lichtenstein *et al*, 2007) Psychological capital (Luthans *et al*, 2007)	9 items 3 items 12 items	0,94 0,94 0,89	Factor analysis	Regression analyses	Work engagement (WE) can decrease turnover intention. Psychological capital mediated between work engagement and intention to turnover.
Memon, M. A *et al* (2016)/ Malaysia	JD-R Model (Bakker & Demerouti, 2007), Social Exchange Theory (Blau, 1964)	Quantitative	409 employees	Job training Satisfaction (Schmidt, 2007) UWES (Schaufeli *et al*, 2006) Turnover Intention Scale (Jung & Yoon, 2013)	4 items 9 items 5 items	0,91 0,89 0,92	Convergent validity-average variance extracted	Structural equation modeling(SEM)	Work engagement (WE) can decrease turnover intention. WE fully mediated between training satisfaction on lateness attitude and turnover intentions
Sheehan, C *et al* (2018)/ Australian	Social Exchange Theory (Blau, 1964) ,Cognitive dissonance (Festingers, 1957)	Quantitative	1039 nurse	Psychological contract fulfillment (DeVos & Maganck, 2009) UWES (Schaufeli et al, 2006) Intention to leave (Meyer *et al*, 1993)	19 item 9 items 3 items	0,90-0,94 0,91 0,80	Factor analysis	Structural equation modeling(SEM)	Work engagement partially mediated between psychological contract fulfillment (interesting job content, social

									atmosphere) and turnover intention
Memon, M. A *et al* (2018)/ Malaysia	Social Exchange Theory (Blau, 1964), Field Theory (Lewin,1951)	Quantitative	409 employees	P-O fit (Jung & Yoon, 2013) UWES-9 (Schaufeli et al, 2006) Turnover Intention Scale (Jung & Yoon, 2013	6 items 9 items 5 items	0,773-0,807 0,598-0,867 0,845-0,895	Convergent validity-average variance extracted	PLS-SEM	Work engagement (WE) can decrease turnover intention. WE fully mediated between P-O fit on lateness attitude and turnover intention
Kumar, M *et al* (2017)/ Not report country	JD-R Model (Bakker & Demerouti, 2003),Social Exchange Theory (Blau, 1964) Organizational Support Theory (Kurtessis *et al*, 2017)	Quantitative	5088 industry employees	Organizational support development (Kraimer *et al*, 2011) Managerial support for development (Maurer & Lippstreu, 2008) UWES-9 (Schaufeli et al, 2006) Overall Job Satisfaction (Nagy, 2002) Turnover intention (Bozeman & Perrewe, 2001)	6 items 3 items 9 items 1 item 3 items	0,90 0,90 0,89 Not report Not report	Convergent validity-average variance extraced	Structural equation modeling(SEM)	Work engagement partially mediated between managerial support for development and turnover intention. Work Engagement partially mediated between organizational support development and turnover intention. Job Satisfaction partially mediated between work engagement and turnover intention

OPTIMIZING INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI) USING CLINICAL DECISION SUPPORT SYSTEM: A SYSTEMATIC REVIEW

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ABSTRACT

Child mortality become priority problem in Sustainable Development Goals (SDGs). High mortality rate of children under five is largely due to preventable causes. A comprehensive approach in solving these problems carry through Integrated Management of Childhood Illness (IMCI). Unfortunately the implementation is constrained by the lack of service accuracy and completeness of health service data, length of service time, and spatial monitoring problems. This study aims to show the effectiveness of Clinical Decision Support System (CDSS) in resolving management of sick children problems. This is a systematic review through analysis journal of child health services, especially management of sick children and CDSS. Article accessed from: Proquest, Ebsco, Google Scholar, and Science Direct. From a review of the literature found 26 related journals.The articles were published between 2014-2018. The result shows that CDSS escalate the accuracy of assessment and decision on medical actions, ensure the completeness of health service data, shorten service time, and overcome spatial problems in service monitoring that lead to improve child health services quality. CDSS able to overcome problems in management of sick children, therefore it can justify the use of CDSS in optimizing IMCI service.

Keywords: child health services, IMCI, CDSS

1. Introduction

The Convention on the Rights of the Child globally stipulated that every country must ensure the maximum survival, well-being, health and development of the children in its territory[1]. Therefore increasing child survival is a long-term international priority[2]. Paying attention to children's rights and the importance of children's health, the Sustainable Development Goals (SDGs) have targeted to end all preventable child deaths by 2030[3].

Child mortality is a burden for every country. In 2017, as many as 5.4 million children under the age of five died due to preventable causes[4], as many as 80% of children under five died at home[5], and moreover, many children still fail to reach their full potential in terms of growth and

development[6]. The major causes of child mortality include pneumonia, diarrhea, malaria, measles, malnutrition or a combination[7]. Some children may experience more than one problem / disease, so the care given must focus on the condition of the child as a whole, not only on the complaint submitted. This indicates the need for specific interventions that can overcome problems while simultaneously improving the quality of child health services[8].

In 1994, the World Health Organization (WHO) responded to child health problems by developing an integrative approach known as the Integrated Management of Childhood Illness (IMCI). IMCI was applied as a guideline for managing toddlers because it has 3 main components that are able to improve children's health, namely: (1) improving the capacity of the health workers, (2) strengthening the health system and (3) improving child care practices in families and communities. The curative, preventive and promotive aspects of the procedures make this form of management effective at improving the quality of health and reducing child mortality, especially for middle and lower income countries. Given the immense benefits of the IMCI and the high number of child deaths in Indonesia, the Ministry of Health of the Republic of Indonesia adopted the IMCI in 1996 with the development of guidelines and several pilot studies, where IMCI became a standard service in the management of health for infants and toddlers[6-9].

The implementation of IMCI has been running for more than 20 years, but in Indonesia, IMCI is still manual and constrained by the lack of service accuracy and completeness of the health service data, the length of the service time, and spatial monitoring problems. The analysis of children's health conditions in the districts is therefore less representative[7,10–12].

Several countries have used health information technology innovations in the form of Clinical Decision Support Systems (CDSSs) for their child health services, especially in the management of sick children. Research on the use of CDSSs has been carried out and these findings are promising. However, for them to be applied in Indonesia, a systematic analysis is needed that strengthens the possibility of using CDSS to optimize IMCI services[13–20].

The objective of this paper was to identify the effectiveness of a Clinical Decision Support System (CDSS) in resolving the management of sick child problems, which is expected to improve IMCI services.

This systematic review will summarize what is known from the existing research about child health services using CDSS. There are five main review questions:

1. What is the participant’s description that uses CDSS in their child health services?
2. What is the comparison between the use of CDSS applications and manual systems in child health services in other countries?
3. How does CDSS impact child health services?
4. What impact does the intervention have on optimizing IMCI and its outcomes?
5. What is the best study design/ methodology to use for revealing the benefits of CDSS in child health services?

2. Methods

The systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines to review child health management and CDSS articles to identify the effectiveness of CDSS in overcoming the problem of child health services, especially for sick children.

2.1 Data collection process

The data collection process was done independently by two reviewers obtaining and confirming the data from the investigators.

2.2 Data items

All of variables for which the data was sought were defined using PICOS. For the identification of the participants, we assigned the study, report and extractor identification details to each record. We included the type of publication and the country of origin. For the methodology, we noted the theories underpinning studies. We included the study design and setting. For the participants, we recorded the sample characteristics as defined by the author intervention characteristic. The article's inclusion criteria consisted of articles on child health services using CDSS or similar information systems in health services, while the exclusion criteria were abstract articles and the articles displayed not being the full text. For the intervention, we recorded the specific types of intervention that had been given in the study. For comparative characteristics, we described the characteristics as a reference point in a manner consistent with participant section and the control group as the foremost comparator. For the outcome, we explained the effect after the intervention was given based on the variable in the study. We represented the result for both qualitative and quantitative studies.

2.3 Risk of bias in individual studies

We explored variability in the study results by specifying the following hypotheses before conducting the analysis. We hypothesized that effect size may be diverse in concert with the methodological quality of the studies.

2.4 Summary measure

We accessed articles from Proquest, Ebsco, Google Scholar, and Science Direct. The articles were published between 2014-2018 with the keywords 'child health services', 'IMCI' and 'CDSS'. Articles that meet the inclusion criteria were collected and examined systematically. The search process obtained 167 articles which were then subsequently selected, extracted and analyzed. For the review, we used the results of the extraction process.

2.5 Risk of bias across studies

We examined the results from the available studies for indications that suggested that there may be missing studies (publication bias) or missing data from the included studies (selective reporting

bias). We compared the outcomes listed in the methods section with those for which the results were presented.

3. Result

Based on the search results, from the 167 articles, 26 related articles were deemed to be in accordance with the objectives of the study. The articles were then collected and screened for eligibility. After the process was completed, 10 eligible articles were obtained, which were then processed as part of a further review. The strategies and framework of the literature search can be seen in Table 1 and Figure 1.

Table 1. Strategy of the Literature Search

Search Engine	Proquest	Ebsco Host	Google Scholar	Science Direct
Search result	78	30	21	154
Full text, 2014-2018	54	19	15	79
Related article	3	3	8	12
Eligible	1	1	4	4
Result		10		

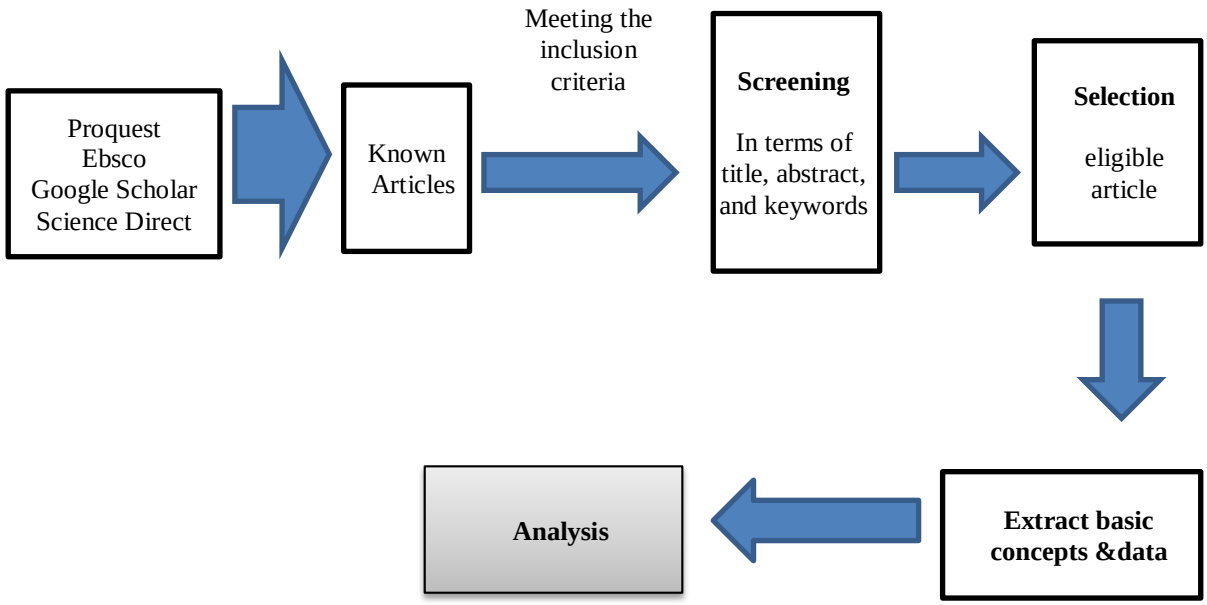

Fig.1 - Framework for the search strategy

After going through the selection process, the researcher then extracted the data from the 10 articles. The data extraction done by analyzing the data based on the name of the author, the title, purpose, research method and results, grouping the important data throughout the article. The results of data extraction are shown in Table 2.

Table 2. Extraction Data Results

No	Author, Year/ Country, Title	Participant, subject	Objective	Method	Result
1	Shao et al. (2015)/ Tanzania New Algorithm for Managing Childhood Illness Using Mobile Technology (ALMANACH): A Controlled Non-Inferiority Study on Clinical Outcome and Antibiotic Use in Tanzania[15].	Two nearby primary care health facilities (HF), similar in terms of natural environment, malaria prevalence, socio-economic status of the catchment population, and type of services available	The objective was to ensure that ALMANACH was safe, while keeping a low rate of antibiotic prescription.	Consecutive children aged 2–59 months with acute illness were managed using ALMANACH (2 intervention facilities), or standard practice (2 control facilities) in Tanzania. Primary outcomes were the proportion of children cured at day 7 who received antibiotics on day 0.	Management of children using ALMANACH improve clinical outcome and reduce antibiotic prescription by 80%. This was achieved through more accurate diagnoses and the better identification of children in need of antibiotic treatment. The building on mobile technology allows for easy access and the rapid updating of the decision chart.
2	Shao et al. (2015)/ Tanzania Can Smartphones and Tablets Improve The Management of Childhood Illness in Tanzania? A qualitative study from a primary health care worker's perspective[20].	40 primary health care workers from 6 public primary health facilities in the three municipalities of Dar es Salaam, Tanzania	This study investigated the constraining as well as facilitating factors that influence the uptake of a new electronic Algorithm for the Management of Childhood Illness (ALMANACH) among primary health workers in Dar es Salaam, Tanzania.	A qualitative approach was applied using in-depth interviews and focus group discussions with altogether 40 primary health care workers from 6 public primary health facilities	ALMANACH was assessed positively. The majority of the respondents felt comfortable using the devices and stated that the patient's trust was not affected. Most health workers said that the ALMANACH simplified their work, reduced antibiotic prescriptions and gave the correct classification and treatment for the common causes of childhood illnesses. Majority of the respondents stated that the devices increased the consultation duration compared to routine practice.
3	Khan et al. (2018)/ Saudi Arabia Health Quest: A Generalized Clinical Decision Support System with Multi-Label Classification[21].	5000health records, which were randomly selected from the dataset. Out of these 5000records, 4000 records were used for training and 1000 records were used for testing	The objective was to study the efficiency of the Health Quest in identifying multiple disease, accuracy and execution time.	Experimental design using 5000 records, which were randomly selected from the dataset. Out of the 5000 records, 4000 records were used for training and 1000 records were used for testing. Time of computation was used as well accuracy for disease	Health Quest capable to identify multiple diseases from a patient's health at a time. Extensive evaluation confirms its effectiveness and accuracy. It is able to identify first disease with 77% accuracy, whereas for the second disease Health Quest achieves an efficiency of 34%. Compared evaluation time noted that execution time decreases with the increase in computational capability. It can be highly beneficial

				diagnosis and the evaluation parameters.	in Medical Sciences for diagnosing disease correctly and assisting physicians.
4	Anand et al (2015)/ USA Pediatric Decision Support Using Adapted Arden Syntax[22]	Record of more than 44.000 patients between 2005-2014	To study the application of the Arden Syntax in a clinical environment	The Child Health Improvement through Computer Automation system (CHICA) screens patient families in the waiting room and alerts the physician in the exam room. Here described adaptation of Arden Syntax to support production and consumption of patient specific tailored documents for every clinical encounter in CHICA and describe the experiments that demonstrate the effectiveness of this system.	CHICA has been a highly successful CDSS and certainly the most studied decision support system in child health care. As of this writing CHICA has served over 44,000 patients at 7 pediatric clinics in the health care system in the last decade and its MLMs have been fired 6182,700 times in "produce" and 5334,021 times in "consume" mode. It has run continuously for over 10 years and has been used by 755 physicians, residents, fellows, nurse practitioners, nurses and clinical staff. There are 429 MLMs implemented in CHICA, using the Arden Syntax standard. Studies of CHICA's effectiveness include several published randomized controlled trials. The adaptation results show that the Arden Syntax standard provides an effective way to represent pediatric guidelines for use in routine care. It only required minor modifications to the standard to support the clinical workflow. Additionally, Arden Syntax implementation in CHICA facilitated the study of many pediatric guidelines in real clinical environment
5	Grout et al. (2018)/ USA A Six- Year Repeated Evaluation of Computerized Clinical Decision Support System User Acceptability [23].	Health workers (CHICA user) recorded 380 completed survey between 2011-2016	This study examined user acceptance patterns over six years of our continuous computerized CDSS integration and updates.	The users of Child Health Improvement through Computer Automation (CHICA), a CDSS was integrated into the clinical workflows used in several urban pediatric community clinics, completed annual surveys including 11 questions covering user acceptability. Responses were compared across the years within a single healthcare system and between two healthcare systems. We used logistic regression to assess the odds of a favorable response to each	Responses were significantly more favorable for all. Increasing system maturity was associated with improved perceived function of CHICA (OR range 4.24–7.58, $p < 0.03$). User familiarity was positively associated with perceived CDSS function (OR range 3.44–8.17, $p < 0.05$) and usability (OR range 9.71–15.89, $p < 0.01$) opinions.

				question by survey year, clinical role, part-time status, and frequency of CHICA use	
6	Sanmathi et al. (2018)/ India Computerized Decision Support System for Remote Health Monitoring: A Systematic Review[24].	52 included paper	The main objective was to outline the research on remote patient health monitoring system that constitutes the multimodal biosignal acquisition system, thereby providing multi-label classification and clinical decision support system (CDSS).	A systematic review was conducted with search terms such as multi-label classification, clinical decision support system, context-awareness and remote health monitoring. The study criteria included the randomized clinical trials evaluating the impact of efficient remote health monitoring system which incorporates CDSS for context-awareness systems by correlating several vital signs.	Several studies were effectively included which provides faster diagnosis for critically ill-patients. It is decisive for the critically ill-patients to be treated at the right time with proper and effective treatment which can be done efficiently using the CDSS and multi-label classification. The disease labels were classified as single and multi-labels where the multi-label classification included the disease labels for the correlated multiple vital signs and where single label classification included disease labels for individual vital signs. Furthermore, on developing the logical learning model using multi-label classification, the decision support system can be enhanced using context-awareness methods to predict the future vital signs, thereby providing an alert to the patients or doctors to take necessary actions.
7	Bernasconi et al. (2017)/ Afghanistan The ALMANACH Project: Preliminary Results and Potentiality from Afghanistan[25].	Record of 8047 children who has attending health facilities between May 2016 and September 2017	to improve the quality of care provided to children between 2 months and 5 years old.	IMCI's algorithms were updated in considering latest scientific publications, national guidelines, innovations in RDTs, the target population's epidemiological profile and the local resources available. Before the implementation of the project, a direct observation of 599 consultations was carried out to assess the daily performance at three selected health facilities in Kabul.	The review showed that with ALMANACH, malnutrition detection, deworming and Vitamin A supplementation increased respectively to 4.4%, 50.2% and 27.5%. Antibiotic prescription decreased to 21.83% and all children were examined and treated in compliance with the protocols. ALMANACH could establish as a powerful innovation for primary health care.
8	Wulff et al. (2018)/ Germany An Interoperable Clinical Decision-Support System for Early Detection of	16 pediatric intensive care patients with different demographic characteristics, diagnoses, courses of	Developing and evaluating an openEHR-based approach to achieve interoperability in CDSS	The design was an interoperable concept, which enables an easy integration of the CDSS across different institutions, by using openEHR Archetypes, terminology bindings and the	It was successfully designed and the population implemented a CDSS with interoperable knowledge bases and interfaces by reusing internationally agreed-upon Archetypes, incorporating LOINC terminology and creating AQL queries,

	SIRS in Pediatric Intensive Care Using Open HER[26].	disease and lengths of stay. The data was from a randomized trial with 807 PICU patients from the ward	by designing and implementing an exemplary system for automated systemic inflammatory response syndrome (SIRS) detection in pediatric intensive care.	Archetype Query Language (AQL). The practicability of the approach was tested by (1) implementing a prototype, which is based on an openEHR-based data repository of the Hannover Medical School (HaMSTR), and (2) conducting a first pilot study. The technical capabilities of the system were evaluated by testing the prototype on 16 randomly selected patients with 129 days of stay, and comparing the results with the assessment of clinical experts (leading to a sensitivity of 1.00, a specificity of 0.94 and a Cohen's kappa of 0.92).	which allowed retrieving dynamic facts in a standardized and unambiguous form. The use of openEHR archetypes and AQL was found to be a feasible approach to bridge the interoperability gap between local infrastructures and CDSS. The designed concept was successfully transferred into a clinically evaluated openEHR-based CDSS. To the authors' knowledge, this is the first open EHR based CDSS, which is technically reliable and capable in a real context, and facilitates clinical decision-support for a complex task. Further activities will comprise of the enrichment of the knowledge base, the reasoning processes and cross-institutional evaluations.
9	Roja et al.(2015)/ India Web Based GIS for Public Health Management in Andra Pradesh[27]	Public health center in Andra Pradesh	The main objective of the study is to create a web application which will be used as a decision support system in public health care and to make the effective utilization of GIS in Health sector for updating, storing and maintenance of spatial and non-spatial data of Health Centers for IDSP, HMIS & MCTS programs.	The information provided by Health department is used as an input to generate spatial layers in GIS environment. Influence boundaries of health centers like CHC and PHC are generated using administrative boundaries of Andhra Pradesh. The locations of Public health centers and hospitals were also created. Unique codes provided by Health department were assigned to each Cluster, PHC, Sub centre and Hospital, which acts as a primary key to connect to the Database. ArcGIS Server 10.2 and ArcSDE are to integrate geographic information query, mapping, spatial analysis and editing within a multi-user enterprise in DBMS environment, ArcGIS	The analysis revealed that the integration of statistical health data with GIS is helpful for analysis and display in the form of simple maps and reports which convey the information to the planners easily. The Health GIS web portal acts as a Decision Support System (DSS) to the health officials to take quick and effective decisions, display not only maps, but can also perform statistical analysis of geographic data, forecasting the predictions and cope up with new technologies.GIS can play a significant role in database management, periodical data comparison, geographic data comparison and data navigation. Comparison of present events to previous years will be helpful to take appropriate actions and precautionary measures. The study concludes that the Geographical information system has the capability to integrate data from different sources and gives single point access for health query and reports. The transitional data through internet will be helpful to access it anywhere and give instant information of incidents. GIS helps health managers to identify and

				API for Javascript as an interface, HTML5 and .Net programming for the web page.	monitor areas with discrepancies, by helping the community to overcome the problems
10	Hansoti et al.(2017)/ US SCREEN: A Simple Layperson Administered Screening Algorithm in Low Resource International Settings Significantly Reduce Waiting Time for Critically Ill Children in Primary Health Care Clinics	In Phase I, 1600(92.38%) of 1732 children presenting to 4 clinics. In Phase II, all 3383 of the children presenting to the 26 clinics during the sampling time frame	To determine the impact of SCREEN on the waiting times for critically ill children post-real world implementation in Cape Town, South Africa.	This is a prospective, observational implementation-effectiveness hybrid study that sought to determine: (1) the *impact* of SCREEN implementation on waiting times as a primary outcome measure, and (2) the effectiveness of the SCREEN tool in *accurately* identifying critically ill children when utilized by the QM and *adherence* by the QM to the SCREEN algorithm as secondary outcome measures. The study was conducted in two phases. The Phase I control (pre-SCREEN implementation- three months in 2014) and Phase II (post-SCREEN implementation in two distinct three month periods in 2016).	The proportion of critically ill children who saw a professional nurse within 10 minutes increased tenfold from 6.4% to 64% (Phase I to Phase II) with the median time to seeing a professional nurse reduced from 100.3 minutes to 4.9 minutes, ($p < .001$, respectively). Overall layperson screening compared to Integrated Management of Childhood Illnesses (IMCI) designation by a nurse had a sensitivity of 94.2% and a specificity of 88.1%, despite large variance in adherence to the SCREEN algorithm across clinics. The SCREEN program when implemented in a real-world setting can significantly reduce waiting times for critically ill children in PHCs, however further work is required to improve the implementation of this innovative program.

4. Discussion

In the limited resource condition, where skilled health workers are insufficient and there is a high number of child visits to health facilities, the length of service time in identifying and evaluating child symptoms and illnesses becomes a significant delay. This delay and long waiting time often causes other patients to leave the health facilities without being examined [11][16]. With limited time and abilities, the accuracy of the assessment in the IMCI services is reduced [12] and the documentation can't meet the procedures, so the health data obtained cannot describe the child's health condition in the area[10]. Meanwhile, geographical distance and a lack of monitoring tools leads to the weak monitoring of services [10][12].

The progress of information technology has enabled many diagnostic activities in health procedures to be carried out electronically[18]. Several studies show that the application of information technology in the form of the Clinical Decision Support System (CDSS) can improve health services. CDSS is a system that is used to support the clinical decision-making processes, therefore it was initially used to provide an alarm in the context of a clinical procedure. But in its development, this system has been applied in various health procedures and continues to evolve. CDSS has various types of use related to clinical decision activities. This system is based on simple rules using engineering knowledge to translate several clinical signs /symptoms into a form of diagnosis /classification[19][28][29]. In terms of the latest technology, CDSS integrated with the Electronic Health Record (EHR) can reduce the burden of documentation, ensure data completeness, and interpret the service data in a way that can affect health policies[26].

Based on a review of several items of literature, CDSS proved able to overcome the obstacles of time, distance, limited energy and it improved the accuracy and consistency of the clinical decisions[19]. In dealing with the spatial problems caused by geographical conditions, this system can be applied in the health world to support service monitoring [30]. Although CDSS has been applied in developed countries, some literature shows that low-middle income countries can also implement CDSS in their child health services and obtain similar benefits. This indicates that CDSS can possibily to apply in child health services in Indonesia with some adjustments.

The implication of these findings for the next research is the emersion of research in the formulation and application of CDSS or similar technology information systems in order to optimize IMCI and child health services generally in Indonesia.

5. Conclusion

CDSS is able to overcome problems in the management of sick children, therefore it is possible to justify the use of CDSS in optimizing IMCI services. With CDSS involved in the management of sick children, it can improve the quality of the children's health.

Reference

[383] United Nations Children's Fund (Unicef) 2014 *The State of the World's Children 2014 -Every Child Counts*

[384] United Nations 2015 United Nations. Transforming our world: the 2030 agenda for sustainable development. 2015 *United Nations Department of Economic and Social Affairs*

[385] Golding N, Burstein R, Longbottom J, Browne A J, Fullman N, Osgood-Zimmerman A, Earl L, Bhatt S, Cameron E, Casey D C, Dwyer-Lindgren L, Farag T H, Flaxman A D, Fraser M S, Gething P W, Gibson H S, Graetz N, Krause L K, Kulikoff X R, Lim S S, Mappin B, Morozoff C, Reiner R C, Sligar A, Smith D L, Wang H, Weiss D J, Murray C J L, Moyes C L and Hay S I 2017 Mapping under-5 and neonatal mortality in Africa, 2000–15: a baseline analysis for the Sustainable Development Goals *The Lancet*

[386] UNICEF 2018 *Levels and Trends in Child Mortality: Report 2018*

[387] Rohayati, Sulastri and Purwati 2015 Analisis Faktor Pelaksanaan Manajemen Terpadu Balita Sakit (MTBS) di Puskesmas *Jurnal Keperawatan***XI** 112–7

[388] WHO IMCI 2014 Integrated Management of Childhood Illness (IMCI) Chart Booklet *Distance Learning Course*

[389] Titaley C, Jusril H, Ariawan I, Soeharno N, Setiawan T and Weber M 2017 Challenges to the implementation of the integrated management of childhood illness (IMCI) at community health centres in West Java province, Indonesia *WHO South-East Asia Journal of Public Health*

[390] Manzi A, Mugunga J C, Iyer H S, Magge H, Nkikabahizi F and Hirschhorn L R 2018 Economic evaluation of a mentorship and enhanced supervision program to improve quality of integrated management of childhood illness care in rural Rwanda *PLoS ONE*
[391] Kementerian Kesehatan RI 2014 *Peraturan Menteri Kesehatan Republik Indonesia Nomor 25 Tahun 2014 Tentang Upaya Kesehatan Anak*
[392] United Nations Children's Fund (UNICEF) 2016 Integrated Management of Childhood Illness (IMCI) in the 21st Century Integration into health systems
[393] Hansoti B, Dalwai M, Katz J, Kidd M, Maconochie I, Labrique A and Wallis L 2016 Prioritising the care of critically ill children: A pilot study using SCREEN reduces clinic waiting times *BMJ Global Health*
[394] Lima R De, Wimbardi A and Christina C 2018 PENGEMBANGAN ALGORITMA MANAJEMEN TERPADU BALITA SAKIT (MTBS) MENGGUNAKAN TEKNIK DECISION TABLES 97–102
[395] Perri-Moore S, Routen T, Shao A F, Rambaud-Althaus C, Swai N, Kahama-Maro J, D'Acremont V, Genton B and Mitchell M 2015 Using an eIMCI-Derived Decision Support Protocol to Improve Provider–Caretaker Communication for Treatment of Children Under 5 in Tanzania *Global Health Communication*
[396] Mitchell M, Hedt-Gauthier B L, Msellemu D, Nkaka M and Lesh N 2013 Using electronic technology to improve clinical care - Results from a before-after cluster trial to evaluate assessment and classification of sick children according to Integrated Management of Childhood Illness (IMCI) protocol in Tanzania *BMC Medical Informatics and Decision Making*
[397] Shao A F, Rambaud-Althaus C, Samaka J, Faustine A F, Perri-Moore S, Swai N, Kahama-Maro J, Mitchell M, Genton B and D'Acremont V 2015 New algorithm for managing childhood illness using mobile technology (ALMANACH): A controlled non-inferiority study on clinical outcome and antibiotic use in Tanzania *PLoS ONE*
[398] Hansoti B, Jenson A, Kironji A G, Katz J, Levin S, Rothman R, Kelen G D and Wallis L A 2017 SCREEN: A simple layperson administered screening algorithm in low resource international settings significantly reduces waiting time for critically ill children in primary healthcare clinics *PLoS ONE*
[399] Javier carnicero A F 2012 *eHealth Handbook for managers of healthcare service and systems* (Spanish: United Nations Publication)
[400] Lucas H 2015 New technology and illness self-management: Potential relevance for resource-poor populations in Asia *Social Science and Medicine*
[401] Weaver C A, Ball M J, Kim G R and Editors J M K *bok%3A978-3-319-20765-0*
[402] Shao A F, Rambaud-Althaus C, Swai N, Kahama-Maro J, Genton B, D'Acremont V and Pfeiffer C 2015 Can smartphones and tablets improve the management of childhood illness in Tanzania? A qualitative study from a primary health care worker's perspective *BMC Health Services Research*
[403] Shahzeb Khan J A S 2018 Health Quest: A Generalized Clinical Decision Support System with Multi-Label Classification *Journal of King Saudi University***1**
[404] Anand V, Carroll A E, Biondich P G, Dugan T M and Downs S M 2018 Pediatric decision support using adapted Arden Syntax *Artificial Intelligence in Medicine***92** 15–23
[405] Grout R W, Cheng E R, Carroll A E, Bauer N S and Downs S M 2018 A six-year repeated evaluation of computerized clinical decision support system user acceptability *International Journal of Medical Informatics*
[406] Shanmathi N and Jagannath M 2018 Computerised Decision Support System for Remote Health Monitoring: A Systematic Review *IRBM*
[407] Bernasconi A, Crabbé F, Rossi R, Qani I, Vanobberghen A, Raab M and Du Mortier S 2018 The ALMANACH Project: Preliminary results and potentiality from Afghanistan *International Journal of Medical Informatics*
[408] Wulff A, Haarbrandt B, Tute E, Marschollek M, Beerbaum P and Jack T 2018 An interoperable clinical decision-support system for early detection of SIRS in pediatric intensive care using openEHR *Artificial Intelligence in Medicine*
[409] Calcaterra D, Di Modica G, Tomarchio O and Romeo P 2018 A clinical decision support system to increase appropriateness of diagnostic imaging prescriptions *Journal of Network and Computer*

Applications

[410] Acácio S, Verani J R, Lanaspa M, Fairlie T A, Nhampossa T, Ruperez M, Aide P, Plikaytis B D, Sacoor C, Macete E, Alonso P and Sigaúque B 2015 Under treatment of pneumonia among children under 5 years of age in a malaria-endemic area: Population-based surveillance study conducted in Manhica district- rural, Mozambique *International Journal of Infectious Diseases*

[411] Uwemedimo O T, Lewis T P, Essien E A, Chan G J, Nsona H, Kruk M E and Leslie H H 2018 Distribution and determinants of pneumonia diagnosis using Integrated Management of Childhood Illness guidelines: A nationally representative study in Malawi *BMJ Global Health*

[412] A.Roja V R G P R 2015 Web Based GIS for Public Health Management in Andhra Pradesh. *International Journal of Health Sciences and Research (IJHSR)***5** 733–41

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COMMUNITY-BASED MANAGEMENT AND CONTROL OF TUBERCULOSIS IN SUB-URBAN SURABAYA, INDONESIA: A QUALITATIVE STUDY

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ABSTRACT

Tuberculosis (TB) is major community health problem in Indonesia. World Health Organisation (WHO report in 2017 shows that 6.4 million new TB cases were officially notified to national authorities, worldwide. Indonesia has 842.0000 cases and places it as the country with the third highest number in the world. The national program Directly Observed treatment, short-course (DOTS) started since 2014 has not able to handle TB cases comprehensively. Communities have important role in TB management. The aim of this study was to explore the existed condition of TB management and control. A descriptive qualitative study was conducted in Tandes Sub-district, which is an endemic area for TB and have the highest incident. Semi-structured interview was conducted to 13 participants which consist of sub-urban TB task force, community health volunteer, Community health Nurses and sub-district officer. Result reveal six themes: altruism as intentional caring factor, in adequate number of staff, the need to improve training skill, insufficient of resources, limited of financial support and social support. The conclusion, in order to be effective program, community-based TB management need to be improve in the availability of budget, staff, training and resources while maintaining the on going work of TB task force team.

Keywords: TB, community-based management, altruism, social support, descriptive qualitative

1. Introduction

The World Health Organization (WHO) states that Tuberculosis (TB) is a global emergency problem for humanity and that it is an important problem in various countries around the world. In Indonesia, although the Directly Observed Treatment Short course (DOTS) strategy has proven to be very effective for TB control, the burden of TB in the community is still high. This is because the implementation of the DOTS strategy and programs for handling TB in its application still encounter challenges and problems in the community. The main obstacle is the failure to mobilize all community capacities by involving and inviting the community members to participate. Unclear forms of contribution and who should be involved in the TB Handling Program activities affects the sustainability and effectiveness of the program[1].

The East Java Province is one of the provinces in Indonesia which still has problems when it comes to tackling tuberculosis with a prevalence of 110 per 100,000 population. In Surabaya, 16,616 people were suspected of TB and 2,330 people were found to be TB positive. Based on the data from the Surabaya Health Office 2015, the highest prevalence of TB was in the Tandes sub-district with 551 people suspected of having TB and 114 people were found to be TB positive[2]. In 2016, there were 109 new TB cases, with a total number of 170 TB patients and a success rate of 88.64% [2].

Modern society is more likely to solve problems independently through the various technological advancements that exist. Individual attitudes and the feeling of being capable of solving problems independently can have an effect on the awareness of living in society. As a result, people in society help each other through mutual cooperation and problems diminish, as depicted by the various individual actions that do not lead to a collective goal but that instead lead to a destination according to the individual's wishes. Coleman explained, in his ideas, about the individual actions influenced by the value of an event. Individuals will act based on the interests and benefits obtained from each individual[3]. If this condition is associated with handling TB cases, it can slow down the handling of the cases. If the ability of social management is understood as a social ability in forming nursing care by optimizing the health service system based on the culture of individuals, groups, families and communities, then an investment in community-based management is a useful strategy for increasing the community nursing care needed to treat TB[4].

Community-based TB management is believed to be able to increase the capacity of the community to work together in solving health problems because the basis of the management can be characterized in the form of individual willingness to prioritize community decisions to resolve health problems. Citizens who are in a community with good community management will form a level of cohesiveness that is interpreted by the existence of horizontal cooperation and the norms of reciprocity because they will also have high confidence when it comes to collaborating, cooperating and helping others[5].

This study aims to reveal how the community is making efforts to manage tuberculosis *with all of their ability and resources in place*.

2. Methods

2.1. Design

A qualitative descriptive study was conducted in Tandes, which is the sub-district with the highest incidence of TB in Surabaya[6].

2.2. Participants

The participants of this study were selected using the purposive sampling method including 1 official heads of the village, 4 directors of the community welfare and safety sub-district office, 2 community nurses who worked at the local public health center and 6 community health volunteers.

2.3. Data collection

The data was collected from January to May 2017 in Tandes, which has an especially high prevalence of TB. A total of 104 cases of TB were reported in 2016. The semi-structured interview questions focused on the influence of community-based management on TB prevention and control and any related experiences. The interviews focused on the participant’s existence, their role, experiences and connection to the community within TB prevention and control activities. The interviews lasted for 45 - 60 minutes for one time data retrieval. The community health workers were interviewed in their homes, and the sub-district officer and the community nurses were interviewed in their workplace to provide them with comfort and convenience. All of the interviews were recorded and transcribed as a part of the data analysis.

2.4. Data analysis

The interview data was analyzed using Uwe Flick[7]. The practical steps of analyzing and representing the interview data were performed. The data analysis began with (1) reducing the data to locate and examine the phenomena of interest. In this phase, the interviews were transcribed, and then the data was read and reread. The next phase was (2) reorganizing, classifying and categorizing the data, in which the researchers generated assertions about the topics by reassembling and reorganizing the data, codes, categories, and stories. The last phase was (3) interpreting and writing up the findings. In this phase, the researcher considered assertions and propositions in light of the prior research and theory in order to develop their arguments. The researchers developed stories that conveyed the main idea developed in the data analysis and they presented data excerpts or stories to support the assertions. The stories were sorted to examine the existence of community-based management for TB prevention and control.

2.5. Ethical considerations

The ethical approval to conduct this study was granted by the Institutional Review Board Ethical Committee of Airlangga University No. 630-KEPK, the Regional Department of Health (Surabaya, Indonesia) and the Regional Department of National Unity, Politics and Public Protection (Surabaya, Indonesia). All of the participants were provided with a participant information sheet written in Bahasa Indonesia, and they signed the consent form prior to participating in the study.

3. Results

Tandes is a sub-district in a suburban geographical area and it is the fifth largest area and highest population density in southern Surabaya. Tandes is located approximately 4 m above sea level. The overall site area is approximately 11.07 km2 and it is divided into six villages with a total population of 93.459. Below are the themes found from the data analysis.

3.1. Altruism as intentional caring factor

One of the forms of community-based management which plays an important role in the effort to eradicate TB is the volunteer. In the Tandes sub-district, six volunteers work in the two primary health centers (PHCs). The volunteers were responsible for the entire TB prevention and control program in the region and they implemented it in their own PHCs. In terms of overcoming the health problems, especially TB, at the government level there is an institution called the TB Task Force and for non-governmental TB elimination, there are the programs carried out by the Aisyiyah Organization. Both work together with puskesmas to conduct TB elimination programs. Social awareness is the basic foundation of working to reduce TB problems.

They said, *"We want life to be beneficial for others. The rest is so important that sincerity and maintaining sincerity is difficult."(P1)*

"We are also happy if we come to the patient. If the patient is happy, then we are also happy. Also the humans must be beneficial to others too." (P2)

"When I saw the patient not recovering and then when they had broken up the medication, I felt unsuccessful in carrying out my duties. I felt sorry when I could not make the person recover." (P3).

3.2. Inadequate number of staff

The nurse said, *"Yes actually it is lacking, because every RT must have counseling. Every RW must also have counseling, that is the target. I think it is still not possible" (P5).*

"in the field the program was not adjusted to the staff at the puskesmas, actually if it was only TB being finished one day it was not finished, we also doubled here and there so I did it"(P4).

"Firstly there was a shortage of cadres, then the work was not maximal. I did not even look at the curative nature of this puskesmas, whereas this health center should be more promotive and involve preventive activities" (PKM nurse)

The director of the sub-district of the community and safety office said, *"Yes, from those cadres, there were many who doubled this number. They also worked on PKK, while PKBM also worked on one working group and one PKK cadre" (P10).*

"The obstacle is that there are no more people… that's all. Looking for it is difficult, bro. Wong, the chairman of his defense cadre, is also old. So it's a bit less maximal but we try as much as possible mas" (P13)

The volunteers said, *"I was wrong because the officers were only one P1 (TB Cadre). Only one officer might not be able to see all patients" (P1)*

3.3. The need to improve the training skills

The problem of TB requires complex management involving all elements of the community and it also requires the evaluation of successful treatment for quite a long time. The treatment is complete once it has been conducted 6 months and the ease of transmission of the disease requires TB observers to carry out monitoring, mentoring and reporting. The number of TB programs must also be balanced with the skills of the human or human resources involved in implementing all of the TB programs.

The nurse Said, *"Yes, indeed there is a program, but I still remember that in my kelurahan, there were only 6 out of 6 who we tested the sputum of and the results were all negative. It should be really suspected if it is checked at all levels in the surrounding environment. It should be checked to see if the comparison of the suspect and BTA + puskesmas discovery numbers will decrease. If you don't find it, you will be asked what the screening process is and how the lab checks the process" P5 (Nurse*)

3.4. Limited financial support and social support

The Surabaya Health Office has provided free medical assistance to TB patients. In addition to the assistance of giving drugs without paying expenses, the TB patients also get free nutritional intake in the form of formula milk given when the patients take drugs at the puskesmas. Other parties who also provided material assistance for underprivileged TB patients were the Aisyiyah, in the form of 30,000 in cash. In reality, the support is still considered to be lacking.

The volunteers said, *"There are those whose economic condition is very difficult. The puskesmas also need to ride a pedicab, but there are also funds from the SSR available during treatment, only once," P1 (cadre).*

"Sometimes if you see something like that, the cadres' own initiative is mas, so we give you something, bro. The point is trying to be concerned. There is a distribution of basic necessities for the sick patient" P1 TB (cadre).

"Once, when I was OK, then I gave 25,000 people money. I didn't feel very happy". (P2)

The nurse said, *"Yes, we are still on a social mission, which we complain about. Usually we have*

a visit where we have not been able to give them transport money. We also usually hesitate if we have to ask" why haven't you visited this? "(P4)

In the Tandes sub-district, there are still no specific counseling programs about TB. This is because TB is still not a priority in the wider context of the community problems. The main TB program is the door knock program. This program is a program with a ball picking approach or where the task force members visit the community one by one to be give counseling and to look for TB suspects. With the constraint that not all communities receive TB health programs, not all levels of society get counseling about TB disease. So an effective way to provide counseling with the participation of many people is through community social groups.

The volunteers said that, *"In the recitation, PKK meetings and also at the puskesmas, when there is counseling for us to give out brochures about TB, later if they go back to the RW then they can transmit the knowledge that they get through the brochure." P3 (cadre, head of the task force).*

"Usually if there is an arisan RW, we hold counseling. Wherever we can hold counseling… if there is a task force. So far we have been at social gatherings."(P9)

"If there is an automatic posyandu… if there is a posyandu, then even though they are not active in the community activities, the posyandi is definitely going to participate, yes… The opportunity for us to provide information is also helped by the RT" (P11)

"I usually go to the sub-district head to ask for help regarding the problem of the residents who still don't know about the TB task force. When we move to the field, they don't know anything and ask 'what is this task?' Now, there are a lot of fraudsters, so now where do you take your SK from the sub-district? "P3 (cadre, task force head)

4. Discussion

Evidence from this study proves that community-based approved programs are also acceptable.
The WHO has issued community-based DOTs to complement health-based DOTs to deal with the high burden of TB in resource-limited countries [8]. Until the patient and community attitudes and the perceptions of the community and health facility-based DOT are discussed and calculated, this assistance will not be carried out with success.

The findings make the drug cadres and supervisors almost look over women and their family members. The responsibility of sick family members in most areas of Surabaya is defined as the role of women [9]. This is because families cannot participate because of DOT and this is because culture, family and family relationships were not proven in our study. Studies conducted elsewhere indicate that family members that are DOT-involved effectively support the treatment [10]. A study conducted in Indonesia did not show any benefits from using the patient's family members supporting DOT treatment [11].

The context in Australia may be different from that of Surabaya where large family members are an important part of one's social network. In Surabaya and Indonesia as a whole, the care of one's family members is important within the local culture [12]. Members of the caregiver's family help to care for their family members with chronic diseases such as HIV / AIDS. There is no reason not to believe that this phenomenon will be different for the TB cases [12]. Future studies should consider the impact of care on TB treatment and how it affects the family relationships.

Our study found the presence of support for the motivation and care put forward by the carers and

former TB patients for reasons of altruism. The majority of the patients also support other TB patients after completing their treatment. These findings are important for two main reasons. First, it shows the potential for using former TB patients in TB control activities. In one study, former TB patients were found to be an important source of information for TB Patients [13]. Former TB patients can also help current TB patients and the TB community by showing that they can be cured. This is very important in Tanzania where many people do not have enough knowledge of TB and delay seeking treatment. The national TB program needs to address this problem based on the available local resources[14].

5. Conclusion

Our findings provide valuable agreement on the effective implementation of relevant, sensitive and acceptable TB control interventions for the needs of the patients and society in general. Community-based TB programs are a viable option and they can be built based on health facilities in DOTS, especially in developing countries such as Indonesia where the health system is overwhelmed by the increasing number of TB and HIV / AIDS patients. Community-based TB Management must be seen of as a complement and perhaps as a substitute for a national TB activity program.

References

[413] Pusat Datadan Iinformasi Kementerian Kesehatan RI, *No Title*. Jakarta: KEMENKES RI, 2015.
[414] P. K. S. Kesehatan, *PROFILKESEHATANTAHUN 2016*. Surabaya: Dinas Kesehatan Kota, 2016.
[415] J. Field, *Social capital*. Routledge, 2008.
[416] I. Kawachi, S. V. Subramanian, and D. Kim, "Social Capital and Health," in *Social Capital and Health*, New York, NY: Springer New York, 2008, pp. 1–26.
[417] M. Eriksson, "Social capital and health – implications for health promotion," *Glob. Health Action*, vol. 4, no. 1, p. 5611, Dec. 2011.
[418] V. A. Saphā Kānphayābān (Thailand) and C. E. Lambert, *Pacific Rim international journal of nursing research.*, vol. 16, no. 4. Thailand Nursing and Midwifery Council, 2012.
[419] U. Flick, K. Metzler, and W. Scott, *The SAGE handbook of qualitative data analysis*. .
[420] J. M. MacNeil, "Use of Culture Care Theory with Baganda Women as AIDS Caregivers," *J. Transcult. Nurs.*, vol. 7, no. 2, pp. 14–20, Jan. 1996.
[421] E. A. M. Tarimo, T. W. Kohi, A. Outwater, and A. Blystad, "Gender Roles and Informal Care for Patients With AIDS," *J. Transcult. Nurs.*, vol. 20, no. 1, pp. 61–68, Jan. 2009.
[422] A. Banerjee *et al.*, "Evaluation of a unified treatment regimen for all new cases of tuberculosis using guardian-based supervision.," *Int. J. Tuberc. Lung Dis.*, vol. 4, no. 4, pp. 333–9, Apr. 2000.
[423] C. R. MacIntyre, K. Goebel, G. V Brown, S. Skull, M. Starr, and R. O. Fullinfaw, "A randomised controlled clinical trial of the efficacy of family-based direct observation of anti-tuberculosis treatment in an urban, developed-country setting.," *Int. J. Tuberc. Lung Dis.*, vol. 7, no. 9, pp. 848–54, Sep. 2003.
[424] J. Caldwell *et al.*, "African families and AIDS: context, reactions and potential interventions.," *Health Transit. Rev.*, vol. 3, no. Suppl, pp. 1–16, 1993.
[425] E. R. Wandwalo and O. Mørkve, "Knowledge of disease and treatment among tuberculosis patients in Mwanza, Tanzania.," *Int. J. Tuberc. Lung Dis.*, vol. 4, no. 11, pp. 1041–6, Nov. 2000.
[426] E. R. Wandwalo and O. Mørkve, "Delay in tuberculosis case-finding and treatment in Mwanza,

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Tanzania.," *Int. J. Tuberc. Lung Dis.*, vol. 4, no. 2, pp. 133–8, Feb. 2000.

MENTAL HEALTH STATUS OF COASTAL POPULATION IN THE REGION OF CENTRAL JAVA'S CAPITAL

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ABSTRACT

The development of coastal populations has not shown progress compared to other community groups. Indonesian statistics show that 25% of the poor are coastal communities. This condition has an impact on mental health which affects their quality of life. Therefore, this study aims to identify the mental health conditions of coastal communities in general, especially the symptoms of psychological stress. This research is an observational descriptive study with a survey approach on coastal communities in Kemijen as a population. The number of samples is 224 male population aged 20-55 years randomly selected. This study used Kesstler-10 to measure the level of psychological stress. It is known that 7% have moderate mental disorders and 18.7% tend to have mild mental disorders. The biggest symptoms detected are depression, anxiety, and restless. Another important finding from observations is that people tend to have violent behaviour both individually and in groups as coping with problems. This result illustrates that the community needs mental health education. It is necessary to conduct in-depth research on the findings of this study and also increase Government efforts for the welfare of the community by realizing mental health services for coastal communities.

Keywords: mental health, coastal populations, psychological distress

1. Introduction

Fishing groups in Indonesia need special attention in terms of health development efforts. Data from the Central Bureau of Statistics (BPS)[1] in 2018 showed that Indonesia has around 15.32 percent of its administrative areas at the village level in coastal areas. For development needs and policy making at the macro level, the residents living in areas on the seafront are often analogous to coastal communities. Coastal and marine areas have an important role as they form space structures in the Indonesian archipelago, as well as having economic and politic importance. They need to be harmonized and synergized so as not to cause conflicts of interest, environmental degradation and the inefficient and effective use of resources[2].

Some studies say that the problems of various fields - whether they be environmental, social, economic, inequality, climate and health - have plagued coastal communities [3,4,5] . Several studies [6],[7] state that physical environments such as the existence of healthy houses, the standards of the latrines and irregular waste disposal are a big problem and also sometimes the sea itself is considered to be a trash can. All of these factors will have an impact on both physical and mental health.

Economic problems and poverty which eventually have an effect on the emergence of criminality are increasingly high, which is also a part of the problem in coastal areas. Therefore, it can be concluded that crime, bad habits, the emergence of thuggery and other behavior deviations are responses to existing problems then make the fishermen's adaptability decrease and their resilience decline [4] .

The study conducted by Erik et al.[8] shows that coastal communities have a high level of anxiety and depression with problems of domestic violence due to economic factors. A low economy is often a broken circle of society where mental health is an important part of it.

The things mentioned above are the factors that can threaten and endanger individual welfare and trigger the emergence of psychological distress[9]. Psychological distress, according to Fawcett [10], is psychological and physical and it arises because of the inability to manage stress continuously. This stress, according to Lazarus and Folkman, is part of the relationship between the individual and the environment in which the individuals feel a pressure that is heavy or beyond the ability that is owned by them, so it threatens his well-being[11]. Therefore, stress arises as a psychological response to every situation that threatens him. If what emerges is a response that is a negative tendency, then this is called distress. This will result in decreased self-capacity [12]. This condition will greatly affect the community's welfare. Therefore, it is important to identify the psychological distress of coastal communities so then early prevention can be implemented. In addition, this is done to prevent the emergence of more severe consequences.

As an area located in the Coastal City of Semarang, Kemijen is often faced with the presence of tidal water (rob) inundating the surrounding settlements. Every five and ten years, the villagers have to pay for the raising of their houses because of the land subsidence process. The economy of the residents is in the lower middle level and on the poverty line. These conditions make them not really care about their environment properly. The absence of waste management facilities also contributes to disaster. The accumulation of plastic waste in the irrigation canals clogs the sewage water flow, causing flooding when it rains. In addition, the condition of the home environment is poorly organized and unsanitary, making it difficult for people to get clean water and other public facilities.

With a total population of 13413 habitants and an area of 120.90 km², this area is a fairly dense urban village. Kemijen is divided into two by Banger and the number of ponds / fish ponds along the edge of the railroad tracks leading to Semarang Tawang station. Overall, the profession of the people in this community is not only fishermen but it also includes entrepreneurs, drivers, freelancers, temporary employees, civil servants, laborers, scavengers, vagabonds, and pedicab drivers. This area has had a bad label attached to it, namely as being a village of pickpockets, thieves and bad boys.

2. Methods

This research was an observational descriptive study with a survey approach. The purpose of this study was to identify the mental health status of the coastal community of Kemijen, Semarang, Central Java, in 2018. The sample of this study consisted of randomly selected men aged 18-55 years. The research sample totaled 224. This study used the Psychological distress scale (K10) made by Kessler and Mroczek (1994). This measurement tool was used to see psychological distress in the

population. K10 consists of 10 items containing distress symptoms over the past month. The scores will range from 10 to 50. The higher the score, the worse the respondent's mental health. There are 4 categories including well mental disorder, mild mental disorder, moderate mental disorder and severe mental disorder. The analysis method of the data used was univariate[13,14].

3. Results

Table 1. Frequency and percentage of the mental health categories.

Category	Well	Mild	Moderate	Severe	Total
Frequency	164	42	15	3	224
Percentage (%)	73	18.7	7	1.3	100

Table 2. Kesstler-10 by respondent

K-10 Questions	Tired[a]	Anxiety	Calm[b]	Hopeless	Restless	Sit Still[c]	Depressed	Effort[d]	Cheer[e]	Worthless
None of the time	153	17	140	134	38	198	19	143	185	197
A little of the time	56	30	48	68	33	16	26	44	32	21
Some of the time	13	29	19	19	37	10	33	15	7	4
Most of the time	2	124	15	3	106	0	130	21	0	2
All of the time	0	24	2	0	10	0	16	1	0	0
Total	224	224	224	224	224	224	224	224	224	224

[a]Feeling Tired Out For No Good Reason

[b]Can't Calm Down..

[c] Can't Sit Still Because Of Restless

[d]Feeling That Everything Takes Effort

[e]Feeling So Depressed That Nothing Could Cheer You Up

A total of 224 residents completed the K-10 questionnaire. Table 1 provides the grouping of the K10 scores based on the four mental status categories as well as the percentages. A total of 3 participants (1.3%) had a severe mental disorder but vice versa, most people (73%) are in a well condition regarding mental disorders; this is good news.

The responses from each of the K10 questions have been illustrated in Table 2. The responses to anxiety that received the most response (at all times) and that functioned as the highest negative screen in the area represents 10.7% of all participant responses (n = 24/224). Conversely, many participants reported that they never felt any symptoms. More than 68% reported never feeling tired for an unclear reason, 59% reported never feeling discouraged, 62.5% reported feeling calm, 82.5% reported never having felt so depressed that no one could comfort them, 63.8% reported never feeling that everything needed to involve effort and 87.9% reported never feeling worthless.

4. Discussion

Overall, this study found that 73% of people were in a well state regarding mental disorders, and those experiencing mild disorders was around 18.7%. However, the emotional mental disorders with the symptoms of depression, anxiety and restlessness were high in this region. Depression is far higher than the national average of 6.1 per 1000 population [15], while this region found that 6 out of 225 experience it. Anxiety was the most common symptom detected. This finding is reasonable due to the complexity of the problems in the area. The results of the interview stated that the thought of the topography of the region, the weather and the future of their family, especially their children, were the main reasons that gave them grave anxiety.

Anxiety was the most dominant symptom of psychological distress. This is in line with the study conducted by Asugeni et al., where almost all of the respondents (90%) reported that sea level rise affected them and their families and that it caused fear and concern both personally and within the community [16]. Four themes emerged from the qualitative analysis: experience about the physical impact of climate change, worry about the future, adaptation to climate change and the responses from the government to help them.

However, there are interesting things that can be seen from other symptom data such as hopelessness and worthlessness, which are not significant enough to be seen of as psychological distress. The interview results indicated that most said that they believe that God always guarantees sustenance, so they did not stop trying and still felt useful within their family. The finding of Alexandra's study was that the fishing community realize that their work depends on nature and the weather, so they feel powerless and unable to change the circumstances of their daily life[4]. On the other hand, there are many inhabitants who depend on the help of institutions and on the government. The residents think that waiting for and seeking help is one form of gaining money.

The residents of Kemijen Village also have varied jobs such as entrepreneurs, fishermen, drivers, freelancers, temporary employees and civil servants. The varied work conditions have a positive effect on their social condition. They can provide broad insights by allowing for the exchanging of ideas when gathering at the Ronda Post or in other non-formal activities. Therefore the symptoms of psychical distress are not very obvious.

The complexity of the problem does not create the tendency of the community to be depressive, but rather, it has an impact on violent behavior. Even though it cannot be generalized, it is noted that there are many juvenile delinquents in this village and that they are quite disturbing to the residents.

One of the ways that they manifest this trouble is by brawling. There are also quite a number of thugs and they are usually motivated by unemployed people and teenagers who are raised in broken homes. This group has a poor pattern of community relations because it usually carries out forms of violence against other citizens, both young and old. This is in addition to groups of thugs who cause unrest.

Research conducted by Hasanah found that the level of aggressiveness of coastal communities was higher than further inland[17]One of the trigger factors is an external factor in the form of the geographical environment [18]. Every individual has the potential to be aggressive but at different levels. Bus and Perry divided aggressiveness into four parts; physical aggression, verbal aggression, anger and hostility [19]. This is the same condition as occurred in this research area.

The economy factor and the low level of education triggers an increase in the crime rate. This situation is quite difficult to change because of the paradigm of the people who tend to be practical and pragmatic. The economic condition of the people of Kemijen, which has an average middle to lower education level, makes it difficult for every citizen to think of other things besides the economic condition of their families. Many teenagers drop out of school and end up consuming drugs and "ngelem" (breathing in glue vapor or other similar substances to gett a hangover sensation), which is common among school-age children. Among the parents (fathers), they like to drink, all of which has an effect on theft and fighting.

The above condition is called mass distress. This is because the response shown to the stressor produces negative consequences that are unhealthy and destructive [20]. Another negative thing is that the bad condition belongs to the community. Social relations disorders affiliated with unemployment contribute to the appearance of distress. Distress can reflect the individual's narrative about the problems faced and their interpersonal interactions in the socio-cultural context.

The study found that health problems in coastal communities are influenced by environmental, social and behavioral factors. This study found that the environment in coastal areas tended to be poor from almost all sides[21]. This is the reason why the bad factors will affect the mental health of the individuals there. Taylor explained that when individuals successfully deal with stressors, they will feel challenged and experience little stress, but when his ability is not enough to deal with the stress and when it requires a lot of effort to solve it, then he will feel a lot of stress[22].

Individual assessments related to things that have the potential to be sources of stress may vary. Individuals can consider the physical environment of their home as a source of stress, while other individuals consider it to be normal. Lazarus and Folkman mentioned that this is called secondary appraisal, which is the assessment of the individual’s coping ability in the face of challenging situations which in the end means that the stress experienced by a person is a balance between primary appraisal and secondary appraisal[11]. Primary appraisal is the determination of meaning when the individual is first exposed to environmental changes.

An interesting finding from this study is that the symptoms of distress were found more than the same characteristics in the same region, namely other coastal areas, according to a study conducted by Erik et al. in North Sulawesi[8]. This is reasonable, because the researchers considered that the area of

research at this time had a variety of problems that could affect the population's mental conditions, inclining them both toward depressive or violent behavior.

This study found that the mental health conditions of coastal communities in general were that 7% had moderate mental disorders and that 18.7% had mild mental disorders.. The biggest symptoms detected were depression, anxiety and restlessness. From this finding, it is necessary to conduct in-depth research on the findings of this study. There are community depressive conditions and violent behavior arising from the problems in coastal communities and also increasing the government efforts for the betterment of community welfare is important by realizing the importance of mental health services in health centers and their networks for fishing communities.

References

[427] *BadanPusatStatistik* 2018 Statistik Indonesia Tahun 2018 Jakarta

[428] Tebaiy S 2018 Pembangunan Kota Pesisir Versus KeberlanjutanSumberdayaPesisirdanLautan Kota Jayapura*J. SumberdayaAkuatikIndopasifik***1** (2) 31-42

[429] Cintia G, Anthoni C, 2019 Community wellbeing: The impacts of inequality, racism and environment on a Brazilian coastal slum *World Developmen Perspective J.* 13 18-24

[430] Alexandra PF 2018 Pathways of adaptation to external stressors in coastal natural-resource-dependent communities: Implications for climate change *J.worlddev.* 108 235-248

[431] Matthew J, Erin S 2018 Rural coastal community resilience: Assessing a framework in eastern North Carolina *J.ocecoaman.* 162 137-150

[432] Ida M, Hariati L, Jusniar R and Afa 2018 identifikasimasalahkesehatanberbasislingkungan di wilayahpesisir*J. IlmiahKesehatanMasyarakat***2**

[433] Fajrie, M. June 2017 Gaya KomunikasiMasyarakatPesisirWedung, Jawa Tengah. : *Int J. of Communication***2**(1)53-76

[434] Erik K, Adam B, Ryan A, Iben M August 2018 *J. Asia-Pacific Psychiatry* 3(1)1-9

[435] Matthews G 2000 *Distress* vol 1 (New York: Academic Press) p 154

[436] Fawcett J 2003 Stress and Trauma Handbook (California: World Vision International) p 286

[437] Lazarus R and Folkman S 1984 Stress, appraisal, and coping (New York: Springer Publishing Company, Inc)

[438] Littleton H, Horsley S, John S and Nelson D 2007 *J. Trauma Stress***20** 977-988

[439] Kessler, R.C., Andrews, G., Colpe, .et al 2002 Short screening scales to monitor populationprevalences and trends in non-specific psychological distress. *J. Psychological Medicine***32** 956-959.

[440] Andrews, G., Slade, T (2001). Interpreting scores on the Kessler Psychological Distress Scale (k10). *Australian and New Zealand J. of Public Health* **25** 494-497.

[441] Kemenkes RI 2013 RisetKesehatanDasar: *Riskesdas* (Jakarta BalitbangKemenkes)

[442] Asugeni J, MacLaren, Massey PD, Speare.R 2015 Mental health issues from rising sea level in a remote coastal region of the Solomon Islands: current and future *J. Australasian Psychiatry***23**(6) 22–25

[443] Uswatun H 2017 Perbedaantingkatagresivitasmasyarakatpesisirnelayandanpedalaman Madura. Thesis

[444] De Jonge 2011 What is fair and equitable benefit-sharing? Journal of Agricultural and Environmental Ethics **24** 127–46

[445] Buss AH, Perry M. October 1992 *J. of Personality and Social Psychology* **63**(3) 452-9

[446] Duffy KG and Atwater E 2005 Psychological for living:Adjustment, growth and behavior today 8thed (New Jersey: Pearson Prentice Hall)

[447] Sumampouw OJ, Soemarno A, Sri S, Endang EN, Jeini 2015 *J KesehatanMasyarakat***3** 1-8

[448] Taylor S 2012 Health Psychology 8thed (New York: McGraw Hill)

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SBAR COMMUNICATION IN EMERGENCY DEPARTMENT: A SYSTEMATIC REVIEW

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ABSTRACT

The Joint Commission International the second patient safety goal index comes from the large amount of incorrect data when doing documentation which leads to communication handover, especially in emergency departments that have a higher risk of medication error than other units in the hospital. The aim of this study was to collect evidence of SBAR (situation, background, assessment, recommendation) in the emergency department services. The main databases for reference include CINAHL Plus, Web of Science, MEDLINE, and PUBMED. Comprehensive search strategy for 6 months until February 2019 which presented empirical based studies keywords: 1) SBAR and 2) Emergency department. Data abstraction developed on each paper to the appraisal level of empirical evidence. Limitation study determines 2011-2019. The finding results from 11 articles reviewed dominated SBAR's superiority as a guideline for providing communication at the emergency department level by health professional. There is evidence of the Demonstrate effective communication with SBAR as a preferred data transfer tool related to the positive impact of the accuracy of data transfers significantly.

Keywords: SBAR, communication, emergency department

1. Introduction

The Joint Commission and Institute for Healthcare Improvement have mandated healthcare organizations to improve their professional effective communication [1]. The main problem of providing health services is that medical errors remain a reality. This cannot be overcome thoroughly in the field of health. Communication problems are sensitive and very challenging [2]. A very important reality in the emergency department (ER) is that it is where health care providers must stabilize, diagnose and treat patients very quickly while building a relationship and developing trust with the patients and their families [3], [4]. Poor communication between the health workers contributes a lot to the cases of medication errors that have the potential to slow down treatment and sentinel events. SBAR (Situation, Background, Assessment, Recommendation) handoff is known as one of the most common and effective transitions of communication services between multiple disciplines, especially for health care professionals [5], [6].

Complex images increase the risk of errors arising from the care provided and from the environment in the emergency unit during the information handover [7]. The communication of clinical handovers is an important component in preventing failures related to errors, side effects and patient hazards that can be avoided and to ensure the continuity of effective care [9], [10]. Before high-risk procedures are carried out, one should allow nurses to construct their own ideas for them to feel confident when talking with other medical staff members. This is then nursing communications can apply to the handover of nurse-to-nurse, while on the rounds, in doctor-nurse

communication, through changes in patient health status, in the directions before surgery by the surgical team, or in the communication between professional health care [14]. In another study, the training provider of SBAR communication techniques improved the effective communication and the interaction processes. They also relieved the stress related to communication and self-expression [15].

In the end, compliance with effective handover communication done using the SBAR technique has an important role in ensuring the accuracy, completeness and effectiveness of information delivery in the emergency department unit. In addition, the SBAR guidelines encourage many emergency department teams to carry out and have the same clinical standards. The review of this study aims to review the evidence base regarding the application of the SBAR technique as a handover communication intervention in the Emergency Department. The purpose of this systematic review was to review the use of SBAR as a communication tool for treatment at an emergency department. Practitioners in the emergency room use SBAR as a communication intervention strategy to provide improved communication and risk reduction for handover errors.

2. Research Method

2.1. Design

This study used a systematic design review that referred to the Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) Statement [16]. The existing PRISMA guidelines adjust and combine from qualitative, quantitative and mixed method studies when conducting a review of this study. The PRISMA checklist is used as a reference for filtering the data articles including Eligibility (inclusion and exclusion) Criteria, Information Sources, Search Strategy and Study Selection.

2.2. Eligibility

The limitations of this study excluded study before 2011. The scope of this study was geographically international. Users of the communication method in the minimal emergency department loaded SBAR as a technique for effective communication. The evidence base of the existing articles was manually appraised by health professionals and expert researchers in determining the feasibility of the study material.

2.3. Search Strategy

The literature search database consisted of CINAHL Plus, Web of Science, MEDLINE and PUBMED. Comprehensive searches were conducted for 6 months until February 2019. In addition to mechanical searches, the reference list was searched and identified by health sciences professionals. When carrying out the identification process, we used the keywords as a reference. Emergency department keywords were used to search for information in including in the title, abstract, content and bibliography. In the next stage, the keywords in English were used to look for the relevant articles in the electronic database. The last step was to filter the results using PRISMA to determine the articles that were worth reviewing. This final step was finalized by limiting the studies to no older than 2011.

2.4. Study Selection

The paper went through 3 stages of screening in order to determine accuracy and to avoid duplicate titles, citations and abstracts. In the first stage, we filtered all of the relevant data based on the content. Second, we read all of the articles at least 3 times so then each article was assessed independently by the researcher. The last step of the researcher was to finalize the data to determine the appropriate articles before extracting and analyzing the contents.

2.5. Study Appraisal

The study appraisal used CASP to assess the feasibility of the articles reviewed and PRISMA for a framework guideline of the systematic review.

3. Results

The search strategy was conducted by generalizing the data with SBAR keywords and Emergency Department with the total initial results being 104 articles plus 7 articles sourced from the reference list found at the end of each study. A total of 38 articles indicated duplication in the titles and abstract were removed, leaving 73 articles total. In the final stage, 12 articles were screened according to the eligibility criteria and inclusion criteria set by the reviewer. The 12 articles included quantitative, qualitative and mixed method data.

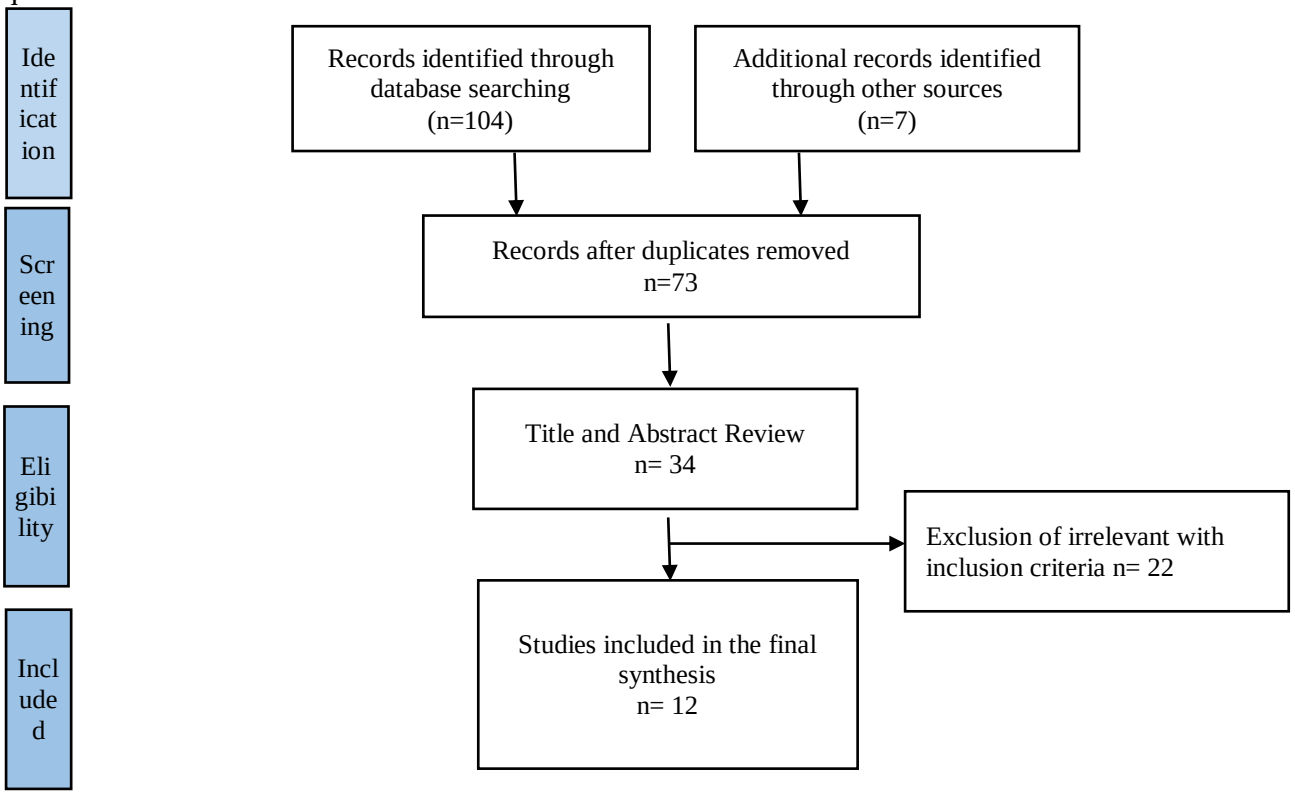

Figure 1. Flow diagram

3.1. *Quality Appraisal*

The assessment and evaluation of the feasibility of the 12 articles was done using the PRISMA and CASP Critical Appraisal Skills Program method with a percentage value of above 75% of the total maximum value of the tool used.

3.2. *Study Characteristics*

A total number of 12 articles were obtained from between 2011 and 2018. They had been carried out in several countries using qualitative, quantitative and development approaches and they involved mixed methods models. There were no criteria limits for the aspects of gender, marital status, the scope of emergency, country etc.

Table 1. Cochrane collaboration's tool for assessing the risk of bias

Domain	Tews et al	Bornemann-shepherd et al	Martin et al	Campbell et al	Caroline et al	Smith *et al*

Random sequence generation	0	0	0	0	0	0
Allocation concealment	0	0	0	0	0	0
Blinding of participants and personnel	0	0	0	0	0	0
Incomplete outcome data	0	0	0	0	0	0
Blinding of outcome assessment	0	1	1	0	1	0
Selective reporting	1	1	1	0	1	0
Other bias	1	1	1	1	1	1
Total	**2 Low bias**	**3 Low bias**	**2 Low bias**	**1 Low bias**	**3 Low bias**	**1Low bias**

3.3. *Result of Synthesis*

The main components of the 12 articles to be reviewed have been shown below in Table 1. Readers easily get a systematic view of the sources found and the results of applying the SBAR in the Emergency Department which will be discussed. This allows the readers to identify the focus of each report. The importance of the various research methods or designs used has been clearly identified and this allows the readers to assess the suitability of the research designs.

In the study [17], the implementation of the SBAR-DR strategy resulted in an increase in verbal handoff quality. The agreement within a clear disposition plan is the most enhanced element, which is very important in describing maintenance responsibilities and streamlining ED throughput. SBAR communication and observation were also used to identify specific improvements. The results of the post-questionnaire showed increased satisfaction for both the staff and patients. The ED area benefits from the supervision of directors, managers and inpatient staff. In addition, the results show positive effects on the staff and patient satisfaction [18]. In another study, it explained the communication score in the increase in handover by increasing the knowledge of SBAR techniques. The experimental group showed greater post-intervention improvement in communication clarity relative to that observed in the control group [19].

The ISBAR standard tool is used to ensure high-quality handover delivery. The transfer of information between clinical teams can lead to improved performance without the need to reallocate resources and large data. Besides this, SBAR was reportedly useful at improving the quality of the information received and how it was adapted to the clinical context. It is very important that all doctors in the ER receive all of the information needed and that they ensure that the patient delivery is comprehensive and safe. Routinely using these instructions can lead to an increase in the quality of patient surrender. The introduction of standard submission tools, combined with education, can improve compliance with these tools. Lack of education knowledge in submission can cause current findings to be short-lived [6], [20]. The paramedics and ED participants agreed that being open to each other's knowledge can reduce the risk of injury or missed signs. This will prevent the occurrence of side effects and help with the patient's health care plan [20].

Other results show that nurses found the SBAR bedside reporting method easy to use and that it prevented a loss of patient information more effectively than pre-intervention practices. Post-intervention, the nurses found the SBAR handoff method easy to use and they found that it prevented a loss of patient information. The nurses declared that handoffs in the bedside context increased mutual responsibility and that it had the opportunity to increase situational awareness by looking at the patients and their surroundings, reviewing orders and discussing care plans with patients and their families [21].

SBAR can be accepted by first-year EM residents, and it is followed by an increase in the ability to apply SBAR in case of simulations and follow-up sessions. This format is feasible to use as a training method and it is well received by resident doctors. This significantly increased their ability to implement SBAR on simulated case presentations. SBAR's approach is the most commonly used approach to improve clinical case communication and it is more adaptable to the emergency department environment more than other complex models [22]. However, the active involvement of senior staff during the planning and implementation stages of the project is recommended. The introduction of 'M' to SBAR's handover tool has led to an increase in the number of prescription drugs that were examined. The time demands in the ER need to be considered when introducing changes to the current practices [23].

Psychometric tools based on the SBAR format were developed and validated to identify and improve the overall quality and value of education from surgical M & M conferences. The SBAR M & M tool is easy to use and requires little training to be used by evaluators. It potentially applies to other specializations [24]. Transfer documentation from a Residential Elderly Nursing carer, paramedics and ED triage nurses does not always contain comprehensive information. Better SBAR communication between non-affiliated organizations is needed to improve the timely maintenance that is appropriate for the residents of RACF (Residential Aged Care Facilities), through to ambulances and the emergency departments [25].

Structured communication techniques, such as the huddle and SBAR framework, promote improved communication between staff members. The joint evaluation followed by huddle was found to be a feasible and effective step to be taken to determine that the patient care plans have the potential to improve patient safety in the emergency department [26]. SBAR protocol support is an effective tool at improving communication through an alignment format and information reporting process. Standardization has been proven to improve the nurses' social orientation and critical thinking processes. Every time the protocol is used, the nurses will have a blueprint of the population assessment process and data collection [27].

SBAR can also be introduced into the nursing curriculum as a part of educating individuals living with chronic diseases to improve their self-care management. This can also be included as a part of return teaching for individuals who are excluded from the emergency unit or inpatient unit. Another ideal time to teach SBAR is when most people come for care. In addition, SBAR can be included in the transition program when individuals move into adult care [28].

4. **Discussion**

This systematic review is the first evidence published intended to improve the handover of patients using SBAR. It also intends to produce an in-depth understanding of SBAR's communication intervention strategies that lead to improved effective communication, in addition to improved accuracy, speed and quality in the services in Emergency Departments. Until now, the nurse communication and multi-disciplinary relationship carried out using the SBAR technique had a very good impact on the delivery of data in order to cope with the incidence of medication errors, patient safety and the length of treatment [15], [18], [26]. The review of this study provides information on the potential of the SBAR technique for the transition of information in ensuring that patient transfers are efficient, accurate and accountable, and that they avoid mistakes. The SBAR technical standard research base ensures that the information results in clear expectations. This reflects that an

emergency department is a land where large risks and significant sentinel events require great responsibility. The risks and sentinel events can be solved by applying the SBAR communication techniques [2], [24]. Ultimately, the approach to SBAR communication techniques in care ensure that the patient expectations and needs are communicated, making Emergency department care more responsive to patient needs and accuracy.

The increased recognition of communication at handover is an initial tool to improve part of the support process involved in the Joint Commission Index Patient Safety Goals. It is clear that the adoption of effective communication using SBAR has a better impact. The results of this systematic review indicate that SBAR communication technique interventions tend to be effective at improving the quality of the weighing and completeness of patient information in the emergency department. Of the 12 articles studied, there are different types of research designs. Most of them used quasi-experiments and others were epidemiological studies that were cross-sectional. This results in an interpretation that cannot be generalized.

5. **Conclusion**

SBAR communication techniques, as a communication tool in the wider scope of emergency, improve the accuracy and clarity of patient data information. The efforts of the WHO, by developing SBAR, have contributed greatly to the communications made by health workers in the emergency department. The continuous improvement of the current guidelines is still very important, especially in the process of patient safety. The use of the SBAR effective communication technique in the emergency department mentioned above is evidence that the adoption of SBAR is a reference for the communication of health workers in the emergency department according to the existing settings. The development and adoption of improved communication protocols in patient processing is not only continuous documentation of an effective handover in the current guidelines but it also involves ongoing modifications to adjust the specific rules to prevent medication errors in patient safety practices through SBAR communication. Further research can summarize the communication skills in emergency cases, with specific emergencies related to each scope of the disease in the Emergency Unit. This reflects on the effective communication practices to ensure that the individual communicates well. Thus, one should consider using SBAR or other standard communication tools to support the practices in the Emergency Department.

6. **References**

[449] The Joint Commission Center, "The Joint Commission Center for Transforming Healthcare. Improving transitions of care: hand-off communications.," 2014.

[450] K. Huth *et al.*, "Between Referring Providers and the Emergency Department : Results of a Multidisciplinary Needs," *Jt. Comm. J. Qual. Patient Saf.*, pp. 1–12, 2018.

[451] D. Kerr, S. Klim, A. Kelly, and T. Mccann, "Impact of a modified nursing handover model for improving nursing care and documentation in the emergency department: A pre- and post-implementation study," *Int. J. Nurs. Pract.*, vol. 22, no. 1, pp. 89–97, 2016.

[452] D. A. Schinasi, I. N. Kolaitis, and F. Nadel, "Difficult Conversations in the Emergency Department: Spotlight on the Disclosure of Medical Errors," *Clin. Pediatr. Emerg. Med.*, vol. 16, no. 2, pp. 90–95, 2015.

[453] Y. Shah, G. Alinier, and Y. Pillay, "Clinical handover between paramedics and emergency department staff : SBAR and IMIST-AMBO acronyms," *Int. Paramed. Pract.*, vol. 6, no. 2, pp. 37–44, 2016.

[454] S. A. F. Yegane, A. Shahrami, H. R. Hatamabadi, and S.-M. Hosseini-Zijoud, "Clinical Information Transfer between EMS Staff and Emergency Medicine Assistants during Handover of Trauma Patients," *Prehosp Disaster Med*, vol. 32, no. 5, pp. 1–7, 2017.

[455] K. Fernando, N. Adshead, S. Dev, and A. Fernando, "Emergency department multiprofessional handover," *Clin Teach*, vol. 10, no. 4, pp. 219–223, 2013.

[456] S. Klim, A. Kelly, D. Kerr, S. Wood, and T. McCann, "Developing a framework for nursing handover in the emergency department: an individualised and systematic approach," *Clin. Nurse*, vol. 15–16, pp. 2233–2243, 2013.
[457] A. Starmer *et al.*, "Rates of medical errors and preventable adverse events among hospitalized children following implementation of a resident handoff bundle," *JAMA*, vol. 310, pp. 2262–2270, 2013.
[458] N. Symons, A. Almoudaris, K. Nagpal, C. Vincent, and K. Moorthy, "An observational study of the frequency, severity, and etiology of failures in postoperative care after major elective general surgery," *Ann Surg.*, vol. 257, no. 1, pp. 1–5, 2013.
[459] M. Street, P. Eustace, P. M. Livingston, M. J. Craike, B. Kent, and D. Patterson, "Communication at the bedside to enhance patient care: A survey of nurses' experience and perspective of handover," *Int. J. Nurs. Pactice*, vol. 17, no. 2, 2011.
[460] M. D. Gordon, K. Novak, and R. Fairchild, "Bedside Reporting and SBAR : Improving Patient Communication and Satisfaction," *J. Pediatr. Nurs.*, vol. 27, no. 6, pp. 760–762, 2012.
[461] L. V. Downey, L. Zun, and T. Burke, "What constitutes a good handoffs in the emergency department : a patient's perspective," *Int. J. Health Care Qual. Assur.*, vol. 26, no. 8, pp. 760–767, 2013.
[462] J. Dunsford, "Structured communication: improving patient safety with SBAR," *Nurs. Womens. Health*, vol. 13, pp. 385–390, 2009.
[463] C. Thomas, E. Bertram, and D. Johnson, "The SBAR communication technique: teaching nursing students professional communication skills," *Nurse Educ.*, vol. 34, pp. 176–180, 2009.
[464] D. Moher *et al.*, "Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement," *Syst. Rev.*, vol. 4, no. 1, pp. 1–9, 2015.
[465] C. J. Smith *et al.*, "Evaluation of a Novel Handoff Communication Strategy for Patients Admitted from the Emergency Department," *West. J. Emerg. Med.*, vol. 19, no. 2, pp. 372–379, 2018.
[466] M. Bornemann-shepherd, J. Le-lazar, M. B. F. Makic, D. Devine, K. Mcdevitt, and M. Paul, "Boarders In The Emergency Department : Improving Safety," *J. Emerg. Nurs.*, vol. 41, no. 1, pp. 23–29, 2015.
[467] M. Yu, "Effectiveness of a role-play simulation program involving the SBAR technique : A quasi-experimental study," *Nurse Educ. Today*, vol. 53, no. April, pp. 41–47, 2017.
[468] N. Bost, J. Crilly, E. Patterson, and W. Chaboyer, "Clinical handover of patients arriving by ambulance to a hospital emergency department : A qualitative study," *Int. Emerg. Nurs.*, vol. 20, no. 3, pp. 133–141, 2012.
[469] D. Campbell and K. Dontje, "Implementing Bedside Handoff In The Emergency Department: Apractice Improvement Project," *J. Emerg. Nurs.*, pp. 1–6, 2018.
[470] M. C. Tews, J. M. Liu, and R. Treat, "Situation-Background-Assessment- Recommendation (SBAR) and Emergency Medicine Residents ' Learning of Case Presentation Skills," *J. Grad. Med. Educ.*, vol. 4, no. 3, pp. 370–373, 2012.
[471] B. Caroline, B. Nerolie, and S. Sue, "Impact of an education session on clinical handover between medical shifts in an emergency department : A pilot study," *Emrgency Med. Australas.*, vol. 29, pp. 336–341, 2017.
[472] E. L. Mitchell *et al.*, "SBAR M & M : a feasible, reliable, and valid tool to assess the quality of, surgical morbidity and mortality conference presentations," *Americn J. Surg.*, vol. 203, no. 1, pp. 26–31, 2012.
[473] B. Campbell, C. Stirling, and E. Cummings, "Continuity matters : Examining the 'information gap' in transfer from Residential Aged Care, ambulance to emergency triage in southern Tasmania," *Int. Emerg. Nurs.*, vol. 32, pp. 9–14, 2017.
[474] H. A. Martin and S. M. Ciurzynsk, "Situation, Background, Assessment, and Recommendation

- Guided Huddles Improve Communication and Teamwork in the Emergency Department," *J. Emerg. Nurs.*, vol. 41, no. 6, pp. 484–488, 2015.

[475] P. M. B. Garrett, "Using SBAR to Decrease Transfers from the Long- term Care to the Emergency Room," Walden University, 2016.

[476] C. Jenerette and C. Brewe, "Situation, Background, Assessment, and Recommendation (SBAR) May Benefit Individuals Who Frequent Emergency Departments: Adults With Sickle Cell Disease," *J. Emerg. Nurs.*, vol. 37, no. 6, pp. 559–561, 2011.

Appendix

Table 2. Summary of the results

Title & Authors	Design of the Research	Number of Participants (n)	Results
Situation, Background, Assessment, And Recommendation (SBAR) May Benefit Individuals Who Frequent Emergency Departments: Adults with Sickle Cell disease (2011) [28]	Pre-post implementation	34 Nurses	Eighty-three percent of patient encounters included a joint evaluation. A huddle structured with SBAR was conducted 86% of the time. Registered nurses and nurse practitioners verbalized the patients' treatment plans in 89% of cases and 97% of cases respectively. Improved teamwork, communication, and nursing satisfaction scores were demonstrated among the nurse practitioners and registered nurses.
SBAR M&M: a feasible, reliable, and valid tool to assess the quality of, surgical morbidity and mortality conference presentations (2012) [24]	Prospective observational study	9 residents	A psychometrically robust assessment tool based on the SBAR format was developed and validated to identify and improve the overall quality and educational value of the surgical M&M conference. The SBAR M&M tool is easy to use and requires little training for use by evaluators and it is potentially applicable to other specialties.
Situation-Background-Assessment-Recommendation (SBAR) and Emergency Medicine regarding the Residents' Learning of Case Presentation Skills, (2012) [22]	Educational study	25 EM Residents	There was a statistically significant improvement in the resident scores in the pre-test/post-test of the first case (P =0.001). There was no difference between the post-test of the first case and the pre-test of the second case (P =0.34), suggesting a retention of the material. There was a statistically significant improvement between the pretest and post-test scores on the second case (P =0.001). The survey yielded good reliability for both sessions (Cronbach's alpha =0.87 and 0.89, respectively), demonstrating statistically significant increases for the perceived quality of training, presentation comfort level, and the use of SBAR (P =0.001).

Caring For Inpatient Boarders In The Emergency Department: Improving Safety And Patient And Staff Satisfaction (2014) [18]	Mixed Method	204 staff members	Situation-background-assessment-recommendation (SBAR) communications and direct observations were also used to identify specific improvements. The post-questionnaire results indicated improved satisfaction for both the staff and patients.
Situation, Background, Assessment and Recommendation – Guided Huddles Improve Communication And Teamwork In The Emergency Department (2015) [26]	pre- and post-implementation surveys	N=34 (32 Nurse and 2 Nurse Practitioner)	Eighty-three percent of patient encounters included a joint evaluation. A huddle structured with SBAR was conducted 86% of the time. Registered nurses and nurse practitioners verbalized the patients' treatment plans in 89% of cases and in 97% of cases, respectively. Improved teamwork, communication, and nursing satisfaction scores were demonstrated among the nurse practitioners and registered nurses.
Using SBAR to Decrease Transfers from Longterm Care to the Emergency Room (2013) [27]	Develop and Implementation Project	140 residents	The implications of social change will include increasing the effective communication, as well as critical thinking skills by building the potential for increasing the satisfaction of the nurses and doctors that have the potential to increase job satisfaction, and to increase recruitment and retention. Positive results increase when care is given by those who are familiar with the patient's norms and settings.
Continuity matters: Examining the 'information gap' in the transfer from Residential Aged Care through an ambulance to emergency triage in southern Tasmania (2017) [25]	Retrospective cross-sectional transfer narratives	80 residents	The inclusion of elements from SBAR was inconsistent across the transfer. Rather, the written narratives focused on the concerns relevant to the immediate priority, the type of information imposed by the document(s) in use and the clinical role of the author.
Clinical Information Transfer between the EMS Staff and Emergency Medical Assistants during the Handover of Trauma Patients (2017) [6]	Clinical audit	178 and 168 Medical records	Clinical audit of the current situation in the ED showed that the clinical handover process does not follow standard ISBAR (0.0%). However, after training, 65.3% of clinical handover processes were performed in accordance with ISBAR. In the current study, there was an increase in all parameters of the ISBAR tool after training, most of which increased significantly compared to the first

			phase of the study (before the intervention).
Impact of an education session on clinical handover between medical shifts in an emergency department: a pilot study (2018) [23]	A pilot study: pre- and post-intervention design using qualitative and quantitative methods	24 doctor	The educational intervention led to an increased focus on checking medication charts, but it had a minimal effect on changing other aspects of clinical handover at the doctors' change regarding shift times. Perceived increased time spent on handover using the new system was seen of as a major barrier to the implementation of SBARM. The addition of 'M' to 'SBAR' heightened awareness of checking the medication and fluid charts.
Implementing Bedside Hand-off In The Emergency Department: A Practice Improvement Project, (2018) [21]	Pre Post Implementation	230 Registered Nurses	The results showed that the nurses found the SBAR bedside report method easy to use and that it helped to prevent the loss of patient information more effectively than pre-intervention practices.
Evaluation of a Novel Hand-off Communication Strategy for Patients Admitted from the Emergency Department, (2018) [17]	Mixed method	560 for the pre- post-test and 110 for the qualitative conversation	The composite quality score improved in the post-intervention phase (7.57 + 2.42 vs. 8.45 +2.51, p=.0085). Three out of the 16 individual scoring elements also improved, including time for questions (70.6% vs. 82.7%, p=.0344) and confirmation of the disposition plan (41.8% vs. 62.7%, p=.0019). The majority of emergency and internal medicine physicians felt that the SBAR-DR model had a positive impact on patient safety and hand-off efficiency.
Effectiveness of a role-play simulation program involving the sbar technique: a quasi-experimental study	A quasi-experimental study	Non-equivalent control-group pretest-posttest quasi-experimental.	The intervention group showed higher SBAR communication scores ($p = 0.003$), communication clarity scores in doctor notification scenarios ($p < 0.001$) and SBAR education satisfaction scores ($p < 0.001$) relative to those of the control group. There was no significant difference in the handover confidence between groups ($p = 0.054$).

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EFFECT OF SPIRITUAL-BASED THERAPEUTIC COMMUNICATION TRAINING ON NURSE COMMUNICATION KNOWLEDGE AND SKILLS

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ABSTRACT

Communication can influence the quality of relationships and nursing care implementation. Successful communication are by nurses' knowledge and skills in therapeutic communication. Moreover, the factor that influence the quality of nurse and patient relationship is nurse spirituality. Spiritual-based therapeutic communication (SBTC) knowledge and skills are expected to improve nurses' abilites in intrapersonal, interpersonal, and transpersonal relationships. This study aims to analyze the effect of SBTC training on nurses' knowledge and skills that are useful to improve the quality of nurses and patients relationship. This was a quasi experimental to the nurse in Bangil hospital East Java Indonesia. The assessment procedure was carried out before and after in the intervention group and control group. The results found an increase knowledge and skills of SBTC in nurses who were given training.. The highest increase was the knowledge about communication and skills, especially positive emotional regulating skills, dimensions of response, and spiritual experience. Spiritual-based therapeutic communication training can improve nurses' knowledge and skills in communication. From the results of this study it is recommended that SBTC training must be carried out continuously.

Keywords: Spiritual, Therapeutic communication, Nurse, Training

1. Introduction

The results of communication will affect the subsequent relationship process. Nurse communication in the implementation of nursing care known as therapeutic communication. Therapeutic communication is a process carried out by the nurses of influencing consciously or helping the patients in their verbal and nonverbal communication (1). Psychologically, therapeutic communication is intended to build trust and cooperation between the nurses and patients (2).

Not all nurses in charge of health services are capable of good therapeutic communication. Aktas and Karabulut (2017) found that 46% of nurses experienced difficulties in their therapeutic communication with patients, especially in non-verbal communication (3). Chan (2017) reported that 58.7% of patients considered the frequency of information provided by nurses to be unsatisfactory (4).

Based on this data, it is necessary to increase thte nurses' knowledge and skills in therapeutic communication to increase patient confidence in the nurses. Therapeutic communication is not just the implementation of communication between nurses and patients. It includes the ability of the nurses to foster therapeutic relationships (5). Therapeutic relationships are influenced by personal quality, facilitative communication, responsive dimensions, action dimensions and therapeutic barriers (6). If there are disturbances in any these factors, then the fabric of the therapeutic

relationship will not have the maximum results possible (7). The personal quality factors of the nurses in therapeutic relationships are nurse-originated factors including self-awareness, value classification, altruism, feeling exploration and the exploration of their abilities and weaknesses (8).

The abilities related a nurse's personal qualities can be influenced by many factors, one of them being spiritual (9). Spirituality is something that is related to the spirit, and to the enthusiasm tfor beliefs, hopes, and the meaning of life (10). Spirituality is a tendency to make a meaning of life through intrapersonal, interpersonal and transpersonal relationships to overcome various life problems (11). Spirituality includes an awareness of conscience, the internalization of values, actualization, and sincerity as actual manifestations of relations with God (12). Spirituality is also referred to as something that is felt about oneself and in one's relationships with other people, good actions, friendliness, and respect for everyone to make someone happy (13).

Vlasboom (2011) revealed that the nurse's spiritual care ability is able to increase self-confidence, emotional control, and sincerity when performing health services that have an impact on increasing the patient trust in nurses and helping the patients find meaning from suffering due to their illness by increasing patient optimism (14).

Spiritual abilities, in addition to increasing individual abilities in interpersonal relationships, will also help someone to understand the meaning of life, sincerity, and the acceptance of any conditions that occur both in him, others, and the environment (15).

The addition of spiritual elements in the therapeutic communication of nurses is related to implementing nursing care to patients (16). This can be used as a means to improve the nurses' ability to understand the meaning of life, sincerity, patience and to increase positive emotions in relationships that are intrapersonal, interpersonal and transpersonal. Based on the chronology of the problem, it is necessary to provide SBTC training to nurses, which is useful for improving the nurses' knowledge and communication skills so as to improved nurse communication knowledge and skills.

2. Methods

2.5 Design

A quasi-experimental pre-test and post-test with a control group design was used (17). This study was used to investigate the effects of spiritual-based therapeutic communication. To find out the effect of SBTC training, we divided the participants into two groups by giving a pre-test and post-test to both groups.

2.6 Participant

The participants in this study were nurses who served in the adult inpatient room at the Bangil hospital, East Java, Indonesian. The population of nurses were serving in the adult inpatient room and totaled 120 nurses divided into 8 rooms. From that number, the samples were chosen to be made into two groups, namely the intervention group and the control group. Each room consisted of 14 nurses, so the number of samples for the intervention and control groups was 28 nurses per group.

2.7 Instrument

The instrument used was the width of the respondent's identity, the questionnaire used to measure knowledge about SBTC and the self-evaluation questionnaire used to measure the nurses' skills in SBTC. The knowledge questionnaire consisted of 25 questions in the form of questions with multiple

choice answers, while the self-evaluation questionnaire used a Likert scale. Before the questionnaire was applied to the participants, the questionnaire was measured for reliability and validity first. The self-evaluation questionnaire initially consisted of 40 items. After being tested for validity and reliability, this was reduced to 27 items. The questionnaire measurement results were in the form of interval data for both the knowledge questionnaire and self-evaluation questionnaire.

2.8 Intervention

This research was carried out after an ethical review process was carried out in RSUD Bangil number 445.1/570.1/424.202/2019. The implementation of SBTC training was carried out for the intervention groups by providing modules, lectures, role-play and direct practice. The spiritual-based therapeutic communication training lasted for 3 days and consisted of three stages: classroom training (1 day) and direct practice with mentoring (2 days).

2.4.1 Definition. Spiritual-based therapeutic communication is a combination of therapeutic communication within the spiritual dimension. The basic elements of therapeutic communication are formed from five elements that influence therapeutic communication and four spiritual dimensions, which are personal quality, facilitative communication, response dimensions, action dimensions, therapeutic barriers, the meaning of life, positive emotions, spiritual experiences and rituals.

2.4.2 Training Objectives. It is expected that after the training, the participants will be able to implement the SBTC techniques in nursing care to their patients, making it easier to help the patients overcome any problems and to improve their abilities.

2.4.3 Part of SBTC training

2.4.3.1 Part 1 Classroom Training. The classroom training was carried out in the form of a lecture, discussion and role play about SBTC for one day consisting of 9 sessions.

Table 1. Topics and methods in the SBTC training in the classroom

Session	Topics	Methods
1	Training Contract	Lecture
2	Why spiritual-based therapeutic communication?	Lecture
3	Who am I? Who is he? (Pre-interaction phase)	Role-play
4	The first impression is so tempting (Orientation Phase)	Role-play
5	Implementation time (Working Phase)	Role-play
6	Say goodbye (Termination Phase)	Role-play
7	Flashback	Discussion
8	Action plan	Discussion
9	Closed	Lecture

2.4.3.2 Part 2 Direct Practice with Mentoring. The participants were invited to practice directly with patients through mentoring. This stage was carried out for 2 days

2.9 Measurement

The respondents' measurements were taken by filling out the respondents' identity details and

questionnaire. The filling in of the respondent's identity and pre-test questionnaire was conducted at the beginning of the study in both the intervention and control group. The post-test was conducted after the 7th day adjusted to the end of training and to the implementation of SBTC in the intervention group.

2.10 Analysis

The respondent's identity data has been described as a table by grouping it together. The results of the pre- and post-test of knowledge and skills in the intervention group and the control group were analyzed using a simple paired t-test. To compare the knowledge and skills between the intervention group and the control group, this was done using an independent t-test.

3. Result

3.4 Characteristics of the Respondents

The characteristics of the respondents between the intervention and control groups was almost the same.

Table 2. Characteristics of the Respondents

Characteristics of the Respondents	Intervention Group n = 14	Control Group n = 14
Age in years		
20 - 29	5	4
30 - 39	7	9
40 - 49	2	1
Sex		
Male	4	3
Female	10	11
Job Experience in years		
1 - 5	4	5
6 - 10	8	8
11 - 15	2	1
Education		
Diploma of Nursing	13	13
Bachelor of Nursing	1	1
Job Status		
Government Employees	4	3
Not Government Employees	10	11
Religion		
Islam	14	14
Others		

3.5 Measurement SBTC knowledge and skills intervention group and control groups

The measurement results of the pre-post test of the knowledge of intervention group showed as being very significant (0,000), while in the control group, it showed as not being significant (0,828).

Table 3. Measurement of SBTC Knowledge in the Intervention and Control Groups

		Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pre – Post Test	Intervention Group	-5.64286	2.59013	-8.152	13	.000
Pre – Post Test	Control Group	-.07143	1.20667	-.221	13	.828

Table 4. Measurement of the SBTC Skills in the Intervention and Control Groups

		Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pre – Post Test	Intervention Group	-11.286	7.405	-5.702	13	.000
Pre – Post Test	Control Group	-.214	3.142	-.255	13	.803

3.6 Comparison of SBTC knowledge and skills between the intervention group and control group

The results of the comparison of knowledge and skills in the post-test intervention group and control group showed as being significant (0,000). This means that there is an effect of providing SBTC training to increase knowledge and skills about SBTC.

Table 5. Comparison of SBTC knowledge between the intervention and control group

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Result Post Test	Equal variances assumed	.030	.865	6.842	26	.000	5.643
	Equal variances not assumed			6.842	25.940	.000	5.643

Table 6. Comparison of the SBTC skills between the intervention group and control group

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Result Post Test	Equal variances assumed	.000	.995	4.408	26	.000	11.357
	Equal variances not assumed			4.408	25.924	.000	11.357

3.7 Distribution of SBTC Elements in The Intervention Group

After the SBTC training, there was an increase in SBTC skills, especially with the most prominent improvement being in the difference in scores before and after training of ≥ 2.00. For the response dimension it was 2.86, for positive emotions it was 2.00 and for the spiritual experience, it was 2.43..

Table 7. Distribution of the SBTC Elements in the Intervention Group

No	Element of SBTC	Mean		Difference
		Pre Test	Post Test	
1	Personal Quality	8.50	9.29	0.79
2	Facilitative Communication	6.14	6.57	0.43
3	Response Dimension	10.50	13.36	2.86
4	Action Dimension	9.71	10.14	0.43
5	Therapeutic Barriers	6.29	6.71	0.43
6	Meaning of Life	7.50	8.29	0.79
7	Positive Emotions	7.64	9.64	2.00
8	Spiritual Experience	7.43	9.86	2.43
9	Rituals	9.93	11.07	1.14

4. Discussion

The results of this study indicate that the nurses trained in SBTC increase their therapeutic knowledge and communication skills more than untrained nurses. SBTC training methods are carried out in the form of lectures, role-playing and direct practice, which is a combination of learning with the stimulation of the cognitive, affective and psychomotor aspects. Allen & Ph (2010) revealed that learning methods for increasing a health workers' knowledge and skills can be improved by providing learning through the three aspects of cognitive, affective, and psychomotor (18).

Increasing the knowledge and skills of theparticipants in this study was in accordance with the theory of learning methods by adjusting to one's own learning style. Everyone has their own learning styles. An effective learning model that can be accepted by the learner is to adjust the learning style of each individual. Individual learning styles can be in the form of visual, auditory and kinesthetic. In SBTC training, a combination of all learning methods is carried out so then any learning styles

that the trainees have allow them to be ble to receive the new information well and to increase their knowledge and skills (19).

The training in this study also aims to provide knowledge and training through visual and auditory media (modules and lectures) and kinesthetic modules (role play and direct practice). It also has the potential to further enhance one's knowledge and skills, because in receiving information and stimuli from outside, someone will pass through a system representation that is visual, auditory, kinesthetic, olfactory and gustatory (20).

The knowledge and skills of the nurses after SBTC training was increased. Increased knowledge and skills in each element of SBTC can make the nurses better understand the meaning of their intrapersonal, interpersonal and transpersonal relationships. Elements of the meaning of life will mean that the nurses try to be role models for others, help spontaneously, hold their promises, forgive themselves and others, be honest, and prioritize harmony and togetherness. The element of spiritual experience will make the nurse feel close and friendly with the universe, they will feel the presence of God in every event, and they will feel a special impression on all of the events they experience (21).

The manifestation of increasing the elements of positive emotions can make the nurses more optimistic, able to control themselves, happy when they are doing good, happy with the happiness of others, and able to make peace under any condition. The ritual element will mean that the nurses feel the love of God, feel a dependence on God, feel calm, fear to do evil and are sensitive to goodness (21).

Increasing the personal quality element of the nurse will make the nurse better know and control themselves, able to be an example of their role, altruism and to have a good sense of ethics and responsibility for what they do. In the element of facilitative communication, it plays a role in increasing the nurses' abilities in terms of verbal communication, non-verbal communication, communication techniques and developing motivational interviews (6).

The dimensions of response include respect for others, sincerity, empathy, and openness. Elements of the dimension of action are confrontation, immediacy, self-disclosure of nurses and emotional catharsis. As for overcoming the therapeutic obstacle elements in the form of resistance, transferring, transferring, and encroachment, the nurses will be better able to act through the knowledge and abilities ifrom SBTC that have been studied and practiced in the SBTC training.

In this study, all of the elements have increased. There are several prominent elements that increase the value of the dimensions of response, positive emotions, and spiritual experience which are the response dimensions, positive emotion, and spiritual experience. The increased response dimensions indicates that the nurses responded to the stimuli given by the patients better. This is in accordance with the aspects of SBTC training including the provision of knowledge and skills in empathy, sincerity, the understandingthe patients and spirituality. Good responsive conditions are very useful for the nurses in the application of therapeutic communication, especially the work phase and termination phase (6). Increased response dimensions can also increase the mutual trust between nurses and patients and this can make the nurses better understand themselves and thi+er patients(6).

Increasing the positive emotions in nurse communication skills is in accordance with what is expected in SBTC training. Combining therapeutic communication elements with spirituality can improve the ability of the nurses to manage their own emotions by accepting whatever happens both in terms of the conditions experienced and referring to the conditions experienced by the patients.

Increasing positive emotions means that nurses are more sincere in helping their patients, with the patient, when facing any situation, receptive to all conditions that occur (22)

Increasing the spiritual experience can make the individuals calmer and closer to God. Every incident that happens is always associated with The Creator, which means that all good or bad events are the will of The Creator and there must be a meaning behind the incident. Increasing the spiritual experience is very useful to keep emotions stable (21).

Broadly speaking, SBTC training is a new communication model in which therapeutic communication has been oriented to increasing the intrapersonal and interpersonal relationship skills, with added spiritual elements that are useful to increase the skills of transpersonal relationships so then communication, especially when in relation to nursing care, does not only involve the element of self themselves and others but it also involves God in every activity of giving nursing care.

5. Conclusion

SBTC training is a training method that combines elements of therapeutic communication with a spiritual dimension that aims to improve the ability of the nurses in therapeutic communication that is useful to increase the nurses' skills in terms of establishing relationships with their patients when providing nursing care.

The provision of SBTC training has been shown to have an effect on increasing the nurses' knowledge and skills in therapeutic communication, especially related to the response dimensions, positive emotions, and spiritual experiences.

References

[477] Fleischer S, Berg A, Zimmermann M, Wüste K, Behrens J. Nurse-patient interaction and communication: A systematic literature review. J Public Health (Bangkok). 2009;17(5):339–53.

[478] Zivanovic, Dejan and Ciric Z. Therapeutic Communication in Health Care Therapeutic Communication in Health Care. SciFed Nurs Health J. 2017;1(2):0–7.

[479] Aktas YY, Karabulut N. Problem In Critical Care Nurse-Patient Communication: Examples Of Poland and Turkey. 2017;56:437–45.

[480] Chan ZCY. A qualitative study on communication between nursing students and the family members of patients. Nurse Educ Today [Internet]. 2017;59(March):33–7. Available from: http://dx.doi.org/10.1016/j.nedt.2017.08.017

[481] Videbeck SL. Psychiatric Mental Health Nursing. 5th ed. Journal of Experimental Psychology: General. China: Library of Congress Cataloging in Publication Data; 2011.

[482] Stuart GW. Prinsip dan Praktik Keperawatan Kesehatan Jiwa Stuart. 1st ed. Keliat BA, Pasaribu J, editors. SingapOre: Elsevier Ltd; 2016.

[483] Roat M, Universidade B, Grande R, Alegre P. Optimism, self-esteem, and personality : adaptation and validation of the Brazilian Version Of The Revised Life Orientation Test (LOT-R). 2014;523–31.

[484] Feist J, Feist GJ. Theories-of-Personality. 7th ed. USA: The McGraw-Hill Companies; 2008.

[485] Akgün Şahin Z, Kardaş Özdemir F. Spirituality and spiritual care: a descriptive survey of nursing practices in Turkey. Contemp Nurse [Internet]. 2016;52(4):454–61. Available from: http://dx.doi.org/10.1080/10376178.2016.1221324

[486] Ronaldson S, Hayes L, Aggar C, Green J, Carey M. Palliative care nurses' spiritual caring interventions: a conceptual understanding. Int J Palliat Nurs [Internet]. 2017;23(4):194–201.

Available from: http://www.magonlinelibrary.com/doi/10.12968/ijpn.2017.23.4.194

[487] Gomez MV, Armenta CG, Rodrigues SM. The Importance of Spiritual Care in Nursing Practice. 2016;1–14.

[488] Taylor EJ, Mamier I, Ricci-Allegra P, Foith J. Self-reported frequency of nurse-provided spiritual care. Appl Nurs Res [Internet]. 2017;35:30–5. Available from: http://dx.doi.org/10.1016/j.apnr.2017.02.019

[489] Yusuf A, Nihayati HE, Iswari MF, Okviansanti F. Kebutuhan Spiritual; Konsep dan Aplikasi Dalam Asuhan Keperawatan. 1st ed. Jakarta: Mitra Wacana Media; 2016.

[490] Vlasblom JP, van der Steen JT, Knol DL, Jochemsen H. Effects of a spiritual care training for nurses. Nurse Educ Today [Internet]. 2011;31(8):790–6. Available from: http://dx.doi.org/10.1016/j.nedt.2010.11.010

[491] Narayanasamy A, Gates B, Swinton J. Spirituality and learning disabilities: a qualitative study. Br J Nurs [Internet]. 2002;11(14):948–57. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17689454

[492] Minton ME. A Willingness to Go There: Nurses and Spiritual Care. 2017;

[493] Singh YK. Fundamental of Research Methodology and Statistics. New Delhi: New Age International; 2006.

[494] Allen KN, Ph D. Affective learning : A taxonomy for teaching social work values. J Soc Work Values Ethics. 2010;(January).

[495] Mahmood B, Abdulmajid M. How to Accommodate Different Learning Styles in the Same Classroom : Analysis of Theories and Methods of Learning Styles. 2015;11(3):26–33.

[496] Grinder J, Bandler R. The Structure Of Magic Vol II. 2nd ed. California: Science and Behavior Books; 1976.

[497] Pasiak T. Tuhan Dalam Otak Manusia Mewujudkan Kesehatan Spiritual Berdasarkan Neurosains. Bandung: Mizan; 2012.

[498] Vlasblom JP, Steen JT Van Der, Knol DL, Jochemsen H. Effects of a spiritual care training for nurses. In: Spiritual care by nurses and the role of the chaplaincy in a general hospital. Elsevier; 2015. p. 46–62.

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UTILITING SOCIAL MEDIAS AS A HEALTH PROMOTION TOOLS TO ENGAGE MILLENNIALS : A SYSTEMATIC REVIEW

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ABSTRACT

Social media has become the most important component of everyone's life in this digital era. It can't be denied that social media has changed the ways people seek about health information. The aim of this study was to assess the effectiveness of health promotion using social media to change health behaviour, awareness, and health outcomes. ProQuest, Scopus, NCBI, and SAGE database was searched for existing literature on social media development to delivering health promotion. The search returned 423 journals, and 15 journals met the eligibility criteria following review of full-text documents literature result. Studies shown social media is effective in increasing health knowledge, awareness, and prevention behaviour. Furthermore, other studies stated social media can enhance their sense of community among patients with chronic disease and thus help people attain healthier lifestyles. This review highlights that social media has a lot of roles in changing people's perception and behaviour, it a useful yet cost effective strategy that have to be considered by health workers to use it as a health promotion tool and engage millenials.

Keywords: social media, social networking, health promotion, behaviour, prevention, awareness

1. Introduction

Social media platforms such as Facebook, Twitter, and Instagram are increasingly becoming a central part of daily life [1]. This transition of technology has created an environment in which everyone has the ability to comment, participate, and contribute toward the sharing of information, especially for healthcare. Social media has become an important health resource, and not just for millenials. Nearly 90 percent of older adults have used social media to seek and share health information [2]. Social media is a gathering place. People gather together to share things, learn, and to engage in conversations regarding things that are important to them [3].

Global Digital 2018 reported that over the past 12 months, the number of social media users in each country has increased by almost 1 million new users every day. Astonishingly, each person is spending around two hours on social media every day. Although they use it as a form of social interaction and self-actualization, social media platforms seem to also be used for seeking

information [4]. It is unsurprising that now, online health information seeking plays an increasingly important role in a user's online activities. According to the report of European Citizen's Digital Health Literacy survey published in 2014, over 60% of Europeans reported using social media to look up health information. From all of the phenomena above, it can be defined that it may be worthwhile for healthcare professionals to find a way to engage millenials by doing health promotions using social media.

We live in a time where, due to the popularity of the smartphone, we have almost instantaneous access to a wealth of specialist information at our fingertips. There is an expectation that health information diffusion will follow suit and that health care organizations are turning to social media. For example, Public Health England has responded to the changing landscape of social media and health communication by engaging with digital technologies and switching to an "always on" approach rather than traditional annual campaigns [5].

Social media is an efficient platform for the user to access information via, including access for help, advice, and information from another user. In other words, social media is a key place to share breaking information during a health crisis. This kind of information sharing and social support in online communities may affect their health behavior. Health promotions in social media enable the users to have a great control over, awareness of and to improve the health outcome through behavior changes.

In this review, we systematically reviewed the literature regarding the effectiveness of health promotions using various forms of social media to change health behavior and health outcomes. This work will facilitate any health professionals, policymakers and organizations to identify any effects, pros and cons from doing health promotion on social media.

2. Methods

2.1 Literature search strategy

The review was based on the results of a search of the research on Scopus, ProQuest, NCBI and SAGE. The keyword terms used were 'social media' or 'social network' or 'Instagram' or 'vlog' and 'health promotion' or 'health awareness' or 'health behavior' or 'health prevention'. The search returned 423 journals, but all of the results were reviewed and evaluated using the following criteria, and we selected the 15 most relevant final studies (Figure 1).

2.2 Inclusion and exclusion criteria

2.2.1 Study Design. The study designs included random controlled trials, exploratory descriptive, analytic observational, an exploratory study and a cross-sectional study. The heterogeneity design provided a different context that may answer whether social media is effective for health promotion or not.

2.2.2 Population. The participants in the study were men and women of any age. This was in order to look at engagement levels at multiple ages.

2.3 Intervention

In the treatment group, the action given to the participants was shown and they were given health education through posts on different social networking platforms. In the control group, the health education was given alongside the usual side-to-side process in which the users can interact with each other and share information.

2.4 Clinical outcomes

The results of the intervention measured after the action included the level of the participant's knowledge, their awareness and their behavior.

3. Results

3.1 Selection Criteria and Process

We used the selected terms on a broad spectrum such as "social media and health promotion" to search the literature. It returned 423 studies and all of the results were reviewed and evaluated using the following criteria. It was found that there were 15 selected items of literature that met the criteria.

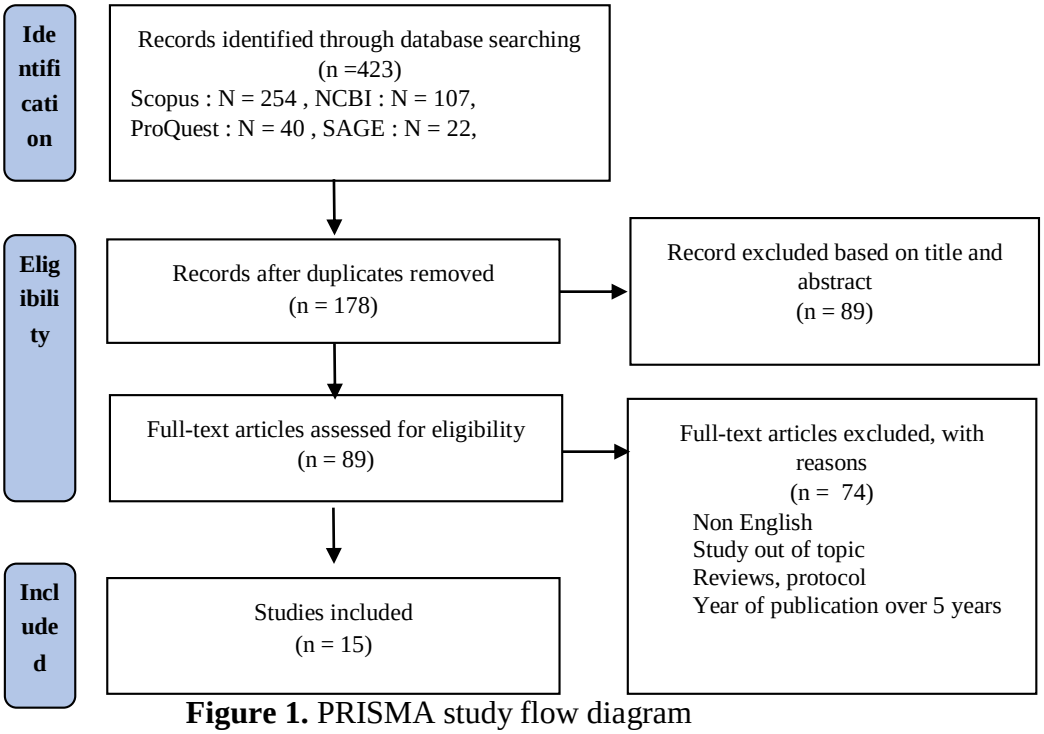

Figure 1. PRISMA study flow diagram

3.2 Kind of Intervention

The interventions were given according to the literature including a Youtube-style video, stimuli public post on Instagram and Twitter, mentoring via a Facebook Group, Twitter and Facebook posts, a website and interactive social media.

3.3 Result Measurement

The measurement tools used on the literature items were exercise motivation, activity, self efficacy, physical activity, knowledge, awareness, and prevention behavior, risk behavior, body mass index, strokes scale and vaccination status [10].

Table. 1 Type of Study in the Setting Up of the *Systematic Review*

Author	Type of Study	Participants	Intervention	Outcome
(6)	Exploratory descriptive Study	146 participants	135 adolescents in British Columbia Canada.	Videos via social media are a promising messaging strategy for raising awareness about tobacco exposure as a modifiable risk factor for breast cancer.
(7)	Exploratory descriptive Study	346 participants	Participants were invited to participate in the creation of a health-promotion intervention on diabetes by expressing their opinions through an online questionnaire posted on Facebook, Twitter, and Instagram.	Social media potentially increased the diabetes patients' engagement and satisfaction with health-promotion interventions, enhancing their sense of community, and thus helping people attain a healthier lifestyles.
(8)	Cluster randomized trial	229 people (99 male, 130 female) from a liberal arts college	Participants viewed a series of 40 actual social media posts across the 4 conditions (individual post with images, corporate post with images, individual post with images, and corporate post	Stimuli with images from individual accounts were more motivating than stimuli with images from corporate accounts, $t(228) = 3.57$, $p < .001$, $d = .24$,

			without images) in a randomized order.	
(9)	RCT	238 adolescents (46.32% boys; M age=12.17, age range: 11–14 years) divided into 2 groups (118 intervention , 120 control)	The influencer agents, based on their closeness centrality within the social networks, used an innovative approach to train the influence agents via smartphones for 5 weekdays and 2 weekend days.	Social network intervention didn't have any effect on the physical activity level of the adolescents.
(20)	AnalyticalObservation	782 participant	Participants were shown a unique random set of 20 tailored messages per day over five days via social media platforms.	There were no statistically significant changes in knowledge and prevention behaviors from the baseline through to post-survey among study participants.
(11)	Cross-Sectional	95 participants	Participants reported their sources of information about contraception and human immunodeficiency virus/sexually transmitted disease such as TV/movies, parents, and social media.	Youths who were exposed to sexual health messages on social media were 2.69 times more likely to have used contraception or condoms the last time they had intercourse.

(12)	Experimental	360 participants	Subjects experiment utilized a 2×4 factorial design, varying the type of social media and the message communicator used to deliver a cancer risk reduction message.	YouTube led to higher comprehension and stronger attitudes toward cancer risk reduction than Twitter and Facebook. The form of social media used to deliver content can have an effect on persuasive outcomes
(13)	Exploratory Descriptive	34 young adults (male 7, female 27)	Eight focus groups (m=4.25 participants per group) were scheduled in-depth-semi-structured interviews using multiple approaches in qualitative research.	The majority of young adults in this study perceived that social media use does have an influence on young adult health behaviors
(14)	Exploratory Descriptive	100 participants Facebook (n=60) Twitter (n=40)	Identifying active Facebook and Twitter profiles undertaking sexual health promotion through a previous systematic review, and assessed profile activity over a one month period.	Key strategies to promoting sexual health promotion by social media are regular individualized interaction with users, encouraging conversations, uploading multimedia and relevant links, and highlighting celebrity involvement
(15))	RCT	556 participants	Participants in the HIV intervention were randomly	Development of peer-mentored social media communities seemes to

		(278 control, 278 intervention)	assigned to 2 peer leaders within their group who would attempt to interact with them about the importance of HIV prevention and testing, while those in the control group received an enhanced (incorporating social media) standard of care.	be an effective method to increase HIV testing among high-risk populations
(21)	Quasi-experimental	64 participants	Interventions of eHealth Self Management (eHSM) based on community for 24 weeks	Self-efficacy, self-care behavior, and social support increase in the intervention group
(16)	RCT	Overweight and obese individuals with a body mass index (BMI) between 25–40 kg/m2 and aged between 21 and 65 years	One group received the program within a Facebook group, along with a support network within the group. The other intervention group received the same program in a booklet. The control group was given standard care.	The Facebook group reported a 4.8% reduction in initial weight, significant compared to the CG only ($p = 0.01$), as well as numerically greater improvements in body mass index, waist circumference, fat mass, lean mass, and energy intake compared to the Pamphlet Group and the Control Group.
(17)	Analytic Observational	620 survey participants	The participants were asked on average how	Several health promotion programs via social media have

		aged 16 to 29 years	many hours per day they spent using SNS, and they were asked to rate their level of comfort receiving information about sex/sexual health from different sources, including traditional sources (school, doctor), older media (mainstream media, websites), and social media.	demonstrated efficacy. However, many young people are not comfortable with accessing sexual health information through these channels.
(18)	RCT	60 participants	Youths in the Internet intervention immediately received emails with links to online HIV/STI prevention websites and YouTube videos. Researchers sent the participants 8 HIPPA compliant emails (containing 2–3 links each) twice a week over 4 weeks	Youths who received links to publicly accessible online prevention content by email showed a significant improvement in HIV self-efficacy and a significant reduction in unprotected vaginal or anal sex.
(19)	RCT	80 participants	5 promotion attempts were made by email, a website,	Social networks and websites can be as effective as traditional methods of advertisement in order

			LinkedIn, Twitter and Facebook	to reach patients for stroke rehabilitation protocols.
(9)	RCT	888 participants	Single-center RCT of vaccine information and social media interventions designed to reduce under-vaccination among infants of women recruited during pregnancy.	Providing web-based vaccine information with social media applications during pregnancy can positively influence parental vaccine behaviors.

3.4 Analysis of Intervention

3.4.1 Youtube Videos. YouTube-style videos shown to the participants raised awareness among adolescent girls and boys about tobacco exposure as a modifiable risk factor for breast cancer [7]. Tailored, gender-specific messages for use on social media hold the potential for cost-effective health promotion and cancer prevention initiatives targeting youths. YouTube led to higher comprehension and stronger attitudes toward cancer risk reduction than Twitter and Facebook [13]. YouTube is the best method for delivering health messages, especially for particularly complex risk reduction messages.

3.4.2 Public Post on Instagram, Facebook and Twitter . Effectiveness of social media content in promoting exercise motivation differed across the general categories of content type (with images or without images) and account type (individual or corporate). From the literature, we've determined that stimuli with images from individual accounts were more motivating than stimuli with images from corporate accounts. Content with images may simply be more accessible and offer more information relevant to making social comparisons rather than content without an image [9]. The promotion on Facebook and Twitter through segmented profiles was more effective than traditional posting on these social networks [20].

3.4.3 Facebook Group Mentoring. The development of peer-mentored social media communities via Facebook Groups seems to be an effective method to increase HIV testing among high-risk populations [16]. On the other hand, Facebook Groups can assist overweight and obese individuals with dietary and physical activity modifications for weight management [17].

3.4.4 Website and Interactive Social Media. Web-based vaccine information and social media intervention had a positive impact on early childhood immunization. Pregnant woman exposed to the

social media were more likely to vaccinate their infants on time than the other participants [10]. Interactive, informational intervention on social media can improve vaccine acceptance.

4. Discussion

There were 15 articles about utilizing social media as a health promotion tool that we reviewed. There were 2 studies that proved that social media had no impact on the physical activity of adolescents and there were no statistically significant changes in the knowledge and prevention behaviors related to cervical cancer [20],[9]. The rest of the studies stated that a health promotion intervention through social media had an impact of health quality, such as breast cancer awareness, diabetes patients' engagement and satisfaction, sexual transmitted disease awareness, cancer risk reduction, young adult health behavior, increasing HIV testing, weight management program, HIV self efficacy, stroke rehabilitation protocol, and vaccine behavior.

The four types of interventions found in this review had a significant effect on knowledge, awareness, and behavior change. However, the effectiveness of social media as a health promotion tool needs to be maximized through interactions with the users, encouraging conversation, image and video uploading and the involvement of social media influencers. Health professionals need to be strategic if they want to make a health promotion through social media. They will need to learn about the social media platforms on which they can engage with their clients, and also having social media ambassador/influencer on board makes the health promotion far more likely to spread.

Furthermore, the limitation of social media is that the readers need to be wary of the health information posted. This is because there is no filter to screen for reliability, and whether it is credible or not. To ensure the accuracy, quality and credibility of the health information, it needs to be evaluated. Social media is low cost and broadly accessible, which made it holds more potential opportunities than just advancing traditional health promotion in this era. The study designs in this systematic review are likely to be heterogenous and this can affect the bias quality assessment. These findings may not generalizable to other regions where people have less access to social media.

5. Conclusion

We reviewed the evaluation of literature search conducted focused on health promotion using social media for breast cancer prevention, vaccine acceptance, stroke rehabilitation, HIV self-efficacy, and physical activity. Successful research has been done using Youtube videos, public posts on Instagram and Twitter, through Facebook group mentoring, websites and interactive social media. Creating health promotions through social media has had a variety of effects which caused by the different types of social media platform, the promotion intensity, and also the promotion's duration. More research is needed to explicitly discuss the theoretical framework. This systematical review has implications for how these technologies might be utilized by health professionals to make a health promotion. In the disruptive era 4.0, it is necessary to bringing health promotions into a modern context. The increasing amount of social media users suggests that health professionals need to make the step forward to engaging millenials.

References

[499] Edney S, Bogomolova S, Ryan J, Olds T, Sanders I, Maher C, et al. Creating Engaging Health Promotion Campaigns on Social Media : Observations and Lessons From Fitbit and Garmin Corresponding Author : 2018;20.

[500] Cristina N. No Title [Internet]. 2019 [cited 2019 Mar 15]. Available from: https://blog.hootsuite.com/social-media-health-care/

[501] Barnes S. Like, Follow, Share: Awesome, Actionable Social Media Marketing to Maximize Your Online Potential. 2015.

[502] Gough A, Hunter RF, Ajao O, Sci C, Jurek A, Mckeown G, et al. Tweet for Behavior Change : Using Social Media for the Dissemination of Public Health Messages Corresponding Author : 2017;3:1–17.

[503] Mahmoudirad, Gholamhosyn; Moslo, Mostafa; Bahrami HB. Effect of Foot Reflexology on Anxiety of Patients Undergoing Coronary Angiography. Crit Care Nurs. 2013;6(4):241–8.

[504] Bottorff JL, Struik LL, Bissell LJL, Graham R, Stevens J, Richardson CG. A social media approach to inform youth about breast cancer and smoking : An. Collegian [Internet]. Australian College of Nursing Ltd; 2014;21(2):159–68. Available from: http://dx.doi.org/10.1016/j.colegn.2014.04.002

[505] Gabarron E, Dorronzoro E, Bradway M, Årsand E. Preferences and interests of diabetes social media users regarding a health-promotion intervention. 2018;2499–506.

[506] Johnston C, Davis WE, Davis WE. Motivating exercise through social media: Is a picture always worth a thousand words? Psychol Sport Exerc [Internet]. Elsevier Ltd; 2019; Available from: https://doi.org/10.1016/j.psychsport.2018.12.012

[507] Wagner NM, Narwaney KJ, Kraus CR, Glanz JM, Xu S, Shoup JA, et al. Web-based Social Media Intervention to Increase Vaccine Acceptance : A Randomized Controlled Trial. 2017;140(6).

[508] Brand LR, Ba RN, Rn DJM, Gavin J, Cmt CR. The Effect of Hand Massage on Preoperative Anxiety in Ambulatory Surgery Patients. Assoc Regist Nurses. Elsevier Ltd; 2013;97(6):708–17.

[509] Stevens R, Jamie SG, Abigail D, Brawner TB. Social Media Use and Sexual Risk Reduction Seeking Safe Sex Information. 2017;66(5):368–77.

[510] Lauckner C, Whitten P. The Differential Effects of Social Media Sites for Promoting Cancer Risk Reduction. 2015;

[511] Vaterlaus JM, Patten E V, Roche C, Young JA. Computers in Human Behavior # Gettinghealthy : The perceived influence of social media on young adult health behaviors. Comput Human Behav [Internet]. Elsevier Ltd; 2015;45(January 2014):151–7. Available from: http://dx.doi.org/10.1016/j.chb.2014.12.013

[512] Veale HJ, Sacks-davis R, Weaver ERN, Pedrana AE, Stoové MA, Hellard ME. The use of social networking platforms for sexual health promotion : identifying key strategies for successful user engagement. 2015;

[513] Galea JT, Coates T. HHS Public Access. 2015;2(1):1–16.

[514] Jane M, Hagger M, Foster J, Ho S, Kane R, Pal S. Effects of a weight management program delivered by social media on weight and metabolic syndrome risk factors in overweight and obese adults : A randomised controlled trial. 2017;1–20.

[515] Lim MSC, Vella A, Sacks-davis R, Hellard ME. Young people ' s comfort receiving sexual

health information via social media and other sources. 2014;25(14):1003–8.
[516] Whiteley LB, Brown LK, Curtis V, Ju H, Beausoleil N. Publicly Available Internet Content as a HIV / STI Prevention Intervention for Urban Youth. J Prim Prev [Internet]. Springer US; 2018;0123456789. Available from: https://doi.org/10.1007/s10935-018-0514-y
[517] Pires DS, Boasquevisque DDS, Speciali DS, Silva GS, Conforto AB. Success of promotion strategies for a stroke rehabilitation protocol. 2018;64(5):443–7.
[518] Lyson HC, Le GM, Zhang J, Rivadeneira N, Lyles C, Radcliffe K, et al. Social Media as a Tool to Promote Health Awareness : Results from an Online Cervical Cancer Prevention Study. Journal of Cancer Education; 2018;
[519] Jung H, Lee JE. The impact of community-based eHealth self-management intervention among elderly living alone with hypertension. J Telemed Telecare. 2017;23(1):167–73.

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CONFLICT IN HEALTH CARE: A LEGAL STUDY ON NURSE PRACTIONER AUTHORITY AT INDEPENDENT MEDICAL CLINIC IN INDONESIA

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ABSTRACT

Indonesian Nursing Law allows and authorizes nurses to establish an independent medical clinic (IMC). The legal problem on this authority arises in relation to the partnership between medical doctor (MD) and nurse practitioner (NP). This study uses a legal doctrinal method which employs statutes and conceptual approach. The purpose of this study firstly is to examine the laws and regulations concerning to the authorizations given to NP to establish an IMC. Secondly, to elaborate the scope of NP authorities both in medical health service and IMC. The result of this study shows that the limitation of authority between medical doctor and nurse is vague, so it potentially causes the conflict in authority. It triggers competition between MD and NP and bring some confusion for the community. As a conclusion, the law needs to be amended and addressed the clear boundaries of authority between MD and NP. It will also enable community to distinguish between MD service and NP service when they need to access medical service and health treatment.

Keywords: Authority, Clinic, Doctor, Nurse, Health, Treatment

1. Introduction

The health service effort is a part of the health subsystem components. The health service effort consists of the individual health efforts (UKP) and the public health efforts (UKM). UKP is an activity carried out by the government, society and the private sector to maintain and improve health, to prevent and to cure diseases and to restore personal health. UKP includes promotion, prevention, restorative and rehabilitation efforts. UKM is an activity carried out by the government, community or private sector to maintain and to improve public health, and to prevent and overcome health problems which arise in the community. Health workers have an important role to improve the health services for both individuals and communities.

Health workers are those who devote themselves to the health sector. They undergo professional training and have graduated from formal health education. According to Article 1 paragraph (1) Law No. 36/2014 concerning Health Workers, the health workers also have the authority to carry out health efforts. Health workers are divided into health workers and health workers' assistants. Furthermore, based on the Article 11, health workers consist of medical personnel such as doctors, dentists and nurses. In practice, doctors and nurses often collaborate to provide health services in public health service facilities or in an independent health practice. In the past, nurses were merely positioned as the assistant of the doctors. Currently, nurses are the doctor's partner in the health services.

According to Law No. 38/2014 on Nursing, nurses have a wide authority such as to provide health services to the community. Moreover, nurses are divided into several levels based on the level of education that they have achieved. Law No. 36/ 2014 allows nurses to have an independent practice. However, the Law is not equipped with a clear explanation of the duties and authority of nurses in the independent practice. Law No. 36/2014 has neither adequate information nor does it differentiate between the nurse's duties/authorities in independent practice and in the health care facilities. The incompleteness of information on the duties and authorities of the nurses and doctors, especially in the independent practice, has caused a conflict of authority in the health care service.

Therefore, it is necessary to explore the government's rationale for issuing independent practice licenses to nurses. Besides, the vagueness of the law regarding to the limitation the authority between doctors and nurse in independent practice is pivotal to be examined. The medical practice carried out by nurses needs to be examined to determine who is responsible for any loss suffered by the patient. This article focuses on the basic considerations required to allow the nurses to conduct independent practice and the limitations of the nurses' duties as well as that of the authorities in independent practice.

2. Method

The type of research used in this article was normative legal research, in which this study used the provisions of positive law or legislation as the most important reference to resolve legal problems that arise and that have caused unrest in the reality of life in society. Peter Machmud Marzuki, a professor of Law from the Faculty of Law, Airlangga University, in his book entitled 'Legal Research', has clearly stated that Socio-Legal Research is not a form of Legal Research. The research team in the context of this legal research does not use the term Socio-Legal Research and the rules of Socio-Legal Research have not been used in this legal research.

The approach used in this study was the statute approach and the conceptual approach. The legislative approach (statute approach) that was used in this approach is where the author conducted research to seek out, examine and understand the laws and regulations relating to the regulation of the practice of independent nursing. The conceptual approach (conceptual approach) is an approach where the writing team feels that it is very necessary to use the conceptual concept of the concept of independent nursing practice.

3. Results

The authority of the nurses to practice independently is regulated in the Law No. 36/2014 on Nursing. The consideration to grant permission to the nurse to conduct independent practice is based on several laws and regulations.

3.1. Basic consideration for nursing independent practice permits

3.1.1. The 1945 Indonesian Constitution . This is the basis and philosophical foundation for granting nurses to establish independent practice. It is stipulated under two articles. They are Article 28A: 'Everyone has the right to live and has the right to defend his life' and Article 28H: 'Every person has the right to live in physical and spiritual prosperity, to live, and to get a good and healthy environment and the right to obtain health services'.

3.1.2. The Law No. 44/ 2009 on Hospital Law. Article 13 of the Hospital Law stipulates that certain health workers who work in hospitals must have a license in accordance with the statutory provisions and that they must work according to professional standards, hospital service standards, applicable standard operating procedures, professional ethics, respecting patient rights and prioritizing patient safety.

3.1.3. The Law No. 3/ 2009 on Health Law. Article 22 of the Health Law requires health workers to have certain minimum qualifications. Based on these qualifications, health workers are authorized to provide health services. In administering health services, the health workers are required to have permission from the government, as stipulated in article 23 (3) of the Health Law. Health personnel who have been granted permission to exercise authority must meet the provisions of the code of ethics, professional standards, health service user rights, service standards and standard operating procedures as stipulated in article 24 (1).

3.1.4. The Law No. 36/ 2014 on Health Workers. Article 46 regulates the issue of licensing for health workers as follows. Every health worker who practices in the health service must have a permit. Permits as referred are given in the form of SIP; SIP is given by the district / city regional government on the recommendation of the authorized health official in the district / city where the health worker carries out their practice. To obtain this, the health workers must have a valid STR and a recommendation from professional organizations and practice sites. Furthermore, the provisions are stipulated in article 47, in that health workers who carry out independent practices must install a practice signboard. Health workers who are given practice permits must carry out their duties in accordance with the authority granted based on their competence, as stipulated in article 62 of the Law on health workers. Furthermore, it is explained that what is meant by competency-based authority is the authority to carry out independent health services in accordance with the scope and level of competence, among others, for nurses authorized to carry out nursing care independently and comprehensively, and for there to be a collaboration between nurses and other health personnel according to their qualifications.

3.1.5. The Law No. 38 of 2014 on Nursing. Nursing is the activity of giving care to individuals, families, groups, or communities, both in a sick and healthy condition (article 1 paragraph (1) of the Nursing Act). A nurse is someone who has passed through nursing education, both domestically and abroad, which is recognized by the government in accordance with the provisions of the legislation. Article 19 of the Nursing Law regulates licensing for nurses states that nurses who carry out nursing practices must have permission. Permits as referred to in paragraph (1) are given in the form of SIPP. The SIPP as referred to in paragraph (2) is given by the district / city regional government on the recommendation of the authorized health official in the district / city where the nurse carries out his practice. Furthermore, in the provision of Article 20 of the Nursing Law, it formulates that the SIPP is only valid for 1 (one) place of practice and that it is given to the Nurse at most for 2 (two) places. Particularly for nurses who carry out independent practices, they must put up a sign of nursing practice as stipulated in Article 21 of the Nursing Law.

Regarding nursing practice, article 28 regulates the nursing permits that can be carried out in health care facilities or independently. Nursing practices carried out in health care facilities must be based on a code of ethics, service standards, professional standards and standard operating

procedures. Independent nursing practices must be based on the principles of health service needs and / or nursing in a region. Based on the legislation mentioned above, the independent practice permit granted to the nurses has been regulated in a number of rules, starting from the highest rules, namely the 1945 Constitution through to the most specific rules, namely Law No.38 of 2014 concerning Nursing. Permission is given to the nurses with consideration to further improve the quality of health services as supported by the health resources, one of which is a nurse. Nursing services are given independently based on the delegation of authority, assignments in certain circumstances of limitations, assignments in emergencies or in collaboration. Thus, giving permission to practice independently to nurses is a part of fulfilling human rights, especially the right to health, which is the responsibility of the state which is manifested in the form of health development directed at improving the welfare of individuals, families and communities by promoting healthy living habits.

3.2. Nurses 'authority in independent nursing practice

Nursing is an integral part of health services, which are an essential service to increase the lives of individuals, families and communities. A nurse is someone who has passed through nursing education, both domestically and abroad, that is recognized by the government in accordance with the provisions of the Laws and Regulations.

The nurse has the authority to carry out nursing. Nursing is a form of professional health service and it is an integral part of health services based on knowledge and the nursing skill in the form of a comprehensive biopsy-socio-spiritual service, shown to individuals, families, and communities both sick and healthy which covers all related processes. According to the results of the 1983 national nursing workshop, nursing is 'a form of professional service that is an integral part of health services based on science and nursing tips, in the form of comprehensive bio-psycho-socio-spiritual services, aimed at individuals, families and communities'. Furthermore, based on Article 1 paragraph 1 of the Law on Nursing, the notion of nursing is "the activity of giving care to individuals, families, groups, or communities, both in sick and healthy conditions".

4. Discussion

Nursing services are carried out as an effort to achieve health improvement, disease prevention, healing, recovery and health care. This is in line with the goals of nursing which include helping individuals to be free from the health problems faced by inviting the individuals / families to participate in improving their health and helping individuals / families to develop their potential to maintain health as optimally as possible so then they do not always depend on others in maintaining health.

The function of the nurse consists of independent functions, interdependent functions and dependent functions. The independent function means that the nurses do not need a doctor's command in carrying out their nursing duties. The nurse is independently responsible for the consequences arising from the actions taken. Examples of nurse actions in carrying out dependent functions are assessing the entire health history of the patient / family and physically testing them to determine their health status, identifying possible nursing actions to maintain or improve health, helping patients in carrying out their daily activities and supporting the patients to behave naturally.

The interdependent function of the nurses is based on collaboration with other health teams. Therefore, this interdependent function appears when people collaborate with other health workers,

such as doctors, when seeking patient recovery. In this collaboration, patients become the main focus of the health services. The nurse's dependent function occurs when the patient acts to help the doctor in providing medical services and special treatment, as the authority of the doctor. Examples of nurse dependent functions are to give infusions and injections, as well as the administration of drugs. Therefore, the responsibility for action is in the hands of the doctor.

The roles of the nurse includes implementing nursing services, managing the field of nursing services and nursing education institutions, improving the education in the science of nursing, and conducting research and development in nursing science. Implementing nursing services brings in the consequence of the nurses being responsible for providing nursing services both simple and complex to individuals, groups and communities. The role of care as a manager in the field of nursing services and nursing education institutions makes the nurses accountable in terms of nursing administration in managing the nursing services for individuals, families, groups and society. The role of nurses in education and in nursing science makes the nurses accountable in terms of education and nurse teaching for other health workers. The role of nurses as researchers and as the developers of nursing science makes the nurses have an obligation to do research to develop care science and to improve the practice of the nursing profession, especially service, education and nursing administration.

Based on the Law on Nursing, nurses have the authority to establish an independent practice. The definition of nursing practice is regulated in Article 1 paragraph 4. It is stated that "nursing practice is a service organized by nurses in the form of nursing care." The notion of nursing care is regulated in Article 1 paragraph 5 of the Nursing Law. The law defines nursing care as "a series of nurse interactions with clients and their environment to achieve the goal of fulfilling the needs and client's independency in caring themselves". Furthermore, based on Article 18, nurses who conduct nursing care are obliged to have STR. The STR is issued by the Nursing Council. Meanwhile nurses who want to carry out independent practice have the obligation to have a license or SIP, as stipulated under Article 46 paragraph 1 of the Law on Health Workers. In addition, based on article 46 paragraph 3, a license is issued by the district/city government on the recommendation of an authorized health official in the district/city. The obligation to have license is also regulated in the Nursing Law. Article 19 points 3 and 4 stipulate that for establishing an independent nursing practice, it is mandatory for nurses to have license or SIPP. SIPP is issued by the district/Regional Government.

In carrying out independent nursing practices, nurses have several authorities as stipulated in the Nursing Law. The authority given to the nurses comprises of (1) Conducting treatment for common diseases under the circumstances that the medical personnel is not available; (2) Referring patients based on the framework of the referral system; and (3) Carrying out limited pharmaceutical services under the circumstance that the medical personnel is not available.

The authority of nursing practices has also been regulated in the Regulation of the Minister of Health of the Republic of Indonesia No. HK.02.02 / Menkes / 148 / I / 2010 concerning the Permit and Implementation of Nurse Practices. This regulation states that the authority of the nurses is "the right of autonomy to carry out nursing care based on ability, level of education, and position of health facilities." Based on the Minister of Health's Regulation, nursing care covers perinatal, neonatal, child, adult and maternity nursing care.

There are fifteen categories of authority in carrying out nursing practices. They consist of (1) conducting basic assessments of individuals, families, groups and communities in health facilities; (2) carrying out further studies on individuals, families, groups and communities at health facilities; c. conducting data analysis to formulate further nursing diagnoses for individuals, families, groups and communities at health facilities; (3) planning simple and complex nursing actions for individuals, families, groups and communities at health facilities; (4) performing nursing actions according to the level of difficulty, such as basic nursing actions in categories I, II, III and IV; (5) conducting complex nursing actions in categories I, II, III and IV; (6) conducting health education: (7) arranging extension programs with simple methods for individuals, families, groups and communities; (8) conducting counseling on individuals, families, groups and communities; (9) conducting health counseling activities for individuals, families, groups and communities; (10) conducting medical actions as delegation of authority / abundant tasks based on their abilities; (11) conducting outside authority in life-threatening emergency conditions in accordance with the applicable provisions (standing order) at health facilities; (12) under certain conditions, when there are no competent personnel, nurses are authorized to take health actions outside their authority; (13) to conduct nursing evaluations; (14) to conduct simple nursing evaluations in the community; and (15) to conduct complex nursing evaluations on individuals, families, groups and communities at health facilities.

Meanwhile, in carrying out nursing practices, they will be granted authority based on their competencies. These competencies comprise of independent competencies, namely the ability of professional nurses to practice based on their level of ability. There are also delegation competencies that are delegated abilities from the professional nurses to vocational nurses and the delegation of abilities from the medical personnel to the nurses. Expanded competency is the ability of the professional nurses to take certain actions after the person concerned has received special training and experience.

Related to the duties and authority of nurses as stipulated in the Nursing Law, the limitations of the authority between the nurses who perform tasks in health care facilities and the duty of the nurses who carry out independent practices are very important. The limitation is pivotal because it has implications on the doctor's authority who grant the authorization to practice independently. In addition, it has legal implications on the patients when the health services provided are detrimental to the patients. Who will be criminally responsible when the medical actions conducted either by the doctors or nurses have caused losses or injury to the patient? Based on the concept of criminal law, criminal responsibility is personal responsibility. It cannot be delegated to doctors or other health service workers.

5. Conclusion

In Indonesia, the legal basis for nursing practice is regulated under the Indonesian 1945 Constitution as well as Law No. 38/2014 on Nursing. The consideration to provide independent nursing practice licenses is to improve the quality of health services in Indonesia through the support of health workers, such as nurses. The health services provided by the nurse are derived from the delegation of authority. Nurses are allowed to deliver health service practices in certain circumstances and under limitation. For example, during emergency circumstances as well as in collaboration with doctors or dentists. Thus, giving the nurse authority to have an independent practice is a part of the state's responsibility to fulfill the public's right to health.

The authority to carry out independent nursing practices is regulated under Law No. 38/ 2014 on Nursing. Nurses have several authorities as stipulated in the Nursing law. The authorities include: a. conducting treatment for common diseases in the case where there is no medical personnel; b. referring to patients according to the terms of the referral system and c. carrying out limited pharmaceutical services in the case where there is no medical personnel. There are no regulations specifically regulating the authority of independent nursing practice. In the future, there needs to be special rules that regulate the practice of independent nursing.

References

[520] The 1945 Indonesian Constitution

[521] Mahmud Marzuki Peter2005Legal Research : Revise Edition, KencanaPrenada Media GrupJakarta

[522] Ns LamintangLeenen 1991 Health Services and LawBinaCipta Bandung

[523] GaffarLa Ode Jumadi1999Introduction to Professional Nursing, EGC Medical BooksJakarta.

[524] Praptiningsih Sri1999Nurse's Legal Position in the Effort of Health Services at the Hospital PT Raja GrafindoPersada Jakarta.

[525] The Law No. 3/2009 on Health law.

[526] The Law No.44 of 2009 on Hospital Law.

[527] The Regulation of the Minister of Health of the Republic of Indonesia No. HK.02.02 / Menkes / 148 / I / 2010 concerning Permit and Implementation of Nurse Practices.

[528] Ns. Ta'adi, 2013Health Law Sanctions and Motivation for NursesMedical Books EGC Jakarta.

[529] The Law No. 36/2014 on Health Workers.

[530] Law No.38/ 2014 on Nursing.

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A SYSTEMATIC REVIEW ON HOSPITAL: DEPENDENT FACTORS THAT INFLUENCE OF DISCHARGE PLANNING

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ABSTRACT

Discharge planning is a routine activity in the health care system that aims to reduce the length of stay in the hospital, and to improve coordination of services after being discharged from the hospital to home or to other units. The purpose of this study was to analyze factors that influence implementation of discharge planning in the hospital and to give recommendation of monitoring and evaluation discharge planning. The journal had searched multiple databases: DOAJ, Sage, Proquest, Medline, Google Scholar, and Science Direct. It used limited time in January 2013 to December 2018. From 1315 article, only 15 articles that suitable with the inclusion criteria. Systematic reviews obtained from 15 medical journals showed various factors that influence the application of discharge planning in hospitals. These factors include factors from health workers or nurses and factors from patient also their family.

Keywords: discharge planning, nurses, patient, patient's family, hospital

1. Introduction

Discharge planning is the development of a personalized plan for each patient who is leaving the hospital with the aim of containing costs and improving patient outcomes (Gonçalves-Bradley et al, 2016). Areas of discharge planning that are frequently missed by nurses include the patient's admission assessment, the coordination of the completion of different discharge planning elements, referral to allied health and community services, and communication within the multidisciplinary team and the patient and their family (Graham et al, 2013). Discharge planning should ensure that the patients leave the hospital at an appropriate time in their care and that, with adequate notice, the provision of post-discharge services will be organized. In its implementation, there are still obstacles in the process of discharge planning, namely communication problems, the limited family capacity to care for patients at home, and plans for follow-up and commitments that are less effective between the health workers, the patients and also their families.

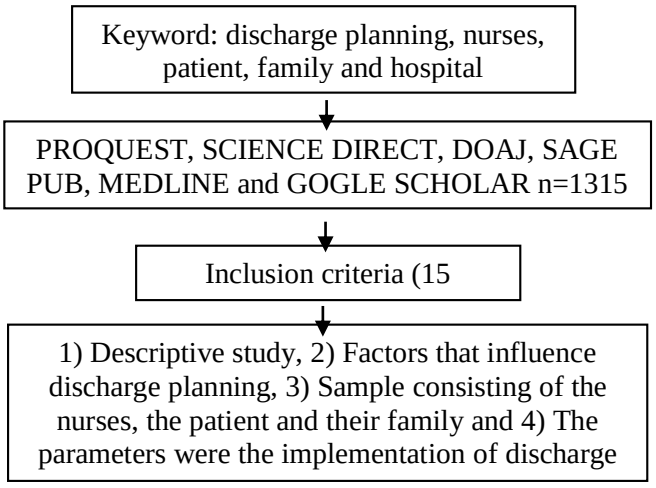
For simple discharges carried out at the ward level, the process should be standardized throughout the entire hospital. The key to making this or any process work consistently in an organization is to adapt it to fit the existing systems and processes. It is helpful to involve the patients and their families in this process. In elective care, planning can commence before admission and it may take the form of a screening tool, risk assessment or care pathway. The principle is to anticipate potential delays and to manage these in a proactive manner. With the advent of the care pathway and the renewed focus on end-of-life issues, care pathways exist to facilitate rapid discharge for patients at the end of life on admission to acute services.

In an emergency and in terms of unscheduled care, advance planning is not possible. Therefore robust systems to gather patient information must be in place - pivotal sources for such include the general practitioner, the primary care team and the carers.

2. Materials and Methods

The purpose of this study was to analyze the factors that influence the implementation of discharge planning in the hospital and to provide recommendations for the monitoring and evaluation of discharge planning. The journals were searched for from within multiple databases: DOAJ, Sage, ProQuest, Medline, Google Scholar, and Science Direct. The search used a limited time frame for inclusion from January 2013 to December 2018. From the 1315 articles, only 15 articles were suitable according to the inclusion criteria for the article. The inclusion criteria was as follows: 1) descriptive study, 2) factors and variable that influence the discharge planning, 3) the sample consisted of nurses, the patient and their family and 4) the parameters were the implementation of discharge planning at the hospital. The papers were critically reviewed and the relevant data was extracted and synthesized using an approach based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

Figure 1 - Summary of the Literature Search



3. Result

The systematic review obtained 15 medical journals that showed the various factors that influence the application of discharge planning in hospitals. The purpose of this study was to analyze the factors that influence the implementation of discharge planning in the hospital and to provide recommendations for the monitoring of discharge planning. Nurses have significant factors associated with them to provide the best discharge planning for patient and their family. The factors from the nurses include knowledge, attitude, skill, psychologists and experience.

4. Discussion

Waring (2014) said that workplaces are where different professional and stakeholder perspectives are brought together in discharge planning and that value face-to-face and interpersonal interactions have been found to involve a better shared understanding about patient care and coordination. It also has the ability to generate a more comprehensive discharge plan [1]. General internal medicine (GIM) units have a high volume of patient admissions given the concomitant pressure of patient in- and outflow [2]. These units have been characterized as extremely busy workplaces with high professional stress, burnout and time pressures present [3]. Discharge planning in GIM units can be particularly complex given the multi-faceted and challenging nature of the patients' healthcare needs and the range of healthcare professionals involved in their care.

Over the last few decades, healthcare systems in Western countries, such as Australia, Canada, the United Kingdom and the United States have witnessed an expansion of management influence over professional activities. A managerial approach that has emphasized task completion and outcomes in the pursuit of evidence-based, cost-effective and efficient care is dominant. This approach affects the range of professional groups in GIM and healthcare more broadly, as they defend or adapt their professional boundaries and roles to these demands.

The other factors that impact successful discharge planning are the patient and their family. The other factors include motivation, attitude, anxiety, psychologists, knowledge, the ability to learn, and their level of education.

Combining with sound patient care and follow-up mechanisms, a discharge-planning service can be complete and effective for patient care. The following studies supported the view. Phillips (2004) said that comprehensive discharge planning plus post-discharge support can reduce medical costs, reduce the rate of re-hospitalization and improve quality of life, but not for all causes of mortality or in relation to all initial lengths of stay for older patients with congestive heart failure by meta-analyzing eighteen studies [4]. The discharge planning intervention in the patients with a percutaneous transluminal coronary angioplasty can increase patient satisfaction and reduce the fourteen day risk of post-discharge readmission, the fourteen days post-discharge risk of emergency treatment, and an increased hospital length of stay [5]. A systematic review showed that telephone-based post-discharge nursing care can decrease the re-admission rate in patients with heart failure [5]. The thematic-analysis of nineteen randomized controlled trials (RCTs) also supported that heart failure management programs with nurse-driven pre-discharge interventions had the potential of reducing hospital re-admission [6].

Except for the objective indicators "post-discharge readmission, post-discharge with an emergency treatment, and the hospital length of stay", the subjective indicator "the satisfaction of patient or caregiver" is also important in the effective assessment of discharge planning. For the caregivers of the home-care clients, the items of dissatisfaction were financial aid (income tax reductions, living cost subsidies, medical expenses, fees for aides and medical devices), services (rehabilitation, nursing consultancy when needed, and transportation) and the information and skills

needed to support caring [7]. Higher levels of patient satisfaction are achieved by offering more nursing teaching, medical transfer and social services [8].

After controlling for the other variables, the adoption of a care plan and the discharge locations were the factors associated with the re-admissions of stroke patients. Increasing home nursing resources to meet the demand for wound nursing care may reduce re-admission [9].

It was also concluded that coaching chronically ill older patients and their caregivers to ensure that their needs are met during care transitions may reduce the rate of subsequent readmission. A Discharge Decision Support System was helpful to use to identify high-risk patients who are recommended for post-acute referral services. This resulted in a reduction in the rate of readmission [10]

The parameters used to evaluate the application of preceptorship were obtained from the questionnaire instruments, checklist observation sheets, and interview sheets. The phenomenon from within many journals indicates that discharge planning in hospitals requires special attention in its implementation. Optimizing the various factors that influence the effectiveness of the application of discharge planning can increase the effectiveness of communication between the nurses and patients and also their family to increase the quality of the health services.

5. Conclusion

Comprehensive discharge planning plus post-discharge support can reduce medical costs, reduce the rate of re-hospitalization and improve quality of life. Discharge planning is a complex activity, particularly in the context of new services offered outside of the hospital like intermediate care, and having a population of increasingly older people who often have extremely complex care needs. Preparation for discharge is a multidisciplinary effort. Nursing staff have the primary responsibility for discharge teaching, which consists of the educational interventions used to prepare the patient and their family members or caregiver with the knowledge and skills needed to assume care as the patient transitions from the hospital to their home.

References

[531] Waring, J., Marshall, F., Bishop, S., Sahota, O., Walker, M., Currie, G. Avery, T. (2014). An ethnographic study of knowledge sharing across the boundaries between care processes, services and organisations: The contributions to ‘safe’ hospital discharge. Health Services and Delivery Research, 2, 1–160. https://doi.org/10.3310/hsdr02290

[532] Gilfillan, C., Newnham, E., Nagappan, R., Evans, J., & Compton, J. (2016). A 7-day team-based model of care in general medicine: Implementation and outcomes at 12 months. Internal Medicine Journal, 46,79–85. https://doi.org/10.1111/imj.12913

[533] Linzer, M., Poplau, S., Babbott, S., Collins, T., Guzman-Corrales, L., Menk, J. Ovington, K. (2016). Worklife and wellness in academic general internal medicine: Results from a

national survey. Journal of General Internal Medicine, 31, 1004–1010. https://doi.org/10.1007/s11606-016-3720-4

[534] Phillips, C. O., Wright, S. M., Kern, D. E., Singa, R. M., Shepperd, S., & Rubin, H. R. (2004).Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure: Ameta-analysis. The Journal of the AmericanMedical Association, 291, 1358–1367.

[535] Tsai, Y. O., Wang, K. Y., Yin, Y. C., & Liao, W. C. (2009). Examining the efficiency of discharge planning of the patients with percutaneous transluminal coronary angioplasty. VGH Nursing, 26, 346–356.

[536] Lambrinou, E., Kalogirou, F., Lamnisos, D., &Sourtzi, P. (2012). Effectiveness of heart failure management programmes with nurse-led discharge planning in reducing readmissions: A systematic review and meta-analysis. International Journal of Nursing Studies, 49, 610–624.

[537] Chiou, C. J., Hsu, S. M., & Wu, S. Z. (2003). Needs of home-care primary caregivers. The Journal of Health Science, 5, 12–25.

[538] Chang, M. H. (2008). Satisfaction and Efficiency of Discharging Planning on Inpatient in Teaching Hospital. (Master's thesis. Retrieved from http://etd.lib.nsysu.edu.tw/ETDdb/ETD-search-c/view_etd?URN=etd-0714108-100717).

[539] Chuang, K., Wu, S., Ma, A., Chen, Y., & Wu, C. (2005). Identifying factors associated with hospital readmissions among stroke patients in Taipei. The Journal of Nursing Research, 13, 117–128.

[540] Bowles, K. H., Hanlon, A., Holland, D., Potashnik, S. L., & Topaz, M. (2014). Impact of discharge planning decision support on time to readmission among older adult medical patients. Professional Case Management, 19, 29–38.

[541] Gonçalves-Bradley, D.C., Lannin, N.A., Clemson, L.M., Cameron, I.D. &Shepperd, S., 2016. Discharge planning from hospital (Review) SUMMARY OF FINDINGS FOR THE MAIN COMPARISON. Cochrane Database Syst Rev, (1), p.74.

[542] J., Gallagher, R. & Bothe, J., 2013. Nurses' discharge planning and risk assessment: Behaviours, understanding and barriers. Journal of Clinical Nursing, 22(15–16), pp.2338–2346.

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THE RELATIONSHIP BETWEEN SPIRITUAL INTELLIGENCE AND LEVEL OF STRESS ON OLDER ADULT

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ABSTRACT

Older adult is those who has each age 60 years. In that period, feeling comfortable will be gained by those who possess a sense of acceptance of their present condition. The aims of this study was to reveal the relationship between spiritual intelligence and the level stress on older adults. This research used Quantitative Descriptive with Cross Sectional approach as research design. The sample of this research was taken by applying Sampling Purposive technique and using inclusive criteria for age, susceptibility, education, will to be a respondent, active speaking Indonesian, good physical health, active religious activities and exclusive criteria. The sample size was 40 respondents. The data were analyzed by Kendall Tau test. The instruments of this research was Spiritual Intelligence Self Report Inventory (SISRI) and questionnaire Depression Anxiety Stress Scale (DASS). The result of Kendall Tau correlation test 0,000 ($p<0.05$), which means that there was a relationship of Spiritual Intelligence with Level of Stress by Elderly. It is found that there was a relationship of spiritual intellegence towards the level of stress for Elderly. The high level of spiritual intelligence will reduce stress levels in older adult.

Keywords: spiritual intelligence, level of stress, elderly

1. Introduction

According to the Republic of Indonesia No.12 of 1998, an older adult (elderly) is someone who has reached an age that is above 60 years old. The WHO data also estimates that 75% of the world's elderly population in 2025 is in developing countries. The results of the 2010 population census showed that Indonesia is among the top 5 countries with the largest number of elderly population in the world.

One of the ways to increase stress immunity is religion. Someone who is religious should not just be more formal, but they should be someone who is more capable of living and practicing his religious beliefs, so he gains strength and calm from him. A religious activity that is associated with decreasing the return of stress is a psycho-religious approach. For the followers of religion (Islam), this can be done by carrying out the obligatory prayer 5 times, coupled with the evening prayer (tahajud) accompanied by prayer and dhikr[1]

The results of a preliminary study conducted in the congregation of Asem Legi Sragen Islamic Boarding School on December 21st, 2015 were gained by interviewing 10 elderly people in Asem Legi Islamic Boarding School Sragen. From the interviews with the 10 elderly individuals, data was obtained; 9 elderly said, "*I could not sleep when this problem I faced*." 5 elderly people said, "*I was easily angry because of small and trivial things after getting into a problem that I told*." 4 elderly

people said, "*I feel sad about what happened to me*." 4 elderly people said, "*I feel embarrassed because of the incident*. "3 elderly people said, "*I feel suspicious and easily offended by other people. I feel they are talking about me*." And 2 elderly people said, "*I am afraid to face people and meet many people because of my shame*. " The data is related to the feelings of the elderly when the problem first arises. The symptoms of stress experienced by the elderly are being unable to sleep, and feeling anxious, suspicious, irritable, and afraid.

After facilitating the interviews related to the problems faced by the elderly, the author gave an interview related to the spirituality that the elderly worked on, especially praying, remembrance and acceptance of God Almighty. From the results of the interviews, data was obtained; 10 elderly said to the effect of, "*I diligently prayed 5 times. I diligently took part in the recitation at AsemLegi Islamic Boarding School. I feel comfortable with dhikr and praying which makes me feel close to Allah SWT.* Then, 9 elderly people said,"*I began to accept the problems I faced*." 6 elderly people said," *I started self-introspection after experiencing the problem.* "10 elderly people said, "*Maybe this is a trial from God to his servant*." 4 elderly said, "*This is a warning that God gave me*." 2 elderly people said, "*I began to be careful in acting*." 8 elderly people said, "*God will test his servant to adding to goodness*. Finally, 9 elderly said that," *By praying, praying and dhikr is my strength in facing problems and being more patient*.

The elderly are vulnerable to psychiatric disorders and tend to experience stress. This is in accordance with the theory of [2**],** in that the problem that commonly occurs in the elderly in psychological aspects is stress. Based on [3]'s theory, it was stated that religious approaches can increase immunity to stress.

Based on the above background, the researcher was interested in researching further with the title "The Relationship of Spiritual Intelligence with Stress Level in the Elderly in the Congregation of Asem Legi Sragen Islamic Boarding School."

2. Material and methods

2.1 Research design, population, sample, and variables

The design was quantitative descriptive with a cross-sectional design. The population in the study were the subjects (for example, humans, also known as clients) who met the criteria that had been set [4]**.** The population in this research were all of elderly who were worshipers in Asem Legi Islamic Boarding School. The sample obtained 40 respondents through purposive sampling. This research was conducted at Asem Legi Islamic Boarding School of Sragen in Central Java in January 2016. The inclusion criteria in this research was as follows: 1) Elderly aged 60 years – 70 years, 2) Elderly whose last level of education was junior high school – senior high school, 3) Elderly who could communicate in the Indonesian language active and fluently, 4) Elderly were routinely attending religious activities and 5) Healthy. The exclusion criteria were 1) Elderly were hospitalized, 2) Elderl was travelling and 3) the elderly has a chronic disease. The independent variable was spiritual intelligence and the dependent variable was the level of stress.

2.2 Instruments

Spiritual intelligence was measured using a questionnaire whose name was SISRI. SISRI consisted of information about *Critical Existential Thinking*, *Personal Meaning Production*, *Transcendental Awareness* and *Conscious State Expansion* as written by [5] which was modified by [6] and

translated into the Indonesian language. The number of questions totaled 24 to be answered using a Likert scale. This questionnaire was tested for validity and reability with a Cronbach's alpha level of 0.92. The instrument for level of stress was the DASS questionnaire by [7], modified by [8] and translate into the Indonesian language. The number of questions totaled 42 items to be answered using a Likert scale with a score of low 0-14, middle 15-28 and high 29-42. The questionnaire was tested for validity and reability with a Cronbach's alpha result of 0.91.

2.3 Research procedures and analysis

This research was conducted in Asem Legi Islamic Boarding School to find out the correlation level of stress and spiritual intelligence in the elderly. The first study in this research was carried out by conducting a preliminary study. The second time around, the researchers interviewed the elderly. Third, the questionnaires were distributed to measure spiritual intelligence and the level of stress in the elderly. The data was analyzed using SPSS and Kendal Tau with an alpha of 0.05.

3. Result

The characteristics of the respondents in [Table 1] showed that all of the respondents were elderly and that the majority were female. The majority of the respondents had their last level of education as being senior high school. All of the respondents were staying in Asem Legi Islamic Boarding School and they routinely attend religious activities. During the interview session, the eldery shared about the changes when they routinely attended the religious activities (dzikr, prayer, khutbah). There is deep tranquility that you can use to control the stressful thoughts that are felt by getting closer to Allah.

The majority of the respondents in the Asem Legi Islamic Boarding School who were respondents in this study were 60 - 65 years old. Those in the vulnerable criteria totaled 24 people or 60%, while those aged 66 - 70 years who were vulnerable totaled 16 people or 40%. Those who were male made up as many as 19 people or 47.5%, while the female sex made up as many as 21 people or 52.5%. Furthermore, the criteria for junior high school education was so for as many as 17 people or 42.5%, while high school education totaled 23 people or 57.5% [Table 1]. The distribution of the elderly spiritual intelligent as in [Table 2] showed that the respondents have a low spiritual intelligence level of 10% or as many as 4 people, moderate spiritual intelligence of 77.5% or as many as 31 people, and high spiritual intelligence of 12.5% or 5 people. The distribution of the elderly level of Stress on [Table 3] showed that the majority of respondents have low stress levels of 100% or 40 people.

The result of the analysis of spiritual intelligence and level of stress using the Kendal Tau test as in [Tabel 4] showed that the result was significant $0.000 < 0.05$. It can be concluded that there is a significant correlation between the variables. The correlation coefficient was -.467*, so the value (-) of the correlation coefficient explains that the variables are contras. When the spiritual intelligence is high, then the stress level will be low. If the spiritual intelligence is low, then the level of stress will be high.

4. Disscusion

The spiritual intelligence of the elderly in the congregation of Asem Legi Islamic Boarding School in the high category totaled 5 elderly (12.5%), the moderate category totaled 31 elderly (77.5%) and the low category totaled 4 elderly (10%). This means that the spiritual intelligence of

the majority of the elderly was of a high and moderate condition. The spiritual intelligence of the majority of the elderly was high and medium because religious activities were carried out in Asem Legi Islamic Boarding School. The elderly approach God Almighty and strengthen themselves in worship such as through prayer, dzikir, and listening to da'wah.

The results of the research by [9] providing cognitive behavioral therapy that leads to spirituality. He stated in his journal that cognitive behavioral therapy can improve spiritual well-being; it would help the elderly to accept their sadness and emotional depletion when the elderly were in mourning. [10] said that the relationship between spirituality and old age occurs through the capacity to bear the limitations, difficulties and disadvantages that are inherent in the process. The nature of living a spiritual life is observed to be heterogeneous, while all have the same recognition of the importance of living in old age with a good quality of life.

[11] said that if there was a basic intervention in terms of security for the elderly in the nursing home, then there would be a difference. It can be seen from the depressive symptoms that there shoud be an increase in the quality of life of the elderly who are in a nursing home. In this study, the intervention given was a recital of Al Quran and a sermon.

The level of stress in the elderly in the congregation of the majority of AsemLegi Islamic Boarding School was in the low category, which totaled 40 elderly (100%). The stress level of the elderly is low due to a sense of acceptance and being able to adjust to the changes that they are experiencing with a positive attitude. Besides that, judging from the characteristics of education, it supports the mindset of the elderly who are able to choose better coping methods when solving their problems.

[12] conducted a study stating that the one in two parents experience at least one mental disorder during their lifetime. [13] said that the elderly generally experience anxiety which can lead to depression. The conclusions in his study indicate that there is a higher prevalence of anxiety and somatic symptoms in Indonesia than in the elderly among Indians.

The research conducted related to stress levels in the elderly with a low majority is in line with the research conducted by [14], which states that elderly parents have low and moderate stress levels because the elderly make the health problems or changes in their physical condition or problems in the family as a pressure on their life and thus this can interfere with their level of independence.

5. Conclusion

The elderly in AsemLegi Islamic Boarding School did regular religious activities during the religious process resulting in the elderly feeling happy. The elderly felt that they didn't have it as tough as before. The elderly had a feeling of surrendering to Allah and believing that their life is arranged by Allah. The elderly executed dhikr, prayer and listened to dakwah. They were patient and tolerant. Stress in life that is not balanced with spirituality will have a negative impact on the elderly. When the elderly have high spiritual trust in Allah, then their stress will decrease.

6. Tables

Table 1. Characteristics of the respondents

haracteristic	n	%
ge		
1. 60-65years	1	)

2. 66-70years	16	40
ex		
1. Male	19	47.5
2. Female	21	52.5
ducation		
Junior High School	17	42.5
Senior High School	23	57.5

Table 2. Distribution of Elderly Spiritual Intelligence

Categori	n	%
High	5	12,5
Medium	31	77,5
Low	4	10

Table 3. Distribution of the Elderly Level of Stress

Categori	n	%
High	0	0
Medium	0	0
Low	40	100

Table 4. Distribution correlation of the Elderly Spiritual Intelligence and Level of Stress

Correlation test	Coefficient correlation value	Signifivicant value
Kendall Tau	-.467**	0.000

*p < 0.05 (*Kendall Tau*)

References

[543] Hawari. Management Stress Cemas dan Depresi. :FK UI.

[544] Darmojo, R.B., Martono HH. No Title. Jakarta: Balai Penerbit FKUI. 2004;(Buku Ajar Geriatri.).

[545] Nursalam. No Title. Salemba Med. 2017;Edisi 4(Pendekatan Praktis Metodelogi Penelitian Ilmu Keperawatan.).

[546] King. No Title. 2008;Trent Univ:Canada.

[547] Khotimah SN. No Title. HUBUNGANKECERDASAN Spirit DENGAN Oton Prof PERAWAT DI RUANG RAWAT Ina RUMAH SAKIT AL Islam BANDUNG. 2014;(Skripsi):Universitas padjajatan.

[548] Lovibond PF. Pergamon THE STRUCTURE OF NEGATIVE EMOTIONAL STATES : SCALES (DASS) WITH THE BECK DEPRESSION AND. Behav Res Ther. 1995;33(3):335–43.

[549] Evelina Damanik. Damanik Indonesian translation - Reliability. 2006. p. 1–9.

[550] Khashab AS, Kivi HG, Fathi D. Effectiveness of cognitive behavioral therapy on spiritual well-being and emotional intelligence of the elderly mourners. Iran J Psychiatry. 2017;12(2):93–9.

[551] Chaves LJ, Gil CA. No Title.

[552] Press D. The effect of religious intervention on depressive symptoms and quality of life among Indonesian elderly in nursing homes : A quasi-experimental study. 2018;473–83.

[553] Andreas S, Schulz H, Volkert J, Dehoust M, Sehner S, Suling A, et al. Prevalence of mental disorders in elderly people: The European MentDis-ICF65+ study. Br J Psychiatry. 2017;210(2):125–31.

[554] Grover S, Sahoo S, Chakrabarti S, Avasthi A. Anxiety and somatic symptoms among elderly patients with depression. Asian J Psychiatr [Internet]. 2019;41:66–72. Available from: https://doi.org/10.1016/j.ajp.2018.07.009

[555] Salim CH. No Titleتخراج اسد فوق اي فراندس با هروغني ا زل با يوديد با. 2015;3.

PHP-659

THE ROLE OF GOOD WORK ENVIRONMENT TO DECREASE BURNOUT SYNDROME: A SYSTEMATIC REVIEW

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ABSTRACT

Nurse are the largest component of health care who have the important role. Stressor in nursing profession sometime make them fatigue until they falls in burnout condition. Burnout syndrome is the effect due to the fatigue of work both physically and mentall. Required actions or policies to lower the burnout syndrome in nurse because it can impact in health care quality. Environment is an important aspect in organization to make a good work performance. Important to make sure that is an organization have a good environment. This paper present a systematic review that examined the role of work good environment for decreasing employee's burnout syndrome. The database namely Scopus, SAGE, Proquest, Science Direct, PubMed were accesed to get relevant study with keyword good work environment, burnout syndrome, nursing workload. This search identified 15 relevant research article published between 2014-2019. The Result showed that good work environment have an important role to decrease burnout syndrome in nursing profession. Eight for 15 article said that good environment plays a important role to decrease burnout syndrome. Good work environment make nurse comfort and enjoy to do there job so it can make reduce statistic of burnout syndrome in nursing profession.

Keywords: good work environment, burnout syndrome, nursing workload

1. Introduction

Nursing is one profession that is not easy to do. Nurses seem to be especially vulnerable to stress and burnout because they often work in a particularly stressful environment that it is related with people's lives and safety[1]. In a study focused on nurses from nine countries, it showed that 33% to 60% of nurses reported a high level of burnout syndrome. Thailand had reported the highest level of burnout syndrome at 41% out of all nurses in Thailand. A study in Shanghai, China, showed that 527 nurses from 41 hospitals reported high emotional exhaustion, moderate depersonalization and low reduced personal accomplishment. The magnitude of this workload could grow when not supported by the working environment, health institutions and where the wage policies add to the problem. The burden must be shouldered by a nurse that has a good coping system, otherwise burnout syndrome will happen[2][3].

Burnout syndrome is conceptualized as the feeling of emotional exhaustion, depersonalization and reduced personal accomplishment that can occur among individuals who work with people in some environments or organizations[4]. High levels of stress in a nurse can be caused by an exhausting work routine, the number of patients who have to be serviced and pressure from their manager who

sometimes adds to the burden that causes the declining performance of the nurses. The nurse's role is very important in primary health care services in the hospital, where a nurse must be able to adapt quickly to high pressure, and they should not be confused when providing services[5].

The consequences that can arising from burnout in the nursing field are very diverse, including emotional exhaustion, depersonalization and a loss of the personal accomplishment[6]. Practically, this can be seen in everyday nursing practices. One example is the length of working hours (shift) that a nurse has to handle as well as a large number of patients. The longer the working hours of the nurses, then the risk of the occurrence of an error or accident the work will grow. One of the studies showed the impact of burnout on family conflicts which, when elaborated on further, shows that the conflict caused by the dimensions of time, stress and changes in behavior[7]. Therefore, there needs to be action or regulation to minimize the occurrence of burnout.

Almost one-third of our lives is spent in the workplace, where much of our interactions with other people can make for a stressful situation[8]. Stress is defined as a relationship or transaction in terms of adaptation and the interactions between a person and the setting or environment that can place a burden on individual well-being and lead to psychological disorders, unhealthy conducts and ultimately, disease [9]. The nursing work environment has been studied for decades. The existing research confirms that a safe, positive work environment is related to improved patient outcomes, staff satisfaction and retention[10]. A safe work environment for a nurse is characterized by, among other factors, good professional relations, a supportive management style, a balanced work schedule, concordance between the nurses' increased workload and the nurses' skill-mix, adequate enough time to meet the patient's needs, professional autonomy, adequacy of the resources and opportunities for professional advancement.[11]

In several studies, it has been reported that a positive work environment is associated with fewer occupational injuries, less burnout and increased job satisfaction. On the other hand, a negative nurse work environment may lead to poor patient outcomes, such as increased mortality and complications and increased healthcare costs.[12]

2. Research Methods

2.1 Search Strategies

The writer in this study chose burnout syndrome as the topic. Factually, this specific condition is an unsolved problem in the management of nursing studies up until now. Furthermore, we determined some of the keywords to make easy to find the literature we were looking for. The keywords were: good work environment, burnout syndrome and nursing workload. Qualified international journals were involved to provide some of the information, including Scopus, Science Direct, Elsevier, Proquest, Pubmed and SAGE. The studies focused on were those published between 2014 and 2019 on the topic of nursing management as the limitations.

2.2 Selection Criteria

The inclusion criteria of the article that we chose in the systematic review were as follows: 1) international journals in which the studies were published in English, 2) studies on the effect of a good work environment on nursing burnout syndrome, 3) the subject of the study was nurses and health workers and 4) The location of the studies was in a hospital.

2.3 Data Extraction

In the next activity, we explored 1034 articles and decide to deeply explore 15 articles according to the inclusion criteria. They had to be studies published in English, research studies (prospective, cross-sectional, systematic review and meta-analysis) and studies that wrote about nursing burnout syndrome and the effect of a good work environment on burnout syndrome.

3. Results

In total, 1034 articles were found from searching the literature, of which 935 articles were excluded after we reviewed the title. Following the review of the abstract, a further 66 articles were excluded. Then we reviewed the full text of the articles. Finally we choose 15 articles according our inclusion criteria. A further 15 articles were included after we reviewed their full text. This systematic review included two descriptive correlational studies, one systematic review, one meta-analysis study and six cross-sectional studies.

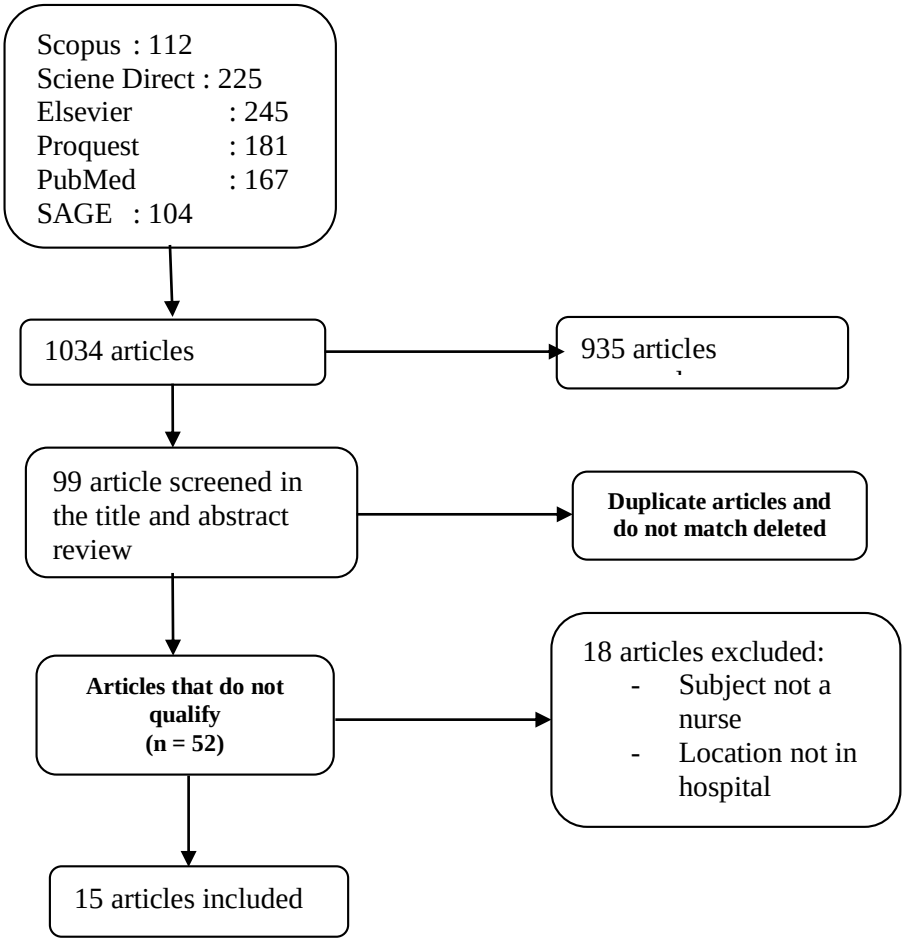

Figure 1. Flow chart of the literature search process

Title, Author, Year	Study Design	Sample	Measurement/Instrument	Reliability Cronbach's	Validity	Analysis
Nursing unit teams matter: Impact of unit-level nurse practice environment, nurse work characteristic, and burnout on nurse reported job outcomes, and quality of care, and patient adverse events-A cross-sectional survey (Peter Van Bogaert, Olaf Timmermans, Susan Mace Weeks, Danny van Heusden, Kristien Wouters, Erik Franck, 2014)	Cross-sectional design with survey	1108 nurse assigned to 96 nursing units	The Nursing Work Index Revised (NWI-R), adapted for our samples, tapped into three dimensions of nurse-physician relations (3 items), nursing management at the unit level (13 items), and hospital management and organizational support (15 items)	Cronbach's alpha of 0.05	Cronbach's alpha	Descriptive statistics and intra-class correlation coefficient (ICC)
Burnout syndrome and demotivation among health care personnel. Managing stressful situation: The Important of teamwork (J.Garda-Campanyo, M. Puebla-Guedea, P. Herrera-Mercadal, E. Dauden, 2016)	Descriptive analytical study	Data was collected by survey focused on the condition of quality of life at work in the European union	To measure burnout syndrome, this article used Maslach's Burnout Inventory (MBI)	Not Reported	Nor Reported	Not Reported
The association of the Chinese hospital work environment with nurse burnout, job satisfaction, and intention to leave (Li-feng Zhang, phD, 2014)	Retrospective secondary analysis	The study was conducted on 9698 nurses in 181 hospitals in China	The intervention provided was by providing a questionnaire where instrument fatigue nurses were measured using the Maslach Burnout Inventory (MBI), while nurse satisfaction was	Cronbach's alpha of 0.05	Not Reported	Chi-square test was performed to examine the percentage difference of high

			measured using nine questionnaire items with 4 point Likert-type scales (1 = very satisfied, 2 = satisfied, 3 = slightly disappointed, 4 = very disappointed)			burnout, job dissatisfaction, and intention to leave inn hospital with poor, mixed, and good work environment, then logistic regression models were performed to estimate the influence of hospital work environment on nurse burnout
Burnout among nursing professionals in tertiary care hospitals in Delhi (Yashika Negi, Rajni Bagga, 2015)	Descriptive study	A total of 200 staff nurses from two randomly selected hospital in New Delhi	Questionnaire. To measure burnout syndrome, this article used the Maslach Burnout Inventory (MBI)	Reliability test was performed on the five constructs using Cronbach's alpha values, and the values were 0,05	The validity test was performed using an independent t-test and one-way analysis of variance (ANOVA)	The data was analyzed using the statistical package for social science (SPSS) version 17
An examination of the correlation between the nurses' organizational trust and burnout levels (GonulOzgur, Pinar Tektas, 2018)	Descriptive and relational study	This study used 155 nurses as the sample who accepted to participate in the study and who had been working in the	Data collection was conducted by two questionnaires; the Organizational Trust Scale (OTS) and the Maslach Burnout Inventory (MBI)	Cronbach's alpha of 0.05	Not reported	ANOVA, t-test, Pearson correlation coefficient, and Poisson regression via SPSS 20.

		institution for at least 1 year				
Practical environment scale of the nursing work index: a reliability generalization Meta-Analysis	Meta-Analysis	This study used 157 articles which were independently reviewed by the primary and secondary authors of the meta-analysis	Questionnaire survey about healthy work environment using the Practice Environment Scale of the nursing work index (PES-NWI)	Cronbach's alpha ranged from 0.904 to 0.936	Not knowing	The comprehensive Meta-analysis version 2.0 (Borentein, Hedges, Higgins, & Rothstein, 2005)
Relationship between authentic leadership and nurse intent to leave: The mediating role of work environment and burnout (Huan-Fang Lee, Hui-Yin Chiang, Hui Ting Kuo, 2017)	Quantitative research method - cross sectional	The total respondents were selected purposely from among 946 nurse from three different levels of hospital (medical center, regional, district)	The Authentic Leadership Questionnaire (ALQ) was used to measure the nurse's perception of their leaders' authentic leadership and the Practical Environment Scale of the Nursing Work Index (PES-NWI) was used to examine the nurse's perception of the environment in the hospital-based setting	Cronbach's alpha scores were 0.96 overall. 0.91 for self-awareness, o.90 for relational transparency, 0.85 for internalized moral perspective and 0.87 for balance processing	The indicator of validity was CFA, which resulted in 0.97 for CFI and 0.06 for the standardized root mean square residual (SRMR)	Descriptive statistic, correlation, and tests of reliability were conducted using SPSS (IBM, 2014a), chi-square and t-test were used to compare differences between junior and senior group
Psychological work environment and suicidal ideation among nurse in Taiwan (Wei-shan chin, Yi-chuan chen, 2018)	Quantitative research method - cross sectional	The total number of respondents were selected purposely among 2734 eligible questionnaire were returned	The Practical Environment Scale of the Nursing Work Index (PES-NWI) was used to examine the nurse's perception of the environment in the hospital-based setting. Maslach's burnout inventory (MBI) was used for measuring burnout syndrome	Not reported	Not reported	Descriptive statistic, logistic regression was used to examine the association between the covariates and suicidal ideation

Effect of work environment on patient and nurse outcomes (panagiota copanitsanou, Nikolaos fotos, hero brokaki, 2017)	Systematic Review	10 articles that contain information about the work environment and the effect of the outcome	Using PRISMA and including criteria for determining the articles	Not reported	Not reported	Not reported
Job Stress and burnout syndrome among critical care health care workers (Noha Selim Mohamed Elshaer, 2017)	Cross-sectional study	The 82 nurses and healthcare who practice in critical care room were selected Using simple random sampling	Data was collected by an interview questionnaire using selected subscales of the NIOSH Generic Job Stress Questionnaire and the Maslach Burnout Inventory of Health and Human Services Questionnaire	Not reported	Not Reported	The collected data was analyzed using STATA statistical software-version 14
Does the nurses' self-concept mediate the relationship between job satisfaction and burnout among Nigerian nurses (Chidozie E.Nwafor, Euckie U Immanel, Harry Obi-Nwonsu, 2015)	Cross-sectional study	The study was conducted on 170 nurses in 2 health care facilities in Nigeria, where the respondents were nurses in the morning and evening shifts who have 22-50 years old, consisting of 160 female nurses and 10 male nurses	The measurement of self concept used the Nurses' general self-concept (NGSF) which is an instrument developed by Corwin (2000). The questionnaire consists of 6 items and it is arranged into points 1-8, while nurse fatigue was measured using the Maslach Burnout Inventory Human Services Survey (MBI) instrument. -HSS) consisting of 22 items used to measured 3 components of burnout	Not reported	Not reported	Statistical analysis of the data was done using the SPSS software (version 19) and the Pearson r correlation
The Effect of Emotional Intelligence on Burnout in Healthcare Professionals (Laura-Elena,	Cross-sectional research study	The study was conducted on 120 male and female doctors and nurses in	The intervention provided is by providing a questionnaire, where workload and fatigue are measured using the Maslach burnout inventory (MBI),	Not reported	Not Reported	Analyzed by SPSS 11.5 using descriptive statistics;

Anca Daniela, 2015)		Romania who have 26-52 years old	whereas emotional intelligence was measured using the emotional intelligence scale (EIS)			
Effect of personal and work stress on burnout, job satisfaction and general health of hospital nurses in South Africa (Natasha Khamisa, Karl Peltzer, Dragan Ilic, Brian Oldenburg, 2017)	Cross sectional study design	The study was conducted on 895 nurses from 1200 nurses in southern Africa's hospital, where participants comprised 46% black nurses, 85% female nurses, 59% nurses private hospital, 28% nurses aged over 50 years, 72% nurses with diploma diplomas and 27% nurses with experience more than 25 years	Participants were given 6 questionnaires consisting of the Socio-Demographic Questionnaire (SDQ), Chronic Burden Scale (CBS), Nursing Stress Inventory (NSI), Maslach Burnout Inventory-Human Services Survey (MBI-HSS), Job Satisfaction Survey (JSS), and General Health Questionnaire (GHQ-28	Not Reported	Not Reported	SPSS Statistic version 20 which included hierarchic al multiple linear regression
Moral distress and its contribution to the development of burnout syndrome among critical care providers (Renata Rego, Gustavo Adolpho, Andrela de Fatima and Jose Mauro Vieira, 2017)	Cross-sectional study	The study was conducted on 289 out of 389 care providers in the Intensive Care Unit (ICU) and Step Down Unit (SDU) rooms attended by a care team consisting	Interventions were carried out by giving a questionnaire where the measurement of work fatigue data was done using the Maslach Burnout Inventory (MBI) instrument, and the Moral Distress measurements were taken using the Moral Distress Scale-Revised (MDS-R)	Not reported	Not reported	Descriptiv e analysis was performed using mean and SD to compare the variables with a Chi-square test, student t-test, and

		of nurses, doctors and respiratory therapists				Wilcoxon rank-sum test
Structural empowerment, job stress and burnout of nurses in China (JiajiaGuo, MD, Juan Chen MD, Jie Fu MD, Xinling Ge MD, Min Chen MD, Yanhui Liu phD, 2015)	Descriptive and Inferential Research	Sample as many as 1080, but a number of nursing questionnaire that returns a 1002. Samples taken from a tertiary hospital in Beijing, Tianjin, Shanghai, Hangzhou, Changsha, Chongqing of China	Structural Empowerment is measured using Conditions for Work Effectiveness-II (CWEQ-II), Burnout syndrome measured by Maslach's Burnout Inventory	Not reported	Not reported	SPSS 17.0 was used to conduct descriptive and inferential statistic analyses. Structural equation modeling (SEM) AMOS 7.0 statistical program was used to analyze the hypothesized model

4. Discussion

This systematic review looked at the existing studies referring to the effect of a good work environment on decreasing burnout syndrome and increasing the quality of the nursing service. The systematic review showed that there is a positive effect gained from a good work environment from the fifteen articles that met the inclusion criteria from the literature search. A good work environment for nurses is not just meaning good available materials and a clean workplace, but it is characterized by other factors like good professional relations, a supportive management style, a balanced work schedule, and fewer occupational injuries, adequate time to meet their patients, adequate resources and opportunities for professional advancement. Other research said that a good work environment includes adequate resources, good colleagues, and relationship and management support. Another study said that a better work environment was associated with lower burnout, higher job satisfaction and less intention to leave[7].

Almost a third of our lives are spent in the workplace, so it is very important to make sure that our working environment can make the employee feel comfort and enjoy working there, especially in a health worker environment that involves high pressure in the job. The health workers are faced with people with varied problems and from different culture. In a health worker and especially in a nursing environment, we demand a place to be able to concentrate and perform with consistency. This is because patient safety and people lives are at stake, but sometimes the high work burden in the nursing environment puts the nurses at risk of burnout syndrome. This can cause the nurses to lose concentration, become angry at the patient and experience depersonalization which can effect patient safety, so it is important to research and study the literature to know how the relationship between a good work environment and burnout syndrome in nurses works[11]

The purpose of this systematic review was to analyze the studies in which the effects of the nurse

work environment on the nursing burnout and nursing job satisfaction. The majority of our literature showed that nurses who work in a good working environment can enjoy and show good performance. There are three major points that can explain what a good work environment is: 1) physical good work environment, 2) good teamwork and relations and 3) good culture and management. It is important to make sure that the workplace can make an employee enjoy their work and feel comfort annually every time they are there, because almost third of their time is spent in a workplace of one sort or another. The items that are included in a physically good work environment include a clean room, good materials available and a machine in room[1]. Interactions with other people in the same place over a long time can make for stressful conditions if the relationship that the nurse has with other people is not good. Communication and teamwork are the best way to make sure that we can adapt and spent our time positively in the workplace[13]. The management maintains all of the policies in an organization. Their decisions determine the culture and purpose of the organization. Good management can make all of those in the organization, especially the work environment, increase employee performance and decrease burnout syndrome[14].

5. Conclusion

The results show that a good work environment means that the nurses enjoy their job and find comfort in their workplace. They have the desire to grow and learn, and to work more professionally in improving the quality of nursing care. Of the fifteen articles reviewed, all showed positive results that a good work environment can improve service quality and decrease burnout syndrome. A supportive environment for the nurse, good teamwork with other nurses and motivation from the management can make increase the work motivation and performance, which impacts on job satisfaction, and decreases resilience and burnout syndrome in the nurse and the working environment. This is so then patient safety and patient satisfaction can be materialized.

References

[556] Zhang L feng, You L ming, Liu K, Zheng J, Fang J bo, Lu M min, Lv A li, Ma W guang, Wang J, Wang S hong, Wu X, Zhu X wen and Bu X qing 2014 The association of Chinese hospital work environment with nurse burnout, job satisfaction, and intention to leave *Nurs. Outlook***62** 128–37

[557] Fumis R R L, Junqueira Amarante G A, de Fátima Nascimento A and Vieira Junior J M 2017 Moral distress and its contribution to the development of burnout syndrome among critical care providers *Ann. Intensive Care***7** 1–8

[558] Năstasă L-E and Fărcaş A D 2015 The Effect of Emotional Intelligence on Burnout in Healthcare Professionals *Procedia - Soc. Behav. Sci.***187** 78–82

[559] Elshaer N S M, Moustafa M S A, Aiad M W and Ramadan M I E 2018 Job Stress and Burnout Syndrome among Critical Care Healthcare Workers *Alexandria J. Med.***54** 273–7

[560] Nwafor C E, Immanel E U and Obi-Nwosu H 2015 Does nurses' self-concept mediate the relationship between job satisfaction and burnout among Nigerian nurses *Int. J. Africa Nurs. Sci.***3** 71–5

[561] Guo J, Chen J, Fu J, Ge X, Chen M and Liu Y 2016 Structural empowerment, job stress and burnout of nurses in China *Appl. Nurs. Res.***31** 41–5

[562] Lee H F, Chiang H Y and Kuo H T 2019 Relationship between authentic leadership and nurses' intent to leave: The mediating role of work environment and burnout *J. Nurs. Manag.***27** 52–65

[563] Copanitsanou P, Fotos N and Brokalaki H 2017 Effects of work environment on patient and nurse outcomes *Br. J. Nurs.***26** 172–6

[564] Chin W S, Chen Y C, Ho J J, Cheng N Y, Wu H C and Shiao J S C 2019 Psychological Work Environment and Suicidal Ideation Among Nurses in Taiwan *J. Nurs. Scholarsh.***51** 106–13

[565] Zangaro G A and Jones K 2019 Practice Environment Scale of the Nursing Work Index: A Reliability Generalization Meta-Analysis *West. J. Nurs. Res.*

[566] J. G-C, M. P-G, P. H-M and E. D 2016 Burnout syndrome and demotivation among health care personnel. Managing stressful situations: The importance of teamwork *Actas Dermosifiliogr.***107** 400–6

[567] Khamisa N, Peltzer K, Ilic D and Oldenburg B 2017 Effect of personal and work stress on burnout, job satisfaction and general health of hospital nurses in South Africa *Heal. SA Gesondheid***22** 252–8
[568] Özgür G and Tektaş P 2018 An examination of the correlation between nurses' organizational trust and burnout levels *Appl. Nurs. Res.***43** 93–7
[569] Van Bogaert P, Timmermans O, Weeks S M, van Heusden D, Wouters K and Franck E 2014 Nursing unit teams matter: Impact of unit-level nurse practice environment, nurse work characteristics, and burnout on nurse reported job outcomes, and quality of care, and patient adverse events-A cross-sectional survey *Int. J. Nurs. Stud.***51** 1123–34

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EXCLUSIVE BREASTFEEDING AFFECTS THE BEHAVIOR OF PICKY EATER IN PRESCHOOL CHILDREN

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ABSTRACT

Picky Eater is characterized by a little eating behavior, choosing the preferred food, reducing the amount of food, and worried to try other foods. The aim was to determine the factors associated of picky eater behavior in preschool children. Research with cross-sectional design. Sample obtained 132 mothers of preschool children with simple random sampling. Independent variable were interaction when eating, mother's eating behavior, complementary food, history of exclusive breastfeeding and birth weight while dependent variable was picky eater behavior. Data were analyzed by chi-square and regression logistic. The results were obtained that the history of exclusive breastfeeding (p=0.001; OR=3.149) was the most influential factor with picky eater behavior in preschool children. Interaction when eating, mother's eating behavior, and complementary food were other factors that influenced picky eater behavior. Parents need to pay attention to the behavior of picky eater in children seriously, because the worst things caused disruption of growth and development in children due to lack of adequate nutritional intake. Parents can stimulate by make interesting food and teach to eat good food through direct examples, because children will imitate what parents do.

Keywords: picky eater; preschool; feeding practice

1. Introduction

Feeding that is of a good quality and amount can promote the optimal growth and development of children. Nevertheless, children in the growth and development period are not always fed perfectly. Problems often arise mostly in improper feeding. Improper feeding can affect many organs and systems in the child's body [1]. In various studies, the parents often find this behavior difficult to manage and by the time that the children reach 3 years of age, a proportion of the children start from 6% up to 50% of what they should be [2].

Picky eating can be a serious health problem when the child is growing. Picky eating usually indicates having strong food preferences, consuming an inadequate variety of foods, restricting the intake of some food groups, eating a limited amount of food or being worried to try other foods[3]. In other hand, picky eaters are very selective at choosing their food [4].

The prevalence of picky eaters in the Netherlands in a study population of 4018 children was 26% for children aged 18 months, 27.6% for those aged 3 years and 13.2% for those aged 6 years [5]. Another study stated that the results of study with 120 children between 2 to 11 years old showed that between 13% - 22% of the children were picky eaters [6]. In China, 937 healthy children aged 3-7 years old were approved as being picky eaters, making up to 54% in preschool [7]. Picky eating occurs at 2.5 to 4.5 years of age and there is twice the risk of children aged 4.5 years old of

experiencing a lack of normal weight compared to children who are not picky eaters [8]. The prevalence of experiencing eating difficulties in children in Indonesia who were aged under five years old was 23.9%, of which 45.5% among them were picky eaters [9].

Picky eating behavior in children can cause stress in the family which can worsen the relations between children with a family and the food itself [9]. Picky eaters also had poor weight gain, a lower intake of a variety of foods, a lack of important nutrients, and even failure and delays in their growth and development [10]. The possible cause of picky eating is a reduced duration of breast-feeding and a late introduction to complementary feeding have been shown to predict it [11]. Picky eating can cause parental practices related to feeding that include pressuring a child to eat more than they want to and using food as a reward [12]. However, the research on picky eating has still not been widely done.

2. Research Methods

2.1 Research design, population and samples, and variables

This study was correlational with a cross-sectional approach. The population in this study was all of the mothers of the preschool children at Ittifaqiah Kindegarten Indralaya, which totaled 198 respondents. With the inclusion and exclusion criteria applied, we obtained 132 respondents. The inclusion criteria in this study included 1) the mothers of children aged between 3 - 6 years old, 2) good communication, 3) the mother willing to be a respondent and 4) healthy children. The exclusion criteria included 1) mothers with mental disorders, 2) mothers who cannot read or write and 3) mothers who were not cooperative during the research process (refused to be a respondent in the middle of the research process). The sampling technique used in this study used simple random sampling. The independent variables were interactions when eating, the mother's eating behavior, a history of complementary food, a history of exclusive breastfeeding and birth weight. The dependent variable was picky eating behavior.

2.2 Instruments

The picky eater questionnaire in this study was modified by [13].The questionnaire consist of 18 items statement. Each item was scored from a minimum of 1 and up to a maximum of 5. The statement was assessed using a Likert scale with a value of 1 (never), 2 (rare, 1-2 times/week), 3 (sometimes, 3-4 times/week), 4 (often, 5-6 times/week), 5 (always, every day).The results of the validity and reliability test of the picky eater questionnaire shown that 17 statements were declared valid and reliable with Cronbach's alpha values of 0.795 but 1 statement was not valid. The researcher tested for reliability and validity in Al Kautsar Kindegarten, and all of the items were found to be valid and reliable.

Interactions when eating were measured by a modified version of the Child Feeding Questionnaire (CFQ) [14]. This instrument consisted of 30 items. Each item was assessed using a Likert scale with a value of 1 (never), 2 (rare, 1-2 times/week), 3 (sometimes, 3-4 times/week), 4 (often, 5-6 times/week) and 5 (always, every day). The results of the validity and reliability test for the CFQ questionnaire indicated that all questions were declared to be valid and reliable with values of 0.866.

The questionnaire in this study about the mother's eating behavior related to picky eating children consisted of 7 statements using a modified Comprehensive Feeding Practices Questionnaire (CFPQ) [15]. The answer choices were marked on a Likert scale, going from 1 (strongly disagree), 2 (disagree), 3 (neither), 4 (agree) through to 5 (strongly agree).The results of the validity and reliability

test on the Comprehensive Feeding Practices Questionnaire (CFPQ) showed that 24 statements were declared to be valid and reliable with values of 0.827.

The history of complementary food was assessed by answering a questionnaire with the answers falling into 2 categories. The answers consisted of less than 6 months and 6 months or over. The history of exclusive breastfeeding was answered by filling in a questionnaire with 2 answer categories, namely exclusive breastfeeding and non-exclusive breastfeeding. Birth weight was examined using a questionnaire with 3 answer categories, namely low birth weight, normal birth weight and over-birth weight.

2.3Research procedures

The initial process of the data collection was done using simple random sampling by selecting prospective respondents according to the inclusion criteria in Al Ittifaqiah Kindergarten Indralaya. This research passed approval with the letter No. 2774/UN9.1.4/PP/2016 as given by the Headmaster of Ittifaqiah Kindegarten. The data was collected by the mothers of preschool children. The researcher explained the purpose and benefits of the study while asking for approval from the prospective research respondents by requesting that they fill in the informed consent sheet and provided a signature as proof of their approval. After the respondent was confirmed as being willing, the researcher then distributed the research questionnaires to the respondents. At the time of the data collection, the researcher accompanied the respondent so then if there were respondents who did not understand the research questionnaire, then the respondent could immediately ask the researcher. The researcher asked for the help of 3 nurse colleagues to assist in taking the research data. The researcher explained and gave direction to the nurses related to technical research. The researcher guaranteed the confidentiality of the respondent's identity and ensured that no other party other than the researcher would know the things that the respondent wanted kept secret.

2.4Analysis of research

The statistical analysis consisted of two stages, namely descriptive and inferential analysis. The descriptive analysis included the distribution of picky eating, interactions when eating, the mother's eating behavior, complementary food, a history of exclusive breastfeeding and birth weight. The inferential analysis used a Chi square test and regression logistic statistics to determine the relationship between the independent and dependent variables.

3. Results

The majority mean for the mother’s age in this study were aged 33 years old (late adulthood). The age of the youngest respondents was 24 years old and the oldest was 42 years old. The majority of the respondents (49) had children who were 6 years. In this study, the respondents with working experiences made up 61 participants, and they were housewives. The majority of the mother's last obtained education was senior high school, for as many 58 participants [Table 1].

The majority of children, 57.6%, were picky eaters. Interactions when eating was found to be 50.8%, with the majority of mothers restricting their eating and pressuring their children while eating. The majority of mothers had good eating behavior, totaling 56.8%.The majority of children had a history of complementary feeding, totaling 52.3% by 6 months. The majority of children had a 51.5% history of exclusive breastfeeding. The majority of children, at 83.3%, had a normal birth weight [Table 2].

The majority of participants, referring to interactions when eating, were in the bad category with 44 participants being picky eaters. In addition, there were also good interactions when eating for as many 32 of the 67 participants, but their children were still picky eaters. The results of the Chi square tests showed that there was a significant relationship ($p<0.05$) between interactions when eating with picky eating behavior in Ittifaqiah Kindegarten Indralaya. The results of the statistical tests showed there to be a correlation ($p=0.032$) [Table 3].

As many as 40 respondents with bad eating behavior for the mother were picky eaters. In the minority of for good mother's eating behavior, as many as 36 out of 75 participants had picky eating behavior. The results of the Chi square showed that there was a very significant relationship ($p<0.05$) between the mother's eating behavior with picky eating behavior in Ittifaqiah Kindegarten Indralaya. The statistical test results also showed as being significant ($p=0.018$) [Table 3].

This study found there to be a majority for a history of complementary food at less than 6 months for as many 44 of 63 participants with picky eating behavior. The children that had a history of complementary food at 6 months and who were picky eaters totaled 32 of 69 participants. The results of the Chi square test showed that there was a significant relationship ($p<0.05$) between a history of complementary food with picky eating behavior in Ittifaqiah Kindegarten Indralaya. The results of the statistical tests also had

a correlation ($p=0.011$) [Table 3].

For the 67 participants who were non-exclusive breastfed, 64 participants were picky eaters. In total, 29 of 68 participants had a history of exclusive breastfeeding and picky eating behavior. The results of the Chi square test showed that there was a significant level relationship between a history exclusive breastfeeding on picky eating behavior in Ittifaqiah Kindegarten Indralaya. ($p=0.001$) [Table 3]. The regression logistics showed that the determinant factor associated with picky eating in preschool children was a history exclusive breastfeeding ($p=0,004$), with more than the other variables in the results with a value (Exp (B)=3.149) that reported exclusive breastfeeding as effecting picky eating by 3.149 times in preschool children [Table 4].

According the results of this study, 7 of 16 participants had a lower birth weight when they were picky eaters. In conclusion, 66 out of 110 participants had a normal birth weight and were picky eaters, while for those with an increased birth weight, as many as 3 out of 6 participants were picky eaters. The results of the Chi square test showed that there was no significant level relationship ($p=0.437$) between birth weight and picky eating behavior in Ittifaqiah Kindegarten Indralaya [Table 3].

The majority of children, 57.6%, were picky eaters. Interactions when eating for the children was 50.8% for the negative, with the majority of mothers restricting their eating and pressuring their children while eating. The majority of mothers had good eating behavior, by 56.8%.The majority of children had a history of complementary feeding, totaling 52.3% for 6 months and over. The majority of children, 51.5%, had a history of exclusive breastfeeding. The majority of children, 83.3%, had a normal birth weight [Table 2].

Table 1. Demographic characteristics of the study participants

Characteristics	n	%
Age of Mothers		
22-26 years	13	9.8
27-31 years	34	25.7
32-36 years	58	44
37-42 years	27	20.5
Education Level		
Elementary School	2	1.5
Junior High School	11	8.3
Senior High School	58	44
Diploma School	11	8.3
Bachelor Degree	48	36.4
Master Degree	2	1.5
Working Experience		
Government employees	31	23.5
Housewife	61	46.2
Entrepreneurs	16	12.1
Trader	8	6.1
Teacher	16	12.1
Age of Children		
3 years	10	7.6
4 years	26	19.7
5 years	47	35.6
6 years	49	37.1

Table2. Distribution of the Respondents based on Picky Eating behavior, Interactions when Eating, the Mother's Eating Behavior, the History of Complementary Food, a History of Exclusive Breastfeeding and the Birth Weight of Preschool Children in Ittifaqiah Kindegarten Indralaya on 2016

Variables	n	%
Picky Eater		
No	56	42.4
Yes	76	57.6
Interactions when Eating		
Bad	67	50.8
Good	65	49.2
Mother's eating Behavior		
Bad	57	43.2
Good	75	56.8

Table2. Distribution of the Respondents based on Picky Eating behavior, Interactions when Eating, the Mother's Eating Behavior, the History of Complementary Food, a History of Exclusive Breastfeeding and the Birth Weight of Preschool Children in Ittifaqiah Kindegarten Indralaya on 2016

History of Complementary Food		
</> 6 months	63	47.7
6 months	69	52.3
History of Exclusive Breastfeeding		
No Exclusive	64	48.5
Yes Exclusive	68	51.5
Birth Weight		
Low	16	12.2
Normal	110	83.3
Over	6	4.5

Table3. The Results of the Analysis of the Correlation Between Interactions when Eating, the Mother's Eating Behavior, a History of Complementary Food, a History of Exclusive Breastfeeding and Birth Weight with Picky Eating Behavior in Preschool Children

Variables	**Picky Eater Behavior**				**p value**
	Yes		**No**		
	n	**%**	**n**	**%**	
Interactions when Eating					
Bad	44	67.7	21	32.3	0.032
Good	32	47.8	35	52.2	
Mother's eating Behavior					
Bad	40	70.2	17	29.8	0.018
Good	36	48	39	52	
History of Complementary Food					
</> 6 months	44	69.8	19	30.2	0.011
6 months	32	46.4	37	53.6	
History of Exclusive Breastfeeding					
No Exclusive	47		17		0.001

Table3. The Results of the Analysis of the Correlation Between Interactions when Eating, the Mother's Eating Behavior, a History of Complementary Food, a History of Exclusive Breastfeeding and Birth Weight with Picky Eating Behavior in Preschool Children

Variables	Picky Eater Behavior				p value
	Yes		No		
	n	%	n	%	
Yes Exclusive	29	73.4	39	26.6	
		42.6		57.4	
Birth Weight					
Low	7	43.8	9	56.2	0.437
Normal	66	60	44	40	
Over	3	50	3	50	

Table 4. The results of the analysis of the determinant factors related to picky eating in preschool children

Variable	Sig (p)	B (Exp)
Interactions when eating	0.073	2.069
Mother's eating behavior	0.031	2.368
History of complementary food	0.004	2.475
History of exclusive breastfeeding	0.022	3.149
Birth weight	0.263	0.574

4. Discussion

The results show that 56% of the sample were picky eaters, totaling 49 children aged six years old. Picky eating will often survive to when they are over 2 years old [6]. Preschool children begin to show the uniqueness of their existence and ego by making decisions that can be the opposite of their parents. Children can begin comparing the food menus at home with the food eaten by their friends at school and on the advertisements shown on the television. At this age, they are picky eaters that love eating snacks outside. This phenomenon is also caused by the mothers having a sufficient level of knowledge, so this makes the feeding problem more serious. Knowledge is an important domain related to establishing behavior in an individual. If the feeding is based on bad knowledge, then it will make the decisions and behavior taken also not appropriate [16]. Persistent picky eating has been identified as a risk factor for subsequent anorexia nervosa, predicted pervasive developmental problems, but not behavioral or emotional problems [11].

Interactions when eating by the mother were bad for as many 67 participants. Interactions when eating include restrictive eating and the pressure to eat. There were 75 mothers who practiced restrictive feeding and 68 mothers who pressured their children to eat. Restrictive feeding as a form of food control is popular when used with children [17]. Fisher and Birch said that groups that are not free to access snacks prefer snacks over those who are free to access snacks. Not only that, but restrictions on eat can induce the children to be forced to eat their food even though they are not hungry. At the same time, pressuring a child to eat does not always show in the form of force. Sometimes it used in the form of reinforcement, which includes praises and rewards. Parents seek to enhance the quality and amount of their children's intake. Furthermore, the pressure to eat child has a negative effect on their eating habits because the children will associate the negative experiences with food [17].

There were cases of the mother's having bad eating behavior for as many as 75 participants. In this study, the majority worked as housewives, rather than following government employments, or being a teacher, entrepreneur or trader. Even though the mothers are busy, as the mothers consume healthy food such as vegetables and fruits, and serve various foods at the dining table, so they can be role model for their children. Korkmaz said that the factors associated with healthy eating behavior were economic status, social status, education level, income level and health facilities [18].

History of complementary foods after 6 months totaled 69 participants. Feeding complementary food will contribute to optimal growth and development if given appropriately. The results of this study showed that half of the participants had the knowledge about starting to feed their children complementary food appropriately. If the mothers have good knowledge about complementary food, then good feeding behavior will appear. The right time for feeding complementary food is at the age of 6 months, because if complementary food given before or after this time then it will put the child at risk of developing a poor digestive system regarding their intestines and enzymes, and it will increase the risk of chocking, asthma, allergies and obesity [19].

There were 68 mothers whose children were exclusively breastfed. This was caused by maternal factors. The mothers in Ittifaqiah Kindegarten Indralaya were aged between 24 - 42 years old, and they worked as housewives, civil servants, traders and entrepreneurs. Similarly, this study found that the mothers who were housewives had higher odds of exclusive breastfeeding than non-housewives [20]. Not only that, but the mothers with higher levels of education knew about the nutrition-related health outcomes of exclusive breastfeeding. Employment status was not an obstacle because there are facilities for feeding rooms in a lot of places, and the government can provide facilities to help with a lack of workplace accommodation for breastfeeding mothers [21]. The older someone is, the higher their maturity level, and the more strength that a person has will result in them being more mature in their thinking and working. Age and employment status can be related to the mother's practices of exclusive breast feeding. Being of an older age affects a person's ability to receive information and there will be more positive behaviors. Working mothers have a double role that will have impact on their health, safety, and on the education of their children in the future.

The majority of the birth weights recorded in Ittifaqiah Kindegarten Indralaya were normal, between 2500 - 4000 grams. The results of the study showed that the education level was low, that the age of the mothers was that of an old adult and that most worked as a housewife. The statement agreed with birth weight being associated with maternal characteristics such as parity, ethnic region and education level [22]. Activities that are a risk during pregnancy include high stress, heavy lifting

and standing for a long time, which will be a risk for the child being of a low birth weight (<2500 grams). The fertilization process for older mothers or for those not of productive age will increase the risk of experiencing growth disorders, which can cause a low birth weight [23].

The Chi square results showed there to be a significant relationship (p=0.032) between interactions when eating and picky eater behavior in Ittifaqiah Kindegarten Indralaya. There was a positive relationship between interactions when eating with being pressured to eat and restricted eating in children with picky eating behavior. Restrictive feeding may affect the child's eating behavior by creating a context in which the child's refusal of food might be a response to both restriction and pressure feeding conducted by the parents to control the food intake of their children [24]. This interaction means that when the child eats, it becomes unpleasant. Restrictive feeding practices related to fast food are because the children want fast food again when there is access to fast food. This caused the children to feel unpleasant, which affected their food intake [17]. Not only that, bad interactions when eating will mean that the children always associate food with the negative experience (cognitive aversion), causing them to create bad memories about food in a specific condition. They will have bad experiences with new food and feel the same when they try other food in the future, with a high severity of this causing food neurophobia [25]. Finally, the role of the parents is important to the children. The frequency of eating family meals is associated with better psychosocial outcomes for both children and adolescents. This is because frequent eating with the family was inversely associated with disordered eating, alcohol and substance use, violent behavior, and feelings of depression [26].

The correlation between the mother's eating behavior and picky eating was strongly significant. Bad eating behavior in the mother caused picky eating in the children. The parents can be a role model when it comes to the consumption of healthy food; the children imitate the feeding practices of their parents. In another study, it showed how a mother's good eating behavior was associated with body mass index in preschool. This is because good and healthy eating behavior in the mother (modeling) can promote positive experiences with food and reduce picky eating behavior in the children [25]. The consumption of fruit and vegetables in young children who reported the modeling role of the parents in relation to healthy food was very useful for introducing bitter foods such as vegetables or food items that are less favored among children. Therefore, the mother's eating behavior can partly show the quality of their children's food behavior [27]. For example, children who experience food enjoyment may be more responsive to parental modeling. Children who are less picky may be more able to duplicate the eating behaviors of their parents, including the behaviors that the parents are less aware that they are exhibiting [28].

The results reported that there was an association between picky eating in children who have a history of complementary food being given after less than 6 months of breastfeeding. If the children are introduced to complementary food before they are 6 months of age, then they have a 2,5 times greater risk of being a picky eater than children given complementary food when they were 6 months old [13]. Beuchamp showed that introducing complementary food at 4 months would make the chance of picky eater behavior higher than introducing complementary food at 6 months. Too early a time introducing complementary foods can increase the risk of digestive disorders and food allergies because the digestive system is not yet mature. If children have negative experiences after consuming complementary foods, then in the future there will be greater occurrence of food neuphobia and the limiting of some foods [29]. The early feeding of complementary food can allow

for the entry of various types of microbe. When an infant is less than 6 months old, the cells around the intestines are not yet ready to receive solid food, so offering food can make a path for microbes to enter the body and this can also cause an allergic reaction followed by a reduced immune system [30]. The same as feeding complementary food under 6 months, the late introduction of foods that need to be processed by the tongue's movement from side to side is associated with a poorer acceptance food and there is a sensitive period for obtaining chewing abilities. The poor introduction of fruits and vegetables with complex food textures can cause more eating difficulties by the time the child is 7 years old [31].

The determinant of being a picky eater was a history of exclusive breastfeeding. This research reported that exclusive breastfeeding affected picky eating in preschool children 3,149 times. Other studies reported that when comparing children who were exclusively breastfeeding up until age 4 - 6 months and up to 6 - 10 months for children who were breastfed for 0 - 1 months only, the former were less likely be picky eater [32]. Children who were exclusive breastfeeding for 6 months and who were introduced to complementary foods after 6 months reduced the incidence of picky eating at an early age. Breastfeeding and the introduction of complementary foods should not be overlooked, especially in the development of healthy eating behavior. Breastfeeding can encourage them to learn many tastes in relation to the foods consumed by the mothers and this can have a protection affect against picky eating in infancy [33]. Similar to the statement that breastfeeding is associated with picky eating behavior, exclusive breastfeeding had a positive relation with umami flavor acceptance. The initial eating impression can have an important impact on food intake and flavor. The first taste recognition in children is breastfeeding [34] and if they are not breastfed, then this will establish and encompass malnutrition, and underdevelopment. An appropriate duration of breastfeeding is recommended to maximize the health benefits for both the infant and mother [21].

There was no correlation between birth weight with picky eating (p=0,437). This is contrast with the study of Dubois et al, who reported that picky eaters aged 2.4 - 4.5 years tended to have a low birth weight (<2500 grams) compared to children with a normal birth weight (2500- 4000 grams). This is caused by children with a low birth weight experiencing changes in their metabolism while in the wombs, so the children are born with the risk of being a picky eater but this requires further research [35]. Another study reported that birth weight was not associated with eating behavior, but that low birth weight was associated with metabolic syndromes that secondarily influence dietary habits through an altered secretion of adipokines that control energy balance and increase the risk of obesity further [36]. According to the researcher, birth weight has no impact on the children's eating behavior but the risk of malnutrition and the incidence of picky eating also does not align with their birth weight. This is caused by the influence of other factors on the digestive system related to birth weight.

5. Conclusion

The majority were picky eaters who were preschool children. Interactions when eating for children were found to be bad, especially regarding restrictions with eating and the pressure to eat. The mother's eating behavior was good. The majority of children had a history of complementary feeding from 6 months and a history of exclusive breastfeeding. The children had a normal birth weight. History of exclusive breastfeeding was the most influential factor regarding picky eating

behavior in preschool children. Interactions when eating, the mother's eating behavior and complementary food were the other factors that influenced picky eater behavior. Parents need to pay attention to the behavior of picky eating in children. This is because it can cause disruptions in their growth and development due to a lack of adequate nutritional intake. Parents can stimulate their children by making interesting food and teaching them to eat good food through direct example. This is because children will imitate what their parents do.

Health care professionals are expected to optimize health information as a health promoter to the parents and society about healthy eating behavior by providing a setting and collaborating with other health professionals such as doctor, nutritionists and a psychologists to provide counseling on healthy food and to motivates the parent to modify their bad behavior in front of the child when eating together. The next researcher is expected to further explore the factors related to picky eating and the self-management of diet. This is to better determine how the factors have an impact on the nutrition of children.

References

[570] Judawanto R. Kesulitan Makan dan Alergi Makanan Pada Anak. Jakarta: Picky Eater Clinics; 2009 p.

[571] Taylor CM, Wernimont SM, Northstone K, Emmett PM. Picky / fussy eating in children : Review of de fi nitions , assessment , prevalence and dietary intakes. Appetite [Internet]. 2015;95:349–59. Available from: http://dx.doi.org/10.1016/j.appet.2015.07.026

[572] Chao H. Association of Picky Eating with Growth, Nutritional Status, Development, Physical Activity, and Health in Preschool Children. 2018;6(February):1–9.

[573] Boquin MM, Moskowitz HR, Donovan SM, Lee S. Defining Perceptions of Picky Obtained Through Focus Groups and Conjoint Analysis. J Sens Stud. 2014;29(2001):126–38.

[574] Lam J. Picky eating in children. Front Pediatr. 2015;3(May):15–7.

[575] Mascola AJ, Bryson SW, Agras WS. Eating Behaviors Picky eating during childhood : A longitudinal study to age 11 years. Eat Behav [Internet]. 2010;11(4):253–7. Available from: http://dx.doi.org/10.1016/j.eatbeh.2010.05.006

[576] Xue Y, Zhao A, Cai L, Yang B, Szeto IMY, Ma D. Growth and Development in Chinese Pre-Schoolers with Picky Eating Behaviour : A Cross-Sectional Study. PLoS One. 2015;1–16.

[577] Dubois L, Farmer AP, Girard M, Peterson K. Preschool children ' s eating behaviours are related to dietary adequacy and body weight. Eur J Clin Nutr. 2007;61:846–55.

[578] Cerdasari C, Helmyati S, Julia M. Tekanan untuk makan dengan kejadian picky eater pada anak usia 2-3 tahun. 2017;13(4):170–8.

[579] Ramos-paúl R, Marriage BJ, Ruiz R, Oliveros L, Ros L, Torres L, et al. Impact of Picky Eating on Level of Family Stress in Healthy Children between the Ages of 3 and 6 Years. Open Nutr J. 2014;8:13–8.

[580] Kusumawardhani N, Al E. Determinan "Picky Eater" (Pilih-pilih Makanan) pada Usia 1-3 Tahun (Studi di Wilayah Kerja Puskesmas Jabon Sidoarjo. J Poltekes Majapahit. 2013;5:2.

[581] Taylor CM, Emmett PM. Conference on ' Targeted approaches to tackling current nutritional issues ' Symposium 1 : Current nutritional issues at the population level Picky eating in children : causes and consequences Proceedings of the Nutrition Society Proceedings of the Nutrit. Proc Nutr Soc. 2018;(June):1–9.

[582] Byrne R, Jansen E, Daniels L. Perceived fussy eating in Australian children at 14 months of age and subsequent use of maternal feeding practices at 2 years. Int J Behav Nutr Phys Act. 2017;1–9.

[583] Goh DYT, Jacob A. Perception of picky eating among children in Singapore and its impact on caregivers : a questionnaire survey. Asia Pac Fam Med [Internet]. 2012;11(1):1. Available from: Asia Pacific Family Medicine

[584] Birch LL, Fisher JO, Grimm-thomas K, Markey CN, Sawyer R, Johnson SL. Confirmatory factor analysis of the Child Feeding Questionnaire : a measure of parental attitudes , beliefs and practices about child feeding and obesity proneness. Appetite. 2001;36:201–10.

[585] Musher-eizenman D, Holub S. Comprehensive Feeding Practices Questionnaire : Validation of a New Measure of Parental Feeding Practices. J Pediatr Psychol. 2007;32(8):960–72.

[586] Notoatmodjo. Ilmu Perilaku Kesehatan. Jakarta: Rineka Cipta; 2010.

[587] Yekani AHK, Mushtaqb Y, Farahanic B, Abdi H, Sotoodehe R. ' ' The Impact of Parental Feeding Practices on Their Children ' s Appetitive Traits : A Study among Children Aged 5-11 Years Old in Dubai Private Schools ". Eur J Soc Behav Sci. 2013;900–9.

[588] Korkmaz M, Yücel AS, Yaman Ç, Hergüner G. Parental Modelling in Child ' s Nutrition Behaviours and Attitudes. Anthropologist. 2015;20(3):535–52.

[589] Lewis S. Seri Praktis Keluarga Panduan Makanan Pertamaku. Jakarta: Erlangga; 2003.

[590] Joshi PC, Angdembe MR, Das SK, Ahmed S, Syed A, Faruque G, et al. Prevalence of exclusive breastfeeding and associated factors among mothers in rural Bangladesh : a cross-sectional study. Int Breastfeed J. 2014;9(1):1–8.

[591] Habibi M, Zahra F, Aguenaou H, Doukkali L. International Journal of Pediatrics and The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices : An experience from. Int J Pediatr Adolesc Med [Internet]. 2018;1–10. Available from: https://doi.org/10.1016/j.ijpam.2018.01.003

[592] Yilgwan CS, Utoo TB, Hyacinth HI. Maternal characteristics influencing birth weight and infant weight gain in the first 6 weeks post - partum : A cross - sectional study of a post - natal clinic population. Niger Med J. 2012;53(4).

[593] Sulistyoningsih H. Gizi untuk Kesehatan Ibu dan Anak. Yogyakarta: Graha llmu; 2011.

[594] Horst K Van Der. Overcoming picky eating . Eating enjoyment as a central aspect of children ' s eating behaviors q. Appetite [Internet]. 2012;58(2):567–74. Available from: http://dx.doi.org/10.1016/j.appet.2011.12.019

[595] Gregory JE, Paxton SJ, Brozovic AM. Maternal feeding practices , child eating behaviour and body mass index in preschool-aged children : a prospective analysis. 2010;1–10.

[596] Harrison ME, Mark F, Frcpc LN, Obeid N. frequency on psychosocial outcomes in youth. Can Fam Physician. 2015;61:96–106.

[597] Gregory JE, Paxton SJ, Brozovic AM. Maternal feeding practices predict fruit and vegetable consumption in young children . Results of a 12-month longitudinal study. Appetite [Internet]. 2011;57(1):167–72. Available from: http://dx.doi.org/10.1016/j.appet.2011.04.012

[598] Palfreyman Z, Haycraft E, Meyer C. Parental modelling of eating behaviours : Observational validation of the Parental Modelling of Eating Behaviours scale (PARM) ☆. Appetite [Internet]. 2014; Available from: http://dx.doi.org/10.1016/j.appet.2014.08.008

[599] Beauchamp GK, Mennella JA. Early Flavor Learning and Its Impact on Later Feeding Behavior. J Pediatr Gastroenterol Nutr. 2009;48(10):S25–30.

[600] Gibney M. Gizi Kesehatan Masyarakat. Jakarta: EGC; 2009.

[601] Harris G, Mason S, Harris G. Are There Sensitive Periods for Food Acceptance in Infancy ? Curr Nutr Rep. 2017;6:190–6.

[602] Specht IO, Rohde JF, Olsen NJ, Heitmann L. Duration of exclusive breastfeeding may be related to eating behaviour and dietary intake in obesity prone normal weight young children. PLoS One. 2018;1–11.

[603] Shim JE, Kim J, Mathai RA, Strong T. Picky Eating Behaviors of Preschool Children. J Am Diet Assoc [Internet]. 2011;111(9):1363–8. Available from: http://dx.doi.org/10.1016/j.jada.2011.06.410

[604] Schwartz C, Chabanet C, Laval C, Issanchou S, Nicklaus S. Breast-feeding duration : influence on taste acceptance over the first year of life. Br J Nutr. 2013;109:1154–61.

[605] Dubois L, Farmer A, Girard M, Peterson K, Tatone-tokuda F. Problem eating behaviors related to social factors and body weight in preschool children : A longitudinal study. Int J Behav Nutr Phys Act. 2007;10:1–10.

[606] Lopez N V., Schembre S, Belcher BR, O'Connor S, Maher JP, Arbel R, et al. Parenting styles, food-related parenting practices, and children's healthy eating: A mediation analysis to examine relationships between parenting and child diet. Appetite. 2018 Sep;128:205–13.

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ANTENATAL EDUCATION INCREASING THE PRENATAL ADAPTATION AMONG PRIMIGRAVID MOTHERS

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ABSTRACT

Lack of adaptation to changes that occur during pregnancy, particularly the first pregnancy, can lead to many mental health problems. Therefore, this study aimed to identify the effects of antenatal education on the prenatal adaptation. A randomised controlled trial involving 78 primigravid mothers (Intervention=38, Control=40) was conducted at the Tengkera Health Clinic, Melaka. The intervention group received two antenatal education sessions for 45 minutes per session while the control group only received the regular health education provided by the clinic. The prenatal adaptation was measured before and after the intervention using the Prenatal Self Evaluation Questionnaire. Data were analysed using the independent t test, Mann-whitney, Wilcoxon signed test and paired t test. Overall, the prenatal adaptation increased significantly after the intervention ($t = 2.818$, $p = 0.008$). Similar findings were also found for the three subscales of the prenatal adaptation; acceptance of pregnancy ($z = -4.742$, $p = 0.000$), identifying mother's role ($z = -5.000$, $p = 0.000$) and relationship to husband ($t = -2.055$, $p = 0.047$). The delivery of antenatal education in this study has led to a more positive prenatal adaptation. The antenatal education of this study is recommended to help increasing prenatal adaptation among pregnant women.

Keywords: antenatal education; prenatal adaptation

1. Introduction

Pregnancy is a condition where a woman becomes a mother. There are various physiological and mental health changes that may occur during pregnancy [1]. These may include back pain, frequent urination, heartburn, nausea and severe vomiting [2]. A lack of adaptation to these changes may result in anxiety, depression, seclusion or internal conflict during the period of pregnancy [3]. Anxiety can then be associated with the incidence of complications in obstetrics where it increases the stress hormone (catecholamines and corticotrophin releasing hormone), stimulating blood constriction which can lead to fetal distress or delayed uterine contraction and eventually it can cause a prolonged labor process and uterine atony [1].

Antenatal education is important for pregnant women, especially primigravida mothers, as a preparation to adapt to the physiological and mental health changes and thus to enable them to take part in self-care during pregnancy and after the birth [4-5]. The aim of antenatal education is to influence the mother's health behavior [6], to provide space for the mother to identify the essentials

for labor [7], to increase the mother's confidence in her ability to deliver her baby[8] and to provide a better preparation for women and their spouse related to the birth and their role as parents [9].

There are many studies that have been conducted to examine the effectiveness of antenatal education on prenatal adaptation [10-14]. These studies have shown that the mothers who received the antenatal education demonstrated a better prenatal adaptation compared to those who did not receive it [11-12,14]. The aspect of the differences included concern for the well-being of the self and baby, preparation for labor and a fear of pain, helplessness and a loss of control [12]. In addition, the level of prenatal adaption increased significantly after the mothers received the antenatal education [14].

However, the effectiveness of the antenatal education in improving prenatal adaptations among pregnant women in Malaysia is unknown since there have been no previous studies conducted in Malaysia. The findings of the studies conducted in other countries may not be appropriate to be generalized to the context of Malaysian pregnant mothers due to the differences in culture and religion. Therefore, this study was conducted by the researcher to examine the effectiveness of the education on the prenatal adaptation of primigravida mothers in Malaysia. This study hypothesized that the mothers who received the antenatal education improved their prenatal adaption.

2. Materials and methods

2.1. Design

A randomized control trial design was utilized to conduct the study. It involved two groups; the intervention and control. The intervention group was given the antenatal class by the researchers whereas the control group only received the routine health education (see Table 1).

Table 1. Routine health education.

Contents	Schedule
✓ Breast self-check up ✓ Common problems during pregnancy ✓ Problems of PIH/GDM/Anemia during pregnancy ✓ Importance of counting baby's movement ✓ Preparation for labor ✓ Breastfeeding ✓ Postnatal care for mother and baby ✓ Knowing your Baby's Health Book at Home ✓ Child immunization	✓ Every Monday and Thursday according to a named list of nurses arranged by the nursing supervisor. *Not all pregnant women get the same health education as it depends on the topic given on the day and time set out in the schedule, *e.g.* breastfeeding and child immunization.

2.2. Participants

The study participants were primigravida mothers who received their routine antenatal check-up at

Tengkera Health Clinic, Melaka. They had not attended any antenatal education program organized by any other organization or private agencies and they were 20 to 24 weeks pregnant. However, the mothers were exempt from this study if they experienced any complications in their pregnancy. This study received ethical approval from the Universiti Kebangsaan Malaysia Medical Centre (UKMREC) (Reference number: UKM PPI/111/8/JEP-2017-802) and from the Malaysian Ministry of Health (Reference number: KKM.NIHSEC/P18-287(5).

2.3. Intervention

The antenatal education provided by this study was based on the antenatal education developed by Sercekus & Mete[12]. Every mother in the intervention group was given the antenatal education package twice. The first session was given at 20 - 24 weeks. The second session was given after four weeks from the date of the first session where the gestational age was between 24 - 28 weeks. It took 30 to 45 minutes to deliver each session. The researcher used various teaching aids such as a doll, female pelvic trainer, video and PowerPoint. Detailed information of the intervention along with its contents has been presented in Table 2.

Table 2. Antenatal education of the study.

Content	Time	Duration
Session 1 (45 minutes)	Week 20 – 24 of gestation	
• Anatomy and physiology of the female reproductive system • Physiological changes during pregnancy. At the end of the topic, an open discussion was conducted to allow		10 minutes
• The growth and development of the fetus. At the end of the topic, an open discussion was conducted to allow the mothers to discuss their feelings about the baby's condition		10 minutes
• Requirements for laboratory testing and routine examinations - Blood, urine and ultrasound tests. - Importance of antenatal follow-up visits. At the end of the topic, an open discussion was performed in order to allow the mothers to state their acceptance (mother and spouse) of		10 minutes
• Changes during pregnancy and how to overcome it. At the end of the topic, an open discussion was conducted to allow the mothers to express her anxiety and capability to overcome her		15 minutes
Session II (45 minutes)	Week 24 – 28 of gestation	
• Nutrients during pregnancy An open discussion was conducted to allow the mothers to share her issues related to cravings, weight gaining and self-image		20 minutes
• Labor management - First, second and third stage. - Labor mechanisms - Pain management during labor – pharmacological and non-pharmacological. After the teaching session – discussing the mother's feeling about giving birth. An open discussion was performed to allow the mothers		25 minutes

2.4. Measure

This study measured the prenatal adaptation using the Prenatal Self Evaluation Questionnaire (PSEQ) developed by Lederman (1979). The reliability of this questionnaire was α 0.84. It was comprised of 79 items dividing into 7 sub-scales; acceptance of pregnancy (14 items), identification with the motherhood role (15 items), concern for the well-being of the self and for the baby in labor (10 items), preparation for labor (10 items), fear of pain, helplessness and a loss of control in labor (10 items), their relationship with their mother (10 item) and their relationship with their husband (10 items). The response format for all items was a five-point Likert scale. The scores of all items in each subscale as well as scores of all 79 items were totaled up (minimum 79 to maximum 316). The lower the score, the more positive the mother's prenatal adaptation was and vice versa. PSEQ was measured twice; at 20-24 weeks just before the first intervention and 4 weeks after the second intervention at 28 to 32 weeks.

2.5. Sample size

The calculation of the sample in this study was performed using two mean formula methods based on the mean and standard deviation (SD) as reported by Sercekus & Mete[12]. Based on this calculation, a total of 70 people were required in this study; 35 for the intervention group and another 35 for the control group. However, in order to overcome the possibility of a reduction in sample size due to attrition, an additional 10% was needed. Therefore, the total sample needed was 80 (40 samples for each group).

2.6. Randomization

All primigrivida mothers in the health clinic that fulfilled the study criteria were given an explanation of the study and they also given the information sheet to read. Those who were interested in participating in the study were given an informed consent form. The mothers who completed and signed the consent form were randomized into either the control or intervention group according to the number allocated to them in a sealed envelope.

2.7. Data Analysis

All of the data analyses in this study were conducted using IBM SPSS version 20. First, the demographic characteristics of the mothers between the intervention and control groups were compared by conducting an independent t test for age and using the Chi-square test for the other demographic variables. The demographic data for race, level of education and occupation were first reduced to two categories (race=Malay vs. non-Malay, level of education=school vs. higher education, and occupation = professional vs. non-professional) before conducting the Chi-square test in order to meet the test assumption[15].

The inferential analyses for the main study variables involved both parametric and nonparametric statistics due to the non-normal distribution in some of the study variables. In particular, when comparing the intervention and control group in the pre-intervention, the independent t test was utilized for two of the prenatal adaptation subscales (concern for wellbeing of self and baby in labor and preparation for labor) whereas others were tested using Mann-Whitney test. Post-intervention, the independent t test was used for three subscales (preparation for labor, fear of pain, helplessness, loss of control and relationship with husband) whilst the other subscales and overall adaptation was tested using the Mann-Whitney test. For the comparative analyses of the prenatal adaptations pre-

and post-intervention, the Wilcoxon signed rank test was used to examine the four subscales of the prenatal adaptation (acceptance of pregnancy, identification with a motherhood role, fear of pain, helplessness and loss of control and relationship with mother). Other subscales and the overall adaptation between pre- and post-intervention were compared using the paired t test because the data distribution was normal. $P<0.05$ was set to determine the significance of the results. The effect size was also calculated for all significant results.

3. Results

3.1. Participation and retention of study subjects

A total of 98 primigravida mothers who met the study criteria were invited to participate in the study. However, only 80 of them were interested and signed the consent form. Of this total, two subjects from the intervention group dropped out from the study before the post-intervention data was measured due to moving out and having important office-related work to do that took priority. Therefore, these subjects were excluded from the analyses involving their post-intervention data; see Figure 1 for details.

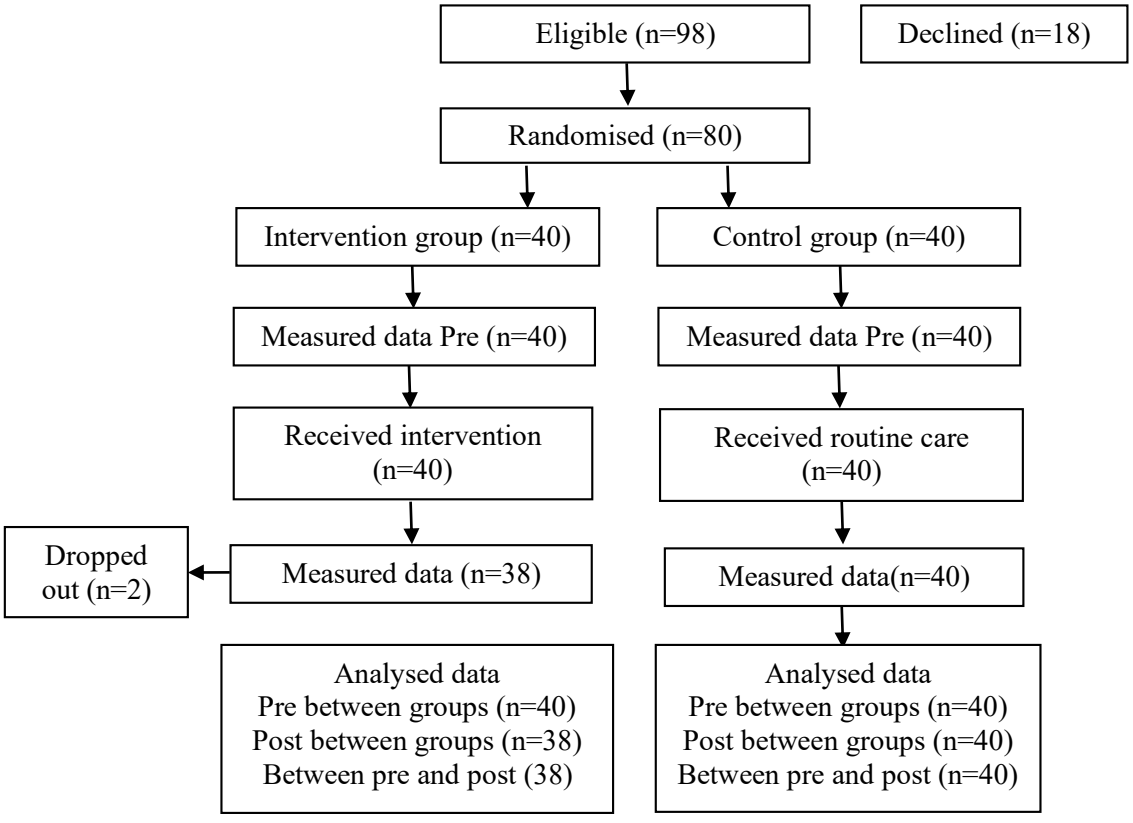

Figure 1. The recruitment and retention of subjects.

3.2. Socio-demographic data

As shown in Table 3, in this study, the subjects in both groups were aged 22 years on average (Intervention: SD = 1.74,Control: SD = 1.81), were comprised of 87.5% Malay (n=35) and most of

them had attended school as their highest level of education (Intervention: 65%, n=26; Control: 62.5%, n=25%). For the occupation, 80% (n=32) of subjects in the intervention group were non-professional workers whereas in the control group, almost half were professional workers (42.5%, n=17). About two-thirds of the subjects in the intervention group earned an income between RM3,001-RM5000 (65%, n = 26) whilst only 45% (n = 18) of subjects in the control group earned the same income. Almost all subjects in both groups stated that they wanted the pregnancy (n=36, 90%). Comparative analyses showed that there was no significant difference in the demographic characteristics between the intervention and control groups (p> 0.05).

Table 3. Demographic data.

Variables	Intervention (n=40) Mean (SD)/n(%)	Control (n=40) Mean (SD)/n(%)	Statistics	*p*
Age	22.05 (1.74)	22.43 (1.81)	-0.945[a]	0.348
Race				
Malay	35 (87.5%)	35 (87.5%)	0.000[b]	1.000
Non-Malay	5 (12.5%)	1 (2.5%)		
Level of education				
School	26 (65%)	25 (62.5%)	0.000 [b]	1.000
Higher education	14 (35%)	15 (27.5%)		
Occupation				
Professional	8 (20.0%)	17 (42.5%)	0.244 [b]	0.621
No-professional	32 (80%)	23 (57.5%)		
Income				
RM1,000-RM3000	9 (22.5%)	17 (42.5%)		
RM3,001-RM5000	26 (65.0%)	18 (45.0%)	3.916 [b]	0.141
>RM5,000	5 (12.5%)	5 (12.5%)		
Asking for pregnancy				
Yes	36 (90%)	36 (90%)	n.a [b]	1.000
No	4 (10.0%)	4 (10.0%)		

[a] = Independent t test; [b] = Chi-square; n.a=not available (Fisher's Exact test)

3.3. Prenatal adaptations between intervention and control group

Table 4 shows the differences in the prenatal adaptations between the intervention and the control group at the beginning of the study. Of all the variables, only the prenatal adaptation of the relationship with the husband showed a significant difference between the intervention (Md=17.50, n=40) and the control group (Md=19.50, n=40); U=535.500, z=-2.559, *p*=0.01. This difference, however, was small (*r*=0.29) [16]. Post-intervention, none of the prenatal adaptations differed significantly between the mothers who did receive and those who did not receive the study intervention (*p*> 0.05) (see Table 5).

Table 4. Prenatal adaptations between the groups pre-intervention.

Prenatal adaptation (pre-intervention)	Intervention Median/ Mean(SD)	Control Median/ Mean(SD)	Statistics	*p*
Acceptance of pregnancy	31.50	34.00	-0.926[a]	0.354
Identification with the motherhood role	29.00	33.00	-1.069 [a]	0.285
Concern for the wellbeing of the self and for the baby	21.15 (4.21)	22.28 (6.50)	-0.919[b]	0.361
Preparation for labor	18.80 (5.14)	18.48 (5.17)	-0.282[b]	0.779
Fear of pain, helplessness, loss of control	22.00	25.00	-1.835[a]	0.066
Relationship with their	18.00	16.50	-1.726[a]	0.084
Relationship with their	17.50	19.50	-2.559[a]	0.010
Overall prenatal adaptation	156.50	170.50	-1.347 [a]	0.178

[a] = Mann-whitney U test; [b]=Independent t test; * = Significant

Table 5. Prenatal adaptations between the groups post-intervention.

Prenatal adaptation (post-intervention)	Intervention Median/ Mean(SD)	Control Median/ Mean(SD)	Statistics	*p*
Acceptance of pregnancy	25.00	24.50	-0.301[a]	0.763
Identification with the motherhood role	23.00	21.00	-0.793[a]	0.428
Concern for the wellbeing of the self and for the baby	20.00	21.00	-0.507[a]	0.612
Preparation for labor	18.53 (5.23)	18.73 (5.25)	-0.17[b]	0.867
Fear of pain, helplessness and a loss of control	22.97 (4.67)	21.83 (3.86)	1.18[b]	0.241
Relationship with their	18.00	18.00	-0.699[a]	0.485
Relationship with their	19.11 (3.20)	17.80 (2.99)	1.86[b]	0.067
Overall prenatal adaptation	152.00	140.50	-0.845[a]	0.398

[a] = Mann-whitney U test; [b]=Independent t test

3.4. Prenatal adaptations between pre and post intervention

The differences in the prenatal adaptations before and after the mothers received the antenatal education have been presented in Table 6. The results showed that the two subscales for the prenatal adaptations had significantly reduced after the mothers received the antenatal education; acceptance of pregnancy (Md = 31.50 (pre)vs. Md = 25.50 (post), z = -4.742, p = 0.000 and the identification with the motherhood role (Pre: Md = 29.00 vs. Post: Md = 23.00), z = -5.000, p = 0.000. Both of the reductions had a large effect size (r = -0.53 and 0.57). The overall prenatal adaptation also had a significant reduction post-intervention; pre: Mean = 159.63 (SD = 21.45) vs. post: Mean = 146.87 (SD = 22.59), t = 2.818, p = 0.008. The eta-squared statistics for this difference was 0.11, indicating

a moderate difference in the overall prenatal adaptation. On the other hand, the prenatal adaptation of the relationship with the husband increased significantly post-intervention; pre: Mean =17.84 (SD= 2.96) vs. post-intervention: Mean =19.11 (SD=3.20), t=-2.055, p=0.047. The eta-squared statistics for this increase, however, was small (0.06), indicating that the difference is small [16]. Other adaptation sub-scales, however, did not show any significant differences between pre- and post-intervention (p> 0.05).

Table 6. Prenatal adaptations for the intervention group.

Prenatal adaptation	Pre (N=38) Median/ Mean (SD)	Post (N=38) Median/ Mean (SD)	Statistics	*p*
Acceptance of pregnancy	31.50	25.00	-4.742[a]	0.000[*]
Identification with the motherhood role	29.00	23.00	-5.000[a]	0.000[*]
Concern for the wellbeing of the self and their baby when in	21.00 (4.17)	21.39 (4.96)	-0.418[b]	0.678
Preparation for labor	18.58 (5.18)	18.53 (5.23)	0.051[b]	0.959
Fear of pain, helplessness and a loss of control	22.00	24.00	-1.197[a]	0.231
Relationship with their mother	18.00	18.00	-0.798[a]	0.425
Relationship with their	17.84 (2.96)	19.11 (3.20)	-2.055[b]	0.047[*]
Overall prenatal adaptation	159.63 (21.45)	146.87 (22.59)	2.818[b]	0.008[*]

[a]Wilcoxon Signed Rank Test; [b]Paired t test; [*] = Significant

4. Discussion

To the best of the researchers' knowledge, this is the first study that has examined the effectiveness of antenatal education on the prenatal adaptations among primigravida mothers in Malaysia. At the beginning of the study, the mothers who did and did not receive the antenatal education were not significantly different in all of their prenatal adaptations except for the relationship with the husband. After the intervention, none of the prenatal adaptations in the mothers who received the antenatal education differed significantly to those of the control group. Nevertheless, the mothers' prenatal adaptations in the acceptance of pregnancy and in their identification with the motherhood role and the overall prenatal adaptation reduced significantly after the intervention, indicating that they had a more positive adaptation after receiving the antenatal education. Their adaptation related to the relationship with their husband, on the other hand, increased significantly or became less positive after the intervention.

Previous studies have demonstrated that pregnant mothers who received the antenatal education had more positive prenatal adaptations in relation to the identification with the motherhood role[11], concern for the wellbeing of the self and their baby in labor, preparation for the birth, a fear of pain, helplessness and a loss of control, their relationship with their husband [12]and the overall adaption than those who did not [14]. These findings contradict the findings of the current study. The non-existence of significant differences in any of the prenatal adaptations between the intervention and control group in this study could be due to the occupational background of the study subjects in

the control group. This group had more mothers who were professional and semi-professional workers than those in the intervention group. These mothers may have been exposed to knowledge about the adaptation to pregnancy and labor through various sources such as the internet and magazines. Therefore, their levels of adaptations were no different than those of the intervention group even though they did not receive the antenatal education.

In addition, the contradicting findings could also be due to the difference in implementing the antenatal education. In this study, the intervention was divided into two sessions in which all of the pregnancy-related topics (three topics) were given in the first session whilst the rest were provided in the second session. In contrast, the previous studies delivered each topic in a separate session[12,14]. This may have caused the study subjects to better understand the topics taught and thus their adaptations differed to those of the control group. Furthermore, the data for the post-prenatal adaptations in these studies were collected at 7[14]and 25 weeks after the first prenatal adaptations were measured [12], whereas in the current study, they were measured just 4 weeks after the pre-intervention test. The mothers in this study may not have had sufficient time to develop a better adaptation than the control group. Moreover, the previous studies provided written information to the mothers whereas this study only used PowerPoint, a video and a pelvic trainer and then delivered the education orally. According to Walker [17], written education is more effective than oral.

However, it was unexpected that the adaption in the relationship with their husband by the mothers in the intervention group was significantly more positive than in the control group at the beginning of the study. It became non-significant after they received the intervention. Most surprisingly, although the scores not significantly different, the score indicates that the control group had a more positive adaptation related to their relationship with their husband despite them not receiving the antenatal education. According to Weis & Lederman [13], staying with their husband is important during the adaptation process of their relationship with the husband. It is important to note that there were two subjects in the intervention group who dropped out from this study post-intervention. It would be possible to assume that the two subjects were those who contributed to a more positive prenatal adaptation than the mothers who remained in the study. Therefore, when they dropped out from the study, the score for the relationship with the husband became higher or less positive.

On the other hand, a previous study also found that the overall prenatal adaptation was positive in the mothers who were given the antenatal education[14]. Similarly, mothers in the current study also had an overall positive prenatal adaptation after receiving the antenatal education. According to Aba & Komurcu [14], the timeliness and appropriate content of the education may create a positive adaptation. However, Aba & Komurcu [14] did not compare the differences in each of the sub-scales of prenatal adaptation pre- and post-intervention. Therefore, the positive prenatal adaption found in the acceptance of pregnancy and identification paired with a motherhood role found in this study after the intervention cannot be compared. It should be noted that the acceptance of pregnancy and the identification with the motherhood role subscales consists of pregnancy-related questions whereas the other three subscales that did not differ significantly between pre- and post-intervention (concern for the well-being of self and baby during birth; preparation for labor; fear of pain, helplessness and loss of control) comprised of labor-related questions. The post-prenatal adaptations of the participants were measured at 28 - 32 weeks of pregnancy. Sercekus & Mete [12] suggested

that pregnant mothers may focus more on birth-related topics when they are about one month prior to their birth.

Furthermore, the findings on the adaptation's effect on the relationship with their mother was that it remained the same even after they received the antenatal education. This can be for several reasons. First, the score was already been low before the intervention (mean 18, range 10 - 50). This indicates that the mothers may have had a positive adaptation to the relationship before they participated in the study. Their mothers probably shared their pregnancy and birth experiences with their daughters. Second, the study subjects were primigravida mothers of a young age (22 years old), which this may have led their mothers to frequently ask about their daughter's health, pregnancy and also the birth. Therefore, whether the antenatal education was given or not, the relationship between the mother and pregnant daughter can be positive.

Unlike adaptations in reference to the acceptance of pregnancy, identification with the role of motherhood and the overall prenatal adaptation, the results of the adaptation in reference to their relationship with the husband became less positive after receiving the intervention – this is beyond expectations. According to Weis & Lederman[13], pregnant women should stay with their husband in order to ensure that there is a good level of adaptation in the relationship between them. However, in this study, the samples were not limited to primigravida mothers who stayed with their husband. It is well known that long-distance marriage is not uncommon in Malaysia. Since this study did not include staying with the husband as the eligibility criteria, the reason why the relationship with the husband had become less positive after the antenatal education was conducted was unknown.

Adapting to pregnancy is necessary in order to avoid mental health problems in pregnant mothers[13]. The results of this study should be given attention by the midwives or nurses involved in providing services to this population, especially the primigravida mothers. The midwives or nurses may consider providing the antenatal education package used n this study in order to help their primigravida mothers in terms of prenatal adaptation. The nursing management should also consider integrating the antenatal education into the standard clinical practices of nursing in antenatal clinics. The courses should also be provided to equip them with knowledge on the importance of antenatal education as well as its implementation. This is to ensure that the antenatal education is delivered in an effective way in order to assist the pregnant women going through the prenatal adaptation process [3].This study, nevertheless, warrants further investigation to include written information in the intervention and samples from those living with their husband as a part of the study criteria. The intervention should also be implemented longer so then each topic can be delivered in an independent session.

5. Conclusion

The antenatal education in this study has resulted in an increase of positive prenatal adaptation in relation to the aspects tied into the acceptance of pregnancy and the identification with a motherhood role as well as the overall adaptation. Midwives or nurses who are involved in health education at the antenatal clinics are encouraged to consider antenatal education for pregnant mothers. Future studies that deal with the limitations inherent in this study should be undertaken.

References

[1] Marshall J and Raynor M 2014 *Myles Textbook for Midwives* 16th Ed Edinburgh: Saunders Elsevier.

[1] Chou F H, Avant K C, Kuo S H and Fetzer S J 2006 Relationships between nausea and vomiting perceived stress social support pregnancy planning and psychosocial adaptation in a sample of mothers: A questionnaire survey. *International Journal of Nursing Studies* **45**:1185-1191.

[2] Sharifah Sulaiha Syed Aznal, Wong C Y, Pamela Lee L T, Vee V S and Chui K W 2014 Mother's mental preparedness for pregnancy: The affecting factors and its effect on birth outcomes. *Department of Obstetrics and Gynaecology, International Medical University* **8(3):**19-27.

[3] Deave T, Johnson D and Ingram J 2008 Transition to parenthood: the needs of parents in pregnancy and early parenthood. *BMC Pregnancy and childbirth***8(30):**1-11.

[4] Wang H H, Lin M L, Yang Y M, Tsai H M and Huang J J 2011 The effects of group health education on childbearing knowledge attitude and behaviour among Southeast Asian immigrant women in Taiwan. *Midwifery***28(2012):**754-759.

[5] Gagnon A J and Sandall J 2011 Individual or group antenatal education for childbirth or parenthood or both. *The Cochrane Collaboration***10**:1-64.

[6] Brady V and Lalor J 2017 Space for human connection in antenatal education: Uncovering women's hopes using participatory action research *Midwifery***55**:7-14.

[7] Bailey J M, Crane P and Nugent C E 2008 Childbirth education and birth plans. *Obstetric Gynecology Clinics of North America***35**:497–509.

[8] Berlin A, Tornkvist L and Barimani M 2016 Content and Presentation of Content in Parental Education Groups in Sweden. *The Journal of Perinatal Education***25(2):**87–96.

[9] Hamilton-Dodd C, Kawamoto T, Cark F, Burke J P and Fanchiang S P 1989 The effects of a maternal preparation program on mother-infant pairs: a pilot study. *The American journal of occupation therapy* **43(8):**513-521.

[10] Schachman K A, Lee R K and Lederman R 2004 Baby boot camp: facilitating maternal role adaptation among military wives. *Nursing research***53(2):**107-115.

[11] Secerkus P and Mete S 2010 Effect of antenatal education on maternal prenatal and postpartum adaptation. *Journal of Advanced Nursing***66(5):**999-1010.

[12] Weis K and Lederman R 2010 Prenatal spousal military deployment and maternal prenatal adaptation as predictors of postpartum maternal-infant attachment. *Nursing Research***10(3).**

[13] Aba Y A and Komurcu N 2017 Antenatal education on pregnant adolescents in Turkey Prenatal Adaptation Postpartum adaptation and newborn perceptions. *Asian Nursing Research***11**:42-49.

[14] Pallant J 2007 SPSS Survival Manual 3rd Ed New York: Mc Graw Hill.

[15] Cohen J 1988. *Statistical power analysis for the behavioral sciences* hlm. 2nd Edisi Hillsdale. NJ: Lawrence Earlbaum Associates.

[16] Walker J A 2013 What is the effect of preoperative information on patient satisfaction? *British Journal of Nursing* **16(1).**

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THE EFFECT OF HEALTH EDUCATION ON EARLY DETECTION OF BREAST CANCER USING DEMONSTRATION METHOD AND POSTER AS MEDIA

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ABSTRACT

Breast cancer is the second cause of death on women. Therefore, one method is needed to detect breast cancer earlier, one of that is by breast-self examination (BSE). The aim of this study was to determine the effect of health education on early detection of breast cancer using demonstration methods and poster as media against knowledge of teens which poster was displayed for fifteen days in each bedroom's teens. This study using pre-post experimental test design without control group. The population in this study was the teens in 11th grade on senior high school of North Indralaya with sample of 35 teens. Data retrieval for this research conducted on 11-25 May 2016. Analysis of experimental data using paired t-test. The results showed the average knowledge of the teens has increased from 12.20 (pretest) to 14.57 (posttest) with p-value 0.000 (<0.05). This result shown a very significant positive relationship between health education using demonstrations method and poster as media on increasing knowledge BSE for teens.

Keywords: breast self-examination, Ca Mammae, knowledge, poster, education

1. Introduction

Breast cancer is a global health issue and it is ~~a~~ leading cause of death among women internationally [1]. The World Health Organization reports breast cancer as being the most common cancer in women, both in the developed and developing world [2]. In Indonesia, it is the most common type of cancer and the second leading cause of cancer death for women, with an incidence of 1,4 cases per 1000 inhabitants. Mortality rates are the highest for women aged 20 - 59, followed by women aged 60 - 79 and those older than 80 respectively [3].

It is currently not possible to prevent breast cancer. However, early diagnosis is vitally important to improve outcomes [4]. The most effective ways to make a diagnosis are by breast self-examination (BSE), mammograms which are the gold standard for early diagnosis, and clinical breast examination (CBE) [5]. Women who regularly perform BSE have a greater awareness of their breasts, and if they detect any changes in their breasts, then they should immediately report to a health-care-professional [6]. Studies on BSE in Indonesia have showed that the rate of women having adequate knowledge and who do BSE regularly is extremely low [7].

The promotion of self-care, an attitude fostered early in life, may pay lifelong dividends. The adolescent period is a time of rapid change that provides teaching opportunities for shaping health

behaviors into adulthood. For example, teaching breast self-care may encourage positive behaviors such as performing breast self-examination (BSE) and attending regular professional breast examination[8]. Health behaviors such as BSE can help to empower women to take control and responsibility over their health promotion [9]. For adolescents, BSE education and adherence are a gateway to health promotion behaviors which sets the stage for the adherence to clinical breast examination and mammography screening later on in life [8].

Educational programs play an important role in breast cancer preventive behavior, and educational interventions have a positive impact on the knowledge, practices, early detection and health beliefs related to breast cancer [9]. Health education activities are more effective among younger groups such as students as they show a more positive attitude toward health education on breast cancer and early screening [10]. Educating young women about the early diagnostic methods of breast cancer is critically important to increase their awareness. Acquiring the behavior and practice of BSE at an early age is also likely increase the probability of continuing it later [5].

The early detection of breast cancer provides women with more treatment choices and a greater chance of long-term survival [11]. Breast self-examination is a simple and non-invasive screening method. In developing countries, BSE remains the method of choice for the early detection of breast cancer because of resource constraints [9]. Unfortunately, there have been only a few studies on the awareness of breast cancer and the practice of BSE among Indonesia women. This points to a lack of knowledge of breast cancer among women [7].

Traditionally, health education is imparted via didactic lectures using audiovisual aids. However, studies have proven that hands-on experience using mannequins and simulations is more a effective learning tool for skill development [12]. Hence a BSE training using a hands-on training experience could be more effective at imparting the skill of Breast Self-Examination, but there are no studies available in the previous literature that have tested this approach. The aim of this study was to determine the effect of health education on the early detection of breast cancer using the demonstration method and a poster as media.

2. Research method

2.1. Research design

This study was carried out using a pre-post test without a control group on a sample of female students from SMAN 1 North Indralaya. This was carried out from April to May 2016.

2.2. Sampling

The target population included all female students in the 11th grade in SMAN 1, North Indralaya. The participants were recruited through purposive sampling with the following inclusion criteria: 1) willing to be a respondent in the research study as shown by signing an informed consent form; 2) female students who were in the 11th grade and in good health; 3) female students who never obtained information about breast self-examination previously and 4) attended from the beginning of the pretest until the end of the post-test.

2.3. Sample size

The study sample included 39 female students who were according to the inclusion criteria.

2.4. Data collection instruments

The data was collected using a structural and validated questionnaire and planned teaching program using posters designed by the researcher. The questionnaire regarding adolescent knowledge about the BSE steps was developed by the researchers as well. A structured questionnaire consisting of 18 Multiple Choice Questions (MCQ) was developed to assess the knowledge about BSE. Each correct answer was 1 and each incorrect answer was 0. The total possible score was 18. The knowledge scores were assessed using a ratio scale. There was no level of knowledge because we could only see the score changes before and after the intervention.

The validity of the tools was established and administered to 20 females students from another school. The results of the validity test for the 18 items in the questionnaire showed that all of the questions were valid with an r value >0.444 ($\alpha = 5\%$) and a t value of >0.561 ($\alpha = 1\%$). The reliability was established by administering the questionnaire to 20 female students from another school. The reliability coefficient of the knowledge questionnaire was established using Cronbach's Alpha. The reliability coefficient was found to be 0.841.

There was also a planned teaching program. The lesson plan with the poster was given and it contained basic anatomy and physiology information, information on the risk factors for breast cancer and the steps of BSE. This was continued with a demonstration of the steps of BSE using a doll.

2.5 Data Collection Procedure

Administrative permission was obtained from the Principal of the selected school. Written consent was obtained from the study participants. The questionnaire was administered to them in the classroom setting. The data was collected by administering the knowledge questionnaire on BSE and the planned teaching program was also introduced to them. The teaching program consisted of demonstrating the steps of BSE using a doll for around 30 minutes and after finishing the intervention, we gave them a poster to stick on their bedroom wall. The students could therefore practice the steps of BSE upon seeing the poster in their bedroom. On the 15th day, a post-test was done by administering the same tool. The post-test score explained that the adolescents understood the steps of BSE from the teaching program and due to seeing the poster for 14 days.

2.6 Data Analyses

The data was analyzed using SPSS package version 16.0. The data was analyzed using descriptive and inferential statistics based on the objectives. Paired t-test analysis was conducted to find out the differences in knowledge before and after the intervention was given.

3. Result

At the time of the study, there were 4 respondents who dropped out; 2 respondents did not attend the post-test and 2 more respondents did not following the intervention because of getting an assignment from school. The sample size in this study was therefore reduced to 35 respondents.

The data presented in Table 1 shows that among the 35 samples, the majority (80%) of the samples were in the age range of 15 - 16 years. Only 14.26% of them had heard about BSE and 2.86% of participants (only one participant) had practiced BSE only once at the time of the study.

Table 1: Sample Characteristics

Demographic variables	(n= 35)	F	%
Age	15-16 years	28	80
	17-18 years	7	20
Age of first menstruation	<11 years	3	34.29
	11-14 years	32	65.71
	>14 years	0	0
Family history of cancer	Yes	1	2.86
	No	34	97.14
Have you heard/read about BSE?	Yes	5	14.26
	No	30	85.74
Have you ever performed BSE?	Yes	1	2.86
	No	34	97.14
If Yes, how often?	Once	1	2.86
	>1	34	97.14

The description of the knowledge scores pretest (Table 2) showed that the average knowledge of female students was 12.20 with a standard deviation of 1.907. The lowest score was 9 and the highest score was 15. The interval estimation results indicate that 95% were in the range of 11.55 to 12.85.

Table 2: Average knowledge of the female students before the intervention

Variable	**N**	**Mean**	**Median**	**SD**	**Min-Max**	**95% CI**
nowledge before intervention	35	12,20	12,00	1,907	9-15	11,55-12,85

The description of the knowledge scores post-test (Table 3) showed that the average knowledge of the female students was 14.57 with a standard deviation of 1.520. The lowest score was 10 and the highest score was 17. The interval estimation results indicate that 95% were in the range of 14.05 to 15.09.

Table 3: Average knowledge of female students after intervention

Variable	**N**	**Mean**	**Median**	**SD**	**Min-Max**	**95% CI**
nowledge after intervention	35	14,57	15,00	1,520	10-17	14,05-15,09

The paired t test was computed to test the effectiveness of health education on the early detection breast cancer using the demonstration method and posters as media (t= -7.170) as shown in Table 4. This shows that health education related to early detection breast cancer was very effective.

Table 4: Computation of the effectiveness of health education on the early detection of breast cancer

Variable	N	Mean	T	df	*p-value*
ɾe-intervention	35	12,20			
			.170	34	000
ɔst-intervention	35	14,57			

4. Discussion

Developing proper health habits in adolescence could lead to the maintenance of good health in adulthood. These habits can have profound long-term ramifications on health. One of these habits is breast self-examination [8]. This study provided important data about the breast health awareness of high school students in Indonesia. The adolescent females were found to have poor knowledge of breast cancer and BSE.

In the present study, the knowledge scores about breast cancer increased significantly at the 14 day follow up after the intervention. This finding demonstrates that breast cancer health education can improve the level of knowledge about breast cancer and the knowledge of early detection by BSE. Similar to the findings of other studies, the education highlighted the positive impact of the breast cancer knowledge including symptoms, risk factors, and early screening methods [10].

Only 14.26% of the students reported to hear about BSE and 2.86% of students had performed BSE. Almost half of the students reported that their main source of information on breast cancer and BSE was the media, consistent with the results of the study by Kara and Acikel (2009) [11]. These findings indicate that the media has continued to be one of the most important sources of information about breast cancer and BSE and that it highlights the cooperation between the public health educators and the media in dissemination breast cancer information and BSE.

The improvement of the knowledge about breast cancer may be attributed to the well-designed intervention. First, this study involved 2 hours of intensive training, consistent with Ludwick Gaczkowski and Budakoglu et al., who showed that short and one-time education was highly effective at improving the knowledge of breast cancer [1]. Second, in this study, color pictures in a combination of posters and written materials could make the participants better informed about the risk factors of breast cancer, the signs of breast cancer, the benefits of early screening methods and the steps of BSE. This result was consistent with that of Leslie et al., who stated that using the video kit was also very useful to improving the knowledge of breast cancer, but it is not convenient when in the form of written material [13]. These findings indicate that the health education conducted using a poster as a media could improve the participants' attitudes to breast cancer and BSE.

Since the sample of this study included the students of a high school, the results of the study cannot be generalized to a larger population in Indonesia. The variables in this study were singular, so the results of the study are limited to knowledge only. Some participants dropped out so the sample size was not as expected by the researcher.

5. Conclusion

The health behaviors that are formed during adolescence can enhance future health and have implications on the entire life course. Female high school students have little knowledge of the risk factors of breast cancer. The students were also not familiar with BSE. The results of this study may provide important baseline information about the awareness of breast cancer risk factors and the practice of breast self-examination among high school students. There is a need to increase the knowledge of the adolescent females about the risks of breast cancer and the benefits of early detection. Health care professionals should develop effective breast health programs in adolescence to help adolescent females to acquire good health habits in their youth. The nurse plays an important role in health promotion and this is only possible when she teaches or educates her client. However, the teaching of BSE can help women to be alert to any abnormal changes in their breasts and to seek medical advice immediately.

References

[17] Doshi D, Kulkarni S, Reddy Bs and Karunakar P 2012 Breast self-examination: Knowledge, attitude, and practice among female dental students in Hyderabad city, India *Indian J. Palliat. Care***18** 68

[18] Mohamed A, Mahfouz A A, Gaballah I I, Aftab R, Farheen A, Rabie F M, Hassanein M H A and Nahar S 2013 Breast Cancer Knowledge and Related Behaviors among Women in Abha City, Southwestern Saudi Arabia *J. Cancer Educ.***28** 516–20

[19] Memis S, Balkaya N A and Demirkiran F 2009 Knowledge, Attitudes, and Behaviors of Nursing and Midwifery Students Regarding Breast Self-Examination in Turkey *Oncol. Nurs. Forum***36** E39–46

[20] Chan C W H, Chan D N S, So W K W, Chen J M T and Sit J W H 2015 Innovative Health Promotion Program on Breast Cancer Screening for Ethnic Minority Women in Hong Kong *JOGNN - J. Obstet. Gynecol. Neonatal Nurs.***44** S1

[21] AA G, Yigitbas C, Yilmaz F, Erdol H, HK B, HK M, KY C, Kahriman I, Hintistan S and Nural N 2009 The effects of peer education on university students' knowledge of breast self-examination and health beliefs. *J. Cancer Educ.***24** 331–333 3p

[22] Lavdaniti M 2015 Perceptions and health beliefs of Greek nursing students about breast self-examination: A descriptive study *Int. J. Nurs. Pract.***21** 882–8

[23] Noor, S., Hardiyanti, D., Nursalam, Yunitasari, E., Tristiana R 2018 Analysis of factors relating to practice of breast self-examination (BSE) among women in Indonesia *Indian J. Public Heal. Res. Dev.***9** 595–9

[24] Karayurt Ö, Özmen D and Çetinkaya A Ç 2008 Awareness of breast cancer risk factors and practice of breast self examination among high school students in Turkey *BMC Public Health***8** 1–8

[25] Desouky D E and Taha A A 2015 Effects of a training program about breast cancer and breast self-examination among female students at Taif University *J. Egypt. Public Health Assoc.***90** 8–13

[26] Ouyang Y Q and Hu X 2014 The effect of breast cancer health education on the knowledge, attitudes, and practice: A community health center catchment area *J. Cancer Educ.***29** 375–

81

[27] Kara B and Acikel C H 2009 Health beliefs and breast self-examination in a sample of Turkish nursing students and their mothers *J. Clin. Nurs.***18** 1412–21

[28] Raithatha S J, Mangalampalli A, Patel M, Kumar D and Tapadiya M 2018 Comparison of two training techniques (mannequin versus flip-chart presentation) of breast self examination of rural women: An interventional study *J. Cancer Policy***15** 1–4

[29] Leslie NS, Deiriggi P, Gross S, DuRant E, Smith C V J 2003 Knowledge, attitudes, and practices surrounding breast cancer screening in educated Appalachian women *Oncol Nurs Forum***30** 659–667

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THE EFFECTIVENESS OF SCHOOL-BASED SMOKING PREVENTION PROGRAM: A SYSTEMATIC REVIEW

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ABSTRACT

Smoking behavior in children is a behavior that can cause health problems or chronic diseases in adulthood. The risk of illness and death will increase if smoking behavior starts at a young age. In addition to causing a burden of disease, smoking can also cause social, economic, and environmental burdens for themselves and other as passive smokers/secondhand smoke. Smoking prevention program is one of the efforts that can be done to reduce the number of smokers and novice smoker. The systematic review aimed to identify the effectivity of school-based smoking prevention program in preventing smoking behavior (cognition, knowledge, attitude, skills, etc). This review conducted database in Scopus, ScienceDirect, Medline, and CINHAL with inclusions are randomized control trial study determined from 2012 to 2018 and related to smoking prevention. The analysis from the article searches is resulted 15 suitable articles with the term required. School-based programs can increase knowledge, attitudes/perceptions of adolescents about smoking, and reduce cigarette use approvals. A school-based program can be a program of controlling and preventing smoking in adolescents/school children.

Keywords: smoking prevention, school-based program, adolescent

1. Introduction

Smoking behavior in children is a behavior that can cause health problems and chronic diseases in adulthood [1]. The risk of illness and death will increase if the smoking behavior starts at a young age. In addition to causing a burden of disease, smoking can also cause social, economic and environmental burdens for themselves and other as passive smokers and due to secondhand smoke [2]. The developments in the stages of smoking behavior star from someone who does not find it easy to smoke through to becoming a person who is vulnerable to smoking behavior, and then finally becoming a smoker[3]. Data from the Surgeon General states that since cigarettes were first marketed in the United States in 1964, twenty million people have died from smoking both as active and passive smokers[4]. Smoking is the cause of death for

nearly 6 million people each year and it is estimated that by 2030, this will increase to 8 million people every year[5].

The factors that can affect children and adolescents related to smoking are wanting to try the "taste" promised by cigarette advertising, wanting to look cool and "slang", being considered an adult by others, being loyal to their friendships, having the wrong perception of cigarettes (cigarettes can reduce or eliminate stress), and the environment they are exposed to cigarettes in[2]. Adults who smoke in the same social environment as children and adolescents indirectly will shape their perceptions, motivations and how they learn about smoking. Close friends can be an important factor in changing the behavior of children and adolescents towards tobacco use[4].

Control programs have been improved, but the usage and hazards that arise remain at a high level [6]. Schools are places that can be used in smoking prevention programs for children and adolescents because most of those in the early age range of smoking are still in the school environment[3,7]. Schools have a tobacco control policy that means that the school community does not to use tobacco products (cigarettes) in the school environment[3]. The school becomes an institution that can determine the quality of life and behavior of adolescents, and this has a profound effect on their lives. Therefore, schools can be a good place to prevent high-risk behaviors that occur during adolescence[8].

School-based smoking prevention programs offering broad and effective interventions that can reach groups of children and adolescents[9]. Various school-based tobacco controls, programs and policies have been implemented with varying degrees of success in terms of reducing the prevalence of smoking among students[3].

The goal of the school-based smoking prevention program is to improve the smoking prevention behavior in childhood and adolescents. Thus, the purpose of this study was to examine the benefits and to identify the school-based smoking prevention programs for children and adolescents.

2. Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement.

2.1 Data Sources and Searches

The results obtained were drawn from the Scopus database, ScienceDirect, Medline and CINHAL, from 2012 until 2018. The articles were searched according to the following keywords: school-based program, smoking prevention and adolescents. Every article that was included in this systematic review has received ethical clearance approval.

2.2 Study Selection

The papers went through 3 stages of screening to determine their accuracy and to avoid duplicate titles, citations and abstracts. In the first stage, filtering all of the relevant data was based on the content. Second, the researcher read all of the articles at least 3 times so then each

article was assessed thoroughly and independently by the researcher. The last step was where the researcher finalized the data to determine the appropriate articles before extracting and analyzing the data itself.

2.3 Data extraction and quality assessment

All citations retrieved from the electronic databases were imported into the Mendeley Program. Two reviewers (AY, YSA) independently analyzed the titles and abstracts of every study retrieved from the literature search to identify which were potentially eligible. The full text of the remaining studies were obtained for further examination. The last review was conducted by the first reviewer (TPD).

The research data included the author's name, year of publication, sample size, research design, the general characteristics of the participants (age) and any interesting results from the school-based smoking prevention programs. A detailed description of the intervention of the school-based smoking prevention program included the characteristics of the intervention (type, duration, and frequency) and the impact of the smoking prevention efforts on the students (children and adolescents).

6. Results

From the article and journal search, 11.510 papers were found from within four databases, including 1040 articles from CINHAL and Medline, 473 articles from Scopus, and 9.997 articles from ScienceDirect. The detailed identification and selection processes of the papers can be seen in Figure 1. The results of the paper selection were according to the inclusion criteria and they were then given a sequence number to facilitate the review process (Table 1).

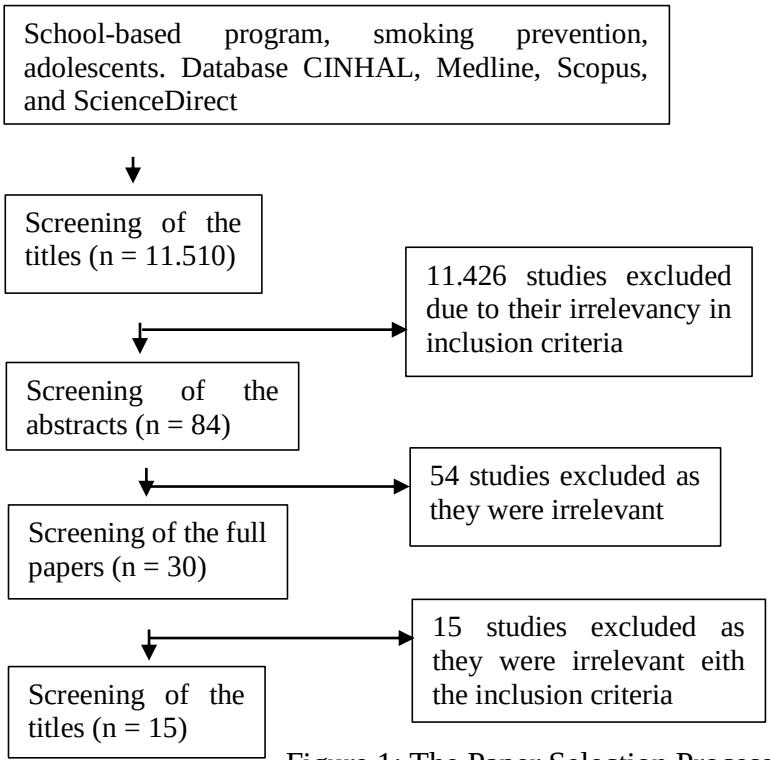

Figure 1: The Paper Selection Processes

For the results of the study conducted by Tahlil et al[6], the intervention given was that the students were taught about the prevention of smoking from an Islamic perspective including smoking behavior in Islamic societies, Islamic views on health, the effects of smoking, national regulations and rules in relation to Islamic teachings about smoking behavior, skills in rejecting smoking invitations and healthy living techniques. It was given using interactive teaching methods (group discussions, brainstorming, role play and storytelling). School-based programs can provide long term benefits for the Indonesian adolescents' smoking knowledge and attitudes.

Based on the research done by Cole, Qian and Leatherdale[3], six tobacco programs or policy interventions had a significant positive influence on the student's susceptibility to smoking.

The X: IT programs conducted by Bast et al.[7] included non-smoking school yard programs, smoking-free curriculums, and parental involvement, contracts, and dialogue. The results show that a higher level of implementation will increase the effect of the intervention itself.

The results of the study conducted by Midford et al.[9] used DEVS intervention. The DEVS program was carried out for 3 years with the result that there was an increase in knowledge about smoking, talking more about smoking with their parents, smoking did not increase, and positive changes were seen in the effects of smoking. These results are in line with the results of Al-sheyeb et al.,[17] using the TAJ intervention (Triple A-Adolescent Asthma Action) and TAJ-Plus (smoke-free classes) by increasing both smoking knowledge and perceptions. TAJ consisted of 3 steps in the intervention, namely training the senior students (peer leaders) and facilitating program implementation (education for juniors in 3 sessions, quizzes and role playing).

Chun, Bae, and Min[16] used 6 sessions adapted from the cognitive behavioral model and the sessions were conducted for 45 minutes 3 times a week in the intervention group (2 schools, n = 35 students) and there was a 1 hour regular education session in the control group (n = 45 students). The research conducted by Rafiee et al.,[8] used an educational intervention to improve self-efficacy in 53 students consisting of 27 students in the intervention group and 26 students in the control group. The education given consisted of 5 sessions a week that covered stress management, an awareness of smoking risks, decision-making management and problem-solving skills, effective and interpersonal communication, and being courageous and the skill of saying no.

The results of the study conducted by Kolovelonis, Goudas, and Theodorakis[15] promoting sports as an alternative to smoking consisted of 8 sessions every week. The program was called "I do not smoke, I exercise". The intervention was carried out on 338 elementary and middle school students (135 elementary school students, 203 middle school students).

4. Discussion

The prevalence of smokers in the world continues to increase every year, as do smokers who are adolescents [14]. Smoking behavior can be influenced by many factors including the desire or curiosity of adolescents, environmental influences, and high cigarette production, and

so on. This of course can affect the health of a child or teenager in the future [4]. Therefore, a way that can improve smoking prevention behavior is needed. There are many researchers looking for ways to overcome the problems that exist related to children and smoking. For the methods or ways to overcome the problems that are found include school-based smoking prevention program.

School-based smoking prevention is a program that is based on the curriculum in schools using the objectives of the school students using various methods and media [7]. The purpose of using this program is to be able to increase the students' knowledge of behavior and the impact of smoking on health, changes in the attitudes / perceptions of smoking risk, normative expectations, resistance skills and refractive self-efficacy efforts [10]. In addition, school-based prevention programs are also a method to train the students as peer-leaders to influence the people around them.

Fifteen journals used school-based smoking prevention programs utilizing several methods and media including group discussions, education, quizzes, role playing, storytelling, extracurricular activities, brainstorming, active learning and short videos, which all showed a significant effect on improving the knowledge, perception, attitude and skills involved in rejecting smoking invitations, motivation, self-management, and quality of life.

5. Conclusions

School-based smoking prevention programs using education, training for both the students and teachers, extracurricular activities based on the school curriculum as well as policies and regulations on smoking in schools are both reliable and effective at improving knowledge, attitudes, self-efficacy, motivation, refusal skills, and self-management in smoking prevention.

References

[30] Puslitbang. Perilaku berisiko kesehatan pada pelajar SMP dan SMA di Indonesia. Badan Litbangkes Kementrian Kesehat RI [Internet]. 2015;1–116. Available from: http://www.who.int/ncds/surveillance/gshs/GSHS_2015_Indonesia_Report_Bahasa.pdf?ua=1

[31] Kemenkes RI. Infodatin-hari tanpa tembakau sedunia. Hari tanpa tembakau sedunia. 2015. p. 2–12.

[32] Cole AG, Qian W, Leatherdale ST. Changing the Smoking Trajectory : Evaluating the Impact of School-Based Tobacco Interventions on Changes to Susceptibility to Future Smoking. 2017;

[33] Prokhorov A V., Calabro KS, Tamí-Maury I. Nicotine and tobacco use prevention among youth and families. Semin Oncol Nurs [Internet]. 2016;32(3):197–205. Available from: http://dx.doi.org/10.1016/j.soncn.2016.05.003

[34] López EV, Rey-reñones C, Rodriguez-blanco T, Grau CF, Arija V, Luisa M, et al. Efficacy of a smoking prevention programme in Catalan secondary schools : a cluster-randomized controlled trial in Spain. 2015;852–60.

[35] Tahlil T, Woodman RJ, Coveney J, Ward PR. Six-months follow-up of a cluster randomized trial of school-based smoking prevention education programs in Aceh , Indonesia. 2015;1–11.

[36] Bast LS, Due P, Bendtsen P, Ringgard L, Wohllebe L, Damsgaard MT, et al. High impact of implementation on school-based smoking prevention: The X:IT study-a cluster-randomized smoking prevention trial. Implement Sci [Internet]. 2016;11(1):1–14. Available from: http://dx.doi.org/10.1186/s13012-016-0490-7

[37] Rafiee Z, Assarroudi A, Zare M, Miri HH, Nabavi FH. Effects of a School-Based Interventional Program on Smoking Refusal Self-efficacy in Adolescent. 2018;(098 51).

[38] Midford R, Cahill H, Lester L, Foxcroft DR, Ramsden R, Venning L. Smoking Prevention for Students: Findings from a Three-Year Program of Integrated Harm Minimization School Drug Education. Subst Use Misuse. 2016;51(3):395–407.

[39] Carreras G, Bosi S, Angelini P, Gorini G. Mediating factors of a school-based multi-component smoking prevention intervention: The LdP cluster randomized controlled trial. Health Educ Res. 2016;31(4):439–49.

[40] Gonzálvez MT, Morales A, Orgilés M, Sussman S, Espada JP. Role of smoking intention in tobacco use reduction: A mediation analysis of an effective classroom-based prevention/cessation intervention for adolescents. Addict Behav [Internet]. 2018;84(January):186–92. Available from: https://doi.org/10.1016/j.addbeh.2018.04.013

[41] Maruska K, Hansen J, Hanewinkel R, Isensee B. The Role of Substance-Specific Skills and Cognitions in the Effectiveness of a School-Based Prevention Program on Smoking Incidence. Eval Heal Prof. 2016;39(3):336–55.

[42] Mohammed M, Eggers SM, Alotaiby FF, de Vries N, de Vries H. Effects of a randomized controlled trial to assess the six-months effects of a school based smoking prevention program in Saudi Arabia. Prev Med (Baltim) [Internet]. 2016;90:100–6. Available from: http://dx.doi.org/10.1016/j.ypmed.2016.06.032

[43] Thurston A, Dunne L, Kee F, Gildea A, Craig N, Stark P, et al. A randomized controlled efficacy trial of a smoking prevention programme with Grade 8 students in high schools. Int J Educ Res [Internet]. 2018;(July):0–1. Available from: https://doi.org/10.1016/j.ijer.2018.10.003

[44] Kolovelonis A, Goudas M, Theodorakis Y. Examining the Effectiveness of the Smoking Prevention Program "I Do Not Smoke, I Exercise" in Elementary and Secondary School Settings. Health Promot Pract. 2016;17(6):827–35.

[45] Chun JS, Bae YJ, Min SK. Effectiveness of smoking cessation program for male adolescents in South Korea. Child Youth Serv Rev [Internet]. 2012;34(1):304–10. Available from: http://dx.doi.org/10.1016/j.childyouth.2011.10.029

[46] Al-sheyab NA, Khader YS, Shah S, Roydhouse JK, Gallagher R. The effect of a "class smoke free pledge" on breath carbon monoxide in Arabic male adolescents. Nicotine Tob Res. 2018;20(5):568–74.

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Author	Title	Design	Sample	Intervention	Frequency/ Duration	Results
Tahlil et al., 2015 [6]	Six-months follow-up of a cluster randomized trial of school-based smoking prevention education programs in Aceh, Indonesia	RCT	476 students (11 and 14 years)	The intervention given is based on Health-based intervention program (historical perspective of tobacco smoking and smoking behaviors in Indonesia, tobacco smoking effects, national regulation about tobacco smoking, refusal skills, assertiveness, and stress management) and Islam-based intervention (smoking prevention from an Islamic perspective, and this included information about Islam; tobacco smoking among Islamic society; Islamic view about, health, tobacco smoking, and healthy living techniques) adapted to the culture and education curriculum. We used teaching methods such as group/class discussions, brain storming, role play, and storytelling.	Eight two-hour sessions.	Health and Islamic-based programs provided stronger effects and while the separate health and Islamic-based approaches showed similar effects, tailoring the intervention components to the participants' religious background might be useful in improving the long-term effectiveness of school-based smoking prevention programs. School-based programs can provide long term benefits on Indonesian adolescents' smoking knowledge and attitudes
Cole, Qian and Leatherdale, 2017 [3]	Changing the Smoking Trajectory: Evaluating the Impact of School-Based Tobacco Interventions on Changes to Susceptibility to Future Smoking	COMPASS (a school-based	Students in Grades 9 to 11 (8.834 students)	Six tobacco program or policy interventions (enforced smoking bans with fines, giving letters to the parents of students who smoke, smoke prevention training)	2012-2014	Few interventions in this study had a significant positive influence on student susceptibility to smoking.

		cohort study design)				
Bast et al., 2016 [7]	High impact of implementation on school-based smoking prevention: The X:IT study-a cluster-randomized smoking prevention trial	RCT	Grade 7 pupils (mean age 12.5 years) and 4141 students	The intervention included three components: (1) smoke-free school grounds, (2) smoke-free curriculum, and (3) parental involvement, contracts, and dialogues.	2010-2012	Implementation assessment includes the adherence to the intervention, the dose, quality of delivery, and participant responsiveness. Schools, which were implemented in the intervention in close accordance with the aim and directions of the intervention program, were found to be highly effective at preventing smoking among the adolescents compared to the control schools. There was a graded negative association between implementation fidelity and smoking

						prevalence among adolescents. The smoke-free curriculum was implemented with high fidelity in the first year but this dropped markedly the second year. Parental involvement, based on the contracts and dialogues, was implemented with high fidelity and stability during the intervention period.
López et al., 2015 [5]	Efficacy of a smoking prevention program in Catalan secondary schools: a cluster-randomized controlled trial in Spain	RCT	1128 students in 29 school 11–15 years of age	The program consists of seven modules that use a different approach to smoking habits including activities, work-shops and/or class sessions.	Consists of 9 sessions over 3 years 1-hour in-class sessions	The school-based intervention reduced the risk, prevalence and incidence of smoking by 25 and 26% respectively, but this was not statistically significant ($P \geq 0.170$). The session given must include a minimum of 10 sessions to get a significant

						program effect.
Midford et al., 2016 [9]	Smoking Prevention for Students: Findings from a Three-Year Program of Integrated Harm Minimization School Drug Education	RCT	13-15 years 1163 students (DEVS program) and 589 students (control)	The intervention was given across 18 lessons consisting of 10 lessons in 2010 and 8 lessons in 2011 using the existing curriculum resources including student workbooks, trigger videos and teacher manuals.	18 lessons consisting of 10 lessons in 2010 and 8 lessons in 2011	Intervention students smoked fewer cigarettes and experienced less smoking related harm, than those in the control. The school drug education program, delivered by specifically trained teachers and employing participatory, student-centered pedagogy, benefited the students who choose to smoke cigarettes, while they did not encourage the uptake by non-smokers
Carreras et al., 2016 [10]	Mediating factors of a school-based multi-component smoking prevention intervention: The LdP cluster randomized controlled trial. Health Educ Res	RCT	14-15 years 989 students	This intervention included the 'Smoking Prevention Path' (SPP), an educational intervention delivered by trained educators, in the context of a community Health Promotion centre. The classroom component consisted of a 2-h in-depth school lesson on one of the SPP sessions. A life-skills peer-led intervention. The enforcement of a school tobacco policy.	SPP was divided into four 40-min sessions. The classroom component consisted of two 2-hour meetings. A life-skills peer-led intervention trained in three 2-h sessions at	The program was also shown to significantly increase risk perception and smoking knowledge, even though these mediators had no effect on smoking. The LdP intervention directly reduced

					school plus one meeting	smoking in school areas.
González et al., 2018 [11]	Role of smoking intention in tobacco use reduction: A mediation analysis of an effective classroom-based prevention/cessation intervention for adolescents	RCT	685 adolescents aged 14 – 20 years	The Project EX curriculum was closely adapted from the original program developed in the United States, included strategies to quit smoking and learning skills for non-smoking maintenance, with an interactive methodology based on motivation.		Project EX can reduce the students' intention to smoke after 12 months. Efforts can be made such as making a commitment about not using tobacco for a long time.
Maruska et al., 2015 [12]	The Role of Substance-Specific Skills and Cognitions in the Effectiveness of a School-Based Prevention Program on Smoking Incidence	RCT	Students in Grades 5 and 6.	This program focuses on improving skills (coping with emotions, stress, and problems and on teaching) or modifying skills and cognition (attitudes toward smoking and risk perception, smoking-related knowledge, normative expectations concerning adult and peer smoking, resistance skills, and the self-efficacy to refuse cigarette offers).	The program is comprised of 14 units, most of which were 90 mins in duration, and two workshops, that were four to six class hours each.	Substance-specific skills and cognitions targeted by the social influence curricula seemed to contribute not only to the effectiveness of the programs in modifying current use but also in preventing adolescent smoking onset.
Mohammed et al., 2016 [13]	**Effects of a randomized controlled trial to assess the six-months effects of a school-based**	RCT	1416 student in Grade 8 (13-15 years) in 19 schools	The five-week program was implemented in December 2008 and January 2009. This program comes from a smoking prevention program in the Netherlands which was then adjusted to the culture and norms in Saudi Arabia. It used a	Five lessons; each lesson took 45 min to be implemented	The students who were exposed to the program had stronger Non-smoking attitudes, a higher self-efficacy to cope with peer and

	smoking prevention program in Saudi Arabia			led peer video, followed by group work and active learning.		social pressure, more action planning and a lower intention to smoke in the future. Smoking initiation at the 6 month follow-up was significantly lower in the experimental group than in the control.
Thurston et al., 2018 [14]	Randomized controlled efficacy trial of a smoking prevention program with Grade 8 students in high school	RCT	Grade 8 students (13-14 years old) 881.55 for the intervention and 992.7 for the control.	Dead Cool was delivered by the teachers and was comprised of four lesson plans consisting of five sessions held for 4 weeks with a duration of 40 minutes/session. The intervention was given using DVD media in the form of short video clips.	Five sessions for 4 weeks (40 minutes/ session)	Multi-level modeling indicated that the program prevented smoking initiation in Grade 8 students.
Kolovelonis, Goudas, and Theodorakis, 2016 [15]	Examining the Effectiveness of the Smoking Prevention Program "I Do Not Smoke, I Exercise" in Elementary and Secondary School Settings	RCT	338 Greek students (135 elementary and 203 secondary students)	For each session, a student book in PDF file form was available that included information about smoking and exercise (e.g., short- and long-term consequences of the smoke on the human body) and examples of activities (e.g., puzzles, drawings, interviews, and slogans). The implementation of the program was mainly based on alternative teaching methods (e.g., brainstorming, role-playing, discussion groups, problem solving). Short lectures were also included. Furthermore, 10 physical education games combining sporting activities with	8 sessions implemented weekly	The results showed that the program had a significant effect on the elementary students' attitude toward smoking, the intention to smoke, subjective norms, the attitude toward the application of the program, and the knowledge of the health consequences of smoking. For the secondary students,

				smoking prevention exercises were available.		significant effects were found in relation to the students' perceived behavioral control and their knowledge about the health consequences of smoking. Very few students reported as having a smoking experience before and after the intervention.
Chun, Bae, and Min, 2012 [16]	Effectiveness of a smoking cessation program for male adolescents in South Korea	RCT	80 male middle school students	This intervention program is based on the cognitive behavior model that has been modified according to the characteristics and cultural factors of Korean students. In session one, they explained the objectives and encouraged the students to introduce themselves and their expectations. In session two, the students performed self-monitoring to better understand themselves, to analyze the pros and cons of smoking, and to anticipate the positive changes associated with quitting smoking. The third session provided each participant with an opportunity to identify their strengths and sources of support for improving self-efficacy. In the fourth session, the participants examined their stressors and	This program consisted of 6 sessions conducted over two weeks with a duration of 45 minutes per session	In conclusion, the significance of this study was that we were able to develop and verify the effectiveness of a shorter smoking cessation program combined with the biological measurement of cotinine and CO in the Korean adolescents.

PHP-668	talked about the causes of stress and potential resolutions. The fifth session involved learning techniques for abstaining from smoking, and for dealing with various situations in order to achieve the goal of becoming a nonsmoker. The students took part in situational role-play (called "Angels and Demons") to practice refusing an offer to smoke a cigarette. In the sixth session, thte students wrote plans to stay away from smoking and they reviewed the measures and techniques that they had learned in the previous sessions.

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CORRELATION OF WORK SCHEDULING TOWARD QUALITY OF NURSE WORK LIFE: A SYSTEMATIC REVIEW

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ABSTRACT

Employee scheduling problems are often found in the hospital. The quality of nurse work life is describing how nurses satisfied with their personal and work needs through participation in the workplace. The sttudy aimed to know the correlation of work scheduling toward quality of nurse work life. Scopus, ProQuest, and Google Scholar databases. Published articles are identified in January 2014 - December 2018. The keywords are "work schedule" AND "QNWL" OR "Quality of Nurse Work Life" AND "Nurse". Articles with observational cross sectional case-control, prospective or retrospective cohort studies and quasi-experimental design. There were 18 articles reviewed from 516 articles found using keywords in the database. The results of the review found that the work shift was related to the quality of nurse work life. Work scheduling can affect nurses activities outside their working hours and nurses feel difficult to socialize. There is a correlation between work scheduling and the quality of nurse work life. To maintain a good quality of work life, nursing management can develop a transition rotation schedule, coordinate the work patterns, improve work shift hours, propose an increasing sallary and recognize workplace characteristics

Keywords: work schedule, quality of nurse work life, QNWL, nurse

1. Introduction

Employee scheduling problems are often found in the service industry, one of which is in hospitals. Most nurses have working hours scheduled as shifts. A job shift is defined as the organization of daily working hours where different people or teams work sequentially to cover more than 8 hours in a normal day[1]. Nurses, in providing comprehensive nursing care to patients in hospitals, will experience a lot of pressure because of the environmental situation that requires optimal performance, dissatisfied patients who are being treated and an uncomfortable feeling because the shift disrupts their sleep and rest cycles. Nurses in the treatment room will provide optimal nursing care so then the patients can recover. This condition can cause a crisis that occurs due to changes in the environment while treating patients in hospitals.

The most common problems related to work shifts were psychological disorders (96.4%), followed by social life (84.5%) and digestive problems (81%)[2]. Work schedules affect the nurses when it comes to them carrying out activities outside of work. Additionally, 25% of respondents who worked the afternoon and evening shifts found that their work shifts sometimes made it difficult for them to socialize with the environment outside of their work[3].

Quality of work life is a fairly broad and general concept, so the quality of work life is beginning to be developed in accordance with the field of work it is focused on[2]. The quality of life of the nurse's work or Quality of Nursing Work Life (QNWL) can be defined as the extent to which a nurse feels satisfied with both their personal needs and work through participation in the workplace to achieve the organizational goals[4]. Research on the factor analysis from QNWL shows that there are 4 valid factors including work context, support system (home and work), work design and employment system[5].

The development of structural empowerment models using the indicators of resources, support and information have a direct influence on psychological empowerment, which reduces fatigue syndrome in nurses[6]. In the end, fatigue syndrome, as an indicator of personal achievement, can affect the Quality of the Nurse's Work Life (QNWL). Hospitals that pay attention to the quality of the work life of the nurses (quality of nurse work life or QNWL) will be able to improve their service quality[7]. In addition, the quality of work life of the nurses, which includes the relationship between their work life and household life, work shifts, workload, the number of nurses, autonomy in decision making, supervision, relationships with colleagues, career development opportunities, salary, and compensation, can affect their commitment to the organization[8]. QNWL indirectly affects the intention to stay through job satisfaction and commitment[7]. The recommendation to increase the intention to stay is to develop good work life quality, job satisfaction and nurse commitment. There are 3 benefits from applying the quality of work life of nurses principles, namely increasing their commitment to the organization, in addition to their work productivity and work effectiveness[7].

The purpose of this systematic review was to find out the impact of work scheduling on the quality of the nurse's work life.

2. Research Methods

This systematic review used a guide based on the Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA) (Liberati et al, 2009). The systematic review was followed by screening and removing duplications, and then conducting title and abstract-based screening for the elimination of articles with topics that were inappropriate / irrelevant. The articles obtained were then identified based on the inclusion criteria (eligibility criteria) that had been determined by reading the whole text. Articles that were appropriate according to the criteria were used to prepare the systematic review.

2.1. Literature inclusion criteria

The inclusion criteria were: 1) Observational design; cross-sectional case-control, prospective or retrospective cohort studies with a quasi-experimental design; 2) Published in English; 3)

Participants were nurses; 4) Outcome: work shift - quality of nursing work life (QNWL) and 5) Published between January 2014 and December 2018.

2.2. Resources

The literature used in this systematic review was acquired through searching 3 (three) electronic databases: Scopus, ProQuest and Google Scholar.

2.3. Literature search

The keywords used were “work schedule” AND “QNWL” OR “Quality of Nurse Work Life” AND “Nurse”. The standard protocol for selecting the research used a guide based on the Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA) (Figure 1).

A total of 13 articles were identified to be included in the systematic review. Searching through Scopus, ProQuest and Google Scholar databases found 516 articles. After duplication screening, topic suitability, research design, English-language publications, and irrelevant outcomes were assessed, there were 13 articles that met the criteria for the review. In total, 10 of the selected articles used a cross-sectional design, 2 consisted of prospective cohorts and 1 article used a survey design.

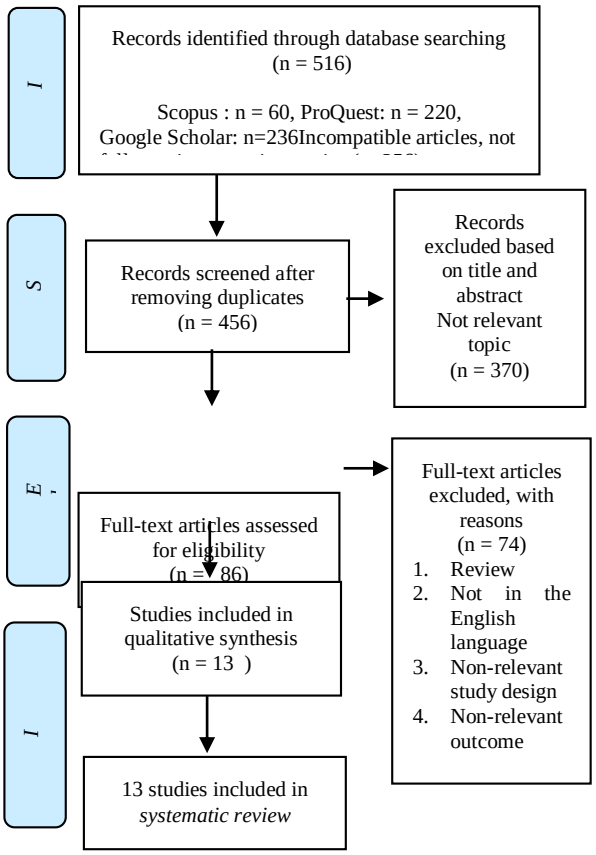

Figure 1: Flow Diagram

2.4. Data Collection

The data was extracted from each study. The articles that were obtained have been included in Table 1 and described. The articles were described by title, author and year, research design, population, the variables involved, the instrument, the outcome and results. Describing the articles made it easier for the author to review each article that was obtained.

3. Results

Work scheduling relates to the life of the nurse both in the work environment and in their personal lives, such as changing their activities outside of work and encountering the difficulty of socializing in the environment outside their work.

There are several impacts that can be identified from the articles. Night work and work rotation take turns not being related to the potential of anxiety or depression. The nurses that work in turns reported higher levels of mental pressure and lower levels of job satisfaction. In some parts, stress in social relations occurred higher in nurses who work in shifts.

Shift workers reported that working shifts had a negative impact on their life outside of work. Despite the negative effects, the participants generally thrived when working shifts.

Table 1. Information on the 13 articles showing the impact of work scheduling on the quality of the nurse's work life

No	Title	Design	Population	Variable	Instrument	Outcome	Result
1.	Effects of Psychological and Social Factors in *Shift* work on Symptoms of Anxiety and Depression in Nurses [9]	Prospective cohort	N: 1574 nurse	1. Psychological Factors of Shift work 2. Social Factors of Shift work 3. Symptoms of nurse anxiety and depression	1. General Nordic Questionnaire for Psychological and Social Factors 2. Factors at work 3. The Swedish Demand–Control–Support Questionnaire. 4. Hospital Anxiety and Depression Scale	Job demands predict the symptoms of depression.	Night work and work rotation take turns not being related to the potential for anxiety or depression 1 year later. Anxiety and depression predict worker experience and the assessment of the work conditions.
2.	Occupational stress and work efficiency of nursing staff engaged in rotating *shift* work [10]	Cross-sectional	N: 122 staff nurses	1.*Shift* work 2.Occupational stress 3.Work efficiency	Standard *Shift* work Questionnaire	1. Occupational stress 2. Work efficiency	The minimum duration of sleep among the night shift nurses was repeated compared to the other shifts. The quality of sleep was disturbed,

No	Title	Design	Population	Variable	Instrument	Outcome	Result
							and this mostly occurred between consecutive night shifts. Although the alertness and performance of the nursing staff varied on different shifts, the final part of the night shift and the early part of the morning shift are most vulnerable to the disruption to work efficiency:
3.	*Shift* work, mental distress and job satisfaction among Palestinian nurses [11]	Cross-sectional	N : 309 participants	1. *Shift* work 2. Mental distress 3. Job satisfaction	1. Demographic variables (age, sex, number of children) 2. General Health Questionnaire	1. Mental distress 2. Job satisfaction	The nurse's work took it in turns reporting higher levels of mental pressure and lower levels of job satisfaction.

No	Title	Design	Population	Variable	Instrument	Outcome	Result
4.	Rotating *shift* work increases occupational stress [12]	Cross-sectional	N: 654 female nurses.	1. Rotating *shift* work 2. Occupational stress	Effort-Reward Imbalance model with a self-reported questionnaires	Occupational stress	The risk of over-commitment is higher for nurses working shifts compared to those who work day / non-shift
5.	Physical Activity, Energy Expenditure, Nutritional Habits, Quality of Sleep and Stress Levels in *Shift*-Working Health Care Personnel [13]	Prospective cohort	N = 4623 nurses working shifts, 10 nurses working non-shift / regular and 13 staff scholars.	1. *Shift*-working 2. Physical activity 3. Energy expenditure 4. Nutritional habits 5. Quality of sleep 6. Stress	1. Multisensory accelerometer 2. metabolic equivalents of task (METs) 3. Trier Inventory for Chronic Stress questionnaire (TICS)	1. Physical activity 2. Energy expenditure / Nutritional habits 3. Quality of sleep 4. Stress	ıere is no difference in the work shifts related to physical activity, nutritional habits and sleep quality. ress in social relations occurs higher in nurses who work shifts.
6.	Nurse practitioner job content and stress effects on anxiety and depressive symptoms, and self-	Cross-sectional	161 nurses	ɔb content ress nxiety epresi elf-perceived health status	The Taiwan Nurse Stress Checklist The Chinese Version of the Job Content Questionna	nxiety and epression elf-perceived health status	ɔb content has an impact on moderate work stress, mild anxiety and depressio n, and having

No	Title	Design	Population	Variable	Instrument	Outcome	Result
	perceived health status [2]				ire (C-JCL) The Beck Anxiety Inventory (BAI) Beck Depression Inventory BDI-II)		below the perceived average health.
7.	Occupational stress and work efficiency of nursing staff engaged in rotating shift work [10]	Cross - sectional	122 nurses	1. Occupational stress 2. Work efficiency 3. Shift work	Standard Shift Work Questionnaire. Perceived Exertion (PE) ratings	ıift work ral temperature ycho-physiological stress eep	The alertness and cognitive performance of the nurses was found to be the worst in the late part of the night shift as well as, to some extent, the early part of the morning shift. These decrements probably coincide with impairments in work efficiency and, as a result, serious mistakes

No	Title	Design	Population	Variable	Instrument	Outcome	Result
							may happen.
8.	Managing Work Across Shifts: Not All Shifts Are Equal [14]	Primarily surveys	nurses (*N* = 446)	Work Shift Chronotype, Work context, negative affectivity,	Early/Late Preferences Scale Negative Affect Schedule Scale the six-item scale the General Health Questionnaire the Kessler-10 item version of the Centre for Epidemiological	hronotype. ge. egative affectivity . hift schedule. b satisfaction. eneral mental health	At the nurse level, this study's findings emphasize the role of the dispositional characteristics of the individual in shift work and in the work design, especially the strong influence of NA across a variety of outcomes, along with the potential to manage the impact of shift work through chronotypes. That is, variables such as chronotype and

No	Title	Design	Population	Variable	Instrument	Outcome	Result
							context are part of a set of complex interrelationships that determine an individual's adaptability to work shifts. The largest influence on the nature of the impact of shift and chronotype variables on nurses in this study was the context of the nurses' work, with different variables predicting outcomes more strongly in different contexts.
9.	Effects of Clockwise and Counterclockwise Job	Cross sectional	100 registered female nurses	1. Clockwise and Counterclockwise job shift	Ad hoc questionnaire and daily diary	eep duration and quality. 'ork-life	During the shift cycle, CW nurses slept

No	Title	Design	Population	Variable	Instrument	Outcome	Result
	Shift Work Rotation on Sleep and Work-Life Balance on Hospital Nurses [15]			2. Sleep 3. Work-life Balance		balance	longer (7.40 _ 2.24 h) than CCW (6.09 _ 1.73; p < 0.001). CW nurses reported less frequently than CCW regarding awakening during sleep (40% vs. 80%; p < 0.001), attention disturbances during work (20% vs. 64%; p < 0.001), and interference with their social and family life (60% vs. 96% and 20% vs. 70%, respectively; p < 0.001). The CCW

No	Title	Design	Population	Variable	Instrument	Outcome	Result
							rotating shift schedule seems to be characterized by a higher number of sleep disturbances and a worse work–life balance.
10.	Development of an empowerment Model for Burnout Syndrome and Quality of Nursing Work Life in Indonesia [7]	Cross sectional	134 nurses	1. Psychological empowerment 2. QNWL 3. Burnout syndrome	Condition for Work Effectiveness Questionnaire (CWEQ-II). Job Activities Scale (JAS). Organizational Relationship Scale (ORS). Psychological Empowerment Scale (PES). Maslach Burnout Inventory QNWL	'ork effectiveness. ɹb activities. ;ychological empowerment. ɹrnout NWL	The development of a structural empowerment model using the indicators of resources, support and information and how they directly influence the psychological empowerment of the sample of nurses. As an indicator

No	Title	Design	Population	Variable	Instrument	Outcome	Result
							of meaning, psychological empowerment decreased burnout syndrome. In turn, burnout syndrome, as the indicator of personal achievement, could affect the QNWL. Structural empowerment directly influenced the QNWL, particularly within the workplace context.
11.	The impact of shift work on intensive care nurses' lives outside work: a cross-	Cross sectional	114 nurses	1. Shift work 2. Nurse's personal live	A questionnaire survey conducted among Danish intensive care nurses concerning their	ıift work. ımily life. ɔare time activities. eep. ealth.	Shift workers reported that working shifts had a negative impact on their life outside of

No	Title	Design	Population	Variable	Instrument	Outcome	Result
	sectional study [3]				experiences with shift work and family life, spare time activities, sleep and health.		work. Opportunities for participating in spare time activities and difficulties falling asleep after shifts were the main issues for evening-shift workers, whereas physical symptoms such as headaches and mood swings were more dominant among the night shift workers. Despite the negative effects, the participants generally thrived on working shifts.
12.	Relationship between Quality of	Cross sectional	193nur	uality of nursing work life.	QNWL	NWL. b satisfactio	The quality of the nurses'

No	Title	Design	Population	Variable	Instrument	Outcome	Result
	Nursing Work Life with Nurse Job Satisfaction in Pilot Project of Nurse Clinical Career Implementation [16]		s e s	ɔb satisfaction. linical career.		n	work life at Dr. Hasan Sadikin Bandung was of a high quality (average value above the middle value (105)) by as much as 98.4% (190 respondents). The nurse's job satisfaction at Dr. Hasan Sadikin Bandung was quite satisfied by as much as 79.3% (153 respondents). The indicators in relation to the nurse's job satisfaction were the main

No	Title	Design	Population	Variable	Instrument	Outcome	Result
							priorities in the aspects of compensation, working conditions, praise and independence. The indicators that need to be maintained by the management of Dr. Hasan Sadikin Bandung are technical supervision, moral values, responsibility, progress of work and co-workers.
13.	Quality of Work Life and Its Related Factors: A Survey of Nurses[17]	Cross-sectional	157nurses	1. Quality of the nurse's work life 2. Workload	1. Demographic and professional characteristics 2. QNWL 3. The Nationa	emographic and professional characteristics. NWL.	Age, education, job position, job location, and a second nursing job in

No	Title	Design	Population	Variable	Instrument	Outcome	Result
					l Aeronautics and Space Administration Task Load Index (NASA-TLX)		another hospital were found to predict QNWL. Among the six subscales of NASA-TLX, frustration and mental demand had the lowest and highest scores, respectively. Temporal demands, frustration, and effort levels were significantly correlated with QNWL.

4. Discussion

The nurse's official schedule in nursing management theory is the activity of staffing. The nursing staff arrangement methodology must be regular, systematic and rationally-based, applied to determine the number and types of nursing personnel needed to provide nursing care to the standards set beforehand related to a group of patients in a certain situation[18]. The shift workers reported that working shifts had a negative impact on their life outside of work. The opportunities for participating in spare time activities and encountering difficulties when trying to fall asleep after their shifts were the main issues for the evening-shift workers, whereas physical symptoms such as headaches and mood swings were more dominant among the night-shift workers. Despite the negative effects, the participants generally thrived on working shifts[18].

The work life – home life dimension is the correlation between the life experience of the nurses in their place of work and when they are at home[4]. In their working life or dimensions of the nurse's home life, it was found that the organization has a flexible leave policy, but the nurses have difficulty balancing their responsibilities at work and at home. Most of the nurses feel tired because they do a lot of tasks that they have to do both at home and in the work place[19]. In the work life/home dimension, the main factors causing dissatisfaction among the nurses in this study included the work life– home life balance, the system of working hours, the availability of child care facilities and the organizational policies for vacations. One-third of the respondents were not able to balance their work and home life and they reported not having energy after work. The increased workload often results in exhaustion and the nurses will have no energy left after the work is done. This often results in an imbalance between their work life and home life. Similarly, nearly one-third of the respondents stated that rotating shift schedules affect their life negatively. Inflexibility in the working schedule is highlighted as a strong predictor for quality of work life and job satisfaction in numerous studies[20]

Work shift settings are needed in nursing because they can affect the physical and mental health of the nurses as well as their ability to care for their patients. The level of concentration and the cognitive abilities of the nurses were both found to decline after carrying out the night shift[21]. This decrease can affect work efficiency and consequently, serious errors can occur. Working in shifts or taking turns is also related to work stress, which can have an impact on physical fatigue[2]. There are differences in the workload between the nurses' work shifts. The inappropriate division of work shifts is related to the workload of each nurse. This then directly affects the quality of life and the nurse's work[22].

The nursing implications from this research are that by improving the quality of the nurse's work life with a shift schedule, the nursing management can develop a transition rotation schedule, coordinate the list of nurses' names to consider shift work patterns, improve the work shift hours, propose intensive improvements for the nurses in terms of shift services and recognize workplace characteristics.

Shift workers experience family and social life dysfunction, as well as a lack of harmonization between the irregular working hours of shift workers and other day workers, thus affecting their participation in terms of regular meetings and other social activities, for which the individuals need to discuss with their family or friends the need for bedtime in the afternoon the day after night shifts. Besides that, it should also be wise to choose social activities that will be carried out so as not to disturb their hours of sleep or resting after night duty.

5. Conclusion

The results of a systematic review of 18 articles about the relationship between work scheduling and the quality of life of the nurses found that the nurse's work scheduling did not directly affect the quality of the nurse's work life. However, the scheduling system has an influence on a number of points in the theory of the quality of work of nurses. The highest impact of the nurse's work scheduling on the quality of the nurse's work life was in the work life - home life dimension and the work design dimension.

Further study needs to be carried out in several countries with larger communities involved. This is so then the research results can be generalized. This is in addition to identifying the other factors that influence the quality of the work life of the nurses.

References

[47] Costa G 2003 Shift work and occupational medicine: an over-view *Occup Med* 83–8

[48] Chen C-H, Wang J, Yang C-S and Fan J-Y 2016 Nurse practitioner job content and stress effects on anxiety and depressive symptoms, and self-perceived health status. *J. Nurs. Manag.* **24** 695–704

[49] Jensen H I, Larsen J W and Thomsen T D 2018 The impact of shift work on intensive care nurses' lives outside work: A cross-sectional study *J. Clin. Nurs.* **27** e703–9

[50] Brooks B A, Storfjell J, Omoike O, Oblson S, Stemler I, Shaver J and Brown A 2007 Assessing the Quality of Nursing Work Life **31** 152–7

[51] Lee Y, Dai Y, Park C and Mccreary L L 2013 Predicting Quality of Work Life on Nurses ' Intention to Leave 160–8

[52] Nursalam N, Fardiana A, Asmoro C P, Fadhillah H and Efendi F 2018 The Correlation between the Quality of Nursing Work Life and Job Performance 6–11

[53] Nursalam N, Fibriansari R D, Yuwono S R, Hadi M, Efendi F and Bushy A 2018 Development of an empowerment model of burnout syndrome and quality of nursing work life in Indonesia *Int. J. Nurs. Sci.*

[54] P A P W, Susilaningsih F S and Somantri I 2017 PENGARUH FAKTOR DEMOGRAFI TERHADAP QUALITY OF NURSING WORK LIFE (QNWL) PERAWAT RUMAH SAKIT 13–24

[55] Berthelsen M, Pallesen S, Mageroy N, Tyssen R, Bjorvatn B, Moen B E and Knardahl S 2015 Effects of Psychological and Social Factors in Shiftwork on Symptoms of Anxiety and Depression in Nurses: A 1-Year Follow-Up. *J. Occup. Environ. Med.* **57** 1127–37

[56] Haldar P and Sahu S 2015 Occupational stress and work efficiency of nursing staff engaged in rotating shift work *Biol. Rhythm Res.* **46** 511–22

[57] Jaradat Y M, Nielsen M B, Kristensen P and Bast-Pettersen R 2017 Shift work, mental distress and job satisfaction among Palestinian nurses. *Occup. Med. (Lond).* **67** 71–4

[58] Lin P-C, Chen C-H, Pan S-M, Chen Y-M, Pan C-H, Hung H-C and Wu M-T 2015 The association between rotating shift work and increased occupational stress in nurses. *J. Occup. Health* **57** 307–15

[59] Roskoden F C, Kruger J, Vogt L J, Gartner S, Hannich H J, Steveling A, Lerch M M and Aghdassi A A 2017 Physical Activity, Energy Expenditure, Nutritional Habits, Quality of Sleep and Stress Levels in Shift-Working Health Care Personnel. *PLoS One* **12** e0169983

[60] Rodwell J and Fernando J 2016 Managing Work Across Shifts: Not All Shifts Are Equal *J. Nurs. Scholarsh.* **48** 397–405

[61] Shiffer D, Minonzio M, Dipaola F, Bertola M, Zamuner A R, Vecchia L A D, Solbiati M, Costantino G, Furlan R and Barbic F 2018 Effects of clockwise and counterclockwise job shift work rotation on sleep and work-life balance on hospital nurses *Int. J. Environ. Res. Public Health* **15**

[62] Patrisia I, Susilaningsih F S, Yudianto K, Harapan U P and Padjadjaran U 2018 Relationship between Quality of Nursing Work Life with Nurse Job Satisfaction in Pilot Project of Nurse Clinical Career Implementation **6** 25–36

[63] Sadat Z, Aboutalebi M S and Alavi N M 2017 Quality of Work Life and Its Related Factors : A Survey of Nurses **22** 0–4

[64] Clarke P N and Brooks B 2013 Quality of Nursing Worklife : Conceptual Clarity for the Future

[65] Kaddourah B, Abu-shaheen A K and Al-tannir M 2018 Quality of nursing work life and turnover intention among nurses of tertiary care hospitals in Riyadh : a cross-sectional survey 1–7

[66] Lee Y, Dai Y, Chang M Y, Chang Y, Yao K G and Liu M 2017 Quality of Work Life , Nurses ' Intention to Leave the Profession , and Nurses Leaving the Profession : A One-Year Prospective Survey 438–44

[67] Haluza D, Schmidt V M and Blasche G 2019 Time course of recovery after two successive night shifts: A diary study among Austrian nurses *J. Nurs. Manag.* **27** 190–6

[68] Sagherian K, Clinton M E, Abu-Saad Huijer H and Geiger-Brown J 2017 Fatigue, Work Schedules, and Perceived Performance in Bedside Care Nurses *Work. Heal. Saf.* **65** 304–12

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THE EFFECT OF TRADITIONAL GAME OF "DAM-DAMAN" TO DECREASE RATE OF DEMENTIA ON ELDERLY IN KEDIRI

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ABSTRACT

Elderly at risk of dementia caused by decrease in cognitive function, one of the treatments that is safe with no side effects is the reminiscence therapy with traditional game of "dam- daman" to increase cognitive function. The purpose of this study is to explain the effect of traditional game of "dam-daman" on elderly with dementia. The total sample were 20 respondents in Kediri whom were inclusion criteria with Quays Experimental design. The sampling technique was multistage random sampling method. Data were collected using MMSE questionnaires and analysed using Paired t-test with a significance level of $\alpha \leq 0.05$. The study was conducted at 8 sessions in 2 weeks. The duration of each session is 60 minutes. The result was indicating a therapeutic effect of traditional game of "dam-daman" to decrease rate of dementia on elderly ($p=0.000$). The second data analysed using Independent T-test with a significance level of $\alpha \leq 0.05$. The conclusion is traditional game of "dam-daman" improves cognitive function elderly with dementia.

Keywords: dam-daman, cognitive impairment, dementia, elderly

1. Introduction

Aging is the process of slowly decreasing the ability of the tissue to repair or replace itself, to maintain its normal structure and function so then it can no longer survive against injury (including infection) and to repair the damage suffered at the age of 30 - 70 years [1]. The aging process will be experienced by all humans and most of them experience dementia or senility in their old age. This condition is a challenge to maintaining the health and independence of the elderly so then they do not become a burden for themselves, their families and society [2]. There is still no specific treatment for dementia but there are treatments for the symptoms. One of them is by introducing reminiscence therapy with the traditional *dam-daman* game. *Dam-daman* is one of the traditional games that can train the cognitive function of the elderly brain. The intervention of traditional games as a defense against the prevention of increasing dementia still needs to be studied.

There were 37 million people in 2010. This will increase in 2025 to as many as 65 million out of the total world population of 7.3 billion million [3]. It is estimated that the number will continue to increase to around 131.5 million in 2050 and the proportion of poor and developing countries will reach 58%. Indonesia is among the ten countries in the world that had the most dementia sufferers in 2015, which was 2.7 million or around 15% of the total number of elderly people in Indonesia [3][5]. In East Java, the number of people with dementia reached around 634,500 million people [6]. Kediri Regency is included in the top 5 districts in East Java which has the largest number of elderly people

in 2014 with 165,061 people; around 24,759 are suffering from dementia [7]. The number of people with dementia will continue to increase if it is not immediately addressed or dealt with further.

The preliminary study looking at 5 out of 287 elderly people was conducted in Purwokerto village whose population was ranked 3rd out of the 16 large villages in the Ngadiluwih sub-district on May 14th 2016 using the MMSE questionnaire. This resulted in data showing that 3 out of 5 experienced temporal orientation disorders, 3 out of 5 experienced a spatial orientation disorder, 3 out of 5 people experienced attention / calculation disorders; 4 out of 5 people could not remember well, 4 out of 5 people experienced interference with their verbal commands and 4 out of 5 people experienced language disorders. In the preliminary study, it can be concluded that 4 out of 5 elderly people experience dementia.

Dementia is a clinical syndrome characterized by a loss of intellectual function and memory, and other thinking power that significantly disrupts the activities of daily life [5]. Dementia attacks the elderly around the age of 65 years, and with an increase in age, the greater the chance of suffering from dementia. This is characterized by a decrease in physical endurance. Physical and behavioral changes can occur in all people when they reach a certain chronological development stage [2], [5].

Things that can reduce the risk factors for dementia include learning activities whose function is to maintain the sharpness of the memory and to exercise the brain function [8]. In overcoming the problem of decreasing cognitive function that has a negative impact on the elderly, nurses as health workers can use methods to reduce the level of impaired cognitive function in the elderly. One of which is the method of remembering and talking about things in the past. This method is used for the elderly who experience cognitive impairment and loneliness for psychological recovery [9]. Therapy for remembering the past or playing games from the past can be given to elderly as individuals, with their families and in groups [10]. The *dam daman* game is a type of traditional Javanese game that has been played in ancient times and when the elderly were young. The traditional game of *dam-daman* will train the brain to think and it will train the elderly to determine the strategies that were done in ancient times when they first played it [11], so the elderly will remember. The purpose of this study is where the researchers looked at the intervention of a traditional game on the increase in dementia in the elderly in Kediri Regency.

Based on the above background, the researchers are interested in conducting research looking at the influence of a traditional game on the decline in dementia levels in the elderly in Kediri Regency. This is to find out how far the influence of the traditional draughts game extends in lessening the cognitive decline to reduce dementia in the elderly.

2. Research Methods

2.1 Research Design, population, sample, and variables

The research design was quasi-experimental. The target population in this study was the elderly with dementia according to the criteria set by the researcher, which was according to the demographic data. The population in this study was the elderly with dementia in Kediri District (26 Sub districts), totaling as many as 24,759 people. The inclusion criteria in this study was the elderly with the Clock Drawing Test (CDT) score ≥ 3 (L. Yang et al., 2016), the elderly who were able to communicate, the elderly who had played or could play *dam-daman* and the elderly who were cooperative. The exclusion criteria in this study were the elderly who were deaf and illiterate, those who experienced mental disorders and those with impaired physical mobility.

The method used in the site selection was multistage sampling, which randomly selected the representative place of the sample in the study. The researcher chose one of the sub-districts in Kediri Regency out of the 26 sub-districts, followed by choosing one village at random. The sample selection used simple random sampling to represent the population determined by the researcher. This study had a sample size of 20 people, consisting of 10 in the control group and 10 in the treatment group from the elderly population of Purwokerto Village in Kediri Regency. The independent variable in this study was the traditional game of *dam-daman*, while the dependent variable was the level of dementia.

2.2 Instruments

The instrument used to regulate the dependent variable in this study was the Mini Mental State Examination (MMSE) in the pretest and post-test (Pond et al., 2016). MMSE as a whole consists of 30 test points covering 7 domains, namely temporal orientation consisting of 5 points, spatial orientation consisting of 5 points, registration consisting of 3 points, attention and calculation consisting of 5 points, short term memory consisting of 3 points, language consisting of 3 points and verbal commands consisting of 6 points. The highest score possible was 30 points. The interval interpretation was 1 - 30.

2.3 Research procedures and analysis

The research passed the ethical review and obtained Ethical Approval certificate *No. 126-KEPK issued by the Health Research Ethics Committee of the Faculty of Nursing of Universitas Airlangga. The research location was in Purwokerto Village, Ngadiluwih District, Kediri Regency. The study was conducted on June 11 - 25 2016, and it involved 8 sessions over 2 weeks. The duration of each session was 60 minutes. The pretest was performed on each client who became a respondent in both the treatment and control group. Traditional games were carried out in the treatment group and the researchers observed each intervention using a log book. After the *dam*-daman intervention was given for 2 weeks, the next step was followed by the post-test to determine the final condition of the dementia level in the elderly, both in the control group and in the treatment group. The researcher then compared the results of the pre-test and post-test before and after the intervention and they also compared the levels of dementia between the treatment and control groups.

The collected data was processed by assessing the results of the MMSE questionnaire, and then executing coding, data tabulation, and data analysis using a paired t-test and independent t-test.

3. Results

The characteristics of the respondents as shown in Table 1 showed that the respondents in the control and treatment groups were between 60 - 75 years old. Most of the respondents had elementary school, junior high school and undergraduate education levels at 30% and in the control group, most had an elementary school education level of 40%. The sex distribution of the respondents in the treatment group and the intervention group were comparable. The treatment group had 2 working seniors and 8 of the elderly did not work. In the control group, there were 3 working elderly and 7 elderly who did not work. The results of the independent t-test stated that the response characteristics were $p > 0.05$, meaning that there were no differences in the characteristics of the respondents between the treatment and control groups.

Table 1. Characteristics of the respondents

Age	Treatment group		ɔntrol group	
	f(x)	(%)	ɤ)	ɔ)
60-75 years old	10	100	)	)0
76-90 years old	0	0		
>90 years old	0	0		
Total	10	100	)	)0
Level of Education	Treatment group		ɔntrol group	
	f(x)	(%)	ɤ)	⅙)
No school	0	0		
Elementary School	3	30		)
Junior High School	1	10		)
Senior High School	3	30		)
Bachelor degree	3	30		)
Total	10	100	)	)0
Independent t-test	p=0,226			
Gender	Treatment group		ɔntrol group	
	f(x)	(%)	ɤ)	⅙)
Male	4	40		)
Female	6	60		)
Total	10	100	)	)0
Independent t-test	p=0,673			
Job	Treatment group		ɔntrol group	
	f(x)	(%)	ɤ)	ɔ)
Work	2	20		)
Does not work	8	80		)
Total	10	100	)	)0
Independent t-test	p=0,628			

Based on Table 2, the lowest pretest was 19 and the highest dementia value was 26 with a mean of 21.6 and a standard deviation of 2.01. For the post-test, the lowest dementia value was 26 and the highest dementia value was 30 with a mean of 28.20 and a standard deviation of 1.31. In the pretest for the control group, the lowest dementia value was 16 and the dementia value was the highest at 25 with an average of 19.40 and the standard deviation was 3.27, while in the post-test, the lowest dementia value was 16 and the highest dementia value was 24 with a mean of 18.70 and a standard deviation of 2, 66.

Table 2. Results of the pre- and post-test for the dementia levels in both the control and treatment groups

No. Respondent	Treatment group			Control group		
	Pre	Post	Δ	Pre	Post	Δ

1	23	27	+4	23	22	-1
2	20	27	+7	25	24	-1
3	22	29	+7	18	18	0
4	26	30	+4	17	18	+1
5	23	30	+7	18	17	-1
6	21	28	+7	18	17	-1
7	21	29	+8	24	21	-3
8	19	26	+7	17	17	0
9	20	28	+8	18	18	0
10	21	28	+7	16	16	0
Mean	21,6000	28,2000	+6,6	19,4000	18,7000	-0,6
SD	2,01108	1,31656		3,27278	2,66875	
Paired t-test	p=0,000			p=0,066		
Independent t-test pretest	p = 0,870					
Independent t-test post-test	p=0,000					

The results of the analysis using the paired t-test statistical test in the group obtained a p value = 0,000 so p <0.05. This means that the difference in the value of dementia was significant during the pre-test and post-test. The control group obtained p = 0.066, so p> 0.05, which means that there is no significant difference in the value of dementia in either the pretest or the post-test.

The results of the analysis using the independent t-test statistic when pretest was p = 0.870, so p> 0.05. There was no significant difference in the value of dementia levels between the control group and the treatment group before the intervention of the *dam-daman* game. The results of the analysis using the independent t-test statistical test in the post-test obtained a value of p = 0,000 so p <0.05, which means that there is a significant difference in the value of dementia between the treatment and control groups after providing the traditional game of *dam-daman*.

4. Discussion

The results of this study indicate that the respondents from both the control and treatment groups were all aged between 60 - 75 years. The data shows that the respondents were in the elderly age group. The problem of dementia that occurs in the respondents is a degenerative process, the

aging process, which is the gradual disappearance of the tissue's ability to repair itself and maintain its normal function. This is experienced by humans age over 60 years old. The risk of dementia increases every 5 years from the age of 65 due to the increasing number of neurons in the brain becoming tangled (neurofibrillary tangles) and gain plaque [5].

Based on the results of the study, there was a change in the value of the dementia level in the treatment group before and after the intervention of the *dam-daman* game, whereas in the control group, there was no significant change in the value of the dementia level. This shows the influence of playing the traditional *dam-daman* game as an intervention to lessen the level of dementia in the elderly.

All of the respondents in this study were known to experience a decline in their cognitive level, which is one of the symptoms of dementia. The presence of an impaired cognitive function can be one of the main indicators of dementia. The traditional *dam-daman* game intervention which was given 8 times over 2 weeks proved to be able to increase the cognitive value of the elderly, which was marked by an increase in the score in the MMSE (Mini Mental State Examination) questionnaire [12]. The scientific explanation of cognitive-assisting games in view of past games is that the traditional game of *dam-daman* could improve cognitive function in the elderly who could lessen the risk of dementia in the elderly [5], [13].

In the MMSE (Mini Mental State Examination) questionnaire, the treatment group in the temporal orientation domain was worth 5 points and it was found that 9 out of 10 received a score of ≥ 3, while only one elder got a score <3. The same was found in the temporal orientation domain, where 9 out of 10 seniors got a score of ≥ 3, while only one elder got a score <3. In the registration domain, it was worth 3 points; i.e. 7 out of 10 elderly got a score of 3, while 3 other elderly got a score <3. In the short-term memory domain worth 3 points, the researcher determined that 6 out of 10 elderly could not answer the question at all with a score of 0, while 4 other elder individuals only got a score of 2. In the language domain, the value was 3, and 9 of 10 got a score that was ≥ 2. Only one elderly person got a score that was 1. The verbal domain was worth 6 points; 7 out of 10 elderly got a score of ≥ 4, while 3 other elders had a score of ≤ 3.

From the explanatory data, it can be concluded that the average elderly individual with dementia has impaired short-term memory domains according to the MMSE questionnaire. After the treatment using a traditional game, there was an increase in the scores of each domain, especially in the domain of short-term memory. From the post-test data in the treatment group, it was found that 6 out of 10 elderly people can answer the short-term domain memory questions perfectly and they got a score of 3; 4 other seniors got a score of 2, which means there was a significant increase before and after the treatment. Similar to the control group, the results of the pre-test depicted the elderly people with dementia as experiencing disruption in the short-term memory domain. The post-test results were different from those in the treatment group. There was no score increase in MMSE in any domain and some even decreased in each domain.

Based on Table 2, the value of the dementia level in the treatment group decreased after the traditional intervention and it also reactivated cognitive function in the elderly. The *dam-daman* game is one of the games that are quite popular among respondents who can prevent senility and improve their cognitive function by stimulating their kinesthetic and visual functions by remembering the strategy of the game.

According to the Indonesian Ministry of Health in 1999, the criteria for cognitive decline includes forgetfulness or the memory not functioning properly. This is because the elderly rarely carry out activities related to cognitive function or memory that can stimulate their kinesthetic and visual functions [14].

Research proves that by remembering events / things in the past by playing, they can improve cognitive decline in the elderly with dementia aged 65 and above [4]. According to [15] and [16], they explained that remembering events in the past through play therapy is one of the effective approaches that can be used to reduce the level of dementia. This therapy is used for the elderly who experience impaired cognitive function by stimulating their kinesthetic and visual functions.

Traditional games are one way for the elderly to play; they think of past game strategies which stimulates the brain to improve or maintain the cognition related to the visual and kinesthetic functions. The traditional *dam-daman* game is a game performed on a board or carton with the strategy of eating the opponent's fruit / pawn and keeping their fruit / pawn itself so then it is not consumed by their opponent. This game stimulates the kinesthetic function of the elderly. The relationship between kinesthetic function and cognitive function occurs in the brain through the limbic system, namely the amygdala and hippocampus. The brain will be stimulated to remember strategies / past events that will be captured by the efferent nerve fibers and this signal will be transported by the afferent nerve fibers to the central nervous system. The process will be integrated into a reticular formation which functions to focus the attention so then movement occurs through a spindle muscle contraction so then the kinesthetic functions work.

The traditional game of dam-daman also stimulates the visual function of the elderly. Visual function originating from the retina stimulates the optic nerve with regard to pawn movements. The prefrontal lobe receives stimulation from the optic nerve to work and think by planning strategies that are to be used in play that have been done in the past. The existence of thoughtful thinking activities related to the past stimulates the cognitive functions to reactivate, which can slow down the decline in cognitive function and prevent an increase in dementia in the elderly.

The process of kinesthetic and visual functions is included in the cognation and regulator subsystems in Roy's adaptation theory. Roy's adaptation theory explains that the relationship between input, the process of subsystem cognation and the regulator, and the output must be balanced so then they will produce an adaptive response in the individual.

Dementia is a symptom experienced by the elderly which means that the elderly cannot respond adaptively. This can affect every aspect of the life; physiological, psychological, social, and spiritual. Roy's Adaptation Theory explains the importance of responding in an adaptive manner to maintain the integrity of the body in defensive against a range of physical and mental illnesses due to the state of the surrounding environment. The adaptive response can work well if the regulator and cognation components are included in the subsystem of Roy's adaptation model and if they are processed through the appropriate inputs. The appropriate input in this study is to intervene using a traditional game to improve cognitive function, mood and behavior in the elderly with dementia so then the elderly can respond adaptively.

Based on Table 2, the H1 results were received. That is, there was an influence from traditional damages on the decline in the level of dementia in the elderly. There was a difference in the level of dementia in the treatment group in the pre-test and post-test through the paired t-test statistical test.

The independent t-test statistical test showed that the intervention of traditional games of draughts provided by the researchers was effective at reducing the level of dementia in the elderly.

From the discussion, the role of the nurses in research on dementia in the elderly is that the nurses are able to carry out the nursing process from the assessment, through to diagnosis, planning, implementation and finally, evaluation. The assessment process occurs when the nurses, in this case the researchers, conduct an assessment of the initial data on the elderly, namely by asking about the characteristics and lifestyle of the elderly. The assessment process was completed and the results obtained which stated that the elderly had dementia. Their nursing diagnosis showed a nutritional imbalance, memory impairment, the barriers to social interaction, verbal communication barriers and ineffective coping according to NANDA 2015. The next actions taken by the researcher were to run the process of planning and implementation. Planning and implementing the appropriate measures to reduce the level of dementia were done using the traditional game of *dam-daman*, so the nursing diagnoses appeared to be overcome. Then we evaluated the results starting from the assessment to implementation. Then the results were evaluated from assessment to implementation.

5. Conclusion

The conclusions are based on the results of the study referring to the influence of a traditional game on the decline in dementia in the elderly in Kediri Regency. Dementia is influenced by age, sex, the type of work that the person had and their level of education. The role of the nurse is needed in the settlement of the risk factors for dementia by conducting a study of the characteristics of the respondent. Then a nursing diagnosis needs to be conducted so then the nurse can carry out the interventions in accordance with the diagnosis obtained. Based on the discussion in the previous chapter, the level of dementia in the elderly before they were given the intervention consisting of the traditional game of *dam-daman* still did not show a difference or vice versa after the intervention was carried out with a decrease in the level of dementia. The implications and the role of the nurses in this study focused on dementia in the elderly is that the nurses are able to intervene to reduce the level of dementia by introducing traditional games such as *dam-daman* to help them remember the past.

References

[1] R. An and G. G. Liu, "Cognitive impairment and mortality among the oldest-old Chinese," *Int. J. Geriatr. Psychiatry*, vol. 31, no. 12, pp. 1345–1353, 2016.

[2] F. G. Metzger *et al.*, "Brain activation in frontotemporal and Alzheimer's dementia: A functional near-infrared spectroscopy study," *Alzheimer's Res. Ther.*, vol. 8, no. 1, pp. 1–12, 2016.

[3] World Alzheimer's Report, "The Global Impact of Dementia: An Analysis of Prevalence, Incidence, Cost and Trends.," in *Alzheimer's Disease International*, London, 2015.

[4] J. J. Wang, "Group reminiscence therapy for cognitive and affective function of demented elderly in Taiwan," *Int. J. Geriatr. Psychiatry*, vol. 22(12), pp. 1235–1240, 2007.

[5] L. Yang *et al.*, "Screening for dementia in older adults: Comparison of mini-mental state examination, Mini-Cog, clock drawing test and AD8," *PLoS One*, vol. 11, no. 12, pp. 1–9, 2016.

[6] BPS, “the data of Dementia in elderly in east java,” 2014.

[7] BPS Kediri, “the data of dementia in elderly in Kediri,” 2014.

[8] P. E. J. Spaan, “Cognitive decline in normal aging and early Alzheimer’s disease: A continuous or discontinuous transition? A historical review and future research proposal,” *Cogent Psychol.*, vol. 3, no. 1, pp. 1–12, 2016.

[9] S. et al. Baillon, “A comparison of the effects of Snoezelen and reminiscence therapy on the agitated behaviour of patients with dementia.,” *Int. J. Geriatr. Psychiatry*, vol. 19(11), pp. 1047–1052, 2015.

[10] H.-M. Chen, L.-J. Tsai, S.-Y. Chao, and M. J. Clark, “Report on the Effects of Individualized Learning Therapy on Cognitive Function and Behavioral and Psychological Symptoms of Dementia in the Institutionalized Older Adults,” *J. Nurs. Res.*, vol. 00, no. 0, p. 1, 2015.

[11] D. . Prasetyono, *Buku Tutorial Game-game Kecerdasan*. Jakarta: Diva Press, 2015.

[12] Napitapulu, “Hubungan Aktivitas Sehari-hari dan Successful Aging pada Lansia,” *Psychol. undergraduate. Univ. Brawijaya*, 2013.

[13] C. J. et al Hsieh, “Reminiscence group therapy on depression and apathy in nursing home residents with mild-to-moderate dementia.,” *J. Exp. Clin. Med.*, vol. 2(2), pp. 72–78, 2010.

[14] P. G. Gasquoine, “Cognitive impairment in common, noncentral nervous system medical conditions of adults and the elderly,” *J. Clin. Exp. Neuropsychol.*, vol. 33, no. 4, pp. 486–496, 2011.

[15] E. & Hess, *Geriatric Nursing and Healthy Aging*. ST Louis: Mosby Year Book, 2014.

[16] V. Latif, “Cara Memori Bekerja,” 2016.

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AN UPDATE ON DOMINANT RISK FACTORS FOR BREAST CANCER: A SYSTEMATIC REVIEW

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ABSTRACT

In the modern era, risk factors become a serious problem for breast cancer. Breast cancer is the most common cancer in women, with 1.67 million new cases of breast cancer diagnosed in 2012 and 522,000 thousand deaths reported. The higher developed countries, the higher incidence rate of breast cancer compared with developing countries. This systematic review aims to explore various risk factors that cause breast cancer based on various international studies and literature reviews. Authors searched the articles in database; Ebscho, Science Direct, Springer, Scopus and ProQuest between 2014 and 2019. Then the authors assessed eligibility of studies based on the inclusion criteria namely breast cancer and all risk factors on various ages, demographics. Then, 18 articles relevance with inclusion criteria are chosen for this systematic review**.** The risk factors can be categorized as the reproductive factors, food related factors (inadequate intake of vegetable and fruits, high intake of fresh red meat, and processed meat and vitamin B), genetic factors (gene mutations), lifestyle related factors (less physical activity, sun exposure, active and passive smoking, drinking alcohol, sleep duration) and histology. Identification of these risk factors may be useful for development of prevention strategies decreasing breast cancer incidence.

Keywords: Breast Cancer, Cancer, Risk Factors

1. Introduction

The risk factors of breast cancer are a serious problem in the modern era. Higher developed countries have a higher incidence rate of breast cancer when compared with developing countries[1]. Community misconception about the cause of cancer is very important to consider in formulating strategies of cancer prevention [2]. Breast cancer is a cancer that is often diagnosed in the world [3]. It has not yet been clarified how many cases are affected by the influence of the risk factors for breast cancer [4].

Cancer is the leading cause of death in the world and it is the biggest health problem in the world[3]. The increase in global demographic and epidemiologic transitions have resulted in an increasing cancer burden over the past few decades, especially in low and middle income countries. It has been estimated that more than 20 million new cancer cases will occur each year until the beginning of 2025[5]. Breast cancer is the most common cancer in women, with 1.67 million new cases of breast cancer diagnosed in 2012 and 522,000 thousand deaths reported [6]. Moreover, Asia, the world's largest continent comprised of about 3/5^{ths} of the human population, is where breast

cancer is the most common type of cancer and the second leading cause of cancer-related deaths among women, accounting for 39% of all breast cancers diagnosed worldwide[7].

The risk factors that occur in breast cancer cases are not only genetic. There are many other factors. An unhealthy lifestyle such as smoking, obesity, the low consumption of fruits and vegetables, alcohol consumption and a lack of physical activity are some of the risk factors for the occurrence of cancer[2]. The reproductive factors that can prolong the woman's exposure to hormones, such as early menarche and late menopause, are also risk factors for breast cancer [8]. The risk factors for breast cancer are a little bit higher in post-menopausal women than in premenopausal women[4]. Nutritional factors such as the effects of vitamin B, diet and some protein precursors can also influence the incidence of breast cancer [6],[9].

The purpose of this study was to conduct a systematic review of the various risk factors that increase the risk of breast cancer. The findings originate from various international studies, systematic reviews and literature reviews. The results of this systematic review are expected to be able to highlight the important information about the risk factors involved in breast cancer to the community. This systematic review has been presented in the form of articles consisting of an abstract, introduction, method, results, discussion, conclusions and the bibliography.

2. Method

This systematic review was followed by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist.

2.1 Searching

The search strategy was developed to identify the published studies describing the risk factors of breast cancer. The search was conducted between 2014 and 2019. Four databases (Scopus, Springer, Pro-Quest, and Science Direct) were searched using different combinations of the following keywords: "cancer", "breast cancer", and "risk factors". The following inclusion criteria guided the search efforts to identify all of the relevant studies.

2.2 Inclusion criteria

The inclusion criteria consisted of the following:

1. Publication in English

2. Study sample comprising of a population of any age and any sex for the breast cancer cases

3. Focus on the risk factors of breast cancer

4. No restrictions on the research design

2.3 Screening

At first, the authors identified 742 articles and then removed any irrelevant topics, duplicated articles, any that were over the time limitation (2014 - 1019) and where the language used was not English. Second, 24 articles are remained. Six articles were excluded again because they did not focus on the risk factors of breast cancer. Finally, 18 articles were chosen for this systematic review.

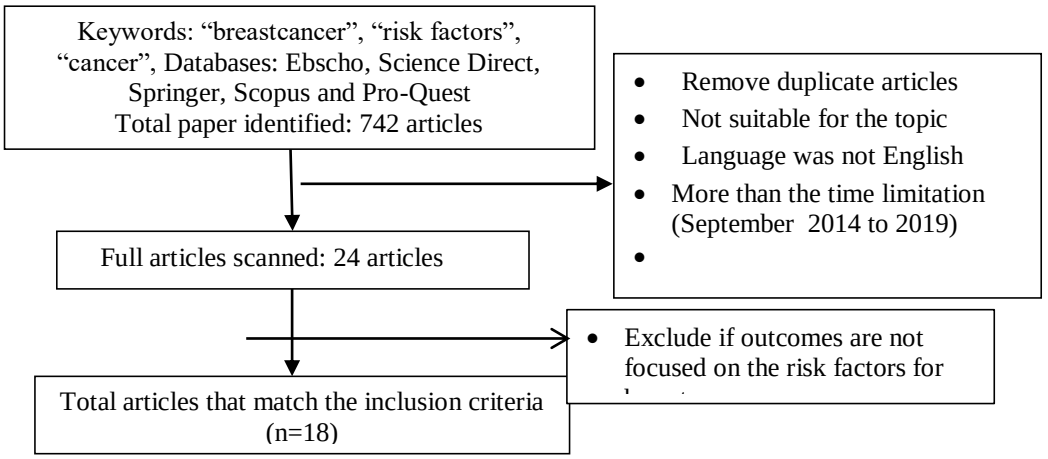

Fig.1. Flowchart of the research on the risk factors of breast cancer

3. Results

All of the studies were published between 2014 and 2019 and the study areas were Sweden, the United States, France, Norway, the UK, Canada and the Kingdom of Saudi Arabia. The four authors analyzed the results. A total of 21 risk factors of breast cancer were identified and classified into 5 important categories: genetic predisposition, histology, reproductive, diet and lifestyle.

3.1. Genetic predisposition

The study by Antoniou et al (2014) aimed to determine the risk factors of breast cancer in women derived from PALB2 (partner and localizer of BRCA2) mutations compared with populations at the age younger than 40 years old, aged 40 - 60 years old and in those aged over 60 years old. The occurrence of the PALB2 mutation in women with breast cancer was 40%. The risk factors for breast cancer were influenced by age ($P < 0.0001$) and by the family factors ($P = 0.04$). The risk factor for breast cancer from the PALB2 mutation came from women aged 70 years old at 33% while the absence of a family history of breast cancer was 58%. The PALB2-associated breast-cancer risk depends on both genotype and family history[10].

The research by Dossa et.al (2018) stated that women who have pathogenic mutations in the BRCA 1 and 2 genes are at a high risk of breast and ovarian cancer[11].

3.2. Histology

Another study conducted by Rice et al (2018) stated that a high percentage for mammographic density (MD) or the proportion of dense breast tissue on a mammogram can be a risk factor for invasive, ER+ , PR+ and HER2 breast cancer[12].

Research by Rehman and Husnain (2014) explained that the excessive accumulation of Fe, Cu and Zn in breast tissue are risk factors for breast cancer. Bowen H (1988) in Rehman and Husnain (2014) stated that iron is important in the regulation of cell growth and that is an important part of many proteins and enzymes. If there are excessive amounts of certain metals, then they may be shunted into very large proteins, such as iron into ferritin. This may have an association with malignancy in the tissue. Copper is also needed to form new blood vessels and cancer needs new

blood vessels in order to grow. Therefore, copper can affect carcinogenesis by acting as a cofactor for angiogenesis[13].

3.3 Reproductive/ hormonal risk factors

The research conducted by Arthur et al (2017) suggests that the use of *hormone replacement therapy* (HRT) and having atypical hyperplasia are both associated with an increased risk of breast cancer among women with benign breast disease (BBD)[14]. Another study by Elebro et al (2014) aimed to determine the potential risk factors for androgen receptor status breast cancer. The androgen receptors from 467 tumor cases (90.5%) were positive while those from 49 tumor cases (9.5%) were negative. Having their first child in old age and the use of oral contraceptive were both risk factors reated to the negative androgen receptors engaged in breast cancer[15]. Naser et al (2014) reported that using HRT doubles the chance of developing the disease among Arab females[16].

A study by Engmann et al (2017) aimed to determine the population at risk of pre-menopausal and post-menopausal breast cancer. Of the 18,437 women with breast cancer, being 40 years of age pre-menopause and 60 years of age post-menopause was also a risk. Additionally, 4,743 women (89.8%) pre-menopause and 12,502 women (95.1%) post-menopausal who were overweight and obese had the risk factors for breast cancer[4]. Moreover, early menarche age (≤13 years), nulliparous, late age at first live birth and a high reproductive interval index were all significantly associated with an increased BC risk in both the pre-menopausal and post- menopausal period[17]. Furthermore, Khaliset al (2018) described that women who were younger than 20 years old at their first full-term pregnancy were associated with a decreased risk of breast cancer. On the other hand, Khaliset al (2018) reported that there was no significant association with breast cancer risk concerning the irregularity of the menstrual cycle, age at menopause, a history of miscarriages and abortions, the duration of breastfeeding per child and their history of oral contraceptive use [18].

3.4. Diet and nutrition

The research on nutrition by Egnell et al (2017) aimed at investigating the association of vitamin B in alcohol consumers and breast cancer risk. This study showed that vitamin-V (thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, folate and cobalamin) supplemental intake in non-to-low alcohol drinkers was inversely associated with breast cancer risk but not in heavier drinkers. This is because the alcohol intake interfered with the vitamin B transport (especially folate), absorption and metabolism

[6].

The study results from Kippen et al(2017) described that the inadequate intake of vegetables and fruits are one of risk factors for breast cancer[2]. Similarly, a research conducted among Jordanian women stated that the good or optimal intake of fruits and vegetables decreases the risk of breast cancer[19]. Another research study by Ji Hyun Kim (2017) aimed to investigate the dietary factors (food, habits) with Korean women's breast cancer risk factors. The participants were aged 30 years or older and they were recruited by the National Cancer Center in Korea between August 2002 and May 2007. In this study, grilled meat, a high-cholesterol food intake and irregular eating habits are significantly associated with breast cancer. Grilled meat increased the risk of breast cancer due to the carcinogenic mutagens such as heterocyclic amines (HCAs) and polycyclic aromatic

hydrocarbons (PAHs) which are highly abundant in meat cooked at high temperatures, especially that which is grilled or barbecued. When cholesterol is converted to cholesterol metabolites at 27HC, it may induce ER+ breast cancer growth [3]. Taking calcium supplements (>3 times a week) was associated with an increased risk of breast cancer. However, this result is not yet clear and needs to be investigated in further studies[19].

Research by Jing Wu et al (2016) proved that various proteins have different effects on the occurrence of breast cancer. In this article, the authors explained about milk. Milk contains fat, calcium, vitamin D, conjugated linoleic acids (CLAs) etc. that can have an effect on the inhibition of cell cycle progression, including the induction of apoptosis, the inhibition of angiogenesis, and the differentiation of the mammary cells. Moreover, soy food is an important food in Asian countries. Soy food contains numerous fibers and phytoestrogens, which can arrest the cell cycle, induce apoptosis, and inhibit angiogenesis. On the other hand, red meat and processed meat are a high risk cause of breast cancer because of (a) the carcinogenic byproducts that can change at a high temperature, (b) the fat, heme iron, and animal sugar molecules of N-glycolyneuraminic acid that enrich the red meat, which could promote inflammation, oxidative stress and tumor formation and (c) the hormone residues used for the stimulation in the growth of cattle. Hence, a higher soy food and skimmed milk intake may reduce the risk of breast cancer. Poultry, fish, egg, nuts, total milk, and whole milk intake are not associated with breast cancer, while red meat, fresh red meat, and processed meat have a risk of breast cancer[9].

3.5. Lifestyle

A cohort study by Dossus et al (2014) proved that both active and passive exposure to cigarette smoke increases the breast cancer risk. However, it depends on the duration of smoking or exposure, the amount of cigarettes and the level of physical activity[20]. Similarly, less physical activity is an increased risk of breast cancer[19]. Likewise, research by Kippen et al (2017) explained that more than 90% of the 3,301 respondents identified the sun exposure factors and active smoking, while around 80% identified passive smoking and 40-60% identified the risk being due to having an overweight body or obesity and drinking alcohol[2].

Research by Naser et al (2014) explained that in the sample of 1,172 women from Arabia, 24% were aged less than 35 years, married and obese (BMI ≥25) and they had increased risk factors for breast cancer. Overweight/obese women exhibit more than 2-times the increased risk of breast cancer compared to women with a normal BMI[16]. Furthermore, a study by Al-Ajmi et al (2018) explained the results of a 9-year study of total breast cancer cases. Being pre-menopause, having a low BMI and a low waist to hip ratio can increase the risk of breast cancer whereas a high BMI can increase the risk in post-menopausal women[17].

Sleep has been closely linked to the risk of breast cancer. Both a short sleep duration (<6h) and a long sleep duration (>9h), in addition to poor sleep quality, were associated with an increased risk of breast cancer progression, especially in pre-menopausal women. Short sleep duration altered melatonin release, immune function, oxidative stress, and the inflammatory pathways, which then consequently influenced the breast cancer progression[21]. A cohort study conducted on 10,802 Mexican American adults aged 20-60 years showed that sleeping for less than 6 hours per night was significantly associated with an increased breast cancer risk [22].

Table 1 List of the risk factors for cancer that form the basis of making this systematic review

No	Author	Type of Study	Sample size	Outcome
1	Arthur *et al.*, 2017	Case-control Study	15,395 women	1. Lifestyle factors 2. Menstruation 3. Histology
2	Kippen *et al.*, 2017	Cross-sectional study	330 women	Lifestyle factors (sun exposure, smoking, obesity, drinking alcohol, inadequate eating of vegetables and fruits)
3	Antoniou *et al.*, 2014	Cohort study	362 members	PALB2 gene mutations
4.	Dossa *et al.*, 2018	Cohort study	17 000 adult women	BRCA 1 and BRCA 2 mutations
5.	Engmann *et al.*, 2017	Case-control Study	18 437 women	1. Pre-menopause 2. Menopause
6.	Rinaldi *et al.*, 2018	Case-control study	237 women	Menopause
7.	Elebro *et al.*, 2014	Cohort study	17,035 women	Oral contraception
8.	Rehman and Husnain, 2014	Correlation study	41 samples of formalin-fixed breast tissue	Changes in Fe, Cu, and Zn in the breast tissue
9.	Qadire *et al.*, 2018	Case-control study	823 women	Lifestyle
10.	Rice *et al.*, 2018	Case-control study	3392 cases	Mammogram
11.	Wu *et al.*, 2016	Meta-analysis study	46prospective studies	Protein diet
12.	Ji Hyun Kim *et al.*, 2017	Case control study	5046 participants	Diet
13.	Egnell *et al.*, 2017	Cohort- study	27,853 women	Vitamin B
14.	Elkum *et al*,2014	Case-control study	534 cases	Obesity
15.	Al-Ajmi *et al.*, 2018	Case-control	273,467 UK females	1. Anthropometry 2. Reproduction
16.	Dossus *et al* ,2014	Cohort study	322,988 women	1.Active smoking 2. Passive smoking
17.	JieShen *et al.*, 2019	Cohort study	10,802 subjects	Sleep duration
18.	Zhuo-zhi Liang *et al.*, 2018	Quantitative study	1580 breast cancer patients	1. Sleep duration 2. Sleep quality

4. Discussion

The study of this systematic review was about the risk factors that influence the occurrence of breast cancer. The studies took place in the U.S, Morocco, Arabia, the UK, France, South Korea and Canada. Based on the 18 articles, there are four reproductive risk factors, namely menstruation, pre-menopause, post-menopause, menopause, and contraception. There are three food related risk factors, including diet, protein and vitamin B factors. The presence of risk factors due to gene mutations was found in two articles. The lifestyle related risk factors included sun exposure, active and passive smoking, obesity, drinking alcohol and the inadequate eating of vegetables and fruits as found in four articles. One article mentioned the factor of tissue changes in the breast, and one article referred to a mammogram. Another article identified obesity as being a risk and two articles described relating the risk with sleep duration. The identification of these risk factors may be useful for the development of prevention strategies to decrease the breast cancer incidence. The most common risk factors found in relation to the incidence of breast cancer are the reproductive factors and lifestyle factors.

There are premenopausal, postmenopausal, menopausal and contraceptive menstruation factors. The use of contraception, the influence of hormones and changes in Fe, Cu, Zn in the breast tissue also affect the occurrence of breast cancer [13]. The risk factors in the field of reproduction are where menarche is too early, where there is a late age for the first live birth and nullipara [18].

Another risk factor that is very influential on the occurrence of breast cancer is a unhealthy lifestyle, including exposure to the sun, smoking, drinking alcohol, consuming low vegetables and fruits and obesity [2]. Obesity is also emphasized as a factor that greatly affects the occurrence of breast cancer in Arab women[16]. Sleep duration (>9 hrs and <6 hrs) is also related to the breast cancer risk[21,22].

The risk factors in the nutrition field say that consuming vitamin B supplements and high calcium supplements can be risk factor for breast cancer. There is a relationship between consuming grilled meat, as and contains a lot of cholesterol, and the occurrence of breast cancer [3][19]. Lifestyle and reproductive factors are the most common risk factors for breast cancer.

5. Limitation

One limitation of this study was that the search strategy was intentionally very broad, as the authors were attempting to identify all of the possible risk factors for breast cancer. Another potential limitation related to the inclusion criteria for this study is the language restrictions used. Some potentially relevant articles may have been excluded. It is believed that the overall impact is minimal.

6. Conclusion

Based on the 18 articles, the authors found there to be various risk factors that influence the occurrence of breast cancer. There were reproductive factors, food related factors (inadequate intake of vegetables and fruits, high intake of fresh red meat, processed meat and vitamin B), genetic factors (gene mutations), lifestyle related factors (less physical activity, sun exposure, active and passive smoking, drinking alcohol, sleep duration) and histology identified. The most common risk factors found in correlation with the incidence of breast cancer were reproductive factors and lifestyle. Changes in diet and lifestyle can be used as a basic consideration in the promotion of breast cancer prevention. Moreover, people with a family history and genetic predisposition should emphasize

regular check-ups for early diagnosis and timely treatment. Therefore, the identification of these risk factors may be useful for the development of prevention strategies for breast cancer.

References

[1] Pudkasam S, Tangalakis K, Chinlumprasert. Maturitas Breast cancer and exercise : The role of adiposity and immune markers. Maturitas. 2017;105(April):16–22.

[2] Kippen R, James E, Ward B, Buykx P, Shamsullah A, Watson W, et al. Identification of cancer risk and associated behaviour : implications for social marketing campaigns for cancer prevention. BMC Cancer. 2017;17(550):1–16.

[3] Kim JH, Lee J, Jung S-Y, Kim J. Dietary Factors and Female Breast Cancer Risk : A Prospective Cohort Study. Nutrients. 2017;9(1331):1–20.

[4] Engmann NJ, Golmakani MK, Miglioretti DL, Sprague BL, Kerlikowske K. Population-attributable risk proportion of clinical risk factors for breast cancer. JAMA Oncol. 2017;3(9):1228–36.

[5] Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015;136(5):E359–86.

[6] Egnell M, Fassier P, Lucie L, Zelek L, Vasson M, Hercberg S, et al. B-Vitamin Intake from Diet and Supplements and Breast Cancer Risk in Middle-Aged Women : Results from the Prospective NutriNet-Sant é Cohort. Nutrients. 2017;9(488).

[7] Fan L, Goss PE, Strasser-Weippl K. Current Status and Future Projections of Breast Cancer in Asia. Breast Care. 2015;10(6):372–8.

[8] Elebro K, Butt S, Dorkhan M, Jernstro H. Age at first childbirth and oral contraceptive use are associated with risk of androgen receptor-negative breast cancer: the Malmo¨ Diet. Cancer Causes Control. 2014;

[9] Wu J, Zeng R, Huang J, Li X, Zhang J, Ho JCM, et al. Dietary protein sources and incidence of breast cancer: A dose-response meta-analysis of prospective studies. Nutrients. 2016;8(11).

[10] Antoniou AC, Casadei S, Heikkinen T, Barrowdale D, Pylkäs K, Roberts J, et al. Breast-Cancer Risk in Families with Mutations in PALB2. N Engl J Med. 2014;371(6):497–506.

[11] Dossa F, Cusimano MC, Sutradhar R, Metcalfe K, Little T, Lerner-ellis J, et al. Real-world health services utilisation and outcomes after BRCA1 and BRCA2 testing in Ontario , Canada : the What Comes Next Cohort Study protocol. BMJ Open. 2018;8:e025317:1–8.

[12] Rice MS, Tamimi RM, Bertrand KA, Scott CG, Jensen MR, Norman AD, et al. Does mammographic density mediate risk factor associations with breast cancer? An analysis by tumor characteristics. Breast Cancer Res Treat. 2018;10549–18.

[13] Rehman S, Husnain SM. A probable risk factor of female breast cancer: Study on benign and malignant breast tissue samples. Biol Trace Elem Res. 2014;157(1):24–9.

[14] Arthur R, Wang Y, Ye K, Glass AG, Ginsberg M, Loudig O, et al. Correction to : Association between lifestyle , menstrual / reproductive history , and histological factors and risk of breast cancer in women biopsied for benign breast disease. Breast Cancer Res Treat. 2018;170:203.

[15] Elebro K, Butt S, Dorkhan M, Jernström H, Borgquist S. Age at first childbirth and oral contraceptive use are associated with risk of androgen receptor-negative breast cancer: The Malmö Diet and Cancer Cohort. Cancer Causes Control. 2014;25(8):945–57.

[16] Al-Ajmi K, Lophatananon A, Ollier W, Muir K. Risk of breast cancer in the UK biobank female cohort and its relationship to anthropometric and reproductive factors. PLoS One. 2018;13(7):1–19.

[17] Qadire M Al, Alkhalaileh M, Hina H. Risk Factors for Breast Cancer among Jordanian Women: A Case-control Study. Iran J Public Heal. 2018;47(1):49–56.

[18] Dossus L, Boutron-Ruault M-C, Kaaks R, Gram IT, Vilier A, Fervers B, et al. Active and passive cigarette smoking and breast cancer risk : Results from the EPIC cohort. Int J Cancer. 2014;134:1871–88.

[19] Elkum N, Al-tweigeri T, Ajarim D, Al-zahrani A, Amer SM Bin, Aboussekhra A. Obesity is a significant risk factor for breast cancer in Arab women. BMC Cancer. 2014;14:1–10.

[20] Liang Z, Xie X, Tang L, Ren Z, Zhang Y, Lin Y, et al. Joint effects of multiple sleep characteristics on breast cancer progression by menopausal status. Sleep Med. 2018;54.

[21] Shen J, Chrisman M, Wu X, Chow WH, Zhao H. Sleep duration and risk of cancer in the Mexican American Mano-a-Mano Cohort. Sleep Heal. 2019;5(1):78–83.

[22] Khalis M, Charbotel B, Chajès V, Rinaldi S, Aure´lieMoskal CB, Dossus L, et al. Menstrual and reproductive factors and risk of breast cancer : A case-control study in the Fez region , Morocco. PLoS One. 2018;13(1):1–13.

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THE EFFECT OF CHEWING GUM ON XEROSTOMIA AND SALIVARY FLOW RATE IN PATIENTS UNDERGOING HEMODIALYSIS: A SYSTEMATIC REVIEW

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ABSTRACT

Changes in the balance of fluids and electrolytes in patients of End Stage Renal Disease (ESRD) resulted in changes in the composition and flow of saliva [1]. In addition to changes in the composition and flow of saliva, ESRD patients also undergo changes dry mouth (xerostomia) caused an increase in the blood concentration of ureum [1]. Xerostomia is also influenced by the drugs used by patients ESRD undergoing hemodialysis (HD). This study aims to find out the effectiveness of chewing gum against xerostomia and the flow rate of saliva in patients undergoing hemodialysis. Search literature begins with the determination of the topic then continued with the search articles using keywords that have been determined by some English-language journals database i.e. Scopus, Pro Quest, Ebscho and Scholar with the limitations of the year publication of 2005 up to 2018. After getting the appropriate journals by keyword and then selected 15 journals that comply with the criteria for inclusion in this study. In General, all the articles that do review give the results that the chewing gum to give benefits to the change of xerostomia and increased flow rate of saliva in patients undergoing hemodialysis. Chewing gum is an effective way, cheap, simple and well tolerated for xerostomia changes and an increase in flow rate of saliva in patients undergoing hemodialysis.

Keywords: chewing gum, xerostomia, salivary flow rate, hemodialysis

1. Introduction

Changes in the balance of fluids and electrolytes in patients with End Stage Renal Disease (ESRD) results in changes in the composition and flow of saliva [1]. In addition to changes in the composition and flow of saliva, ESRD patients also undergo changes resulting in a dry mouth (xerostomia) caused by an increase in the blood concentration of ureum. Xerostomia is also influenced by the drugs used by the patients ESRD undergoing hemodialysis (HD). Some studies show xerostomia can be experienced by the patient's ESRD when they are undergoing hemodialysis [2,3,1,4,5,6,7].

Several studies show there are interventions when it comes to stimulating saliva and minimizing xerostomia, namely sugar free chewing gum or sucking on sugar-free candy to stimulate the flow of saliva, sucking ice cubes, drinking water while eating to assist in the chewing and swallowing of food, the use of an alcohol-free liquid gargle (mouthwash), the avoidance of

carbonated beverages (such as soda), caffeine, tobacco, and alcohol, using a lanolin-based lip balm for the lips when they are cracked or dry, acupressure, electrostimulation, the use of pilocarpine and cevimeline (mouthwash) and drugs that target angiotensin[8,9,10,11,12].

In general, the prevalence of xerostomia in patients undergoing hemodialys is about 33 - 76% [5]. In Indonesia, the research conducted by Widati et al in RSU Haji Surabaya showed that the prevalence of xerostomia in patients with chronic kidney disease who underwent hemodialysis end stage as many as 35 out of 60 patients (58.3%) [6]. Besides, the research conducted by Gowara et al in Cipto Mangunkusumo hospital showed that the main complaint was xerostomia in patients with chronic kidney disease who underwent hemodialysis in the end stage, which was 77 (82.8%) of the subjects [7].

Xerostomia will occur when the flow of saliva decreases to 50% of the normal secretions. A decrease in saliva causes precipitation in the above-mentioned composition of the saliva such as the level of bicarbonate, phosphate and urea being reduced, thus causing a decrease in the capacity buffer of the saliva producing a decreased pH [13]. In the event of an increase or decrease in the volume of saliva, it will be followed by an increase or decrease in the pH of the saliva of 78.5%. The increased secretion of saliva causes an increased volume and dilution of the saliva needed to proceed with both ingestion and lubrication. The increased secretion of saliva also increases the number and arrangement of the content of saliva, such as bicarbonates which can increase the pH. Conversely, the decreased secretion of saliva will lower the number and arrangement of the content of saliva that can cause a decrease in the pH of the saliva in turn [14]. The research done by Khoerunnisa and Dralfoldman shows that in the more severe degrees of xerostomia, it will lower the pH of the saliva [15].

The impact of xerostomia in patients undergoing hemodialysis (HD) is related to difficulties swallowing, chewing, tasting, and speaking; an increased risk of disease, including oral mucous lesions, gingiva and those of the tongue; bacterial and fungal infection such as candidiasis, dental caries and periodontal disease; an interdialytic body weight resulting from an increase in fluid intake and a decrease in quality of life[12].

Therapies without any side effects are necessary to prevent xerostomia from happening. The research conducted by Mansouri and Ali, Vahed and Shahraki, Shahdadi, Mehr and Arbabisarjou said that chewing gum without sugar has more of an effect when it comes to reducing xerostomia in patients undergoing hemodialysis compared to candy without sugar [3]. In addition, the sweets without sugar were also found to significantly lower the xerostomia in some patients who underwent hemodialysis. The research done by Said and Mohammed concerning the influence of chewing gum on xerostomia, haus and interdialytic weight gain in patients on hemodialysis pointed out that the use of chewing gum reduces thirst, xerostomia and that it significantly reduces interdialytic weight loss and increases the flow rate of saliva in the HD patients[4]. In addition, Bots et al foud that chewing gum for a short period of 2 weeks reduces thirst and xerostomia, which is more effective than a comparison of saliva, with the best improvement seen in patients who also increase their chewing of gum as a useful therapy[16].

There are several scientific articles found about interventions used to treat xerostomia in patients undergoing hemodialysis, namely chewing gum, chewing gum with chewing gum, chewing gum and Straw, chewing gum containing CPP-ACP, massaging the salivary glands and gum chewing, sweetgum (Happydent White Chewing Gum) and sugar-free gum (Happydent White

Xylitol Chewing Gum), chewing different flavored gums, sugar-free chewing gum and xanthan gum-based artificial saliva. Therefore a systematic review is needed to identify the effect of chewing gum effectiveness on xerostomia and the salivary flow rate of patients undergoing hemodialysis. This study aimed to find out the effectiveness of chewing gum against xerostomia and the flow rate of saliva in patients undergoing hemodialysis.

2. Method

The review of the journals was done using the guidelines in the form of the checklist of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISM) and the PICO framework.

2.1 The Search Strategy Article

As many as 336 articles were found. The results came from four databases: 102 articles from Scopus, 87 articles from Proquest, 61 articles from Ebscho and 86 articles from Scholar. The results of the article selection according to the inclusion criteria of 15 articles, then they were given a serial number and article analysis was done to facilitate the review process. The articles were taken from 2005 to 2018. The keywords used in the journal search were chewing gum AND xerostomia AND Saliva and Hemodialysis Flow Rate.

2.2 Selection Criteria of the Article

The inclusion criteria specified were (1) English-language journals, (2) the intervention given was in the form of chewing gum, (3) the research subjects were patients experiencing xerostomia and a decreased salivary flow rates and (4) the results of the study stated that chewing gum is needed to reduce xerostomia complaints and to increase the salivary flow rate. The exclusion criteria were journals that did not discuss gum chewing interventions, the research subjects were patients undergoing head and neck therapy and the year of publication was before 2005.

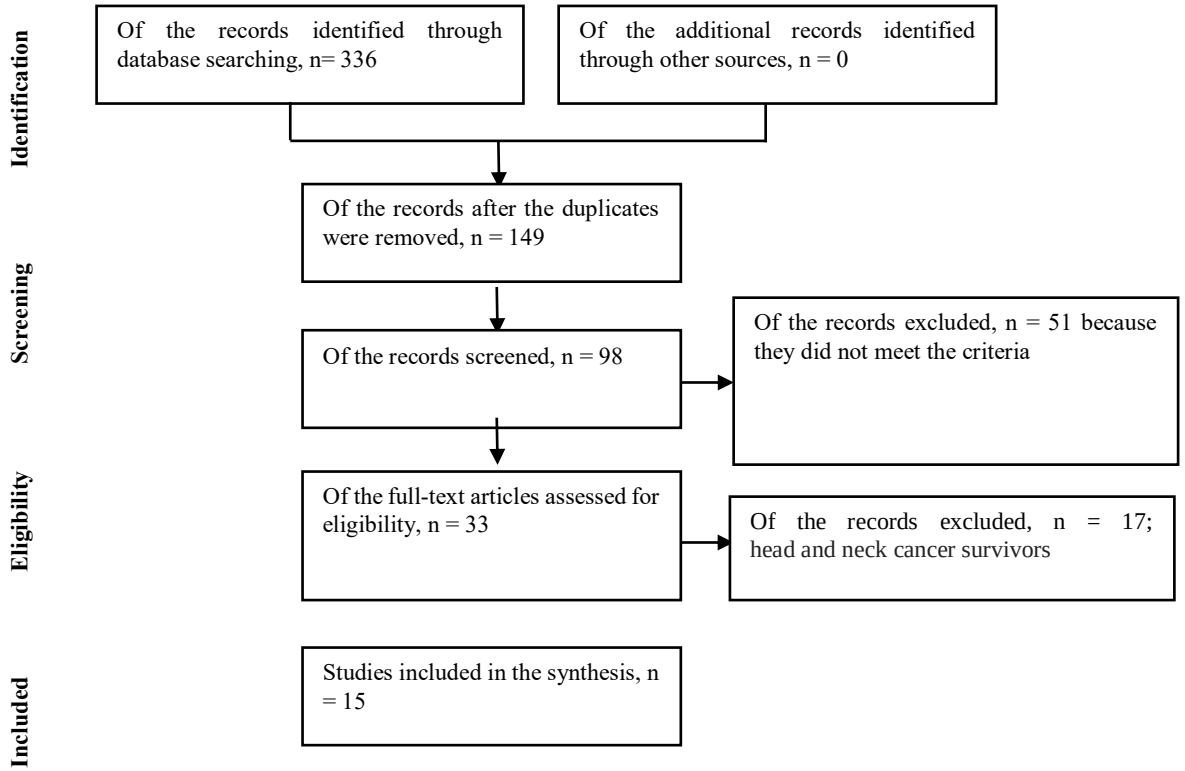

Figure 1. PRISMA Flow Diagram

2.3 Assessment Of Articles

This systematic review was not limited to studies with randomized controlled trial research designs. For the desired outcome, it was stated that a gum chewing intervention is needed to reduce the xerostomia and to increase the salivary flow rate. For the stages, methods and duration of the intervention and the number of samples in this systematic review, there are no restrictions.

Our review has some limitations. First, there is the potential for the incompleteness of the evidence reviewed to have restricted the validity of the results. Second, biased publication and location can also affect the results of this systematic review. Third, the number of trials included in the review and analysis of the US and the total sample size was too small to allow for a definite assessment. Fourth, the collection of statistics is not possible because of the heterogeneity of the studies that were included and the lack of adequate raw data reporting.

3. Results

From the search results using predetermined keywords, the researcher found 336 journals which were then screened by looking at the title and reading the abstract; 33 journals were obtained. Of the 33 journals, 15 journals were selected that met the inclusion criteria. Some journals were not selected is because they did not meet the inclusion criteria. Of the 15 selected journals, all discussed about the intervention of chewing gum to reduce xerostomia and to increase the salivary flow rate.

Table 1. Analysis of the Literature

Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
The Null Effect of Chewing Gum During Hemodialysis on Dry Mouth[2]	Randomized, controlled, single-blind, crossover experimental study	Sample: 61 patients on hemodialysis. Technique: Random sampling	Variable independent: Chewing gum Variable dependent: Dry mouth and its symptoms	Dry mouth symptoms were assessed using the Visual Analog Scale [VAS]	1. Normal distribution was assessed using the Shapiro Wilk test 2. To test the effects of chewing gum on the flow rate of saliva pH, saliva, and the symptoms of dry mouth, set points in time of 0-4 hours were measured using the Wilcoxon signed rank test 3.To determine the effects of chewing candy, we used the Friedman test	There were significant differences ($P < 0.05$) between chewing gum with no chewing gum against the pH of saliva but it does not increase the flow rate of saliva and it does not control the dry mouth symptoms. However, it was also reported that most of the patients (68.9%) have a positive opinion about chewing gum, which is likely related to its ability to refresh the mouth.
A comparative study on the effect of sugarless chewing gum with sugarless candy on xerostomia in	Semi-empirical study	Sample: 61 patients on hemodialysis Technique: Random sampling	Variable independent: Chewing gum with candy without sugar Variable dependent:	Xerostomia determined using the Xerostomia Index (XI). The duration of dialysis use was also looked at	- To measure the duration of a comparison group of patients in thirst related to gum consumption before and after the intervention	There was a significant difference in xerostomia patients before and after the interventions in both the intervention group and the control group ($p < 0.05$).

Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
patients undergoing hemodialysis[3]			Xerostomia	(DTI). To measure the intensity of thirst, VAS was used	was used via the Wilcoxon test - Average and standard deviation of the duration of the haus in three groups were compared before and after the intervention using the Kruskal-Wallis test	The results of this study showed that the average index of xerostomia for the chewing gum without sugar and for the sweets without sugar was higher than the control group. The average deductions for the xerostomia group for chewing gum without sugar were higher than the groups with candy without sugar.
Study on the Clinical Significance and Related Factors of Thirst and Xerostomia in Maintenance Hemodialysis Patients [1]	Observational study and crossover trial	Sample: 61 patients undergoing hemodialysis Technique: Random sampling	Variable independent: - Chewing gum - Straw Variable dependent: - Thirst - Xerostomia	Thirst was assessed using visual analog scales (VAS) and the Dialysis Thirst Inventory (DTI). Xerostomia was assessed using VAS and Xerostomia	The data was analyzed using ANOVA and the correlation coefficients were used to assess the correlation between the continuous variables. The results of the crossover experiment were investigated using two T-test samples	Xerostomia was significantly reduced by gum use (P = 0,000) and thirst was reduced with straw use (P = 0.016)

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Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
				Inventory (XI)		
Effect of Chewing Gum on Xerostomia, Thirst and Interdialytic Weight Gain in Patients on Hemodialysis[4]	Quasi-experimental	Sample: 61 patients on hemodialysis Technique: Random sampling	Variable independent: Chewing Gum Variable dependent: - Xerostomia - Thirst - IDWG - Saliva flow rate	The symptoms of dry mouth were measured using Xerostomia Inventory (XI). Thirst was assessed using the Dialysis Thirst Inventory (DTI). Interdialytic Weight Gain (IWG) was used to measure body weight during the dialysis sessions. Salivary Flow Rate Scale was used for the saliva level measurements	The continuous quantitative data was compared using student t-tests as part of a comparison between the two groups. If the normal distribution of data cannot be assumed, then a non-parametric Mann-Whitney test was used instead of the student t-test. The qualitative variables were compared using the Chi-square test. If the normal distribution of the data cannot be assumed, then a non-parametric Kruskal-Wallis test was used instead	The use of gum reduces thirst, xerostomia and significantly impacts interdialytic weight loss and it also increases the salivary flow rates in HD patients ($p < 0.001$)
The effect of chewing gum on salivary	Randomized, balanced crossover; single-	Sample: 14 female patients	Variable independent: Chewing gum	Symptoms of dry mouth were assessed	The effects of salivary stimulation on the level of salivary	There was a statistically significant difference in supporting

Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
secretion, oral mucosal friction, and the feeling of dry mouth in xerostomic patients [17]	dose comparison with blind evaluation	with dry mouth Technique:	Variable dependent: - Saliva secretion - Friction of the oral mucosa - Dry mouth feeling in xerostomia patients	using the Visual Analog Scale [VAS]	secretion, friction value, and subjective evaluation on the visual analogue scale were analyzed using the t-test for the crossover design	gum (P <0.05). The results show that patients with xerostomia can increase the level of secretion of their saliva and reduce dry mouth by chewing gum
Management Of Xerostomia In Patients With Compromised Health Status - A Clinical Study[24]	Clinical Study	Sample: 60 adult volunteers with xerostomia Technique: Random sampling	Variable independent: - Hyposalivation massage - Gum chewing Variable dependent: Xerostomia	Spitting method	The paired t-test was used to compare changes in the flow rate / severity of dryness in each group. The t-test was used to compare the differences between the two groups	Hyposalivation massage and gum chewing can be used as a safe, simple, and cost-effective method for improving dryness of the mouth (xerostomia). The increase in the number of subjects using gum as a stimulant was greater than those who used gland massage
Effect of Chewing Gum Containing CPP-ACP on Salivary Flow and Buffer Capacity:	Cross-over	Sample: 12 young adults Technique:	Variable independent: Chewing Gum Containing CPP-ACP	Spitting method was used to measure the flow rate of saliva. PH is measured directly	Normal distribution warranted the use of the Shapiro-Wilk test. Analysis of variance (ANOVA) and the Tukey test were used to	Chewing gum with and without CPP-ACP can increase the salivary flow and buffer capacity within the normal range

Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
An In-vivo Study [20]			Variable dependent: Salivary Flow and Buffer Capacity	using a potentiometer	compare the groups	
Management Of Xerostomia In Patients With Compromised Health Status - A Clinical Study [24]	Clinical Study	Sample: 60 adult volunteers Technique: Random sampling	Variable independent: Massaging the salivary glands and gum chewing Variable dependent: Xerostomia	Spitting method is used to collect saliva. Xerostomia Inventory was for assessing xerostomia	The student's t-test was used to compare the scores obtained from both groups. The paired t-test was used to analyze the changes in flow rate and the severity of dryness in each group	Massaging the salivary glands and chewing gum can be used as a safe, simple, and cost-effective method for improving the dryness of the mouth
Comparative evaluation of the effects of Xylitol and sugar-free chewing gum on salivary and dental plaque pH in children [21]	Quasi experimental	Sample: 30 school children Technique: Random sampling	Variable independent: Sweet gum (Happydent White Chewing Gum) and Sugar-free gum (HappydentWhite) Xylitol Chewing Gum Variable dependent: PH of the saliva and the PH of dental plaque	The pH meter was used to measure salivary pH and dental plaque	Student paired t tests were used to compare the salivary pH values and plaques in the same group and the Student t test was also used to compare the differences between the two groups	Sugar-free gum (Xylitol) effectively increases the pH of both saliva and plaque

Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
Xerostomia after Radiotherapy for Oral and Oropharyngeal Cancer: Increasing Salivary Flow with Tasteless Sugar-free Chewing Gum [22]		Sample: 20 patients after a therapy demonstration Technique: Random sampling	Variable independent: Sugar-free gum Variable dependent: Xerostomia after radiotherapy	Spitting method to assess salivary stress. EORTC H and the N35 questionnaire were used to assess xerostomia	The correlation between the measurements of saliva output was tested using a paired t test. The characteristics of the patients who met the requirements and the responses to the questionnaire were tested using Spearman's correlation	Chewing gum can stimulate salivary output.
Xylitol Gum for Xerostomia in Patients with Chronic Kidney Disease [23]	Quasi experimental	Sample: 15 people with CKD patients Technique: Consecutive sampling	Variable independent: Xylitol gum Variable dependent: Xerostomia in CKD patients	SXI-D for assessing xerostomia	The Friedman test with a post-hoc Wilcoxon test to identify the effect of Xylitol gum on xerostomia. Multivariate analysis was used to assess the effect of the confounding variables on xerostomia.	Chewing Xylitol gum can reduce the complaints of xerostomia in CKD patients
Effects of Chewing Different Flavored Gum on Salivary Flow Rate and pH [25]		Sample: 15 volunteers who were dental students	Variable independent: Chewing Different Flavored Gum Variable dependent: - SFR - pH of saliva		The groups that received SFR and pH were stimulated without stimulation when compared using one-way ANOVA and the analysis of variance with repeated measurements	Spearmint and cinnamon-flavored sweets significantly increase the pH of the saliva

Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
					over time. The results at the beginning and after 6 minutes in each group were compared to the student's paired t-tests	
Effects of Xylitol chewing gum on salivary flow rate, pH, buffering capacity and the presence of Streptococcus mutans in saliva, [26]	Quasi experimental	Sample: 90 student children	Variable independent: Xylitol chewing gum Variable dependent: Salivary flow rate, pH, buffering capacity and the presence of Streptococcus mutans in the saliva	The salivary flow rate was measured by collecting the stimulated saliva in a measuring cup. The PH levels were measured using Cyberscan pH 110 pH meters (Eutech Instruments). CRT buffer strips and CRT (Ivoclar-Vivadent) bacterial tests were each used to measure the S. mutans buffer and level capacity	Sample collection was compared using 1-way variance analysis	The chewing effect is very important for the stimulation of salivary flow and recovery resulting from the pH levels and a reduction in the level of S. mutans in the saliva

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Title	Research Design	Sample and Sampling Technique	Variable	Research Measurement Tool	Analysis	Outcomes
Three Months of Regular Gum Chewing neither Alleviates Xerostomia nor Reduces Overhydration in Chronic Hemodialysis Patients, [9]	A prospective pre/post-test	Sample: 38 chronic HD patients	Variable independent: Gum Chewing Variable dependent: Xerostomia, thirst, hydration and the nutritional status of the HD patients		The Wilk–Shapiro test was used to verify the hypothesis related to the normal distribution of the variables. The 2-sided paired student t-test was applied to test for differences between the variables in the same group of patients. To test for the differences between the groups, the student t-test was applied in the case of 2 groups and a 1-way analysis of variance test was used for the cases involving a higher number of comparisons. To analyze the relationship between the variables, the linear correlation coefficient was calculated. A c2 test was used to analyze the answers provided by the	3 months of the use of chewing gum does not cause significant changes in xerostomia and thirst. Moreover, chewing regularly and the use of gum did not improve the parameters of hydration status in the chronic HD patients.

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Title	**Research Design**	**Sample and Sampling Technique**	**Variable**	**Research Measurement Tool**	**Analysis**	**Outcomes**
					participants in the xerostomia and thirst survey	
The management of xerostomia in patients on hemodialysis: comparison of artificial saliva and chewing gum, [16]	Crossover trial	Sample: 65 HD patients	Variable independent: Sugar-free chewing gum and xanthan gum-based artificial saliva Variable dependent: Xerostomia	The level of xerostomia was assessed with the Xerostomia Inventory (XI)	To assess the overall treatment effect of each therapy with the repeated multivariate analysis of variance (MANOVA). Furthermore, we investigated the effects of each therapy compared to the BASELINE for the level of xerostomia using the General Linear Model of the design of repeated ANOVA actions, followed by a paired t-test as a post hoc procedure if appropriate. Differences between the VAS scale data were analyzed using non-parametric tests and the other data from the questionnaires was analyzed using the Chi-square test.	Chewing gum and artificial saliva could play an important role in the palliative care of xerostomia in HD patients

3.1 Intervention

The results of a journal review of the research that has been done on chewing gum showed that the reduction of the xerostomia release and the increase of the salivary flow rate indicates that the duration, amount and frequency used for the administration of interventions varied. The duration of the interventions was between 2 weeks to 3 months and the amount of gum given was between 6 and 10 seeds per day according to the consideration of the researcher.

3.2 Characteristics Summary of Studies

The research conducted by Duruk et al. with 60 hemodialysis patients as the sample stated there were significant differences ($P < 0.05$) between chewing gum and no gum chewing against the pH of saliva but that this did not increase the flow rate of saliva and that it did not control dry mouth or the symptoms[2]. However, it was also reported that most of the patients (68.9%) had a positive opinion about chewing gum, which is likely to be related to its ability to refresh the mouth. In this study, the patients were asked to chew gum every hour for 15 minutes during a session of hemodialysis while in the other studies, the patients were asked to chew gum six times a day for at least 10 minutes [2]. The differences between the scores of all of the subjective dry mouth symptoms (VAS) at the 0- and 4-hour time points in the day when gum was not chewed and on the day when the gum was chewed, the results were found to be significant (P G .05), except for the scores for the "amount of saliva" and "burning sensation in the mouth". Because this was a single-blind study, the symptoms of dry mouth (VAS), the salivary flow rate and the pH were assessed by a nurse who was not included in the study team with the aim of avoiding bias. The nurse collecting the objective data did not know which patients had completed gum chewing. The nurse was instructed by the researchers about how to record the symptoms on the VAS, how to measure the amount of saliva in the graduated tube and how to read the pH value. Because this was a single-blind study, the symptoms of dry mouth (VAS), the salivary flow rate and the pH were assessed by a nurse who was not included in the study team with the aim of avoiding bias. The nurse collecting the objective data did not know which patients had completed the gum chewing. The nurse was instructed by the researchers about how to record the symptoms on the VAS, how to measure the amount of saliva in the graduated tube and how to read the pH value.

The research conducted by Fan *et al*. was where a total of 11 MHD patients were enrolled and randomized across two groups: chewing gum and straw for 2 weeks respectively. There was no significant difference in age, gender, time on HD and the parameters of biochemistry, hemoglobin, Kt / V and nPCR between the two groups. What's more, no obvious difference was found in the level of xerostomia, thirst, IDWG and blood pressure. However, significant treatment effects were observed for thirst and xerostomia. The use of chewing gum decreased the VAS thirst score (70.7 ± 17.1 to 61.1 ± 22.0, $P = 0.038$), DTI (19.3 ± 3.4 to 14.3 ± 4.8, $P = 0.000$), VAS xerostomia score (54.6 ± 19.6 to 44.6 ± 20.0,$P = 0.001$) and XI (32.2 ± 9.4 to 27.3 ± 11.7, $P = 0.001$). The use of straw also had a positive overall effect on the DTI ($P = 0.016$) and VAS thirst score ($P = 0.003$) during the crossover clinical trial. When the patients were treated with chewing gum, the IDWG2d decreased from 2.78 ± 0.66 kg to 2.43 ± 0.70 kg ($P = 0.009$) and IDWG3d decreased from 3.17 ± 0.89 kg to 2.88 ± 0.65 kg ($P = 0.017$). IDWG3d also decreased by the use of a straw to control the water intake ($P = 0.049$). Treatment with chewing gum and straw did not influence UWS, PC-SWS, MAP, SBP, and DBP during the crossover clinical trial. Compared with the treatment of straw during the crossover clinical trial, the VAS xerostomia score significant decreased through the use of chewing gum ($P = 0.06$). Between the two interventions, no difference was found in DTI, VAS thirst score, XI, UWS, PC-SWS, IDWG, MAP, SBP and DBP [1].

The research conducted by Mansouri et al., according to the Wilcoxon test, showed that there was a significant difference between xerostomia before and after the intervention in the chewing gum group ($p = 0.001$) and the candy group ($p = 0.001$). There was no significant difference in the control group ($p = 0.44$). The mean and standard deviation of xerostomia in the patients across the three groups were compared before and after the intervention using the Kruskal-Wallis test. The results showed that there was no significant difference between the three groups before the intervention ($p = 0.72$). The results after intervention showed that there was a significant difference between the mean xerostomia index of the patients in all three groups ($p = 0.001$). By considering the mean and standard deviation obtained for each group, it can be concluded that the mean of the xerostomia index in the chewing-gum group was less than the other two groups and that it was smaller in the candy group when compared to the control group[3].

The research conducted by Said & Mohammed showed that the age of the studied sample was divided into two categories, which was most prevalent in the age group of (<50) years in both the study and control group (60.0% & 53.3% respectively), followed by the category of (50+) years. The gender distribution was almost equal between males and females with a slightly higher preponderance of males in both groups. Regarding the duration of hemodialysis, about 40% of the study group and 33.3% of the control group had received hemodialysis for more than 4 years. Regarding the dry weight, the mean for the study and control group was (74.94±5.13) and (72.92±3.7) respectively. There were no statistically significant differences revealed among the two groups for any of the characteristics. There was a statistically significant difference among the patients in the study group throughout the six sessions in relation to xerostomia, thirst, salivary flow rate (ml) and interdialytic weight gain (kg). There was a decrease in xerostomia, thirst and interdialytic weight gain from 4.6±0.6,4.3±0.6 and 4.4±1.2 to1.8±0.8, 1.9±0.7 and 1.8±0.7 (respectively) through the six sessions. There was an increase in salivary flow rate (ml) from 0.4±0.1 to at 0.8±0.2 through the sixth session. Statistically significant differences among the patients in the control group throughout the six sessions were in relation to xerostomia, thirst, salivary flow rate (ml) and interdialytic weight gain (kg). There was an increase in xerostomia, thirst and interdialytic weight gain from 3.3±0.7, 2.3±1.1 and 1.8±0.5 to 4.0±0.9, 4.4±0.8 and 3.0±1.5 (respectively) through the six sessions. There is a decrease in the salivary flow rate (ml) from 0.5±0.2 to 0.4±0.2 through six sessions [4].

The use of chewing gum reduces thirst and xerostomia, significantly lowering the interdialytic weight gain and increasing the flow rate of saliva in the patients [4]. The patients with xerostomia can increase the level of their salivary secretion and it can reduce dry mouth through the use of two flavors of chewing gum [17].

4. Discussion

The findings from the 15 items of literature state that chewing gum effectively reduces the complaint of xerostomia, increases the salivary flow rate and is effective at neutralizing the pH of saliva. The intervention of chewing xylitol gum works through both mechanical and chemical stimuli. The mechanical stimuli obtained from the mastication process causes the muscles in the oral cavity to work so then the chemoreceptors and pressure receptors in the mouth respond. These receptors begin implusions in the nerve fibers that carry information to the saliva center in the medulla oblongata. The saliva center then sends implications through the extrinsic autonomic nerves to increase the salivary secretion. The chemical stimuli are obtained from the taste of gum which will stimulate the parsympathetic nerves from the superior and inferior salivatory nuclei of the brain stem. The nucleus is stimulated by the taste on the tongue and the oral and pharyngeal

cavities according to the salivary needs which increases the rate of saliva. The increased salivary secretions also increase the amount and composition of the salivary content, such as bicarbonates which can increase the salivary pH[18,19]. The purpose of this review was to critically evaluate the effectiveness of chewing gum against xerostomia. Ten out of the 11 literary reviews examined to see if chewing gum can effectively reduce the complaints of xerostomia, increase the saliva flow rate and neutralize the pH of the saliva. One item of literature did not state that there was an effect on xerostomia or the flow rate of saliva[2,3,1,4,17,20,21,22,23,9]. The difference in the findings of this study and other studies is associated with the method, duration, frequency and the number of different candies used in the research [2]. The research conducted by Duruk et al. stated there was a significant difference ($P < 0.05$) between chewing gum and no gum chewing against pH saliva but that it does not increase the flow rate of saliva and that it does not control the dry mouth symptoms. However, it was also reported that most of the patients (68.9%) have a positive opinion about chewing gum, which is likely to be related to its ability to refresh the mouth. In this study, the patients were asked to chew gum every hour for 15 minutes during a session of hemodialysis while the other study patients were asked to chew gum 6 times a day for at least 10 minutes [2]. In addition, a study conducted by Jagodzi et al. stated that the use of chewing gum for 3 months did not cause significant changes in xerostomia and thirst. In addition, the regular use of chewing gum does not improve the parameters of hydration status in chronic HD patients. This is attributed to the non-compliance of the patients in carrying out interventions and the patients felt bored at the intervention [9].

Our review has several limitations. First, the potential incompleteness of the evidence that we reviewed might have limited the validity of the results. Second, the publication bias and location can also influence the results of the systematic review. Third, the number of trials included in our review and analysis and the total sample size was too small to allow for a definite assessment. Fourth, statistical collection was not possible because of the heterogeneity of the studies included and the lack of adequate reporting of the raw data.

5. Conclusion

Chewing gum is an effective way that is simple, inexpensive and that can be well tolerated to change xerostomia, increase the flow rate of saliva and neutralize the pH of saliva in patients who undergo hemodialysis.

References

[1] Fan W 2013 Study on the Clinical Significance and Related Factors of Thirst and Xerostomia in Maintenance Hemodialysis Patients **200240** 464–74

[2] Duruk, Nazike; Eser S 2016 The Null Effect of Chewing Gum During

[3] Mansouri, Ali; Vahed, Aziz Shahraki; Shahdadi H, Mehr S D and Arbabisarjou A 2018 CrossMark chewing gum with sugarless candy on xerostomia in

[4] Said H and Mohammed H 2013 Effect of Chewing Gum on Xerostomia, Thirst and Interdialytic Weight Gain in Patients on Hemodialysis Hanan Said and Hanan Mohammed Department **10**

[5] Yu I C, Tsai Y F, Fang J T, Yeh M M, Fang J Y and Liu C Y 2016 Effects of mouthwash interventions on xerostomia and unstimulated whole saliva flow rate among hemodialysis patients: A randomized controlled study *Int. J. Nurs. Stud.***63** 9–17

[6] Widati, Dita Rana ; Hadi, Priyo ; Radithia D 2016 Prevalensi xerostomia pada pasien penyakit ginjal kronis stadium akhir yang menjalani hemodialisis di RSU Haji Surabaya *Oral Med. Dent.***8**

[7] Gowara Y, Sarsito A, Siregar P and Wimardhani Y S 2015 Orofacial Disorders of Patients with End Stage Renal Disease Undergoing Haemodialysis *J. Dent. Indones.***21** 69–78

[8] Yang L-Y, Yates P, Chin C-C and Kao T-K 2010 Effect of acupressure on thirst in hemodialysis patients *Kidney Blood Press. Res.***33** 260–5

[9] Jagodzińska M, Zimmer-Nowicka J and Nowicki M 2011 Three months of regular gum chewing neither alleviates xerostomia nor reduces overhydration in chronic hemodialysis patients *J. Ren. Nutr.***21** 410–7

[10] Johnstone P A S, Peng Y P, May B C, Inouye W S and Niemtzow R C 2001 Acupuncture for pilocarpine-resistant xerostomia following radiotherapy for head and neck malignancies1 *Int. J. Radiat. Oncol. Biol. Phys.***50** 353–7

[11] Health Policy Institute 2015 *Oral Health and Well-Being in the United States*

[12] Bossola M and Tazza L 2012 Xerostomia in patients on chronic hemodialysis *Nat. Rev. Nephrol.***8** 176–82

[13] Pinna R, Campus G, Cumbo E, Mura I and Milia E 2015 Xerostomia induced by radiotherapy: an overview of the physiopathology, clinical evidence, and management of the oral damage *Ther. Clin. Risk Manag.***11** 171

[14] Marasabessy F A 2013 Hubungan Volume dan pH Saliva pada Lansia **D** 55–60

[15] Khoerunnisa N and Ningrum F H 2017 Hubungan Derajat Xerostomia dengan pH Saliva Pasca Radio terapi Kanker Kepala Leher **6** 983–92

[16] Bots C P, Brand H S, Veerman E C I, Valentijn-Benz M, Amerongen B M Van, Amerongen A V N, Valentijn R M, Vos P F, Bijlsma J A and Bezemer P D 2005 The management of xerostomia in patients on haemodialysis: comparison of artificial saliva and chewing gum *Palliat. Med.***19** 202–7

[17] Hodge P and Ed F D S R C S 2016 Mouthwashes : Do They Work and Should We Use Them ? Part 2 : Anticaries , Antihalitosis and Dry Mouth Relief Efficacy of Mouthwashes

[18] Sherwood L 2013 *Fisiologi Manusia dari Sel ke Sistem* (Jakarta: EGC)

[19] Anggraeni, Tjahajawati D, Wihardja S and Rosy 2007 Saliva secretion difference before and after rinsing with baking soda on menopause women *J. Dent.***18** 28–33

[20] Pereira J V, Maciel R P, Jorge M and Monteiro F 2016 Effect of Chewing Gum Containing CPP-ACP on Salivary Flow and Buffer Capacity : An in vivo Study **16** 425–31

[21] Kumar S, P S S H and Indushekar K R 2013 Comparative evaluation of the effects of xylitol and sugar-free chewing gums on salivary and dental plaque pH in children **31** 1–5

[22] Kaae J K, Stenfeldt L and Eriksen J G 2016 Xerostomia after radiotherapy fo r Oral and Oropharyngeal cancer : increasing salivary Flow with Tasteless sugar-free chewing gum **6** 1–6

[23] Prasetya H A ; I 2018 Permen Karet Xylitol untuk Xerostomia pada Pasien Penyakit Ginjal Kronis *Keperawatan***10**

[24] Mirjalili N, Karbassi M A and Gazerani M ManageMent of xerostoMia in patients with coMproMised health status - a clinical study 1–5

[25] Karami Nogourani M, Janghorbani M, Kowsari Isfahan R and Hosseini Beheshti M 2012 Effects of chewing different flavored gums on salivary flow rate and pH *Int. J. Dent.***2012**

[26] Ribelles M L, Guinot F J, Mayné R A and Bellet L J D 2010 Effects of xylitol chewing gum on salivary flow rate, pH, buffering capacity and presence of Streptococcus mutans in saliva. *Eur. J. Paediatr. Dent. Off. J. Eur. Acad. Paediatr. Dent.***11** 9–14

[27] Jagodzi M, Zimmer-nowicka J and Nowicki M 2011 Three Months of Regular Gum Chewing Neither Alleviates Xerostomia nor Reduces Overhydration in Chronic Hemodialysis Patients **21** 410–7

[28] Bots C P, Brand H S, Veerman E C, Valentijn-benz M and Van B M 2005 The management of xerostomia in patients on haemodialysis : comparison of artificial saliva and chewing gum 202–7

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NON PHARMACOLOGICAL INTERVENTION TO REDUCE PAIN SCALE IN POST PATIENT FRACTURES: A SYSTEMATIC REVIEW

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ABSTRACT

To review previous studies of non-pharmacological interventions, namely relaxation and distraction, pain and anxiety disorders in post-fracture surgery and weaknesses of these interventions **.** The literature search was carried out using the terms "pain" "non- pharmacological intervensions" and "Fracture " in Scopus, Google Scholar, and Pubmed from 1990 to March 2018. Studies were reviewed and categorized based on progressive muscle relaxation [PMR], autogenic training, deep breathing relaxation, benson relaxation, guided imagery, finger gripping, music therapy, classical music, murrotal, Dhikr, hypnosis therapy, education and coping mechanisms), and summarized in relation to various research characteristics and results. The researchers support for non-pharmacological interventions, namely a maximum of 6 journals from 15 journals reviewed. The most common distraction techniques are supported by listening to the verses of the Qur'an, especially for pain and anxiety of Patients postoperative fracture. Researchers report total therapy is very supportive therapy in addition to relaxation and music. Little evidence is found for the use of cold packs, aromatherapy and coping, and there is no support for progressive muscle relaxation. Most reviewed studies have weaknesses in the methodology, which limits the ability to draw conclusions about intervention.

Keywords: Pain, non-pharmacological intervention , fracture

1. Introduction

Fractures are defined as fractures caused by physical trauma. They can occur due to excessive pressure versus the ability of the bone to withstand pressure. Various efforts and actions are needed to restore the bone structure and function to as it was before. Actions that are often chosen in fracture patients are surgical procedures commonly known as orthopedic surgery [1]. Pain management can use pharmacological therapy and non-pharmacological therapy. Pharmacological therapy is often carried out but it cannot always be done because of the contraindications within the drug administration, while non-pharmacological therapies such as distraction techniques in the form of the transfer of attention and menden garkan music are still in the process of undergoing continuous research [2]. Pain in a fracture patient, if not treated immediately, can interfere with physiological processes. Pain is the fifth vital sign and pain interferes with hemodynamics. Pain can cause stressors and anxiety, which can ultimately disrupt the healing process of the disease. Therefore the pain needs to be overcome so then further complications do not occur and interfere with patients. This can help

their healing process [3]. The aim of this systematic review was to summarize non-pharmacological interventions used with the intention of reducing the scale of pain by synthesizing the existing qualitative studies to inform of the hemodialysis facilitators and clinical research.

2. Methods

2.1 Design

The design of this study was a systematic review of quantitative study approaches which were formulated to review a handful of relevant studies to allow them to undergo comprehensive analysis. This systematic goal was developed based on the PICO model (Patient, Intervention, Comparison, and Outcome). The reporting was done through the systematic use of PRISMA *(Preferred Reporting Items for Systematic Reviews and Meta-Analysis).*

2.2 Inclusion and Exclusion Criteria

This systematic review established the inclusion and exclusion criteria that focus on both quantitative and quasi-experimental studies. A feasibility study was conducted to identify non-pharmacological interventions to reduce the pain scale in post=operative patients with fracture with the language eligibility criteria being that they used English. The publications had to be from 2012 - 2018. The further inclusion group criteria were studies with post=operative adult fracture patients and the exclusion criteria were post-operative fracture patients who were children.

2.3 Search Strategy

The systematic search used the PICO electronic data framework (Xiaoli Huang., Jimmy Lin., 2006). In the first step, we looked in the Scopus, Google Scholar and Pubmed electronic databases to identify key articles and to identify the keywords by adjusting the key concepts: 1. Patients' post-operative fracture, 2. Pain, 3. Non-pharmacological interventions and 4. Quantitative study. Our keywords were used to look for quotes and full articles, including the title, abstract, text and reference information. The second step was translating keywords in English to find the relevant articles in the selected electronic databases. The third step was to filter using the PICO framework to determine which articles passed for further review according to the topic.

Table 1. Reliability criteria

Criteria	Inclusion	Exclusion
Study Design	RCT Quasi-experimental Pre-experiment	Qualitative
Concept		
Population	People with post-operative fractures	Fracture from multiple traumas Health worker associated with hemodialysis (e.g. nurse, doctor, nutritionist) Family Caregiver
Context	Adults in the Health Services / Community	Children
Language	English (* min. Abstract)	Full text without an abstract in English
Date range	≥ 2012 - 2018	< 2012

2.4 Research design

In this systematic review, most of the research designs used were quasi-experimental (11 articles), and pre-experimental (4 articles). The most widely used research design was quasi-experimental with the largest number of samples being 50 respondents.

2.5 Characteristics of the Respondents

The number of samples ranged from 10 to 50 patients. In 14 journals, the respondents were patients with post-operative fractures. The measuring device for evaluating pain was the Visual Analog Scale (VAS) used in 8 journals and the Numeratic Rating Scale (NR S) used in 5 journals. Vital Signs (TTV) and adaptive coping were each used in 1 journal.

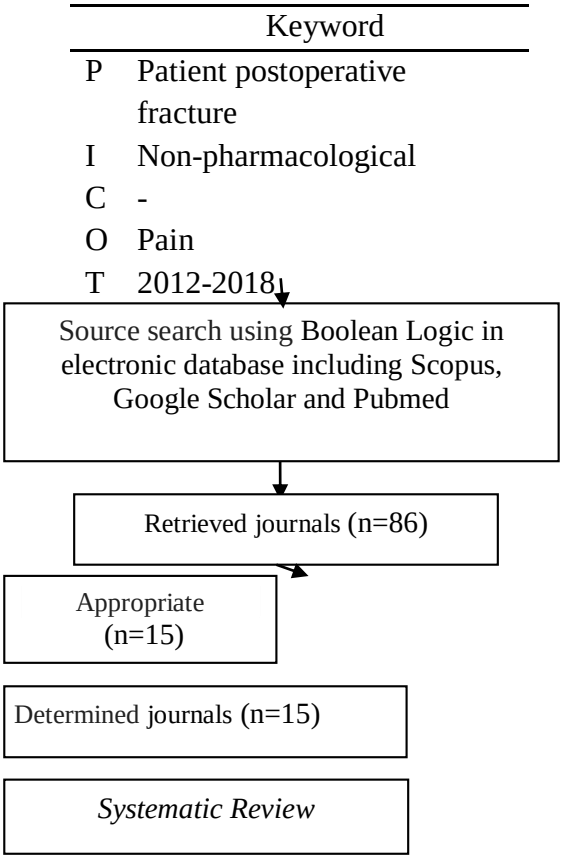

Figure 1: PICOT strategy and Booelan logic source search in the electronic databases

3. Results

3.1 Music therapy

Music has been shown to lower the blood pressure and change the perception of time. Nurse need to be able to use music creatively in various clinical situations. The patients are generally performing the activity by playing the instrument, singing songs or listening to music. Music from the beginning is always according to the mood of the individual, and this is the best option. Music produces a change in status of the consciousness through sound, silence, space, and time. Music must be heard for at least 15 minutes to have a positive therapeutic effect. In the state of acute care, listening to music can have very effective results when it comes to reducing pain in a post-surgery patient.

Four research articles stated that music therapy interventions were used in treating post-fracture surgery patients. In total, 4 of the articles used a quasi-experimental research design. The research conducted by [9] states that music therapy greatly affects the vital signs of the patients who experience pain. The research design was a one group pre-post test with a pre-experimental approach. The population studied were all of the postoperative fracture patients in RSUD Dr. Harjono Ponorogo. Using accidental sampling techniques, the researcher obtained a sample of 26 respondents. The instrument used was an observation. The results were analyzed using the Wilcoxon test ($\alpha = 0$, 05). The results showed the effect of music therapy on blood pressure with a significant p value (0.002), pulse with a p value (0.025), respiration with a p value (0.014), and a non-significant

body temperature with a p value (0.180). This is because music therapy can stimulate serotonin production. Research by Yanuar (2015) states that music therapy causes a decrease in pain intensity. This type of research is quasi-experimental with a Non-Equivalent Control Group Design, and a feature of this study was using a control. The number of samples was 20 respondents; 10 people in the experimental group and 10 in the control group. The sampling method used was the accidental sampling technique. The data was retrieved using interviews and tagging using a pain scale NRS (Numerical Rating Scale) before and after the music therapy for 10 minutes in the experimental group. Based on the Mann-Whitney statistical test, the p value = 0.007 showed that the language p value < 0.05, which means there was a difference in pain intensity in the patients with post-operative fractures between the experimental group and the control group. For the third study by Djamal, Rompas and Bawotong (2015), it stated that there was an effect from music therapy on the scale of pain in the fracture patients at Irina A RSUP Prof. Dr. RD Kandou Manado. The study was quasi-experimental with a pretest-post-test design approach with a control group. The sample taken totaled 50 patients. The data collection was done using a questionnaire. The results were examined using a t test (P value = 0.000; α = 0.05). The latest research by Farida (2019) combines two methods of non-pharmacological interventions, namely music therapy with aromatherapy. The study was quasi-experimental with the study design involving a non-equivalent control group pre- and post-test. The sample totaled 30 respondents; 15 for the intervention and 15 for the control group.

3.2 Murrotal therapy

Murottal therapy, or the recitation of Qur'anic verses, was mentioned as having the same effect as pharmacological therapy. In the study, 36 respondents indicated that there was a difference between murottal therapy and music therapy in reducing their pain levels. The mean reduction in pain in the murottal therapy group was greater than the decrease in pain in the music therapy group (Rilla, Ropi and Sriati, 2014). Research conducted by Khashinah and Candra (2015) stated that there was a significant effect of Juz 'Amma murottal therapy on pain reduction in the post-ORIF patients at PKU Muhammadiyah Hospital in Yogyakarta and Suyanto (2013). Research says that Al Quran (Murotal) reading can stimulate delta waves, so the listener becomes calm and comfortable. The effect is expected to reduce the pain intensity experienced by the fracture patients.

3.3 Asmaul husna therapy

Listen to readings from Beautiful Names can be used for arbitrary anxiety or pain lessening in the treatment of disease. The application of listening to Asmaul Husna is easy to do and quickly implemented. This non-pharmacological intervention can be used as a complementary therapy to pharmacological therapy. Medical therapy is not good enough without being accompanied by religious factors (religion and dzikir) and vice versa. Religious therapy is also incomplete without medical therapy (Wulandini, Roza and Safitri, 2018). Another study states that Asmaul Husna therapy is effective att reducing the pain in fractured patients. Past research that has been conducted by Masrvia, Sulitiyani and Hidayanti (2018) shows that listening to the reading of the Asmaul Husna can be effectively used to reduce the pain in fractured patients both preoperatively and post-operatively in RSUD Dr. R Soedjono Selong. It was given to 26 respondents where the Wilcoxon signed rank test results obtained a p value <α (0,000 <0,05). Ha was accepted and H0 was rejected.

3.4 Other non-pharmacological interventions to reduce pain

In the previous study, that by Aji, Armiyati and Sn (2015), they said that autogenic relaxation was more effective than slow deep breathing relaxation at reducing the pain in post -ORIF patients in Ambarawa Hospital. The study of Novia and Respati (2018) also said that guided imagery therapy has an influence on pain in post-fracture surgery. Guided imagery therapy can be applied by the health workers, especially nurses, in hospitals as a non-pharmacological therapy to reduce pain.

The research by Ayu Puspita (2018) provided two therapies, namely lavender and finger hand aromatherapy to 30 respondents divided into two groups; 15 respondents as an experimental group and 15 control group respondents. There was an influence from the lavender and hand-held aromatherapy on decreasing the pain intensity in post-fracture surgery patients in the hospital. This study involved 48 people divided into 24 in the treatment group and 24 in the control group and the researcher produced a combination of pain education and dhikr meditation to reduce pain intensity and to stabilize the blood pressure, pulse and respiration in the patients after fracture surgery [11]. The research by Kristanto and Arofiati (2016) proved that giving a cold pack had a greater effectiveness than the delivery of deep breath relaxation, so the researchers suggest that the use of cold pack is recommended to be used as an independent nursing implementation but to still consider the patient's physical condition.

4. Discussion

Significant effects from the non-pharmacological interventions related to the pain of the post-operative fracture patients has been described in the 15 studies reviewed. The researcher reported pain relief for the post-fracture surgery patients using music therapy (Lopes, Alimansur and Santoso, 2012; Djamal, Rompas and Bawotong, 2015; Yanuar, 2015; Nurul Farida, 2019), Qur'anic total therapy (Suyanto, 2013; Vava Rilla, Ropi and Sriati, 2014), Asmaul Husna therapy (Masrvia, Sulitiyani and Manhidayanti, 2018; Wulandini, Roza and Safitri, 2018) and other effective interventions such as a combination of 2 autogenic relaxation interventions and deep breathing, lavender and hand-held aromatherapy, education and remembrance, cold pack use and deep breath relaxation (Nasriati, Suryani and Afandi, 2014; Aji, Armiyati and Sn, 2015; Kristanto and Arofiati, 2016; Ayu Puspita, 2018). The use of murrotal therapy is recommended to get more samples and to consider the factors of gender, age and the experience of pain by the patients.

Most of the sympathizers were given a non-pharmacological intervention at a frequency of several times over several days or weeks, providing the sample with a sufficient number of opportunities to learn and practice the technique. Non- pharmacological interventions were documented in 15 studies, in which the patients using the non-pharmacological interventions produced significant improvements in terms of reducing their post-fracture pain.

Apart from the advantages and disadvantages in non- pharmacological intervention studies, some can be used to explain the mixed results. Small sample sizes (n <50) were used in 15 of the research studies. The authors rarely discuss strength or justify their sample size. Although the proportion of the studies show as having beneficial effects, studies with small samples may be underpowered and the results may thus be inaccurate. Relaxation techniques are often practiced independently by the research participants without the researcher monitoring the frequency, duration or if they are doing it according to the standard procedure.

5. Conclusion

Given the variations in the methodology and quality of the involved studies, the conclusions about the non-pharmacological interventions need to be further investigated regarding if they can provide effective treatment for post-fracture surgery patients.

Referrences

[1] Maulana R, Elita V and Misrawati 2015 Pengaruh Murotal Al Qur'an Terhadap Kecemasan Pasien Pre Operasi Bedah Orthopedi *J. Online Mhs.* **2** 1410–7

[2] Suyanto 2013 Efek Kombinasi Bacaan Al quran dan Terapi Farmakologis Terhadap Penurunan Intensitas Nyeri Pada Pasien Fraktur Ekstremitas *J. Keperawatan* **IX** 57–62

[3] Aji S B, Armiyati Y and Sn S A 2015 Efektifitas antara Relaksasi Autogenik dan Slow Deep Breathing Relaxation Terhadap Penurunan Nyeri Pada Pasien Post Orif di RSUD Ambarawa *J. Ilmu Keperawatan dan Kebidanan* **002** 1–12

[4] Khashinah N and K Anita Candra D 2015 Pengaruh Terapi Murrottal Juz' Amma Terhadap Tingkat Nyeri Pada Pasien Post Open Reduction Internal Fixation (ORIF) di RS PKU Muhammadiyah Yogyakarta 1–9

[5] Ayu Puspita N 2018 Pengaruh Aromaterapi Lavender dan Genggam Jari Terhadap Intensitas Nyeri Post Operasi Fraktur di RS. Ortopedi Prof. dr. r. Soeharso Surakarta 1–21

[6] Vava Rilla E, Ropi H and Sriati A 2014 Terapi Murottal Efektif Menurunkan Tingkat Nyeri dibanding Terapi Musik Pada Pasien Pascabedah *J. Keperawatan Indones.* **17** 74–80

[7] Ismonah, Cahyaningrum D A and Sn M S A 2013 Pengaruh Slow Deep Breathing Terhadap Intensitas Nyeri Pasien Post Orif di RS Telogorejo Semarang *J. Ilmu keperawatan dan Kebidanan* 19–28

[8] Wulandini P, Roza A and Safitri S R 2018 Efektifitas Terapi Asmaul Husna Terhadap Penurunan Skala Nyeri Pada Pasien Fraktur diRSUD Provinsi Riau *J. Endur.* **3** 375–82

[9] Lopes M, Alimansur M and Santoso E 2012 Pengaruh Terapi Musik Terhadap Perubahan Tanda-tanda Vital pada Pasien Post Operasi Fraktur Yang mengalami Nyeri *J. Ilmu Kesehat.* **2** 1–19

[10] Yanuar A 2015 Pengaruh Terapi Musik Klasik terhadap Intensitas Nyeri pada Pasien Post Operasi Fraktur di RSU PKU Muhammadiyah Yogyakarta

[11] Nasriati, Suryani and Afandi 2014 Kombinasi Edukasi Nyeri dan Meditasi Dzikir Meningkatkan Adaptasi Nyeri Pasien Pasca Operasi Fraktur *Muhammadiyah J. Nurs.* 59–68

[12] Kristanto A and Arofiati F 2016 Efektifitas Penggunaan Cold Pack Dibandingkan Relaksasi Nafas Dalam untuk Mengatasi Nyeri Pasca Open Reduction Internal Fixation (ORIF) *Indones. J. Nurs. Pract.* **1** 68–76

[13] Djamal R, Rompas S and Bawotong J 2015 Pengaruh Terapi Musik Terhadap Skala Nyeri pada Pasien Fraktur di Irna A RSUP Prof. Dr. R.D Kandou Manado *e-Journal Keperawatan* **3** 1–6

[14] Novia A D and Respati A C 2018 Pengaruh Terapi Guided Imagery Terhadap Nyeri Pada Pasien Post Operasi Fraktur Di Ruang Bougenvil RSUD Dr. R. Koesma Tuban *J. Kebidanan Univ. Islam Lamongan* **10** 52–63

[15] Nurul Farida B 2019 Pengaruh Aromaterapi Lavender dan Terapi Musik Klasik Terhadap Intensitas Nyeri Post Operasi fraktur di RS. Ortopedi Prof.Dr. R Soeharso Surakarta 1–14

[16] Masrvia E, Sulitiyani E and Manhidayanti B 2018 Pengaruh Mendengarkan Bacaan Asmaul Husna Terhadap Perubahan Skala Nyeri Pada Pasien fraktur di RSUD dr. R. Soedjono Selong **4** 66–74

Appendix

Journal	Design	Sample	Variable	Instrument	Analysis	Information
Combination Effects of Quran Reading and Therapy Pharmacology at Decreasing Intensity Pain in Limb Fracture Patients[2]	Quasi-experimental	30 patients with limb fractures	Al Quran reading, Pharmacological therapy	Pain with VAS	Pair T-test	This study can be continued in patients with more ecstatic fractures and in wider samples Considering the factors of gender, age and the experience of pain.
Effectiveness Between Autogenic Relaxation and Slow Deep Breathing Relaxation To Decrease the Pain in Post-Operative Patients in Orif Di Rsud Ambarawa [3]	Quasi-experimental	The sample consisted of 22 respondents through the quota sampling technique	Autogenic Relaxation, Slow Deep Breathing Relaxation	VASE	Mann Whitney Test	The results of this study recommend that autogenic relaxation and slow deep breathing relaxation can be used as a non-pharmacological independent nursing action to reduce post-ORIF pain.
Effect of Juz 'Amma Murottal Therapy Against Pain Levels in Post Patients Open Internal Reduction Fixation (Orif) At Rs Pku Muhammadiyah Yogyakarta[4]	Pre Experiment	10 post ORIF patients	Juz Amma Murottal Therapy, Pain Level	The level of pain is measured by the Numeratic Rating Scale (NRS)	Paired T-Test	The results show that therapy affects the decrease in pain significantly
Effect of Lavender and Finger Hand Aromatherapy Against the Intensity of Post-Operative Fracture Pain in Rs. Orthopedics Prof. Dr. R. Soeharsosurakarta [5]	Pre-experiment	15 respondents as the experimental group and 15 control group respondents	Lavender Aromatherapy, Finger Handheld, Pain Intensity	Pain intensity was measured using the Numeric Ratting Scale (NRS)	Independent sample t-test and a paired sample t-test	The therapy causes a decrease in the patient's scale of pain
Effective Murottal Therapy Reduces Pain Levels	Quasi-experimental	36 respondents	Murrotal Therapy, Music	The level of pain was measured by	T test	Murottal therapy can be considered as a form of therapy that is

Journal	Design	Sample	Variable	Instrument	Analysis	Information
Compared to Music Therapy in Post-operative Patients[6]			Therapy, Pain Levels	the Numeric Rating Scale		non- pharmacological that can reduce the pain levels of Muslim patients after surgery.
Effect of Slow Deep Breathing on the Intensity of Pain in Post-Operative Patients in Telogorejo Hospital Semarang[7]	Quasi-experimental	24 respondents	Slow Deep Breathing, Pain intensity	Pain intensity is measured by a visual analog scale	Wilcoxon Test	There is an effect from therapy in reducing the scale of the pain
Effectiveness of Asmaul Husna Therapy on the Decline in the Scale of Pain in Fracture Patients -in Rsud Riau Province[8]	Quasi-experimental	30 respondents	Asmaul Husna Therapy, Decreasing the scale of pain	The pain scale is measured by VAS	T-test	There is the therapeutic effect of decreasing the scale of the pain
Effects of Music Therapy on Changing Vital Signs in Post-Operative Patients After Fracture Surgery Who Experienced Pain[9]	Pre-Experiment	26 Respondents	Music Therapy, Changes in their Vital Signs	The exploration of vital signs was measured using a stethoscope and sphygnomanometer	Wilcoxon test	Music therapy greatly affects the vital signs of patients experiencing fracture pain
Effects of Classical Music Therapy on Pain Intensity in Post Patients Fracture Operation in Rsu Pku Muhammadiyah Yogyakarta [10]	Quasi experiment	20 respondents	Classical Music Therapy, Pain Intensity	Pain intensity measured by NRS (Numerical Rating Scale)	Mann-Whitney	Therapy causes a decrease in pain intensity
Combination of Pain and Education Meditation of Dhikr Increases Post-Operative Patient Pain Adaptation After Fracture Surgery[11]	Quasi-experimental	48 respondents	Pain Education, Dhikr Meditation, pain adaptation	VAS	Parametric test (Paired T test and T test independent) and non-parametric (Wilcoxon signed Rank test	This research used a combination of pain education and dhikr meditation to reduce the pain intensity. This did not affect their blood pressure, pulse and respiration post-fracture surgery

Journal	Design	Sample	Variable	Instrument	Analysis	Information
					and Mann Whitney test) t-test	
Effectiveness of Use of a Cold Pack compared to Relaxation and Deep Breaths to Overcome Post-Open Reduction Pain Internal Fixation (ORIF)[12]	Quasi-experimental	30 respondents	Cold pack, deep breath relaxation, pain	Pain is measured using a visual analog scale		This research proves that a cold pack has a greater level of effectiveness than that deep breath relaxation
Effects of Music Therapy on the Scale of Pain in Patients with a Fracture in Irina A Rsup Prof. Dr. RD Kandou Manado[13]	Quasi-experimental	50 respondents	Music therapy, pain scale, fracture patients	Pain measured by NRS (Numerical Rating Scale)	T-test	The research shows that there is an influence from music therapy on the scale of pain in fracture patients
Effect of Therapeutic Guided Imagery on Pain in Post-Operative Patients After Fracture Surgery In Bougenvil Room RSUD Dr. R. Koesma Tuban[14]	Quasi-experimental	28 respondents	Therapy for Guided Imagery, pain	Pain assessment with a visual analog scale	Mann Whitney test	Guided imagery therapy has an effect on the pain post-fracture surgery. It is expected that guided image therapy can be applied by health professionals and particular nurses' in the hospitals as a non-pharmacological therapy to reduce pain.
Effects of Lavender Aromatherapy and Classical Music Therapy on Intensity of Post-operative Pain Fractures in Rs. Orthopedics Prof.Dr.R Soeharso Surakarta[15]	Quasi-experimental	30 respondents	Lavender aromatherapy, classical music therapy, pain	VASE	Mann-Whitney	There is an influence from lavender aromatherapy and classical music therapy on the intensity of post-operative fracture pain.
The Effect of Listening to the Reading of the Asmaul Husna Against Changes	Pre-experimental	26 respondents	Listen to the asthma reading and the scale of	Pain assessment with a visual analog scale	Wilcoxon signed rank test	This research was focused on listening to the reading of the Asmaul Husna which was effectively used to reduce

Journal	Design	Sample	Variable	Instrument	Analysis	Information
in the Scale of Pain in Fracture Patients in RSUD Dr. R. Soedjono Selong[16]			their pain			the pain in fracture patients both pre-operatively and post-operatively

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EFFECT OF CAREGIVER EDUCATION ON SELF-EFFICACY AND RECOVERY OF STROKE PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Handling in stroke patients is still a polemic in developing countries. There is evidence that shows the importance of caregiver education on improving self-efficacy and recovery in stroke patients. The literature review aims to analyze the effectiveness of giving caregivers to the improvement of self-efficacy self and recovery in stroke patients. Literary studies in a systematic study published in the period 2008-2018, indexed Scopus, Medline, Psychinfo, and Embase with keywords: stroke, caregiver, educations, and self efficacy. Of the 126 quotes there are only 15 quotes that match the inclusion criteria. The results of these studies indicate that there is a significant influence on providing education to caregivers on improving self-efficacy and disease recovery experienced by stroke patients. It can be concluded that providing education to caregivers can help stroke patients to achieve health recovery and improve self-efficacy to restore good social life.

Keywords: stroke, caregiver, education, self efficacy, recovery

1. Introduction

Stroke is a critical public health problem around the world. Every year, around 5.5 million people die from stroke and 44 million people have lost years of their life from adjusting to disability (1) In Thailand, stroke is the fourth cause of death and disability and the number of stroke patients increases every year with an incidence of 352.3 per 100,000 population in 2014. Nearly 50% of stroke patients have moderate to severe disorders and even paralysis, where they are unable to take care of themselves (2). In a previous long-term study, it was reported that 25% -74% of stroke victims needed assistance to carry out their daily living activities (ADL) including feeding, self-care and mobility (3).

Considering the prevalence of cerebrovascular and residual disabilities, comprehensive interdisciplinary rehabilitation interventions are considered to be the main management modality for post-stroke care. This type of intervention is increasingly being requested. Previous reviews have reported that additional program training by therapists on weekends can increase the level of functional recovery after a stroke event. Thus, additional rehabilitation therapy based on caregiver education programs can improve functional recovery after stroke (4). Self-effectiveness refers to an individual's confidence in his ability to perform certain tasks or to meet certain demands. This may explain the reasons for the various levels of performance in people with equal skills. Stroke sufferers

who approach functional activities with confidence have been reported as being more likely to improve after rehabilitation than their counterparts who have less self-confidence. Furthermore, independence and positive influences correlate with motor function, functional activities and the quality of life of stroke patients and it can function as a compensation mechanism for the psychological improvement of adaptation and recovery after stroke (5).

Support for stroke patients globally has been prepared informal and namely done by caregivers. Informal caregivers are defined as those who provide unpaid assistance to other people, usually their family members or friends after the onset of chronic illness or disability (6). According to estimates, 62% of stroke patients will become dependent on others (7). Family caregivers are a major part of the care provision for stroke patients. A family carer is considered to be a friend or family member who offers free assistance to the patients who are chronically ill (8). Strength-oriented psychoeducation also applies to the families of caregivers with low educational attainment because families can demonstrate the ability to learn and to apply problem-solving skills without a long period of training (9). Additional rehabilitation therapy based on the caregiver education program can improve the functional recovery of stroke patients (4).

The systematic review (10) related to self-efficacy and its influence on the recovery of patients with strokes was reviewed, which showed the result that stroke patients with high self-efficacy function better in their daily activities than patients with low self-efficacy. Evidence about the determinants influencing self-efficacy and self-efficacy interventions make it clear how nurses can develop and adapt self-efficacy interventions for the clinical practice of people with stroke. The purpose of this systematic review was to determine the effect of caregiver education on self-efficacy and the recovery of stroke patients.

2. Material and Methods

Using electronic databases such as Scopus, PubMed and Science Direct, searches are carried out with "education", "caregiver", "self-efficacy" "recovery", "stroke" as the main keywords. This SR used the following PRISMA consisting of literature search strategies, inclusion and exclusion criteria, Randomized Controlled Trials (RCT) consisting of 7 articles, randomized controlled clinical trials consisting of 1 article, randomized trials consisting of 1 article, randomized experiments consisting of 1 article, randomized studies consisting of 1 article, an experiment consisting of 1 article, a prospective study consisting of 1 article and 1 cross-sectional article.

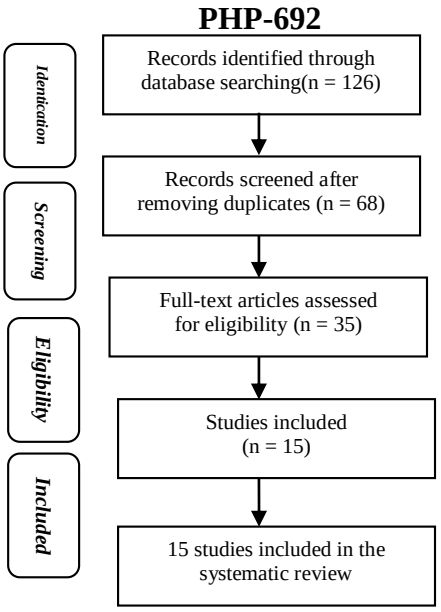

Figure 1 Flow Diagram

3. Result

3.1 Literature search and study selection

A total of 126 articles were found using the selected keywords.

3.2 Study Characteristic

The total number of respondents in the literature selected consisted of the caregivers making up 958 respondents and stroke patients making 1018 respondents in the range of 25 to 128 respondents per study. The respondents were between the ages of 19 - 70 years. The PICOT table shows the characteristics and interventions carried out in the four articles about the effect of a caregiver's education (4, 9, 11, 12) and concerning the programs for family caregivers (2, 13, 14, 15, 16, 17, 18, 2). The focus was also on stroke self-management support improving self effectiveness (19, 20, 21).

3.3 Results of the individual studies

Three articles mentioned that the education had a significant effect on the recovery of stroke patients (4, 9, 12). In this article, the effect of caregiver education programs for the stroke patients had positive results on the patient's functional improvement and on caregiver satisfaction. The author believes that additional rehabilitation therapies with educational programs can help the patients to achieve functional improvement for their return to an optimal social life. (11) It is recommended that the caregivers of stroke patients be given an instructional program to advocate increasing their understanding of the risks and challenges of the dependence of the stroke patients.

Disability can be assessed as a perceived threat (PT) in various activities or as a level of dependence on personal help. Therefore the ranking of PT difficulties in carrying out various activities can be considered to be the main assessment of disability (22). In this case, helping caregivers with educational interventions at PT to regulate the appropriate care and to overcome negative physical and psychological changes might be a priority (23). The effect of education on outcomes after education increases the knowledge of stroke for both the patients and caregivers (24). Patients who are informed and supported are treated well and they often experience successful

discharge from the hospital (25). The provision of information and education interventions also positively influence the patients' physical integration and psychological well-being (26). Education and support also increase their social activities and improve their quality of life (27).

(13, 14, 15, 16, 17, 18, 2); these seven articles describe post-stroke care programs that can improve the post-caregiver family care skills resulting in increasing the functional status and reducing the complications among post-stroke patients. They also increased the skills of the family carers in the group experiments as a part of developing interventions that focus on information, motivation, and skills practice in post-stroke care. First, providing specific information about caring for patients during their recovery after a stroke results in an increased awareness of the family caregivers and this leads to a better understanding of patient care and rehabilitation for the patients experiencing their first stroke.

This finding supports the existing literature that shows education and information on the nature of stroke, recovery and secondary prevention are the key components of skills development. This is the first study that examined whether an increase in limb over function can be predicted by involving caregiver support during the treatment. Both increasing the time taken to exercise and the caregiver's involvement in rehabilitation showed a positive relationship with improvement in upper limb function. This is a factor that changes during therapy (18), involving the relationship between the self-assessment ability to solve psychological problems and stresses, burden and the social support felt by the informal stroke caregivers (28).

A systematic review of Bandura’s construction of self-efficacy is the most common underlying theoretical premise. The expectation of the results of a construct that is closely related to self-efficacy also has an important influence on the behavior of stroke management. However, several studies have examined the role of the expected outcomes or one's judgment about the possible outcomes that occur when they perform a self-management behavior (19).

Newer research has begun to evaluate the role of self-efficacy in terms of activity and participation. Self-efficacy is the individual's own beliefs in their ability to do things and it is related to their self-confidence, motivation, behavior and environment. Understanding the different relationships between the different types of outcome measures, activities and participation after stroke will help therapists in designing optimal rehabilitation interventions to target recovery and to track the progress of stroke patients (20).

Patients with high self-efficacy function better in their daily activities than patients with low self-efficacy. Evidence regarding the determinants that affect self-efficacy and self-efficacy interventions make it clear how nurses can develop and adapt self-efficacy interventions for the clinical practice of people with stroke. Therefore, it is necessary to emphasize the role of self-efficacy in the care of stroke patients in the nursing curriculum (10). In this study, a significant increase in neurological damage was observed but not in functional performance. It was previously reported that an increase in muscle strength did not directly lead to an increase in functional performance and that functional independence can be achieved when a patient has a certain level of muscle strength (29).

4. Discussion

This systematic review investigated the effectiveness of the education of the caregiver related to the self-efficacy and recovery of stroke patients. Most caregiver training programs for patients with acute or sub-acute stroke are performed in hospitals or rehabilitation settings and the program teaches the

participants about stroke-related problems, the skills to help the patients in their daily activities, how to play a supervisory role and how to prevent the complications of the disease (14).

Bandura Theory (30) defines self-efficacy as a person's belief in his ability to achieve set goals or tasks that have an influence on the lives of individuals. The fact that self-efficacy can be obtained through verbal persuasion and the experience of representation is very important in stroke rehabilitation. For example, verbal persuasion such as positive feedback and motivation from rehabilitation professionals can serve to stimulate the stroke patients to be obedient and to share in carrying out tasks and rehabilitation activities that lead to increased functional abilities. Likewise, representative experience by observing their peers can be obtained through group training in rehabilitation and t is likely to spur on the stroke patients to maximize their potential (5).

Non-pharmacological therapy is one of the independent nursing actions of a health worker for the family and clients, namely providing education to families on the recovery of stroke patients. Family caregivers indirectly function as the main component of the care system. Family care provides support and motivation to the families who have experienced stroke through instructional programs to improve the patient health's, the knowledge of the family caregivers and to promote patient independence in ADL (11). There is a relationship between family support and self-efficacy in stroke patients (31).

5. Limitations of the study

The limitations of this study were the period of sampling and the recurrence of stroke. Another limitation was the high level of anxiety of the family caregivers related to a fear of loss or the inability of the patients when hospital, which somewhat reduced their focus when studying the topic of education.

6. Conclusion

This systematic review confirms the importance of the caregivers' families having the important skills needed to care for post-stroke patients at home. The results showed that family caregivers who participated in post-stroke care intervention programs could improve their post-stroke care skills, thereby increasing the Activities of Daily Living and reducing complications in the post-stroke patients. Caregiving assistance can be improved by providing education in the form of instructing the family caregivers and encouraging the need to develop rehabilitation therapy and support from the relevant organizations to assist patients in their recovery. Self-efficacy is an important aspect to be considered in the daily care and rehabilitation of patients post-stroke. Self-efficacy is positively related to mobility, ADL and quality of life related to health (HRQL). This is negatively associated with depression in patients with a stroke, and so interventions and self-efficacy programs need to be developed. Further studies are needed to assess the effectiveness of caregiver education on the self-efficacy of stroke patients. In particular, the research must have an adequate sample size and use validated outcome measures. The reporting of this research must be such that the results can be replicated independently.

References

[1] Mukherjee D, Patil CG. Epidemiology and the global burden of stroke. *World Neurosurg*. 2011;76**(6)**:S85–90.

[2] Pitthayapong S, Thiangtam W, Powwattana A, Leelacharas S, Waters CM. A Community Based Program for Family Caregivers for Post Stroke Survivors in Thailand. *Asian Nurs Res* (Korean Soc Nurs Sci). 2017;11**(2)**:150–7.

[3] Billinger SA, Murray L, Zorowitz RD, Miller EL, Bakas T, Richards L, et al. Comprehensive Overview of Nursing and Interdisciplinary Rehabilitation Care of the Stroke Patient. *Stroke*. 2010;41**(10)**:2402–48.

[4] Hong S, Kim C, Kim E, Joa K, Kim T. Effect of a Caregiver ' s Education Program on Stroke Rehabilitation. *Ann Rehabil Med Eff*. 2017;41**(1)**:16–24.

[5] Vincent-onabajo GT, Lawan AK, Oyeyemi AY, Hazmat TK. Functional Self-Efficacy and Its Determinants in Nigerian Stroke Survivors. *Top Stroke Rehabil*. 2012;19**(5)**:411–6.

[6] Atteih S, Mellon L, Hall P, Brewer L, Horgan F, Williams D. Implications of stroke for caregiver outcomes : findings from the ASPIRE-S study. *World Stroke Organ.* 2015;10(August):918–23.

[7] Mendis S. Stroke disability and rehabilitation of stroke: World Health Organization perspective. *Int J stroke*. 2013;8**(1)**:3–4.

[8] Collins LG, Swartz K. Caregiver care. *Am Fam Physician*. 2011;83**(11)**:1309.

[9] Cheng HY, Ying S, Pak J, Chau C. Effectiveness of strength-oriented psychoeducation on caregiving competence, problem-solving abilities, psychosocial outcomes and physical health among family caregiver of stroke survivors : A randomized controlled trial. *Int J Nurs Stud.* 2018;87(March):84–93.

[10] Corrie Korpershoek J van der B& T ra BH ttir. Self-efficacy and its influence on recovery of patients with stroke: a systematic review. *J Adv Nurs*. 2011;2020:1876–94.

[11] Deyhoul N, Vasli P, Rohani C, Shakeri N, Hosseini M. The Effect of Educational Intervention on Family Caregivers ' Perceived Threat of the Risk of Dependence Among Patients with Stroke : A Randomized Clinical Trial. *Iran Red Crescent Med J*. 2018;20**(6)**:1–10.

[12] Eames S, Hoffmann T, Worrall L, Read S, Wong A. Randomised controlled trial of an education and support package for stroke patients and their carers. *BMJ Open Access Med Res*. 2013;1–9.

[13] Berg M Van Den, Crotty M, Liu E, Killington M, Kwakkel G, Wegen E Van. Early Supported Discharge by Caregiver-Mediated Exercises and e-Health Support After Stroke. *Am Hear Assoc Inc*. 2016;1–8.

[14] Wang T, Tsai AC, Wang J, Lin Y, Lin K, Chen JJ, et al. Caregiver-Mediated Intervention Can Improve Physical Functional Recovery of Patients With Chronic Stroke : A Randomized Controlled Trial. *Neurorehabil Neural Repair*. 2015;29 **(1)** 3-1.

[15] Shyu YL, Chen M, Chen S, Wang H, Shao J. A family caregiver-oriented discharge planning program for older stroke patients and their family caregivers. *J Clin Nurs*. 2008;2497–508.

[16] Galvin R, Cusack T, Grady EO, Murphy TB, Stokes E. Family-Mediated Exercise Intervention (FAME) Evaluation of a Novel Form of Exercise Delivery After Stroke. *Stroke*. 2011;681–6.

[17] Nahid Dehghan Nayeri, Sepideh Mohammadi, Shadan Pedram Razi TMAPAK. Effectiveness of family empowerment program on level of adherence to treatment regimens in stroke patients; a randomized controlled trial. *Evid Based Care J*. 2015;

[18] Harris JE, Eng JJ, Miller WC, Dawson AS. The Role of Caregiver Involvement in Upper-Limb Treatment in Individuals With Subacute Stroke. *Phys Ther*. 2010;90**(9)**:1302–10.

[19] Suzanne, Anne M. Chang, Janita P.C. Chau. Stroke Self-Management Support Improves Survivors 'Self-Efficacy and Outcome Expectation of Self-Management Behaviors. *J Am Heart Assoc*. 2018;1–4.

[20] French MA, Moore MF, Pohlig R, Reisman D. Self-efficacy Mediates the Relationship between Balance / Walking Performance, Activity, and Participation after Stroke. *Top Stroke Rehabil.* 2015;XX:1–7.

[21] Shaughnessy M, Michael K, Resnick B. Impact of Treadmill Exercise on Efficacy Expectations, Physical Activity, and Stroke Recovery. *J Neurosci Nurs*. 2012;44**(1)**:27–35.

[22] Nicholson SL, Donaghy M, Johnston M, Sniehotta FF, van Wijck F, Johnston D, et al. A qualitative theory-guided analysis of stroke survivors' perceived barriers and facilitators to physical activity. *Disabil Rehabil*. 2014;36**(22)**:1857–68.

[23] McLennon SM, Bakas T, Jessup NM, Habermann B, Weaver MT. Task difficulty and life change among stroke family caregivers: relationship to depressive symptoms. *Arch Phys Med Rehabil*. 2014;95**(12)**:2484–90.

[24] Brown L, Forster A, Young J, House A, Knapp P, Smith J, et al. Information provision for stroke patients and their caregivers. *Cochrane Database Syst Rev*. 2008;**(2)**.

[25] Ellis-Hill C, Robison J, Wiles R, McPherson K, Hyndman D, Ashburn A, et al. Going home to get on with life: patients and carers experiences of being discharged from hospital following a stroke. *Disabil Rehabil*. 2009;31**(2)**:61–72.

[26] Harrington R, Taylor G, Hollinghurst S, Reed M, Kay H, Wood VA. A community-based exercise and education scheme for stroke survivors: a randomized controlled trial and economic evaluation. *Clin Rehabil*. 2010;24**(1)**:3–15.

[27] Shook R, Stanton S, Shook R. Patients' and caregivers' self-perceived stroke education needs in inpatient rehabilitation. 278 *Int J Ther Rehabil*. 2016;23. No.6:278–87.

[28] Lui MH, Lee DTF, Greenwood N, Ross FM. Informal stroke caregivers ' self-appraised problem-solving abilities as a predictor of well-being and perceived social support. *J Clin Nurs*. 2011;232–42.

[29] Bohannon RW. Muscle strength and muscle training after stroke. *J Rehabil Med.*

2007;39**(1)**:14–20.

[30] Bandura A. The Explanatory and Predictive Scope of Self-Efficacy Theory. *J Soc Clin Psychol* [Internet]. 1986 Sep 19 [cited 2018 Dec 7];4**(3)**:359–73. Available from: http://guilfordjournals.com/doi/10.1521/jscp.1986.4.3.359

[31] Pongantung H, Anita S, Jmj S, Lanny M, Ndjaua M. Hubungan Dukungan Keluarga dengan Self Efficacy pada Pasien Stroke di RSUP Dr. Wahidin Sudirohusodo Makassar. *J Mitra Sehat*. 2018; Vol. VIII:137–43.

PHP-695

CARING IN INTENSIVE CARE UNIT PERSPECTIVE OF NURSES, PATIENT AND FAMILY: AN INTEGRATIVE REVIEW OF LITERATURE

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ABSTRACT

Caring for critically ill patients in intensive care unit (ICU) is essensial and need capability to influent complex health care need, deliver save. Using the methodology of Whittemore and Knafl, an integrative review of the literature was conducted . The question directed to how is the nature of caring in intensive care and nurses experince about caring on publised literatur. This review analysed 25 articles obtained from electronic databases. Domains theme were caring patient with ventilator, end of life care, care of dying patient, pain control, wound care, infection, complexities of nurse-patient interaction, psychological problems and Caring behaviors of the nurses were. An integrative review was conducted to explore experiences of intensive care nurse as presented in 25 articles. The themes that emerged most frequently about caring behavior were Providing Information, Providing reassurance, Demonstrating Proficiency, Being present, Giving guidance, voice tone.

Keywords: nurse experince caring, intensive care nurse and caring behaviors

1. Introduction

Caring for critically ill patients requires competent nurses to help save and secure the lives of the patients, using technological developments while maintaining humanistic care [1]. The care of a mechanically ventilated patient is at the core of a nurse's clinical practice in the Intensive Care Unit (ICU) [2].

Mechanical ventilation is a major supportive treatment in intensive care and a patient receiving mechanical ventilation require close observation and the continuous monitoring of their vital signs. The nurses can help to make these patients more comfortable by ensuring that they receive a high standard of care in the following areas; the clearance of secretions, ventilated patients who have an endotracheal tube are frequently treated with sedatives and analgesics to ensure tube tolerance, patient comfort and reducing anxiety, oral care, nutritional support, communication and psychological support, humidification, eye care and attention to any safety issues [3].

The aim of this study was to present an integrative literature review of the caring processes as identified by Swanson focused toward mechanically ventilated patients in ICU to improve the nursing care using the methodology of Whittemore and Knafl [4].

2. Methods

To guide this review, we used the integrative review methodology by Whittemore and Knafl [4] with a five step process: problem identification, literature search, data evaluation, data analysis and the presentation of the results. Integrative reviews are the broadest type of research review method allowing for the simultaneous inclusion of experimental and non-experimental research in order to more fully understand a phenomenon of concern, which is congruent with the purpose of understanding the nurses' caring experience of mechanically ventilated patients to improve nursing care. The varied sampling frame of integrative reviews in conjunction with the multiplicity of purposes has the potential to result in comprehensive concepts, theories, or health care problems that are of importance to nursing [4].

2.1. Problem identification

Caring has traditionally been used to define the care of patients and their family members. The caring theory by Swanson outlines five caring processes: knowing, being with, doing for, enabling, and maintaining belief. Published work relating to the numerous nursing issues involved in the care of mechanically ventilated patients in the ICU is growing significantly. The literature focuses on the patient assessment and management strategies for patient stressors, pain and sedation. However, this literature is fragmentary by nature [2]. The literature has not been collectively and critically reviewed. The purpose of this integrative review is to expose the caring processes of a mechanically ventilated patient in the ICU. The research question was: 'What are the caring processes for a patient with a mechanical ventilator and the nurses' experience according to the published literature?' The aim of this integrative literature review was to understand and to examine the nurses' experience of caring for a mechanical ventilator patient, to encourage better understanding among both intensive and critical care nurses and providing information on the caring issues for further research and investigation.

2.2. Search method

The integrative review search should begin with the identification of the variables of interest in the relevant literature, of which the problem or topic of interest has been included in the review [4]. The final search terms were decided based on the databases' thesaurus or MeSH heading as outlined in Table 1. This was based on a preliminary search, a brief review of the abstracts, the use of keywords and the topic of review interest.

Table 1. Search strategy

Databases	Thesaurus or MeSH Headings & other searching terms
PubMed	Caring for a ventilated patient Nurse's experience of caring for a ventilated patient
NCBI	Caring for a ventilated patient Nurse's experience of caring for a ventilated patient Nurse's experience of caring in the ICU
Sopus	Caring for a ventilated patient

Databases	Thesaurus or MeSH Headings & other searching terms
	Nurse's experience of caring for a ventilated patient Nurse's experience of caring in the ICU
Science Direct	Caring for a ventilated patient Nurse's experience of caring for a ventilated patient Nurse's experience of caring in the ICU

2.3. Analysis

To get an understanding of the data, the analysis started by examining and reading the whole text. The data was extracted from the primary sources concerning the sample characteristics and method (if empirical), as well as any reference to the concept of integration. In an integrative review, data reduction occurs during the extraction and subsequent coding [4]. The data was reduced via entry into Excel with the following columns: study design, purpose or research question, abbreviated and detailed findings, gaps that the study filled, gaps remaining, strengths and weaknesses, sample characteristics and instruments and location and setting. Trends across the findings in the Excel spreadsheet were highlighted and further reduced via concept mapping. For example, articles referring to the domains of caring were highlighted using Excel. Commonalities were mapped into a data display via a concept map. The data comparison was conducted using the table data display. The data was examined and the categories were thus developed. The initial thematic categories were the domains of the nurses' caring behavior, the factors influencing the experience of the nurses' care of patient on mechanical ventilation and a category initially labeled 'other'.

3. Result

3.1. Study selection

The number of titles and abstracts found totaled 128 results, with the duplicates removed, which were read through and reviewed based on the inclusion and exclusion criteria. The inclusion criteria were studies conducted between the years 2010 - 2019, peer-reviewed original research articles relating to the nurses' experience of a mechanical ventilator patient and studies in the English language. The exclusion criteria were a specialty setting outside of the ICU and emergency. Studies were excluded if they focused on any other nursing process other than the aspect of caring. Review audits, study protocols, case reports and routine descriptions were excluded. The secondary review involved reading the article content for its relevance to the variables of interest. In total, 17 articles were selected for a full-text review. They were read in full by the first author and discussed with the two other authors. The discussion between the authors resulted in repeated and extended searches in order to cover the topic as well as possible. It was of importance to include articles covering the context of the nurses' caring experience related to ventilated patients. All discussions between the authors were resolved in a consensus solution. Finally, all 17 articles were retained for inclusion and they were found to be appropriate for an in-depth qualitative review (see Figure 1).

3.2. Study characteristic

The final sample of the integrative review included 17 articles; 14 were qualitative, 2 were quantitative and there was 1 qualitative meta-synthesis. All articles critically appraised for quality. As directed by Whittemore and Knafl (2), the empirical reports included a wide variety of methods: case study, cross-sectional, grounded theory, phenomenology and instrument development designs. Due to this diverse representation of primary sources, the reports were coded according to two criteria. No report was excluded based on this data evaluation rating system. However, the score was included as a variable in the data analysis stage.

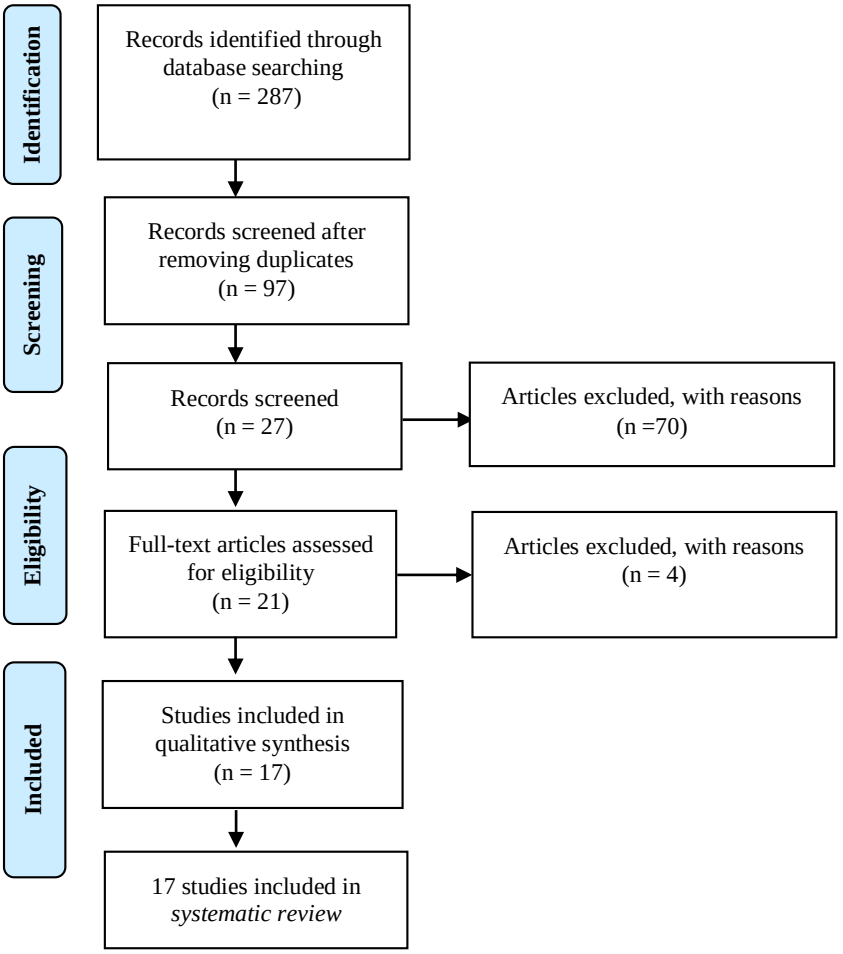

Figure 1. Flow Diagram

3.3. Summary of studies

The number of articles included in the integrative review totaled 17 articles. Articles related to the nurses' experience of caring for mechanical ventilated patients in the ICU described the domain of experience of caring for MV patients, the factors influencing the caring and communication tools of the MV patient and the other nurses' perception of the MV patient caring process (see Appendix A).

3.3.1. Domain aspect of caring. The domain experience of caring across the literature was about providing information and reassurance, demonstrating proficiency, being present, giving guidance, managing frustration, alleviating discomfort and negotiating reality. Eight studies reported that providing the information described as a way of explaining the rationale for the nursing, giving direct information and explaining what was being done and why [5]. Attempting dialogue describes the

interactions involving functional two-way communication based on the principle of dialogue as an ideal in nursing [6]. Talking to the patients, communicating and using communication tools are also involved [5,7–10]. The nurses' actions involve perceptual attention, embodied understanding and calm communication [11]. Four studies found that the nurses provided reassurance. Provide reassurance that makes clients relax and trust them [5], particularly in terms of comprehensive supervision and the time spent building trust [7]. The nurses want to demonstrate a mutual relationship of trust [8] with empathy [9].

Eight studies described demonstrating proficiency. Proficiency is identified as the skill and adeptness of the nursing practice that can influence the patients' and their families' perception of nursing care[5]. Experiential perceptiveness and more experience in patient care are also pertinent [7]. The nurses performed their tasks [12] in the form of immediate and prompt interventions to maintain life [13]. The nurses provided experience and integrated clinical, technical and ethical issues in their problem solving [11]. The nurse has confidence in the management of the ventilated patients by maintaining physiological signs [14,15]. The nurses are responsible for doing their best for the patients and they work dutifully [8].

Table 2. Domain aspect of caring across the articles

Doman	Article
Providing information	[5–11,14]
Providing reassurance,	[5,7–11,14,15]
Demonstrating Proficiency	[5,7,10,11,14,15]
Being present.	[5,7,8,10–12,14,15]
Giving guidance	[5,8,14]
Managing frustration,	[6,7,10–12]
Negotiating reality	[6]
Alleviating discomfort	[6,10]

Seven studies reported the importance of the physical presence of nurses. Being present meant the physical availability of the nurse, demeanor and attitude (Weyant et al 2017). The importance of physical presence and continuous face-to-face contact [7]. Conscious patients demanded more physical presence of the nurse [6,12]. Reacting to body language and maintaining eye contact with the patients [8]. When nurses were able to relationally connect with patients, they would spend extended time [10] and an attentive response to the patients [11].

Giving guidance is described as the nurses not only answering questions but also helping to instruct on what a patient or family member needs to do to restore their health [16]. Managing frustration was identified as what the nurses described as an attentive response [11], where they had a constant awareness of the patients' condition, expressions, actions and needs while trying to comfort and manage their care to handle the situation in the best interests of the patient [12]. Alleviating discomfort means that all patients have a fundamental need for comfort and rest, both of which are important for healing (Minton et al,2017). The nurses have a sense of compassion and duty to reduce suffering [6].

3.3.2. Domain factors influence caring. Three studies found factors that influence caring, namely good technical skills, intelligent management, good interdisciplinary collaboration with physicians, years of experience [7,12] and the need for a more appropriate staffing ratio [6].

3.3.3. Communication tools of the MV patient. Both the nurses and patients have to rely on non-verbal communication, such as body language, lip reading and eye contact. They wanted access to better communication tools to obtain functional communication [6].

4. Discussion

The purpose of this integrative review was to explore the literature about the nurses' caring experience regarding mechanical ventilator patients because the domains and related factors of the caring experience have not been collectively or critically reviewed. The aspect of caring trends across the literature were about providing information, providing reassurance, demonstrating proficiency, being present, giving guidance, managing frustration, alleviating discomfort and negotiating reality. The domains are interrelated and dependent upon one another. Providing information is described as explaining the rationale for the nursing care being provided, interpreting what was happening and providing explanations [5].

Being present means the physical availability of the nurse, their demeanor and their attitude [5]. The importance of a physical presence and continuous face-to-face contact is emphasized [7]. The continuous presence provides more time for the patient and encouraged communication, touch and empathy. The nurses were attentive and responsive to the patients' wishes [12].

Nurses with five or more years of critical care experience stressed the importance of technical proficiency in order to communicate with the patient while performing other tasks. Surprisingly, the less experienced nurses perceived the ability to perform simultaneous but diverse care activities as merely a practical issue [12]. Nurses with more experience will enhance their ability to pay attention to the key factors and to gain a deep understanding of the patient's condition during the weaning process [7]. They wanted access to better communication tools to obtain functional communication [6]. The participants pointed out the role of the ICU management in maintaining the continuity of care. Effective organization of human resources, the close monitoring of staff reporting, nurse support as well as controlled sedation during the night shift were mentioned as important aspects of care.

However, unlike the ICU clinical setting where a 1:1 or 1:2 nurse- patient ratio is generally maintained for ventilated patients (both invasive ventilation and NIV [15], the nurse-patient ratios while caring for a patient receiving mechanical ventilation was 1:1. The nurse-patient ratio was reported by 38% of respondents for invasively ventilated patients but it was infrequent for patients requiring NIV. Out of the respondents, 18 (7%) (invasive) and 51 (21%) (NIV) reported providing care to 4 or more patients at the same time as managing a ventilated patient [15].

5. Conclusions

An integrative review was conducted to explore the nurses' experience of caring for mechanical ventilation as presented in 17 peer-reviewed articles. The three domains of caring experience were the aspect of caring, the factors influencing caring and the communication tools of the MV patient.

This integrative review on the caring experience of nurses practicing in adult ICUs needs further study including domain-based theoretical work and interventions toward caring behavior development among practicing ICU nurses.

References

[1] Limbu S, Kongsuwan W, Yodchai K. Lived experiences of intensive care nurses in caring for critically ill patients. Nurs Crit Care. England; 2019 Jan;24(1):9–14.

[2] Couchman BA, Wetzig SM, Coyer FM, Wheeler MK. Nursing care of the mechanically ventilated patient: What does the evidence say? Intensive Crit Care Nurs [Internet]. 2007 Feb;23(1):4–14. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339706000991

[3] Newmarch C. Caring for the mechanically ventilated patient: part two. Nurs Stand. England; 2006 Jan;20(18):55–64; quiz 66.

[4] Whittemore R, Knafl K. The integrative review : updated methodology. 2005;(Broome 1993):546–53.

[5] Weyant RA, Clukey L, Roberts M, Henderson A. Show Your Stuff and Watch Your Tone: Nurses' Caring Behaviors. Am J Crit Care [Internet]. 2017 Mar 28;26(2):111–7. Available from: http://ajcc.aacnjournals.org/lookup/doi/10.4037/ajcc2017462

[6] Mortensen CB, Kjær M-BN, Egerod I. Caring for non-sedated mechanically ventilated patients in ICU: A qualitative study comparing perspectives of expert and competent nurses. Intensive Crit Care Nurs [Internet]. 2019 Jun;52(xxxx):35–41. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339718301046

[7] Khalafi A, Elahi N, Ahmadi F. Continuous care and patients' basic needs during weaning from mechanical ventilation: A qualitative study. Intensive Crit Care Nurs [Internet]. Elsevier Ltd; 2016 Dec;37:37–45. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339716300349

[8] Lind R, Liland H, Brinchmann BS, Akeren I. He survived thanks to a non-sedation protocol: Nurses' reflections about caring for critically ill, non-sedated and mechanically ventilated patients. Intensive Crit Care Nurs [Internet]. Elsevier Ltd; 2018 Aug;47:54–61. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339718300235

[9] Holm A, Dreyer P. Nurse-patient communication within the context of non-sedated mechanical ventilation: A hermeneutic-phenomenological study. Nurs Crit Care [Internet]. 2018 Mar;23(2):88–94. Available from: http://doi.wiley.com/10.1111/nicc.12297

[10] Minton C, Batten L. Rethinking the intensive care environment: considering nature in nursing practice. J Clin Nurs [Internet]. 2016 Jan;25(1–2):269–77. Available from: http://doi.wiley.com/10.1111/jocn.13069

[11] Sørensen D, Frederiksen K, Groefte T, Lomborg K. Striving for habitual well-being in noninvasive ventilation: a grounded theory study of chronic obstructive pulmonary disease patients with acute respiratory failure. J Clin Nurs [Internet]. 2014 Jun;23(11–12):1726–35. Available from: http://doi.wiley.com/10.1111/jocn.12322

[12] Laerkner E, Egerod I, Hansen HP. Nurses' experiences of caring for critically ill, non-sedated, mechanically ventilated patients in the Intensive Care Unit: A qualitative study. Intensive Crit Care Nurs [Internet]. Elsevier Ltd; 2015 Aug;31(4):196–204. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339715000075

[13] Minton C, Id O, Issue S, Care F, Article O. TITLE : THE IMPACT OF A PROLONGED STAY IN THE ICU ON PATIENTS '. :0–3.

[14] Landström M, Rehn I-M, Frisman GH. Perceptions of registered and enrolled nurses on thirst in mechanically ventilated adult patients in intensive care units—A phenomenographic study. Intensive Crit Care Nurs [Internet]. 2009 Jun;25(3):133–9. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339709000238

[15] Rose L, Ramagnano S. Emergency Nurse Responsibilities for Mechanical Ventilation: A National Survey. J Emerg Nurs [Internet]. 2013 May;39(3):226–32. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0099176712004345

[16] Weyant BRA, Clukey L, Hour CE. Y OUR S TUFF AND W ATCH Y OUR T ONE : 2017;26(2):111–7.

[17] Engström Å, Nyström N, Sundelin G, Rattray J. People's experiences of being mechanically ventilated in an ICU: A qualitative study. Intensive Crit Care Nurs [Internet]. 2013 Apr;29(2):88–95. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0964339712000766

6. Appendix A

Table A1. Summary of findings

Articles	Design	Purpose/Question	Domain of Nurse Experience
[5]	Qualitative	To explore the perceptions of the nurses' caring behaviors among intubated patients and their family members	Providing information, Providing reassurance, Demonstrating proficiency Being present. Nurses giving guidance Using a soothing tone of voice. Behavior that was contrary to the perception of caring: - Negative attitude - Interrupting sleep, - Not receiving information - Poor pain management.
[6]	Qualitative	To compare the perspectives of expert and competent nurses regarding their interactions with non-sedated mechanically ventilated ICU patients	Managing frustration, Attempting dialogue, Negotiating reality Alleviating discomfort.
[7]	Qualitative	To describe the continuous care process during weaning	Time spent with the Patient Continuous communication Long, face-to-face contact Time spent in building trust Comprehensive supervision Continuous response to fluctuating indicators, Holism Comprehensive objective-subjective view, Experiential perceptiveness Maintenance of the quality of care during shifts Effective communication between shifts Overnight stop Intelligent management
[12]	Qualitative	To explore nurses' experiences of caring for non-sedated, critically ill patients requiring mechanical ventilation	Caring for and with the patient Negotiating relational and Instrumental care Managing physical and emotional closeness
[8]	Qualitative	To explore the ICU nurses' experiences of caring for non-sedated, critically ill mechanically ventilated patients when following a study protocol as part of a clinical trial	Cautious optimism (positive experiences but with a negative undertone): 1) Excitement and uncertainty 2) Inspiring but demanding nurse-patient relationship, 3) Teamwork or working against the tide
[9]	Qualitative	To explore non-sedated mechanically ventilated patients' communication with nurses in the intensive care unit	Overall nurse–patient communication is a movement between the two opposite feelings of comprehension and frustration Comprehension: Easy to interpret the patient's message, Communication is unequivocal, Communication about basic and/or informative subjects The nurse and patient have a common objective in communication, The patient is awake and participating,

Articles	Design	Purpose/Question	Domain of Nurse Experience
			The patient can use communication tools, Continuity in nursing care, Patience, Calmness Time to prioritize Communication, The nurse shows empathy. Frustration: Difficult to interpret the patient's message, Communication is equivocal, Communication is about complex subjects, Pressure of busyness, noise and disturbances, the nurse shows indifference.
[17]	Qualitative	To describe the intensive care unit experiences of people undergoing mechanical ventilation	Being dependent for survival on other people and technical medical equipment. Being vulnerable in an anxious situation and a feeling of uncertainty about one's own capacity to breathe. Having lines and tubes in one's body was stressful. Being given a diary and follow-up visit
[10]	Qualitative	To explore the patients', families', and health professionals' experiences of a long-stay patient in an intensive care unit	Prioritizing tasks and technology -Devaluing relational and comfort work. -Fundamental psychosocial needs such as family presence, comfort, relationships and communication -Provide fundamental, patient and family centered care -Satisfaction when seeing patients' positive responses
[14]	Qualitative	To describe the registered and enrolled intensive care nurses' perceptions of the feelings of thirst in mechanically ventilated patients	Identified: reasons for thirst, signs of thirst Preventing or reducing thirst The perception that patients had no feelings of thirst. Relieving thirst is a human need that must be recognized in nursing education and on intensive care units
[11]	Qualitative	To describe the reasoning and actions of experienced nurses caring for patients with non-invasive ventilation	The experienced nurses exhibited 'practical wisdom', three interrelated components: 1. Achieving non-invasive adaptation, 2. Ensuring effective ventilation 3.Responding attentively to patients' perceptions of non-invasive ventilation
[15]	Qualitative	To examine the exposure of emergency nurses to patients requiring mechanical ventilation, as well as their responsibilities and education on ventilation received	Respiratory therapists (RTs) remained in the emergency department until patients' condition stabilized and patient transfer RT was on call, no RT was available. Few nurses responsibility for initial ventilator setting and titration of ventilation , nurse responsibility was influenced by RT availability Nurses responsibility for monitoring patient response to ventilation, alarm troubleshooting, and oxygenation management.

PHP-696

PRIMARY SEXUAL ABUSE PREVENTION IN SCHOOL AGE CHILDREN: A SYSTEMATIC REVIEW

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ABSTRACT

Sexual Abuse is a condition that needs to be considered in recent years. Sexual abuse has become a public health issue because of the various health effects it causes. So it is necessary to make primary prevention efforts on behavior sexual abuse, specifically for school age children. The purpose of this study is to find out how effective health education as a primary prevention effort for sexual abuse in school-age children.This papers uses a systematic review design. Data was taken from the ProQuest, Scopus, and ScienceDirect databases with the period 2000-2018. Search was carried out for journals, articles and literature review using keywords of sexual abuse, prevention and psychoeducation. The results of the analysis looked for articles, analysis of 19 articles according to the Required requirements. namely health education as a form of preventive efforts to prevent sexual abuse in the form of games. The results of the study show that health education was effort to prevent sexual abuse that occurs a lot in the school and family, health education rovided to school-age children can reduce the occurrence of sexual abuse. Health education is provided in the form of games so that it is easily understood by school-age children

Keyword: Sexual Abuse, Preventive and Education

1. Introduction

Sexual abuse is a condition that needs to be considered in recent years. Sexual harassment has become a public health issue because of the various health effects that it causes [1]. Sexual abuse does not only occur in adults; it also occurs in children. Various research evidence states that child sexual abuse (KSA) negatively impacts both their short and long term physical and emotional health, cognitive abilities and educational attainment, as well as their social and behavioral development [2]. The sexual abuse of children and adolescents can cause physical and psychological vulnerability in children[3]. A child who is abused cannot react or oppose the authority carried out by the perpetrator and although he does not agree, he feels that he cannot prevent this occurrence. In the face of threats, children often keep hidden the fact that they have been abused[3].

In the United States, 1 in 5 women (18.3%) and 1 in 71 men (1.4%) reported having experienced rape in their lives (Black et al., 2011). In addition, 44.6% of women and 22.2% of men reported experiencing another form of sexual harassment in their lives (Black et al., 2011). Given the prevalence of sexual violence, as well as the increased public attention to sex crimes against children, there is strong support for federal, state and local governments to develop policies to protect people from sexual acts.

Sexual abuse is the child's involvement in sexual activity. The child does not understand what is happening[4]. Sexual activity includes touching the sensual parts, showing pornographic videos, sexual intercourse and the showing of the genitals [5]. Sexual abuse is a serious problem because if it is not handled, the children who are the victims of sexual abuse will experience depression and post-traumatic stress disorder[6].

The epidemiological data shows that the global average prevalence of sexual abuse in children is 11.8-13.8%, with higher rates among girls (18-19.7%). Africa showed the highest rate of child sexual abuse (around 34 %), while the lowest appears in Asia (around 10%) and Europe [7]. According to the data from CSA (Child Sexual Abuse) in Southeast Asia it varies greatly, with 40 cases of child abuse in 14 countries in the region concluding that around 10% of boys and 15% of girls have experienced at least one form of sexual abuse[8].

This complex public health problem requires prevention strategies at various ecological levels [2]. One ecological level includes the school. Primary prevention is a broader approach that occurs before sexual abuse has occurred to prevent the initial action (for example, by educating the parents and conducting health education in schools). Secondary prevention is a targeted approach to the population "at risk". Tertiary prevention is an immediate response after sexual harassment occurs to deal with the immediate consequences of violence (for example, targeting offenders detected through treatment groups) [9]. School-based sexual harassment prevention programs have positive results. However, little is known about how these programs are disseminated. The deployment model use a main trainer to equip others to implement the program, allowing more adults to teach and then more children to receive the program [10].

School-based programs are created to help children to avoid sexual abuse [11]. Schools evolve as a clear choice for teaching children about people's safety. This is because the school's main goal is to easily educate children. The objectives of the school-based KSA prevention program include five things: (a) helping children recognize the potential abusive situation or potential offender, (b) encouraging the children to reject sexual requests by saying "No", (c) teaching the children to refuse and try and get away from the perpetrator, (d) to encourage children to report in advance or to report ongoing abuse, and (e) to explain that contact with others is not for granted [12].

The family also has an important role in preventing the sexual abuse of children. In principle, the family has great potential when it comes to providing instructions on how to deal with violence against children [13]. The parents need to be involved in the prevention of sexual abuse because the education relayed by the parents to the children as an effort related to self-safety programs, shows an improvement compared to the education that is only done by the teachers in schools. In the program of providing education in schools, it is not running optimally without the contribution of the parents. In this study, the researchers sought to involve the participating parents in terms of preventing sexual abuse behavior in children[14].

The efforts taken to prevent sexual harassment in children are carried out in schools in the form of health education in the form of games. This is so then children are able to understand easily about what is meant by sexual harassment. Health education is very important as a primary effort related to the sexual abuse of children.

2. Research methods

2.1 Data Sources and Search

The journal search strategy began by asking the following research question, namely "Does psychoeducation have an influence on behavior change as one of the primary prevention efforts of sexual abuse in school-age children?" This writing used a systematic review design. The databases used for the journal searches were Proquest, Science Direct, and Scopus. The keywords used are sexual violence, preventive and psychoeducation. The journal was limited to the 2011 - 2018 publication years within the areas of nursing, medicine and psychology as well as journals in English.

2.2 Study options and criteria

The inclusion criteria specified were 1) quantitative or qualitative studies, both observation and experimental; 2) maximum time span of 10 years ago; 3) the subjects in this SR were children at school age and 4) interventions provided in the form of the primary prevention of sexual abuse in school-age children in the form of games. The journals were selected using the PRISMA method.

3. Results

3.1 Study Results and Selection

In relation to the selection of the journals to be used in the systematic reviews of journals, they must have the same characteristics and feasibility in terms of the study. This was assessed using the PICOT approach so then it was easier to understand in writing. They were selected using the systematic review PRISMA method. The population used in this study was school-age children who are at risk of sexual abuse. The primary prevention of sexual abuse needs to be given. The interventions are carried out by providing both standard education and health education. This is good to execute in schools. Health education is provided in the form of games so that it is easily accepted by school-age children because it uses the Comparison Game method. Some journals that carried out the PICOT process were divided into 2 groups, namely control groups and treatment groups. Several journals conducted structured interviews to obtain the desired results. The interventions were carried out in the form of the primary prevention of the sexual harassment of school-age children by conducting health education by playing games. The output was the data before and after the intervention. The results are measured using a questionnaire sheet [15]. The research designs used were both qualitative and quantitative.

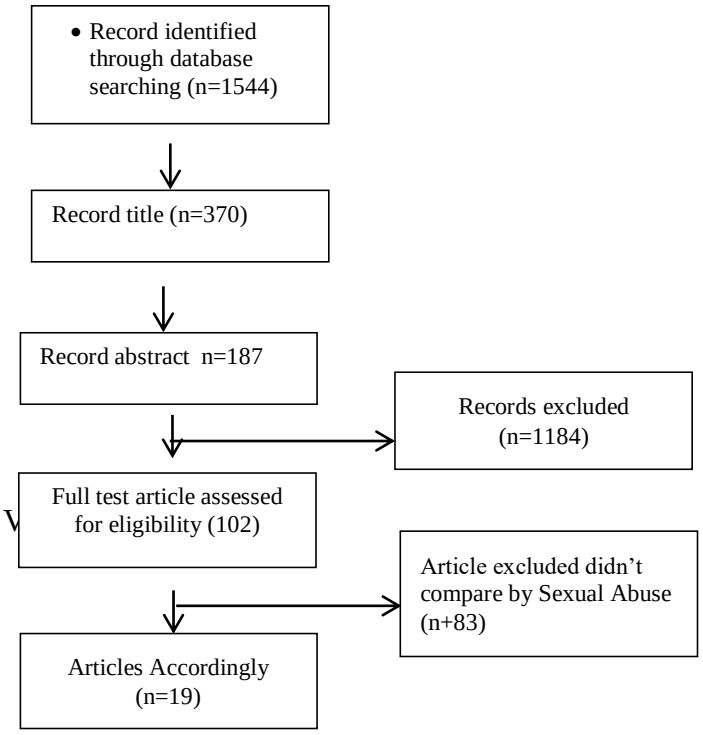

Figure 1. PRISMA Flow Diagram for 'Primary Sexual Abuse Prevention in School Age Children: A Systematic Review'

3.2 Study characteristics

The characteristics of the study are explained in the PRISMA chart. All of the journals obtained from the results of the study involve interventions that are carried out as an effort to prevent the sexual abuse of school-age children with the method of health education through games. This is an approach undertaken by schools commonly.

3.3 Results of the Review Study

The results of the scientific study conducted by the authors were obtained from the search of the Proquest, Medline, and Science Direct and Scopus databases. The total number of participants from all studies was 940 with the theme of violent behavior and the risk of violent behavior both in the school, in the family and in the community. In the current SR writing, the author used 19 journals that are appropriate and that involve different interventions. The interventions given included multiple components including education and cognitive techniques as well as educational games that are expected to be able to change behavior. With different duration averages in all of the studies, most of them used the same measurement tools, namely psychoeducation using Child Sexual Abuse Prevention Education (C-SAPE)[15]. The questionnaire contains items designed to measure CSA knowledge[16] using a questionnaire (WITS) and the *"Body Safety Training Program* (BST)[10].

Post-treatment effect

From a number of the literature journals that have been carried out on PICOT, there are significant

effects found statistically from the various interventions given such as providing education, educational games about the prevention of sexual abuse, parental support related to the prevention of sexual violence behavior as well as the correct ways of care related to education and health regarding to the prevention of sexual harassment behavior in school-age children. After routine and scheduled treatment, the measurement was done using a standardized measuring instrument. The results obtained in the intervention given to the treatment group had a significant impact on the provision of interventions in the form of related education about the prevention of sexual harassment behavior both in the school, by the family and within the community, as well as good forms of care. It was expected to increase the knowledge of school-aged children in terms of the prevention of sexual abuse behavior.

4. Discussion

In making this systematic review, the author selected 19 journals. The author chose to look into the effectiveness of sexual abuse prevention efforts in school-age children in the form of games [17] From the review, several studies have shown that the application of education carried out in schools has a very important role because it is sustainable between the health education that is done at home and that in school [18]. The measuring instrument used in terms of seeing changes in behavior and the knowledge in children was the Child Sexual Abuse Prevention Education (C-SAPE) [15]. The questionnaire contains items designed to measure CSA knowledge [16], using a questionnaire (WITS) and the “Body Safety Training Program (BST) [10]. The in-depth semi-structured nature of all the results is in line with the various efforts made to improve the primary prevention of sexual abuse in school-age children.

Child sexual abuse (CSA) is a serious public health problem. The recent approach to treating the victims and punishing offenders is not enough to overcome this big problem. Rigorous development and the evaluation of CSA prevention strategies is very important. We propose that CSA prevention efforts should target the parents of young children. Parents have been ignored as the focus of the prevention of CSA. They deserve attention because of their potential to improve their children's safety through effective communication and monitoring[19]. Childhood sexual abuse is a significant public health problem that negatively affects the victims, their families, organizations and society[2].

Sexual health education programs with a focus on postponing sexual debuts among children and adolescents should also consider handling ACE, such as neglect, physical, psychological and sexual violence, witnessing parent violence, and parental detention and psychopathology [20] Knowledge about sex in children can prevent sexual deviations in children. This is because they are taught about the role of sex, how to behave as a boy or even a girl and how to get along with the opposite sex. Sex education in children can also prevent the children from becoming victims of sexual abuse. Ideally, sex education for children is given first time by parents at home or family. However, not all parents want to behave openly with their children when discussing sexual issues [21]. Active involvement by the parents can contribute substantially to the success of school-based programs to prevent child sexual abuse (CSA). In China, little is known about the parents' understanding of CSA[22].

Psychoeducation can increase the knowledge of sexual abuse in children because psychoeducation is a process used to develop knowledge, teach, educate and provide important

information related to sexual harassment and the forms and methods of its prevention in school children. Effective education in school-age children in the form of games that are filled with knowledge of sexual abuse [11] can improve the preventive efforts undertaken at school. This is expected to improve behavior change in school-age children.

The findings from the review of this article will have implications for nursing and research practices. In nursing practices, the findings of this review will provide basic information for nurses in terms of providing preventive nursing care that it can be done by the parents of teachers and the children to make efforts to prevent sexual abuse. Providing appropriate interventions will improve their abilities and prompt behavior changes in the children of school age to encourage them to defend themselves against and to act in preventing sexual abuse.[23] Effective interventions are done for the school-age children through game-based health education that is easily understood.

There were no significant differences in the CSA levels between poor and non-poor families. Poor CSA victims were significantly more likely to have a repeat report for abuse. Children with multiple reports are more likely to have negative results overall. Interventions for CSA survivors should focus on preventing the recurrence of persecution in general and not ignoring the needs of male victims[24].Further research is expected to be able to find out other sources that can reduce the burden of care, such as the use of social support, especially in Eastern countries that are still minimal in relation to social support.

5. Conclusion

In conclusion, this review shows that education in the form of games is a good prevention and that it is best done in a family and community school environment. Parents also have an important role in relation to the primary prevention of the sexual abuse of school-age children. This can be used as a guideline and become a reference for further research that is tailored to the characteristics of the respondents. Sexual prevention training in children can increase their knowledge and self-confidence, in addition to the preventive behavior of the children. This is expected to increase the level of behavior change in children.

References

[1] Ogunfowokan A A and Fajemilehin R B 2012 Impact of a School-Based Sexual Abuse Prevention Education Program on the Knowledge and Attitude of High School Girls **28** 459–68

[2] Kenny M C and Wurtele S K 2012 Journal of Child Sexual Abuse Preventing Childhood Sexual Abuse : An Ecological Approach Preventing Childhood Sexual Abuse : 37–41

[3] Olinda M, Carvalho D S, Nitschke R G, Rodrigues A D, Rodrigues V P, Couto T M, Maria N and Diniz F 2017 Surviving Sexual Abuse In Everyday Life : Forms Of Resistance Used By Children And Adolescents 1 Sobrevivendo Ao Abuso Sexual No Cotidiano Familiar : Formas De Resistência Utilizadas Por Crianças E **26** 1–9

[4] Tanaka M, Suzuki Y E, Aoyama I, Takaoka K and MacMillan H L 2017 Child sexual abuse in Japan: A systematic review and future directions *Child Abuse Negl.*

[5] Gokten E S and Duman N S 2016 Factors Influencing The Development of Psychiatric

Disorders in Te Victims of Sexual Abuse: A Study on Turkish Children *Child. Youth Serv. Rev.***69** 49–55

[6] Bhaskaran T S S, Seshadri S P, Srinath S, Girimaji S and Sagar J V 2016 Clinical characteristics of children presenting with history of sexual abuse to a tertiary care centre in India *Asian J. Psychiatr.***19** 44–9

[7] Lesmana C B J, Suryani L K and Tiliopoulos N 2015 Cultural Considerations in the Treatment of Mental Illness Among Sexually Abused Children and Adolescents: The Case of Bali, Indonesia 109–16

[8] Rumble L, Febrianto R F, Larasati M N, Hamilton C, Mathews B and Dunne M P 2018 Childhood Sexual Violence in Indonesia : A Systematic Review

[9] Mccartan K F, Merdian H L, Perkins D E and Kettleborough D 2018 Ethics and Issues of Secondary Prevention Efforts in Child Sexual Abuse

[10] Weingarten C, Rabago J, Reynolds J, Gates K, Yanagida E and Baker C 2018 Child Abuse & Neglect Examining the utility of a train-the-trainer model for dissemination of sexual violence prevention in schools *Child Abuse Negl.***80** 70–9

[11] Wurtele,S.K.,&Miller-Perrin C 2017 What works to prevent the sexual exploitation of children andyouth. *(Eds.), Wiley Handb. what Work. child Prot. An evidenced-based approach to Assess. Interv. child Prot. (***pp. 176**–**19**

[12] Tunc G C, Gorak G, Ozyazicioglu N, Ak B and Vural P 2018 Preventing Child Sexual Abuse : Body Safety Training for Young Children in Turkey Preventing Child Sexual Abuse : Body Safety Training for *J. Child Sex. Abus.***00** 1–18

[13] Babatsikos G and Miles D 2015 Journal of Child Sexual Abuse How Parents Manage the Risk of Child Sexual Abuse : A Grounded Theory 37–41

[14] Miller H L, Pavlik K M, Kim M A and Rogers K C 2016 An Exploratory Study of the Knowledge of Personal Safety Skills Among Children with Developmental Disabilities and Their Parents

[15] Kim S and Kang K 2016 Effects of the Child Sexual Abuse Prevention Education (C-SAPE) Program on South Korean Fifth-Grade Students ' Competence in Terms of Knowledge and Self-Protective Behaviors 1–10

[16] Tang K 2018 Child Abuse & Neglect Childhood sexual abuse , risky sexual behaviors and adverse reproductive health outcomes among Chinese college students *Child Abuse Negl.***84** 123–30

[17] Ferguson S, Chouliara Z, Ph D, Gullone A, Douglas A, Ph D, Ferguson S and Psych D Effectiveness and Acceptability of Group Psychoeducation for the Management of Mental Health Problems in Survivors of Child Sexual Abuse (CSA)

[18] Walsh K, Zwi K, Woolfenden S and Shlonsky A 2015 School-based education programmes for the prevention of child sexual abuse (Review)

[19] Mendelson T and Letourneau E J 2015 Parent-Focused Prevention of Child Sexual Abuse

844–52

[20] Brown M J, Masho S W, Perera R A, Mezuk B and Cohen S A 2015 Child Abuse & Neglect Sex and sexual orientation disparities in adverse childhood experiences and early age at sexual debut in the United States : Results from a nationally representative sample ☪ *Child Abuse Negl.***46** 89–102

[21] Masilo D T 2018 Prevention of Child Sexual Abuse within the Family System : Guidelines for an Educational Social Group Work Program Prevention of Child Sexual Abuse within the Family *J. Child Sex. Abus.***00** 1–12

[22] Chen J, Dunne M P and Han P 2007 Prevention of child sexual abuse in China : Knowledge , attitudes , and communication practices of parents of elementary school children **31** 747–55

[23] Nurse A M 2018 Children and Youth Services Review Coaches and child sexual abuse prevention training : Impact on knowledge , con fi dence , and behavior **88** 395–400

[24] Oshima K M M, Jonson-reid M, Seay K D and Louis S 2015 HHS Public Access **23** 1–19

PHP-697

WORK RELATED MUSCULOSKELETAL DISORDERS AND THE RISK FACTORS IN NURSE: A SYSTEMATIC REVIEW

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ABSTRACT

Nursing has been identified as the most risk profession experiencing work-related musculoskeletal disorders (WRMDs). Work-related musculoskeletal disorders (WMSDs) are the most important common cause of lost work days, increased costs and human injuries and the main cause of disability. This review study was conducted to determine the risk factor of work related musculoskeletal disorders in nurses. The present study was conducted on the basis of the PRISMA checklist for systematic review. To access eligible articles, domestic and foreign databases such as Scopus, Science Direct, PUBMED, ProQuest, and the Google scholar search engine and keywords of low back pain and nurse and ergonomic. Capping the results journals that do is the year of publication of the journal are restricted to start 2011- 2019 and article in English. The results of the review of 10 eligible articles showed that the risk factor of musculoskeletal disorders and low back pain in nurses. The results showed that predisposing risk factors of lower back pain are gender (female), working time and Working in the same positions for long periods.

Keywords: work-related musculoskeletal disorders, low back pain, nurse, associated factor, prevalence

1. Introduction

Work-related Musculoskeletal disorders (WMSDs) are widespread and an increasing occupational health problem, reported as an important risk for health and safety in the workplace worldwide [1,2]. It is a serious risk factor and a common cause of morbidity affecting occupations such as health professionals [3,4]. Nurses are reportedly at a high risk of WMSDs with the population that constitutes about 33% of the hospital workforce at particularly high risk accounting for 60% of the reported occupational injuries [4–6]. The term musculoskeletal disorders refers to inflammatory and degenerative conditions that affect the muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels with consequent ache, pain or discomfort [6–8]. Previous studies also reported that the lower back, shoulders, neck, forearms and hands were the regions most affected by musculoskeletal disorders [3,9]. WMSDs usually occur in workers who have excessive repetition, awkward postures and heavy lifting, poor patient transfer techniques, physical nature of the job, increased patient load and workplace activities such as strenuous action, manual handling and job stress [1,4,6,10–12]. WMSDs are the most important common cause of lost work time or absenteeism, increased work restriction, transfer to another job, human injuries and it is the main cause of disability with a considerable increased cost for the individual, the organization and society

as a whole. It has an impact on quality of life [9,12,21,13–20]. The present study intended to investigate the risk factor of work-related musculoskeletal disorders in nurses using a systematic review.

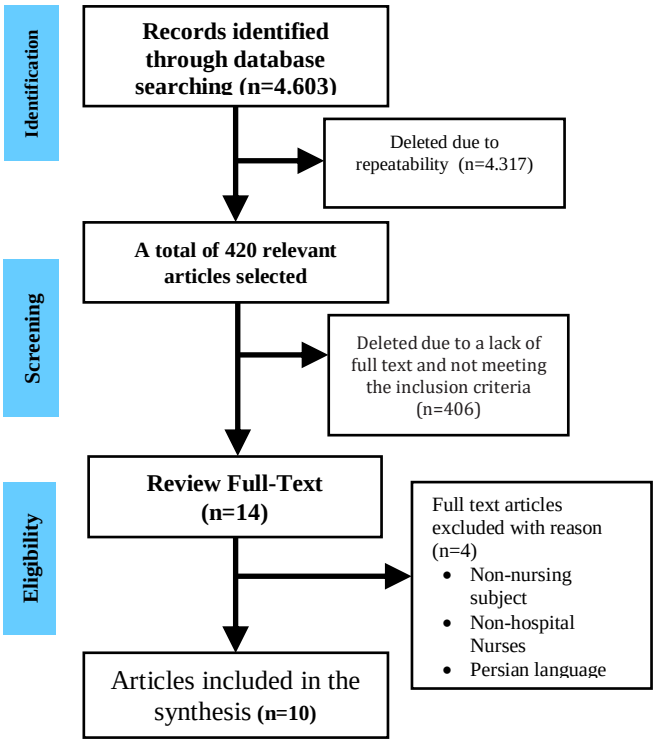
2. Methods

The present study was a systematic review based on a reporting system for systematic review studies (PRISMA). The literature was searched and the selection of peer-reviewed and professional journal publications was conducted through the following search engines; Scopus, PubMed, ProQuest and Science Direct. A literature review was conducted using "Work-related musculoskeletal disorders", "Low back pain", "Nurse", and "Associated Factor" as the keywords. The selection of articles were published between 2010 - 2019.

This systematic review included studies that looked at the prevalence and/or associated risks and contributing factors of WRMDs among the nurses working in hospital. The studies selected for analysis were required to meet the following inclusion criteria: (i) reported evaluation between the associated risks, contributing factors and prevalence of WRMDs; (ii) fully published articles and (iii) a cross-sectional study. Studies were excluded based on the following criteria: (i) population studies that included non-hospital nurses and (ii) papers that were not peer-reviewed or that were only abstracted.

3. Result

In the present systematic review, 4.603 articles were identified, 4317 of which were deleted due to repeatability. Following this, 406 articles were deleted due to a lack of full text and not meeting the



inclusion criteria after a preliminary review. Additionally, 4 articles were excluded due to being on a non-nursing subject, the nurses worked in a non-hospital setting and they were in the Persian language after reviewing the full text. With this done, 10 articles were selected in synthesis (Fig 1). The sum of all nurses involved in these investigations was 3592 nurses who worked in various wards

in hospitals in various countries such as Vietnam, Iran, Greece, China, Pakistan, Nigeria, Iran, Zimbabwe, Turkey and New Zealand.

Figure 1. The inclusion stages of the studies in the systematic reviews

Table 1. Summary of the included studies.

Author, Year [Ref]	Title	Findings
Arsalani, Masou, Malin & Monica (2014) [22]	Musculoskeletal Disorders and Working Conditions Among Iranian Nursing Personnel	The three most prevalent body regions were the lower back (65.3%), knees (56.2%) and neck (49.8%). The participants reported an inflexible work schedule, poor quality of devices for transferring patients, overexertion and job dissatisfaction.
Chiwaridz, Makotore, Dambi, Munambah, and Mhlanga (2018) [4]	Work-related musculoskeletal disorders among registered general nurses: a case of a large central hospital in Harare, Zimbabwe	The most prevalent body region was the back 84%, especially the lower back (lumbar) 67,9%. Repeatedly performing nursing tasks, the perception of treating a large number of patients, the perception of repeatedly bending/twisting the back and the perception of lifting/transferring dependent patients and materials were identified as the significant risk factors.
Celik, Tasdemir, Oksuzoglu, Dirimese, Kocasli (2018) [3]	Critical-Care Nurses' Pain Experiences and the Prognostic Factors	The critical-care nurses were found to experience pain mostly in the lower back (88.3%), upper backs (77.5%), right (76.6%) and left (78.4%) feet, neck (73.9%) and most infrequently in the right (28.8%) and left (28.8%) lower arms. Changing the bed linens while the patient remained in bed and lifting, pulling or pushing heavy materials caused the nurses who felt despondent and tired to feel significant pain.
Luan, Hai, Xanh, Giang, Thuc, Hong, Khue (2018) [1]	Musculoskeletal Disorders: Prevalence and Associated Factors among District Hospital Nurses in Haiphong, Vietnam	A very high prevalence of MSDs in the past 12 months (74.7%) and during the last 7 days (41.1%), with the two most common sites being the lower back (44.4%) and neck (44.1%). When analyzing the factors related to MSDs, the results showed that gender (women), a history of MSDs, psychological distress and frequent absenteeism are the associated factors.
Passali, Maniopoulou, Apostolakis, Varlamis (2018) [2]	Work-related musculoskeletal disorders among Greek hospital nursing professionals: A cross-sectional observational study	The prevalence of musculoskeletal disorders, in general, was 98%, with symptoms reported for the waist (85.3%), neck (71.2%) and back (70.7%). The risk of WMSD was higher for specific RN groups: gender (female), 11-20 years of work experience, strain on the waist and lifting loads. Shift work, age and the body mass index also lead to an increased risk.
Yan, Li, Zhang, Yang, Huang,	Prevalence of Work-Related Musculoskeletal Disorders in the	The most common regions affected by WMSDs were the lower back (62,71%),

Author, Year [Ref]	Title	Findings
Wang, Yao (2017) [9]	Nurses Working in Hospitals of Xinjiang Uygur Autonomous Region	neck (59,77%), shoulder (49,6%) and back (39,5%) The results indicated a working time of ≥6 years, working in the Emergency Department, working in the Department of Anesthesia, working in the Department of Supply Room, working in shifts, working on the night shift for more than once a week, a working time of ≥40 hours per week, poor health conditions and fatigue were the risk factors for WMSDs.
Rathore, Attique, Asmaa (2017) [7]	Prevalence and Perceptions of Musculoskeletal Disorders Among Hospital Nurses in Pakistan: A Cross-sectional Survey	The prevalence of musculoskeletal disorders over a 12-month period was 31.6%, with the most common site being the lower back (32%) followed by the shoulders (20%), upper back, and knees (10%). Working in the same positions for long periods (93.1%), attending an excessive number of patients in one day (81.2%) and working in awkward and cramped positions (78.6%) were the most common perceived risk factors for WRMDs.
Tinubu, Mbada, Oyeyemi, Fabunmi (2018) [6]	Work-Related Musculoskeletal Disorders among Nurses in Ibadan, South-west Nigeria: a cross-sectional survey	The most common regions affected by WMSDs were the lower back (44.1%), neck (28.0%) and knees (22.4%). Working in the same position for a long periods (55.1%), lifting or transferring dependent patients (50.8%) and treating an excessive number of patients in one day (44.9%) were the most commonly perceived job risk factors for WMSDs.
Yang, Liu, Zeng, Wang, Li (2018) [23]	Prevalence and Risk Factors of Work-Related Musculoskeletal Disorders Among Intensive Care Unit Nurses in China	Lower back pain was the most commonly reported musculoskeletal disorder (80.1%), followed by neck (78.6%) and shoulder pain (70.4%). Female gender, unmarried status, a greater perception of risk and a lack of a safe work environment are the significant factors.

4. Discussion

The results will be discussed under the following headings; the most prevalent body region affected by WMSD and the risk factors predisposing nurses to WMSD.

The most prevalent body region is the lower back, followed by the neck, shoulders, knees, waist and arm. Further stratification concerning the prevalence within the vertebral column revealed the lower back to be the most susceptible to WMSD, followed by the neck, shoulders and knees. This result was consistent with that of the previous research findings, as the prevalence of hospital nurses in Iran who experience low back pain is 30-60% [24]. A study conducted in Switzerland found that the prevalence of low back pain over 1 year among health workers was 67.3% of which nurses amounted to 75.6% [25] while in Korea, 90.3% of nurses were intensive units with LBP increases at least once and where only about 18.3% of nurses went for treatment [26]. The nurses' prevalence that

increased the Jordanian nurses' lower back pain was 83.6% and as much as 40% agreed that lower back pain increased absenteeism at work. Meanwhile, 58.7% stated that lower back pain could increase their work productivity by 9% [27] and this gave rise to the theory that the nurses' moods and fatigue triggered somatic complaints. Moreover, it was observed that the nurses who were tired and felt pain did so as a result of decreased opportunities for relaxation at home. This was due to working in shifts, having short or infrequent break times, not using appropriate body mechanics and remaining in a stationary position for extended periods during work [3].

Gender: Females are more at risk than males. This can be understood as women have lower adaptive status than men in terms of patient-related activities, such as patient transport and infusion. A history of musculoskeletal diseases in the past has been a factor in the development of MSDs. When an individual has suffered from previous musculoskeletal diseases, the adaptive capacity of the musculoskeletal system related to the activity will be reduced. Combined with inappropriate manipulations and postures when working, these conditions will motivate and generate the manifestations of MSDs.

Working time: The working time of 50 hours per week and a daily working time of 8.5 hours were considered to be a risk factor for WMSDs. The working time of the nurses [9] was in the range of 30 – 65 hours and the weekly time was 46.87 ± 4.42. According to the multivariate analysis, adequate rest was a protective factor against WMSDs. In a previous study, Wang et al. revealed that a rest time of 15 min could guarantee the recovery of the erector muscle of the spine and the heart rate could settle into the normal range. Therefore, adequate rest is recommended for those involved in the nursing profession [28], in order to attenuate the stress and relax the muscle tissues, as well as to eliminate fatigue.

Working in the same position for a long period: Working in the same position for a long periods, lifting or transferring dependent patients and treating an excessive number of patients in one day were the most perceived job risk factors precipitating WMSDs among the nurses in this study. These findings are consistent with the previous reports indicating that manual patient handling and transferring or moving patients are the important predictors of musculoskeletal disorders and low back pain among nurses [2–4,6,7,22]. From this study, getting assistance or support staff involved in handling heavy patients, the modification of the nursing procedures in order to avoid re-injury or stressing an injury, and the modification of patient's/nurse position were the top three coping strategies in ameliorating the risk of WMSDs. These coping strategies used among the Nigerian nurses seem similar to the previous findings. The worker's performing strenuous work are often advised to prevent problems and to cope with musculoskeletal symptoms by changing their working technique, using lifting equipment, taking breaks and avoiding strenuous work tasks [29–32].

5. Conclusion

This systematic review has identified that nurses are vulnerable to WMSD, especially lower back pain. The predisposing risk factors of lower back pain are gender (female), working time and working in the same position for a long period.

Reference

[1] Luan HD, Hai NT, Xanh PT, Giang HT, Thuc P Van, Hong NM, et al. Musculoskeletal Disorders : Prevalence and Associated Factors among District Hospital Nurses in Haiphong, Vietnam. Hindawi BioMed Res Int. 2018;2018:9.

[2] Passalia C, Maniopouloua D, Apostolakisa, Ioannis Varlamis I. Work-related musculoskeletal disorders among greek hospital nursing professionals: A cross-sectional observational study. 2018;

[3] Sevim C ¸ elik, PhD; Nurten Tas ¸demir, PhD; Ays ¸e O ¨ ksu ¨ zog ˘lu B, Elif Dirimes ¸e PSK ¸as ¸lı. Critical-Care Nurses ' Pain Experiences and the Prognostic Factors. 2018;(February):3–11.

[4] M. Chiwaridzo, V. Makotore, J. M. Dambi NM and MM. Work-related musculoskeletal disorders among registered general nurses : a case of a large central hospital in Harare, Zimbabwe. BMC Res Notes. BioMed Central; 2018;1–7.

[5] Harcombe H, Herbison GP, Mcbride D, Derrett S. Musculoskeletal disorders among nurses compared with two other occupational groups. 2014;(August):601–7.

[6] Bolanle MS Tinubu, Chidozie E Mbada, Adewale L Oyeyemi AAF. Work-Related Musculoskeletal Disorders among Nurses in Ibadan, South-west Nigeria : a cross-sectional survey. BMC Musculoskelet Disord. 2010;6–13.

[7] Rathore FA, Attique R, Asmaa Y. Prevalence and Perceptions of Musculoskeletal Disorders Among Hospital Nurses in Pakistan : A Cross-sectional Survey. Cureus. 2017;9(1):1–10.

[8] Saberipour B, Ghanbari S, Zarea K, Gheibizadeh M, Zahedian M. Investigating prevalence of musculoskeletal disorders among Iranian nurses : A systematic review and meta-analysis. Clin Epidemiol Glob Heal. Elsevier; 2018;(June):0–1.

[9] Ping Yan, Fuye Li, Li Zhang, Yi Yang, Amei Huang, Yanan Wang, and HY. Prevalence of Work-Related Musculoskeletal Disorders in the Nurses Working in Hospitals of Xinjiang Uygur Autonomous Region. Hindawi Pain Res Manag. 2017;2017.

[10] Josephson M, Lindberg P, Voss M, Alfredsson L, Vinga E. Employment and Sickness Absence The same factors influence job turnover and long spells of sick leave — a 3-year follow-up of Swedish nurses. Eur J Public Health. 2008;18(4):380–5.

[11] Ellapen T, Narsigan S. Work-Related Musculoskeletal Disorders among Nurses : Systematic Review. J Ergon. 2014;4(4).

[12] Bruno R. da, Costa and Edgar Ramos V. Risk Factors for Work-Related Musculoskeletal Disorders : A Systematic Review of Recent Longitudinal Studies. Am J Ind Med. 2010;323:285–323.

[13] Ã LP, Wegman DH. Work-related musculoskeletal disorders : the epidemiologic evidence and the debate. 2004;14:13–23.

[14] Holder NL, Clark HA, DiBlasio JM, Hughes CL, Scherpf JW, Harding L, et al. Cause, prevalence, and response to occupational musculoskeletal injuries reported by physical therapists and physical therapist assistants. Phys Ther. United States; 1999 Jul;79(7):642–52.

[15] Aptel M, Aublet-Cuvelier A, Cnockaert JC. Work-related musculoskeletal disorders of the upper limb. Joint Bone Spine. France; 2002 Dec;69(6):546–55.

[16] Badley EM, Rasooly I, Webster GK. Relative importance of musculoskeletal disorders as a cause of chronic health problems, disability, and health care utilization: findings from the 1990 Ontario Health Survey. J Rheumatol. Canada; 1994 Mar;21(3):505–14.

[17] Riihimaki H. Hands up or back to work--future challenges in epidemiologic research on musculoskeletal diseases. Vol. 21, Scandinavian journal of work, environment & health. Finland; 1995. p. 401–3.

[18] Leijon MG, Hensing G, Alexanderson K. Gender trends in sick-listing with musculoskeletal symptoms in a Swedish county during a period of the rapid increase in sickness absence. Vol. 26, Scandinavian journal of social medicine. 1998. 204–213 p.

[19] David G, Woods V, Li G, Buckle P. The development of the Quick Exposure Check (QEC) for assessing exposure to risk factors for work-related musculoskeletal disorders. Appl Ergon. England; 2008 Jan;39(1):57–69.

[20] Turner JA, Franklin G, Fulton-Kehoe D, Egan K, Wickizer TM, Lymp JF, et al. Prediction of chronic disability in work-related musculoskeletal disorders: a prospective, population-based study. BMC Musculoskelet Disord. 2004;5(1):14.

[21] Taanila H, Suni J, Pihlajamäki H, Mattila VM, Ohrankämmen O, Vuorinen P, et al. Musculoskeletal disorders in physically active conscripts: a one-year follow-up study in the Finnish Defence Forces. BMC Musculoskelet Disord. 2009;10(1):89.

[22] Arsalani N, Fallahi-khoshknab M, Josephson M. Musculoskeletal Disorders and Working Conditions Among Iranian Nursing Personnel Musculoskeletal Disorders and Working Conditions Among Iranian Nursing Personnel. Int J Occup Saf Ergon. 2014;3548(February 2016).

[23] Yang S, Lu J, Zeng J, Wang L, Lan Y. Prevalence and Risk Factors of Work-Related Musculoskeletal Disorders Among Intensive Care Unit Nurses in China. Workplace Health Saf. 2018;XX(X):1–13.

[24] Nourollahi M, Afshari D, Dianat I. Awkward trunk postures and their relationship with low back pain in hospital nurses. 2018;59:317–23.

[25] Genevay, Stéphane Cedraschi, Christine Courvoisier DS, Perneger T V, Grandjean R, Griesser, Anne-claude Monnin D. Work-related characteristics of back and neck pain among employees of a Swiss University Hospital. Jt bone spine. 2011;78:392–7.

[26] June KJ, Cho S. Low back pain and work-related factors among nurses in intensive care units. 2010;479–87.

[27] Suliman M. Prevalence of low back pain and associated factors among nurses in Jordan. 2018;1–7.

[28] Buxton OM, Hopcia K, Sembajwe G, Porter JH, Dennerlein JT, Kenwood C, et al. Relationship of sleep deficiency to perceived pain and functional limitations in hospital patient care workers. J Occup Environ Med. United States; 2012 Jul;54(7):851–8.

[29] Chanchai W, Songkham W, Ketsomporn P, Sappakitchanchai P. The Impact of an Ergonomics Intervention on Psychosocial Factors and Musculoskeletal Symptoms among Thai Hospital

Orderlies. 2016;1–10.

[30] Goreth M, Lopes R, Hélia A. Ergonomic constraints among nursing workers in the sectors of emergency care in two public hospitals in Brazil. 2012;41:1849–54.

[31] Hoof W Van, Sullivan KO, Kee MO, Verschueren S, Sullivan PO, Dankaerts W. The e ffi cacy of interventions for low back pain in nurses : A systematic review. 2018;77(October 2017):222–31.

[32] Moazzami, Dehdari, Taghdisi, Soltanian. Effect of an Ergonomics-Based Educational Intervention Based on Transtheoretical Model in Adopting Correct Body Posture Among Operating Room Nurses. 2016;8(7):26–34.

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FACTORS ASSOCIATED WITH FOOT CARE BEHAVIOR IN DIABETIC PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Diabetic foot ulcer (DFU) is one of the most common complications in diabetic patients and associated with high morbidity, mortality and health cost. Optimal foot care prevents the DFU reached 85%. Identification of factors related to foot care behavior is important and may help health care providers in designing interventions to improve patient behavior. This systematic review was performed to identify factors that affect foot care behavior in diabetic patients. The literature search used predefined keywords such as foot care behavior and foot self-care through several electronic databases such as Scopus, ProQuest, Ebsco (CINAHL) and Science Direct. All quantitative and qualitative studies from 2014 to 2019 were included. There were 10 studies reviewed. Results showed that there were various factors such as predisposing factors (level of education, socioeconomic status, social support, past experience, information) and precipitating factors (communication with health workers, psychological condition) related to foot care behavior. Information, social support, communication can facilitate positive foot care behaviors. Education for health care providers, patients, and their family is needed for good foot care practices.

Keywords: foot care, diabetic, systematic review

Introduction

Diabetes mellitus is one of the biggest health problems worldwide and it has become one of the leading causes of death globally due to non-communicable disease [1]. Diabetic foot ulcers (DFU) are one of the most common complications that often occur in diabetic patients. DFU is associated with the incidence of amputation, high morbidity, mortality and health costs[2,3]. Globally, there were 425 million diabetics in 2017. The lifetime risk for a diabetic of developing foot ulcers is up to 25 %. DFU occurs in 15-25 % of all diabetics by more than 2% every year and between 5-7,5 % of patients with neuropathy [2].

Foot ulcers are preventable through foot care such as a daily foot inspection, foot hygiene, foot moisture, injury prevention, appropriate footwear and with the toenails cut[4,5]. Optimal foot care activities are proven to reduce the foot ulcers by 85 %[2]. Chin et al. found that foot care (applying moisturizer on dry foot skin) was associated with the incidence rate of diabetic foot ulcers[6].

To improve the foot care behavior among diabetics, understanding some factors affecting good foot care behavior is important. A previous review highlights the psychosocial factors as both barriers and enablers to the foot care in older adults diagnosed with type 1 or type 2 diabetes[7]. Research shows that the level of education and the patient's knowledge of diabetes are important factors that

influence the foot care behavior in patients with diabetes mellitus[5]. In addition to the internal factors, it is important to explore the external factors that influence foot care behavior in diabetics. Therefore, this systematic review aims to identify the factors influencing foot care behavior in diabetics based on the perspective of both the patient and the health care provider.

Methods

This systematic review was conducted using the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). This systematic review was conducted to identify the factors related to the foot care behavior in patients with diabetes mellitus, referring to both the internal factors from the patient and the external factors.

Search strategy

The articles were searched for from within several electronic databases i.e Scopus, Proquest, Science direct and EBSCO (CINAHL) published between 2014 and 2019. There were several specific keywords used such as foot care behavior, foot self-care, diabetes mellitus and diabetic foot ulcer.

Inclusion and exclusion criteria

The inclusion criteria for this systematic review included English-language journals where the research subject was adults with diabetes mellitus type 1 or 2 and the health care providers who deliver the care for diabetics. Cross-sectional studies, cohort studies and qualitative studies were included in this review. Systematic and literature reviews were excluded. In this systematic review, first all of the titles and abstracts were reviewed to see if they met the inclusion criteria. After that, the studies that were considered to be included in the review were read in full. Articles with unavailable full papers were excluded.

Data synthesis

All of the studies included in this review were read in full. All of the findings were grouped and then the factors were summarized related to foot care behavior in patients with diabetes mellitus.

Results

Literature search and study selection

From the search results found by using the specified keywords, 983 articles were found and then screening was conducted by looking at the title and abstract. The search first obtained 80 journals. Lastly, there were 10 journals that meet the inclusion criteria (Figure 1).

Study characteristic

There were 8 cross-sectional studies, 1 longitudinal study and 1 qualitative study. The type of participants involved in the systematic review were adults who were type 1 and type 2 DM patients and the health care providers who cared for diabetic patients.

Findings

The summary of the study characteristics and findings have been presented in Table 1. There were several factors related to foot care behavior in diabetics. Six studies found that education level was

associated with diabetic foot care behavior[5,8–12]. Five studies found that socioeconomic status had a significant impact on the patient's foot care behavior[1,3,4,6,7**].** One study showed that social support was an enabling factor of proper good foot care [12]. Three studies found that understanding DM and its management can facilitate good foot care behavior[5,14,15**].** Three studies showed that foot care and DM complication education offered by the health care provider can facilitate the patient's in having good foot care behavior[8,13,16**].** Two studies found that poor communication between the patients and health care providers was a barrier factor for the patient's foot care behavior[12,15**].**

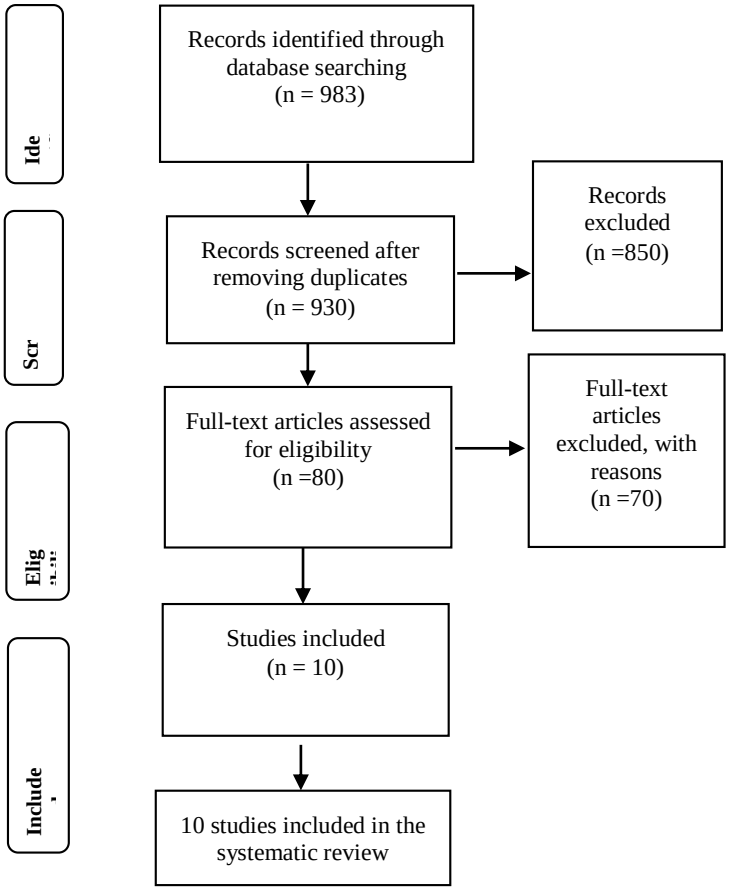

Figure 2. Flow Diagram

Table 1. Study characteristics and findings.

Authors	Study Design	Sample/Participants	Sample Size	Findings
D'souza et al. [5]	Cross-sectional study	T2DM patients	160	*1) Education level* Patients with a high education level (Bachelor's/Master's) had good foot care behavior (p = 0,012) *2) Knowledge* Understanding DM and its management was related

					with good foot care behavior (p = 0,040) *3) Income* Income was associated with foot care education (p = 0,050)
Syed et al. [8]	Cross-sectional study	DM patients	400	*1)* *2)* *3)*	*Community background* A rural or urban background was associated with foot care behavior (p = 0,001) *Income* The individual's monthly income was related with foot care behavior (p < 0,0001) *Foot-care education provided* Foot care education provided by the health care workers influenced the patient's foot care behaviors (p < 0,0001)
Li et al. [9]	Cross-sectional study	T2DM patients	5961	*1)* *2)*	*Education level* Education level was associated with foot care behavior (p < 0,001) *DM complications education* Education about DM complications by the health care workers influenced the patient's foot care behavior (p < 0,001)
Zafar et al.[10]	Cross-sectional study	T2DM patients	220	*1)* *2)*	*Education level* Patients with poor education had a lower foot care behavior score. *Socioeconomic status* Lower socioeconomic status was associated with a lower foot care behavior score.
Darshan et al. [11]	Cross-sectional study	T2DM patients	133	*1)* *2)*	*Education level* Education level had a significant impact on diabetic foot self-care. *Socioeconomic status* Lower socioeconomic status was associated with a lower foot care behavior score.
Chiwanga and Njelekela[12]	Cross-sectional study	T2DM patients	404	*1)*	*Foot-care education provided* Patient who had received foot care education from the health care provider

				had good foot care behaviors.
Pereira, Pedras and Ferreira[13]	Longitudinal study	T2DM patients	271	*1) Knowledge* Understanding DM was associated with good foot self-care.
Mogre et al.[14]	Cross-sectional study	T2DM patients	201	*1) Education level* Education level was associated with good foot care behavior (p = 0,037).
Seid and Tsige, [15]	Cross-sectional study	DM patients	313	*1) Knowledge* A lack of adequate knowledge was associated with poor foot self-care. 2) *Communication between the patient and health care provider*. Poor communication between the patient and the health care workers (nurses/physicians) was associated with poor foot care behavior.
Sayampathan, Cuttilan and Pearce[16]	Qualitative study	Health care providers	17	1) *Predisposing factors* (education level, socioeconomic status, social support, past experience) were related to foot care behavior 2) *Precipitating factors* (psychological factor, health care providers). A low degree of psychological barriers and poor communication between the patient and health care workers were both associated with diabetic foot care practices.

Discussion

The review showed that there were various factors related to foot care behavior. Education level, socioeconomic status, social support, the patient's knowledge, the education provided and the communication between the patients and the health care workers were associated with foot care practices. Education level was a determinant factor of foot self-care. Poor education status was related to poor foot care. People with a low level of education had less access to healthcare facilities and often wore inappropriate footwear[5]. Patients with a higher education level were more likely to understand how to perform good foot care and the benefits of foot care behavior. They were more able to read and obtain information about foot care. Socioeconomic status was related to foot care

practices. People with low socieconomic status have low foot care knowledge and consequently, they have poor foot care [5].

Knowledge is one of the important factors in foot care behavior. Patients with good knowledge about DM management and foot care behavior had good foot care behavior. Level of knowledge was influenced by education level, the duration of diabetes and their education on foot care. Patients who received advice on foot care and DM management from the health care providers performed good foot care behavior [8,9]. When the diabetic patients know about foot care and the benefits therein, they will find it easy to do foot care in their daily activities. Patients who have good knowledge of foot care have a high awareness concerning preventing diabetic ulcers through regular foot care.

The education provided and the communication between the patients and the health care provider were also identified as a determinant factor related to foot care behavior. DM management and foot care education provided by the health care workers could improve foot care [16]. One study showed that patients who received information from the health workers about diabetic foot care had better foot behaviors than those who did not [17]. Seid and Tsige (2015) showed that poor communication between the patients and the health care workers was as a barrier factor for foot self-care [15]. Poor communication between the health workers and patients due to the patient's language skills and the availability of resources in foot care education also played a part [11].

One study showed that social support was associated with foot care practices. A lower level of social support (family or other forms of caregivers) could act as a barrier factor for foot care [12]. Family members play an important role as a supervisor in the patient's regular foot care. The limitation of this systematic review is that it didn't use a quality assessment.

Conclusion

This systematic review provided an overview of the determinant factors of foot care behavior. Good foot care behaviors were influenced by education, social support structure and the health care providers. Therefore, education for the health care providers, the patients and their family is needed for the promotion of good foot care practices. Before planning the intervention, health care providers need to consider the various factors such as level of education and the patient's social support that can facilitate good foot care behaviors. For further research, it is important to modify the educational program based on the patient and the health care resources available for the patient, family or their caregivers and the health care providers.

References

[1] International Diabetes Federation (IDF) 2017 *IDF Diabetes Atlas 8th edition*

[2] International Diabetes Federation (IDF) 2017 *IDF Clinical Practice Recommendations on the Diabetic Foot – 2017*

[3] Hemmati Maslakpak M, Shahbaz A, Parizad N and Ghafourifard M 2018 Preventing and managing diabetic foot ulcers: application of Orem's self-care model *Int. J. Diabetes Dev. Ctries.***38** 165–72

[4] Aalaa M, Malazy O T, Sanjari M, Peimani M and Mohajeri-Tehrani M R 2012 Nurses' role in diabetic foot prevention and care; a review *J. Diabetes Metab. Disord.***11** 1–6

[5] D'Souza M S, Ruppert S D, Parahoo K, Karkada S N, Amirtharaj A, Jacob D, Balachandran S and Al Salmi N M D 2016 Foot care behaviors among adults with type 2 diabetes *Prim. Care Diabetes***10** 442–51

[6] Chin Y F, Liang J, Wang W S, Hsu B R S and Huang T T 2014 The role of foot self-care behavior on developing foot ulcers in diabetic patients with peripheral neuropathy: A

prospective study *Int. J. Nurs. Stud.***51** 1568–74

[7] Matricciani L and Jones S 2015 Who Cares About Foot Care? Barriers and Enablers of Foot Self-care Practices Among Non-Institutionalized Older Adults Diagnosed With Diabetes: An Integrative Review *Diabetes Educ.***41** 106–17

[8] Li R, Yuan L, Guo X H, Lou Q Q, Zhao F, Shen L, Zhang M X and Sun Z L 2014 The current status of foot self-care knowledge, behaviours, and analysis of influencing factors in patients with type 2 diabetes mellitus in China *Int. J. Nurs. Sci.***1** 266–71

[9] Zafar S, Rashid A, Aleem M, Bashir A, Tariq R and Akram E 2018 Knowledge and practices of foot care in type diabetic patients visiting OPD of a tertiary care hospital *Pakistan J. Med. Heal. Sci.***12** 1143–6

[10] Darshan B B, Unnikrishnan B, Kulkarni V, Thapar R, Mithra P, Kumar N, Holla R, Kumar A, Jatana V, Kolluru S, Phogat V, Nambiar A and Ghosh M 2015 Knowledge and practice regarding foot care among type 2 diabetes mellitus patients at a tertiary care hospital in coastal South India *Asian J. Pharm. Clin. Res.***8** 182–5

[11] Mogre V, Abanga Z O, Tzelepis F, Johnson N A and Paul C 2017 Adherence to and factors associated with self-care behaviours in type 2 diabetes patients in Ghana 1–8

[12] Sayampanathan A A, Cuttilan A N and Pearce C J 2017 Barriers and enablers to proper diabetic foot care amongst community dwellers in an Asian population: a qualitative study *Ann. Transl. Med.***5** 254–254

[13] Syed F, Arif M A, Afzal M, Niazi R, Ramzan A and Hashmi U 2017 Foot-care behaviour amongst diabetic patients attending a federal care hospital in Pakistan 58–63

[14] Pereira M G, Pedras S and Ferreira G 2018 Self-reported adherence to foot care in type 2 diabetes patients: do illness representations and distress matter? *Prim. Health Care Res. Dev.***10** 1–8

[15] Seid A and Tsige Y 2015 Knowledge , Practice , and Barriers of Foot Care among Diabetic Patients Attending Felege Hiwot Referral Hospital , Bahir Dar , Northwest Ethiopia **2015**

[16] Chiwanga F S and Njelekela M A 2015 Diabetic foot: Prevalence, knowledge, and foot self-care practices among diabetic patients in Dar es Salaam, Tanzania - a cross-sectional study *J. Foot Ankle Res.***8** 1–7

[17] Hadi Sulistyo A A, Sae Sia W and Maneewat K 2018 The effect of a foot care camp on diabetic foot care knowledge and the behaviours of individuals with diabetes mellitus *J. Res. Nurs.***23** 416–25

DOES HYPERTENSIVE ASIAN ELDERLY REQUIRE SPECIFIC CARE IN BLOOD PRESSURE CONTROL?

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ABSTRACT

The prevalence of uncontrolled blood pressure, hypertension, is the leading of the global risk of mortality among Asian countries. Hypertension caused by arterial stiffness that increase by the age and sedentary lifestyle. However, hypertension still preventable and possible to control, thereby it does not rise in sudden cardiovascular death. The systematic review aimed to identify and synthesize the available evidences about blood pressure control strategies specifically among the Asian elderly. This review conducted database in Medline, Scopus, PubMed and Cochrane Library with inclusions are randomized trial study determined from 2013 to 2019 and related to hypertension that assessed using the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement. Six eligible studies were included with outcome was the blood pressure measurement. One study reported that mechanism of low salt-diet and potassium significantly reduced blood pressure. Others two studies reveals the effect of nutritional intervention to blood pressure and the other provides self-management and supporting intervention in the group. These studies conclude that blood pressure control for Asian elderly based on three main aspects of nutrition, medication and management support.

Keywords: blood pressure control, elderly, hypertension and Asia

1. Introduction

Hypertension in Asia contributes to the increase in cardiovascular disease and death. Uncontrolled blood pressure with low obedience for hypertension management, especially in South East Asia, is reported as a factor that is leading the rise in deaths. Hypertension is a worldwide issue due to the disobedience of patients to the medication program, which has only reached half of the total number[1]. Research was conducted in China in 2017 and it reported that the degradation of medication proportions and blood pressure control needs patient compliance to control hypertension[2]. Vascular aging in the elderly, namely arterial stiffness, is expected to become the dominant phenotype of hypertension, especially in Asia[3].

Virdis et al. described the aging process as involving arterial stiffness and the changing of the inner wall of the arteries, mainly of the aorta and proximal branches. The thickening of the intima causes a loosening of elasticity and this has an effect on the hemodynamics. When stiffness

attacks the large arteries, the cushioning function is damaged. The ejection function of ventricle and recoil elasticity will decline. The continuity of this situation potentially increases the risk of stroke and heart failure[4].

Hypertension in the age group of 65 or more, mostly in women, is known as one of the trigger factors of worldwide premature death[5]. Many studies have reported about hypertension among the hypertensive Asian elderly. The countries with the highest prevalence of essential hypertension in Asia were Singapore (73,9%, aged ≥60years) and Korea (68,7%, aged ≥65 years), and it was indicated that only two thirds received anti-hypertension medication. The number of hypertensive individuals in the most populated countries, namely India and China, was predicted to potentially rise in 2025 to 95,3 million and 117,6 million people respectively[6]. Sinclair et al. conducted *The Systolic Hypertension in the Elderly Program pilot project* in 2012 which revealed that smoking in the elderly was the first predictor of cardiovascular disease and myocardial infarction that caused sudden death[7]. The Indonesian Ministry of Health reported that this amounted to 69,5% of the elderly (aged >75 years) with hypertension as the highest percentage in 2018[8]. A web-based report in 2016 in Primary Health Care showed that hypertension was the first reported case with the total patient admissions amounting to 238.695, dominated by men[9].

Based on all of the studies, hypertensive Asian elderly have had many interventions applied to control their blood pressure with the aim of lowering the risk of complications. Pharmacological intervention programs, dietary management and other types of management to support high quality of life mainly in the Asia region. Therefore, this systematic review aimed to identify the kinds of interventions that successfully help the hypertensive Asian elderly.

2. Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement[10].

2.4 Data Sources and Searches

The databases searched included Medline, Scopus, Pubmed and Cochrane Library. They provided the studies related to the clinical trials of hypertension management in Asia determined from 2013 to 2019 by the following keywords: blood pressure control, elderly, hypertension and Asia.

2.5 Study Selection

Only interventional randomized trials conducted on older adults and the elderly with hypertension were included in this review. The studies selected by the inclusion criteria were open access randomized trial studies within full-text articles in the English language conducted in the Asia region. We excluded studies with a non-clinical trial design focused on non-elderly participants and with unrelated study protocols.

2.6 Data extraction and quality assessment

All of the citations retrieved from the electronic databases were imported into the Mendeley Program. Two reviewers (BU, SNK) independently analyzed the titles and abstracts of every study retrieved from the literature search to identify potentially eligible studies. The full text of the remaining studies was obtained for further examination. The last review was conducted by the first reviewer (TPD).

The data of the included studies were independently extracted by the same two reviewers by including the first author's name, the year of publication, the sample size, the study design, the duration of the trial, the general characteristics of the participants (age, hypertension or high blood pressure, gender) and the main outcome of interest (blood pressure measurements). A detailed description of the nutritional intervention, medication program and supporting management was documented for both the intervention and control group.

We used blood pressure measurement as the main outcome of this systematic review, which changed after the intervention according to a variation of duration. The methodological quality of the studies was measured according to Cochrane Collaboration's tool for assessing the risk of bias in randomized trials. The biases were classified into six domains: selection, performance, detection, attrition, reporting and other[11]. The risk of bias was independently analyzed by two reviewers for each domain and it was classified as high, low or unclear. Regarding the lowering of the blood pressure, the risk was classified as "low" if the study described the changing process of the intervention.

3. Results

3.6 Literature Search

We conducted an identification of 620 studies through the database searches. Seven duplicate studies were excluded, followed by 572 studies due to non-elderly participants, non-RCT, irrelevant studies and poor study protocols. The 41 eligible studies were assessed and 35 of them were excluded because they were from outside of an Asian country and the outcome was not blood pressure monitoring. The six remaining studies were included in the current systematic review.

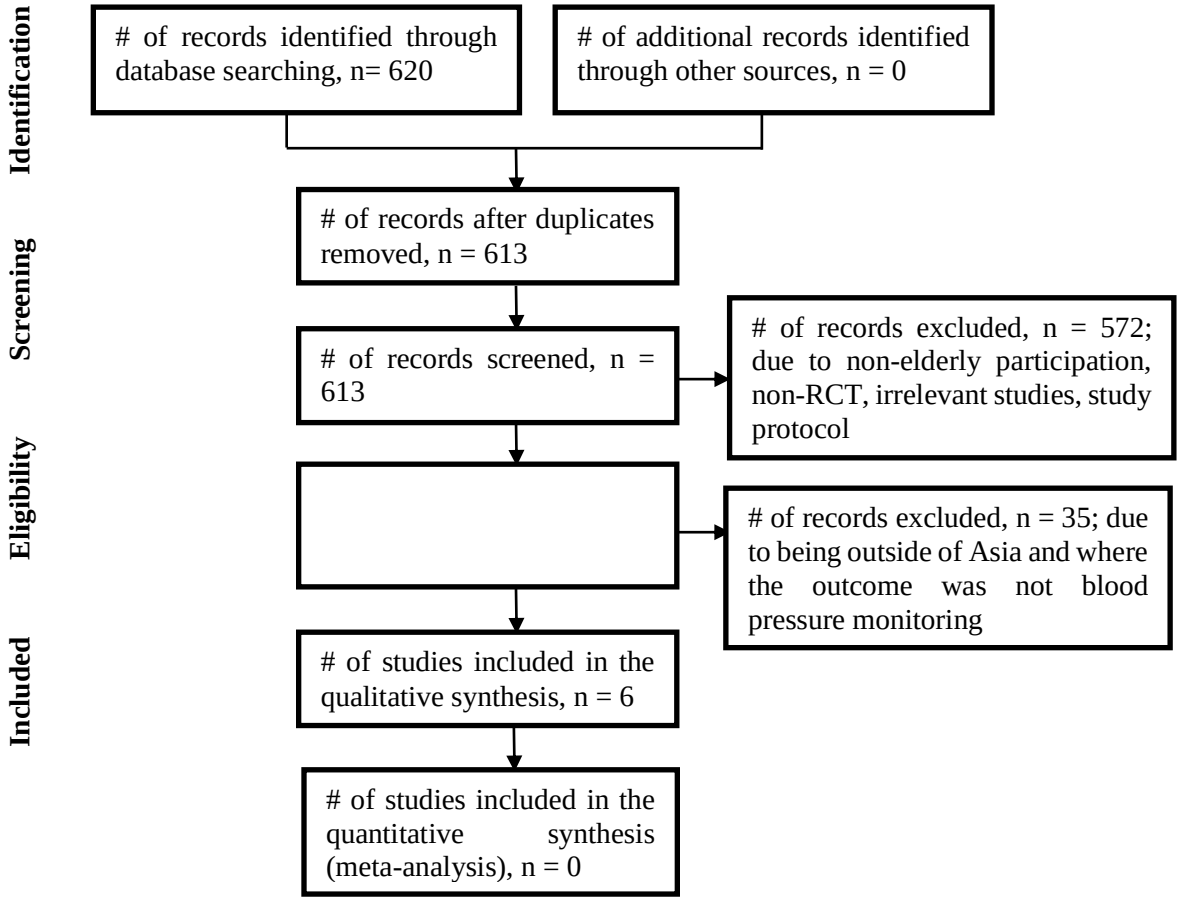

Figure 3. The flow diagram of the literature search used to identify the randomized trials used for evaluating the interventions that successfully lowered the blood pressure of the hypertensive Asian elderly

3.7 Study Characteristics

The total number of participants from the six eligible studies was 537 older adults and elderly with hypertension. Most of the trials were conducted in Asia with one of the outcomes being their blood pressure measurement. Three trials included nutritional interventions, in the form of 300 mg of Nigella sativa seed extract, tomato juice and a low salt diet with potassium. They were conducted for less than 1 month for the hypertensive elderly with a systolic blood pressure >140 mmHg and diastolic >90mmHg. Tomato juice has been effectively proven to lower blood pressure[12]. The dietary intervention of a low salt diet with potassium was also effective at regulating the blood pressure, which is beneficial to enhancing arterial compliance and preventing arterial stiffness. The other studies provided educational and supporting programs to improve the elder's capability of self-reliance in terms of blood pressure management. Table 1 reveals the complete description of the included studies.

Table 2. Characteristics of the studies evaluating the different kinds of intervention that successfully helped the hypertensive elderly

Author, year, location	Design	Duration of trial	Inclusion criteria	Participant	Intervention	Result
Wang, He, Liu, Lin, & Hong, 2017 **China**	A randomized trial	21 days supplementation	Mean systolic BP (SBP) of ≥140 mmHg and/or a mean diastolic BP (DBP) of ≥90 mmHg, or taking one or more antihypertensive medications	44 subjects (38-65 years old) In one group intervention	One group intervention: low-salt diet for 7 days (3.0 g/day of NaCl), a high-salt diet for 7 days (18.0 g/day of NaCl), and then a high-salt diet supplemented with potassium for another 7 days (18.0 g/day of NaCl + 4.5 g/day of KCl)	Potassium consumption combined with a low salt diet is effective at regulating blood pressure and reducing the cardiovascular risk by enhancing arterial compliance
Songthai, Subgranon, Kangchai, & Rosenberg, 2014 **Thailand**	A randomized controlled trial	6 weeks intervention with evaluation in the 4th and 16th weeks	1) Age 60 or older 2) Diagnosed with essential hypertension for at least a year 3) Blood pressure of Grade 1 or 2 4) Understood Thai 5) Possessed normal perceptions of date, time, place and person 6) Able to undertake activities by themselves (based on the Mini-Mental State Examination	81 elderly with hypertension (27 elderly for each group)	Intervention group 1: attended a program of peer-support, self-management led by six of their elderly peers with hypertension Intervention group 2: peer-support, self-	Both interventions resulted in a blood pressure reduction and self-management behavior improvement in the hypertensive older adults which was measured at week 16.

			Thai Version 2002: MMSE-Thai 2002) 7) No persistent disease or disorder that hindered participation in the program (based on Modified Barthel ADL Index: BAI)		management led by six VHVs Control group: none	
Wu et al., 2019 **Taiwan**	A randomized controlled trial	1 month	1) Systolic blood pressure 120–139mmHg or diastolic blood pressure 80–89mmHg 2) HDL-C<40mg/dL for men and<50mg/dL for women 3) Low-density lipoprotein cholesterol (LDL-C) 130–159mg/Dl 4) Triglycerides 150–219mg/dL 5) Cholesterol total200–239mg/dL	84 participants aged > 50 years (43 elderly in the intervention group, 41 elderly in the control group)	Intervention: 2-hour health promotion sessions within 1 month Control: conventional health education	Significant improvements were found in body mass index, systolic and diastolic blood pressure, blood glucose and also HDL-C. Moreover, the improvement of self-efficacy in managing hypertension was also maintained until six months after the intervention
Sabilu, Fachlevi, Saptaputra, &Hidayanty, 2017 **Indonesia**	A randomized controlled feeding design	7 days intervention for each group	1) Elderly hypertension patients who were 60 years of age and older 2) With a systolic BP >140 mmHg or a diastolic BP >90mmHg 3) Were not receiving any antihypertensive drugs 4) Resided in the Kulisusu Public Health Center	28 elderly patients (14 elderly for each group)	Intervention: consumed 1 glass of tomato juice for 7 days Control: nutrition education on a balanced diet for 7 days	The tomato juice taken over 7 days positively affected both the systolic and diastolic blood pressure in the hypertensive elderly

			working area at the time of the study 5) Were willing to participate in the study by providing informed consent 6) Had no co-morbidities.			
Charoensuk, Tansirisithikul, Sakulpipat, Suriyawongpaisal, &Aekplakorn, 2015 **China**	A randomized controlled trial	6 months intervention with an evaluation at 6 and 12months	Patients with systolic BP (SBP) ≥140 mmHg or diastolic BP (DBP) ≥90 mm Hg based on the average of the prior 12 months	224 participants (111 participants in the intervention group and 113 in the control group)	Intervention: self blood pressure monitoring (SBMP) Control: usual care	The SBMP group had a lower blood pressure compared with the usual care group for those aged >60 years. Conversely, no significant effect was found in those aged <60 years
Rizka, Setiati, Lydia, &Dewiasty, 2017 **Indonesia**	A randomized controlled trial	28 days	Patients aged ≥60 years with hypertension (SBP>140 mmHg and or DBP>90 mmHg	76 elderly patients with hypertension (38 participants for each group)	Intervention: capsule consumption containing a dose of 300 mg Nigella sativa extract Control: received a placebo capsule that was the same color	The blood pressure level tended to decrease, but Nigella sativa extract is not yet statistically proven to lower blood pressure

The studies were organized into three types of intervention: nutritional intervention, medication and a management program. Only one study, which was conducted by Wang et al (2017) was not an involved control group. Research by Rizka, Setiati, Lydia, & Dewiasty conducted in 2017 resulted in a blood pressure reduction but this was not statistically significant proven[13].

3.8 Nutritional interventions resulting in blood pressure reduction

The first assessed study involved 21 days of supplementation through a diet combination. This revealed that a low-salt diet (3.0 g/day of NaCl) for the first 7 days of the intervention tended to lower the patient's blood pressure. Furthermore, their blood pressure levels showed a significant incline when the next high-salt diet assessment was performed. Otherwise, it continued to decrease after the intervention changed to a high-salt + potassium supplementation ($p<0.05$). The biochemical result proved that the salt intake affects the serum gastrin levels that are positively correlated with 24 hours of urinary sodium excretion. Gastrin acts as a regulator of the body's sodium balance and blood pressure. On the other hand, a decent potassium intake remarkably alleviates the blood pressure increase that is induced by the high level of dietary salt through inhibiting the sympathetic nerve excitability, salt-induced insulin resistance and oxygen reactive free radical generation. A long duration of potassium supplementation is beneficial concerning arterial stiffness and compliance. The intake of serum gastrin in a high-salt diet was successfully reduced by potassium supplementation[14].

A daily routine involving tomato juice consumption might be one solution as a part of their daily nutrition, easily processed and delicate, aimed to maintain blood pressure in normal range. This non-pharmacological treatment has minimum adverse effects and it contains many natural nutrients such as bioflavonoids, potassium, calcium and fiber. The vulnerable population of the elderly sometimes prefer to choose herbal treatments and to avoid medication. Maintaining essential nutrition in the elderly can help them to maintain their health and prevent complications.

Both of these interventions have proven that potassium is effective at reducing a high blood pressure level in the hypertensive elderly. High potassium consumption is beneficial for lowering the systolic and diastolic blood pressure through the increased concentration of the intracellular fluid which tends to draw fluid from the extracellular compartments. Potassium taken in through the vasodilator action reduces the peripheral resistance which can help to reach normotension. Moreover, it might increase the cardiac output by inhibiting the release of renin[12]. A similar study was conducted in Poland for 4 weeks. It proved that the standardized tomato extract treatment for hypertension has the effect of significant blood pressure reduction and reducing the mean arterial pressure over 24 hours. In addition, pulse pressure also declined in the day time and over 24 hours[15].

The World Health Organization has a promotion program focused on population-level salt reduction which contains three pillars. This includes the reformulation of processed food, consumer awareness and environmental changes in order to increase the availability and affordability of healthy food. The health risks that come from the habitual consumption of excessive salt causes millions of premature deaths annually and this seems to now be a challenge for public health. The lowering salt consumption is an action that is used to save more lives practically with the aim of preventing related diseases, resulting in lower healthcare costs[16]. The World Health Organization also recommends a potassium intake of at least 90mmol/day (3,5g/day) from food in order for adults to reduce their BP

and their risk of cardiovascular disease, cerebrovascular events and coronary heart disease. A regular potassium intake may help people who find it difficult to reduce their sodium intake[17].

3.9 Peer-support in a self-management program resulting in the enhancing of self-management behavior and blood pressure control

The efforts undertaken to enhance the abilities of the elderly through a self-management program has many benefits. The elderly management program for hypertension requires them to have the ability to monitor their blood pressure regularly by themselves. The consensus document, the Improving of Hypertension Management in Asian Patients, was published in AHA journals in 2018. It reported that mask hypertension and mask uncontrolled hypertension were more likely to be diagnosed in Asia than in any other region. Morning blood pressure measurements will hopefully help us to focus on the out-of-office management of hypertension in Asians. The need for home-blood pressure monitoring for hypertensive Asian elderly individuals becomes important because Asians often are associated with a high sodium intake and salt sensitivity[3].

Based on that report, a variety of self-management supports and programs were developed. Several programs have tried to provide knowledge of the illness and problem-solving skills for hypertensive patients. Songthai (2014) tried to prove the effect of peer-support in a self management program which combined the support from the external environment of the elderly and their internal ability to control their blood pressure. The interventions were led by elderly volunteers or by the village health volunteers (VHV's) who were recruited and trained before the intervention. A significant improvement in self-management behavior and blood pressure were proven statistically in the group with elderly volunteers. This proves that support is an antecedent of self-management which corresponds to the conceptual analysis of Udlis (2011). Social and emotional support is needed to succeed in chronic illness management[18].

The first phase of the program was peer-led training which helped the volunteers to get an understanding of the information and emotional support for hypertension management. This phase then continued by exchanging knowledge and behavior (practiced self-management skills) regarding hypertension. After that in weeks 2 to 6, the chance was given to practice self-management by using the hypertension medication, reducing their weight, reducing their alcohol consumption and smoking, increasing their physical activity, relieving stress, adopting the diet recommendations and writing a journal on their home self-management. The last phase was a group visit by the leaders to the group member to exchange knowledge and behaviors, before completing the evaluation[18]. A longitudinal study in 2012 using a multi-component proactive nursing program also proved that a group discussion as part of a home visit as a form of nursing care support can help the elderly to enhance the ability of blood pressure control and a healthy lifestyle[19].

3.10Self-blood pressure monitoring resulting in blood pressure reduction

The skill of self-blood pressure monitoring is required due to the morning hypertension. The morning blood pressure control should be improved with the use of long-acting antihypertensive drugs in appropriate, often full, dosages in the proper combination. In the morning, both ischemic stroke and coronary events often occur. Moreover, the daily blood pressure usually peaks in the morning[3]. Most people do not feel or present with any signs or symptoms. According to the Updated 2014 Eight Joint National Committee (JNC-8) guidelines on hypertension, the recommendation for blood

pressure for the age group >60 years old is less than 150/90 mmHg. The initiation of anti-hypertensive drugs is required if the blood pressure is to remain ≥150/90 mmHg[20].

The effectiveness of self-blood pressure monitoring was proven to lower blood pressure in the elderly. The SBMP group had lower blood pressure compared with the usual care group for ages >60 years. Conversely, no significant effect was found in those aged <60 years. The elderly were trained and observed during the six months of the intervention about how to use a monitor and how to record and interpret their blood pressure result twice a day (concerning their morning and evening blood pressure). For individuals aged ≥60 years, the proportion of those with uncontrolled blood pressure decreased from 90,0% to 38,2% at month 12[21]. The effectiveness of this intervention was also evidenced in the systematic review that revealed that it worked best when combined with more intensive interventions (self-management, systematic medication titration or lifestyle counseling). In addition, it was most effective in those taking less antihypertensive medication and who had a higher baseline systolic blood pressure up to 170mmHg[22].

3.11Health promotion intervention resulting in blood pressure reduction and self-efficacy enhancement

The experimental group received 2-hour health promotion sessions within 1 month that included learning health promotion skills, watching a 30-minute video about hypertension prevention and receiving a booklet to record their blood pressure and other activities. According to The International Partnership in Self-Management and Empowerment, it covered practicing the recommended behaviors, vicarious experiences, verbal persuasion, psychological and emotional self-evaluation. In this study, the participants in the experimental group were empowered to measure their blood pressure by themselves and to maintain their BMI within the ideal range. This was done by choosing healthier foods at home and following their diet plan when they ate out. They believed that medication could control their blood pressure and cholesterol and reduce the likelihood of complications from disease, which increased their level of mastery[23].

This evidence was supported by Haricharan (2017), who proved that health promotions for hypertension using different methods, including via SMS, were also effective at improving knowledge and facilitating healthy living even in deaf hypertensive South Africans[24]. Another article reported that nursing has an important role in health promotion interventions concerning the strategies used to enhance quality of life, health and the participation of hypertensive people in blood pressure control[25]. From the literature review of Asian nursing research, we learned that the areas of health promotion through nursing include the 7 areas of JNC VII which are blood pressure control, weight control, alcohol consumption, physical activity, smoking consumption, adherence to the medication regimen and diet[26].

3.12Methodological Quality Assessment of Studies

Cochrane Collaboration's tool for assessing risk of bias in randomized trials was used to assess the risk of bias of both studies[11]. Six studies were assessed to judge the studies based on their bias characteristics. The complete assessment of the studies is in Table 2.

Table 3. Assessment of the methodological quality or risk of bias item for each included study

Three out of the six included studies meet all of the criteria of bias[13,18,23]. Only one study presented with a high risk of bias in the blinding aspects[21] and two studies showed as having unclear criteria[12,14]. All of the studies were successfully assessed according to the results of the blood pressure measurement after the interventions were given.

	Selection bias		**Performance bias**	**Detection bias**	**Attrition bias**	**Reporting bias**	**Other bias**
	Random sequence generation	Allocation concealment	Blinding of the participant and personnel	Blinding of the outcome assessment	Incomplete outcome data	Selective reporting	Blood pressure
Wang, 2017	?	?	-	-	-	-	-
Songthai, 2014	-	-	-	-	-	-	-
Wu , 2019	-	-	-	-	-	-	-
Sabilu, 2017	-	-	?	-	-	-	-
Charoensuk, 2015	-	-	-	+	-	-	-
Rizka, 2017	-	-	-	-	-	-	-

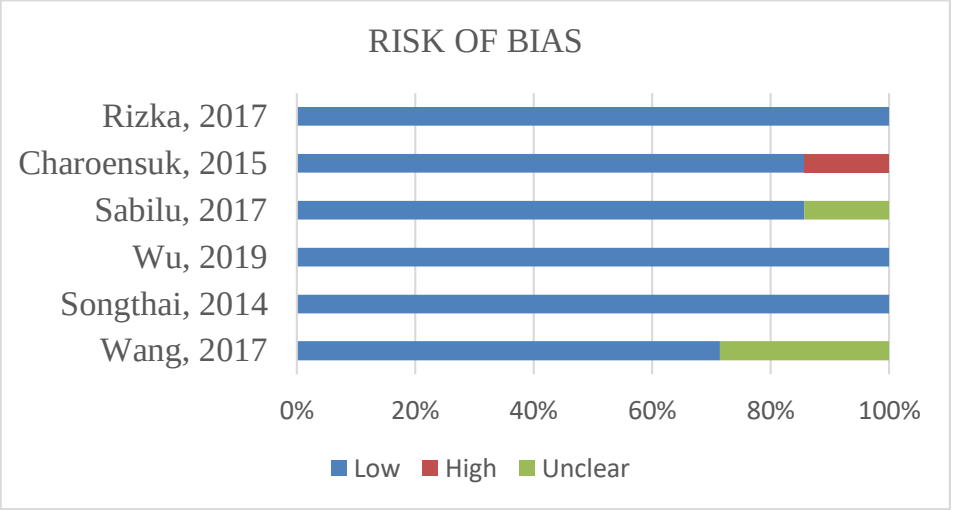

Figure 4. Risk of bias in the included studies

4. Discussion

Major interventions of hypertension highlight the interventions used to reduce blood pressure. The Joint National Committee (JNC) has updated guideline (JNC-8) recommendations concerning hypertension. It is known as the silent killer because it typically has no warning signs or symptoms even when hypertensive people have a dangerously high blood pressure level. It may result in brain damage as a predictor of aneurysm or stroke. Based on this situation, JNC have first and second- line treatment when it comes to medication utilization. Malfunctions in angiotensin and aldosterone, as well as disturbances in the electrolytes, may be controlled by applying a well-balanced diet, exercising and maintaining a healthy weight[5]. In the elderly with many dysfunctions and complications, it may help them to achieve their blood pressure goals with minimum medical intervention.

Based on the consensus of Asian hypertension, the characteristic of the Asian population is that it is aging rapidly. They have a larger diameter and thinner media of the proximal aorta that modulates the interaction between ventricular ejection and arterial load. Moreover, they have a smaller stature and may have greater wall stress and stiffness in the proximal aorta. Consequently, these conditions may have a greater significance on the hypertension outcomes of Asian patients than in other regions[3]. Especially in the senior population, an analysis in Japan revealed that the use of antihypertensive medication and a certain level of compliance is necessary when seeking to achieve the target blood pressure even when there is another risk condition (i.e. chronic kidney disease)[27].

4.3 Summary of findings

Three aspects which play an important role in blood pressure reduction are nutrition management, medication adherence and supporting management. Nutritional management includes salt restriction and potassium supplementation to balance the nutrition and to control the blood pressure[12,14]. Not only diet management, but the natural nutrition also needs to support the elderly with less medication program compliance. The consumption of tomato juice which contains many important nutrients may help them to regulate their blood pressure using natural ingredients.

Hypertensive Asian elderly have a lot of physical impairments that may affect their ability to self-manage their blood pressure. Therefore, the support of a peer group or health care provider is needed

to help them to solve the physical or psychological problems and limitations. Their impairments need evaluation and prevention to reduce the risk of complications without any prejudice regarding their basic ability in terms of hypertension management. The elderly have the potential to act as an active person by applying self-monitoring blood pressure as an effort to prevent hypertension even without signs and symptoms appearing. It may benefit if they received appropriate training and health education[18,21,23].

4.4 Implication for research

Nutrition management, adherence to the medication recommendations and management support have an essential role in maintaining quality of life and a healthy lifestyle, resulting in the lowering of the cardiovascular risk. As far as we know, an excess of salt/sodium consumption increases the blood pressure by fluid retention. Hypertension is a modifiable cause of mortality worldwide due to poor blood pressure control. The control will get hard and the prevalence will increase with age. Optimal blood pressure needs the role of system, physician and patient together to achieve blood pressure goals[28].

Several factors contribute to the current hypertension burden in Asia, such as a high salt intake with high salt sensitivity and an epidemic of obesity. Therefore, home blood pressure monitoring (HBPM) is required to obtain reliable blood pressure recording resulting in better blood pressure control. The review of the HOPE Asia (Hypertension, Cardiovascular outcome Prevention and Evidence in Asia) Network has been reviewed, presenting data about the current utilization of HBPM in Asia. The success of HBPM application among hypertensive Asians is challenging due to limitations such as cost constraints, a lack of understanding and training on how to use the devices by patients and the absence of formal recommendations on HBPM in the national guidelines[29].

4.5 Limitations of the findings

Both of the studies reveal the outcome of the assessed blood pressure level, which mostly declined after the interventions despite the method and tools being different in each study. This may cause there to be different standards of assessment in the blood pressure report and monitoring, resulting in making it difficult to classify them into the same result category.

5. Conclusion

This systematic review has found there to be limited evidence from randomized trials that have categorized one kind of specific interventions. Further research is needed to assess the specific proven interventions by using a qualitative method to explore the benefits and difficulties related to applying the intervention based on the preferences of the elderly, especially in Asia.

References

[1] Damasceno A, Mondlane E and Africa S 2016 Prevalence and management of hypertension in Southest Asia *Spec. Satell. Symp. 05***17**

[2] Yang Z-Q, Zhao Q, Jiang P, Zheng S-B and Xu B 2017 Prevalence and control of hypertension among a Community of Elderly Population in Changning District of Shanghai: A cross-sectional study *BMC Geriatr.***17**

[3] Kario K, Chen C H, Park S, Park C G, Hoshide S, Cheng H M, Huang Q F and Wang J G 2018 Consensus document on improving hypertension management in asian patients, taking into

account asian characteristics *Hypertension***71** 375–82

[4] Virdis A, M. Bruno R, Fritsch Neves M, Bernini G, Taddei S and Ghiadoni L 2011 Hypertension in the Elderly: An Evidence-based Review *Curr. Pharm. Des.***17** 3020–31

[5] Bell K, Candidate P and Olin B R 2015 *Hypertension: The Silent Killer: Updated JNC-8 Guideline Recommendations* (United States of America)

[6] Jin C-N, Yu C-M and Sun J-P 2013 The healthcare burden of hypertension in Asia *Heart Asia***5** 238–43

[7] Sinclair A J, Morley J E and Vellas B 2012 *Pathy's Principles and Practice of Geriatric Medicine* (United Kingdom: John Wiley & Sons)

[8] Kemenkes RI 2018 *Hasil Utama Riskesdas 2018* (Jakarta)

[9] Kemenkes RI 2016 *Profil penyakit tidak menular tahun 2016* (Jakarta)

[10] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration *J. Clin. Epidemiol.***62** e1–34

[11] Higgins J P T, Altman D G, Gøtzsche P C, Jüni P, Moher D, Oxman A D, Savovic J, Schulz K F, Weeks L, Sterne J A C, Cochrane Bias Methods Group and Cochrane Statistical Methods Group 2011 The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *BMJ***343** d5928

[12] Sabilu Y, Fachlevi A F, Saptaputra S K and Hidayanty H 2017 Tomato Juice (Lycopersicum commune) Reduces Blood Pressure in Elderly Hypertensive Indonesians in Kulisusu , North Buton *Asian J. Clin. Nutr.***9** 11–117

[13] Rizka A, Setiati S, Lydia A and Dewiasty E 2017 Effect of Nigella sativa Seed Extract for Hypertension in Elderly: a Double-blind, Randomized Controlled Trial *Acta Med. Indones.***49** 307-313

[14] Wang Y Y, He W W, Liu Y C, Lin Y F and Hong L F 2017 The effect of salt intake and potassium supplementation on serum gastrin levels in Chinese adults: A randomized trial *Nutrients***9**

[15] Osiński M, Rzymski P, Osińska A, Krasiński Z, Krasińska A, Tykarski A and Krasińska B 2017 Favourable hypotensive effect after standardised tomato extract treatment in hypertensive subjects at high cardiovascular risk: a randomised controlled trial *Kardiol. Pol.***76** 388–95

[16] World Health Organization 2016 *The SHAKE Technical Package for Salt Reduction* (Switzerland: World Health Organization)

[17] J. P, F. Z, A.R. S, V. S, E. H and A. M 2017 Oral potassium supplementation for management of essential hypertension: A meta-analysis of randomized controlled trials *PLoS One***12** 1–16

[18] Songthai N, Subgranon R, Kangchai W and Rosenberg E 2014 Effects of peer-support, self-management program on self-management behavior and blood pressure of older adults with essential hypertension *Chiang Mai Univ. J. Nat. Sci.***13** 371–82

[19] Petsirasan R and Sasat S 2012 Effect of a multicomponent proactive nursing program on blood pressure control at a 6-month follow up among hypertensive older persons in community *J Heal. Res***26** 229–31

[20] Stergiou G S and Ntineri A 2015 The optimal schedule for self-home blood pressure monitoring *J. Hypertens.***33** 693–7

[21] Charoensuk P, Tansirisithikul R, Sakulpipat T, Suriyawongpaisal P and Aekplakorn W 2015 Effectiveness of Self-Monitoring Blood Pressure in Primary Care *J. Prim. Care Community Health***7** 58–64

[22] Tucker K L, Sheppard J P, Stevens R, Bosworth H B, Bove A, Bray E P, Earle K, George J, Godwin M, Green B B, Hebert P, Hobbs F D R, Kantola I, Kerry S M, Leiva A, Magid D J, Mant J, Margolis K L, McKinstry B, McLaughlin M A, Omboni S, Ogedegbe O, Parati G, Qamar N, Tabaei B P, Varis J, Verberk W J, Wakefield B J and McManus R J 2017 Self-monitoring of blood pressure in hypertension: A systematic review and individual patient data meta-analysis ed K Rahimi *PLOS Med.***14** e1002389

[23] Wu M P, Wu S F V, Lee M C, Peng L N, Tsao L I and Lee W J 2019 Health-promotion interventions enhance and maintain self-efficacy for adults at cardiometabolic risk: A randomized controlled trial *Arch. Gerontol. Geriatr.***82** 61–6

[24] Haricharan H J, Heap M, Hacking D and Lau Y K 2017 Health promotion via SMS improves hypertension knowledge for deaf South Africans *BMC Public Health***17** 1–17

[25] Gomes Guedes N, Moreira R P, Cavalcante T F, Leite De Araujo T, Venicios M, Lopes O, Ximenes L B, Francenely N and Vieira C 2012 Nursing interventions related to health promotion in hypertensive patients *Acta Paul Enferm***25** 151–6

[26] Hong W-H S 2010 *Evidence-based Nursing Practice for Health Promotion in Adults With Hypertension: A Literature Review* vol 4 (Korea)

[27] Hatori N, Sakai H, Sato K, Miyajima M, Yuasa S, Kuboshima S, Kajiwara K, Hara Y, Minamizawa K and Miyakawa M 2016 A survey of actual clinical practice concerning blood pressure control among patients with hypertension in Kanagawa 2014 *J. Nippon Med. Sch.***83** 188–95

[28] Alhawassi T M, Krass I and Pont L G 2017 Prevalence, management and control of hypertension in older adults on admission to hospital *Saudi Pharm. J.***25** 1201–7

[29] Chia Y C, Buranakitjaroen P, Chen C H, Divinagracia R, Hoshide S, Park S, Shin J, Siddique S, Sison J, Soenarta A A, Sogunuru G P, Tay J C, Turana Y, Wang J G, Wong L, Zhang Y and Kario K 2017 Current status of home blood pressure monitoring in Asia: Statement from the HOPE Asia Network *J. Clin. Hypertens.***19** 1192–201

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FACTORS AFECTING WOMEN'S INTENTION TO PERFORM EARLY DETECTION OF CERVICAL CANCER: INTEGRATION OF THEORY OF PLANNED BEHAVIOR AND PROTECTION MOTIVATION THEORY

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ABSTRACT

Cervical cancer often occurs in developing countries. Early detection is one of the prevention efforts to reduce the incidence of cervical cancer. Intention is related to the behaviour of early detection of cervical cancer. This study aims to identify factors that influence women's intention to detect cervical cancer through the integration of the theory of planned behaviour and protection motivation theory. This research was cross sectional study and the sample was obtained from two working areas of community health center in Jember City, Indonesia, with 200 women aged 30-50 years. The sampling technique was simple random sampling. The result showed that attitude variables have a significance value (p=0.003), subjective norm (p=0.0019), perceived behavioral control (p=0.000), perceived vulnerability (p=0.000), perceived severity (p=0.004) and perceived reward (p=0.001). The most dominant factor of influence was the perceived vulnerability with t value is 3.865 and beta coefficient 0.212. The study showed that attitudes, subjective norms, perceived behavioural control, perceived vulnerability, perceived severity, perceived reward have a positive influence on intention. Continuing efforts are needed by women, especially interventions that aim to increase the factors that shape women's intention to make early detection of cervical cancer

Keywords: intention, early detection, cervical cancer

1. Introduction

Cervical cancer is a disease that attacks women. It is the highest cause of death among women [2]. The International Agency for Research on Cancer (IARC) at the WHO (World Health Organization) in 2014 found as many as 14 million new cancer cases and 9% of them were cervical cancer. The WHO issued a resolution in 2005 that asked for priority in the cooperation related to developing cancer control programs. This program aimed to reduce the incidence and mortality of cancer patients [3]. One of them was performing the early detection of cervical cancer [4]. The early detection of cervical cancer has been improved in several developing countries over the recent decades. This experience indicates that good planning and the good organization of the early detection of cervical cancer will decrease the incidence of new cervical cancer. It is associated with a decrease in the mortality rate of women with cervical cancer.

Indonesia is one of the developing countries with the number of cervical cancer sufferers in 2013 being many as 98,692 people with the biggest total number of sufferers of cervical cancer after China [5]. East Java is the province in Indonesia with the highest number of cervical cancer sufferers, reaching 21,313 people[1]. Jember Regency is one of the districts in the East Java Province that has experienced an increase in the number of cervical cancer patients from 2015 to 2017. The Indonesian

government established a program named "The Acceleration of Community Participation in the Prevention and Early Detection of Cancer in Indonesian Women for the period 2015-2019". This program had a target consisting of women aged 30-50 years old [6]. The coverage of the early detection of cervical cancer in 2017 reached 2.98%. This needs to be improved considering that the achievement of the national target is 10% of women aged 30-50 years old performing the early detection of cervical cancer every year.

Improving the behavior of the early detection of cervical cancer in a community is an important strategy to control the incidence of cervical cancer. Therefore we need to understand the factors that are related to performing the early detection of cervical cancer. One of the factors that is related to performing the early detection of cervical cancer is intention [3]. The intention to perform cervical cancer screening by women in Uganda is associated with income, knowledge and cervical screening status before[20]. The Theory of Planned Behavior (TPB) and Protection Motivation Theory (PMT) are social theories of cognition that discuss intention [7]. The study used TPB and as a result, attitude and perceived behavioral control from TPB were found to be significant predictors of the intention to screen for human papillomavirus related to cervical cancer screening with an extended interval[21]. PMT also identified, through another study, that perceived vulnerability and perceived severity were significantly associated with screening intention in rural Chinese women. There has been no study previously that has identified the factors related to the women's intention to perform the early detection of cervical cancer based on TPB and PMT in Indonesia. Therefore, this study aims to identify the factors that are related to the women's intention to perform the early detection of cervical cancer based on the Theory of Planned Behavior and Protection Motivation theory.

2. Research Method

2.1 Research Design

This research was a cross-sectional study using primary data. The data collection was during February 2019. The independent variables in this research were attitudes, subjective norms, perceived behavioral control, perceived vulnerability, perceived severity and perceived rewards. The dependent variable was the intention to perform the early detection of cervical cancer.

2.2 Populations and Sample

The population consisted of women aged 30-50 years registered in two community health center working areas in Jember Regency, East Java, Indonesia. The simple random sampling technique was used to find the respondents in two community health center working areas. The sample size of this study was 200 women. The inclusion criteria was (1) women who had been married or who had ever married for more than 3 years, (2) women who can communicate with oral and written, (3) women who can understand Indonesian. Exclusion criteria are (1) women diagnosed with cervical cancer (2) women with mental disorders.

2.3 Research Instrument

The research instrument used a questionnaire consisting of attitude, subjective norms, perceived behavioral control, perceived vulnerability, perceived severity, perceived rewards and the intention to perform the early detection of cervical cancer. The questionnaire was modified from Kim's cervical cancer TPB questionnaire [8]. The researcher made modifications in the form of adding question

items based on TPB [7] and translating it into Indonesian. The questionnaire about perceived vulnerability, perceived severity and perceived rewards was arranged based on Protection Motivation Theory[7]. The questionnaire consisted of 48 questions in total. There were favorable and unfavorable questions. The choice of answers used a Likert scale (strongly agree, agree, disagree and strongly disagree). All of the variable were derived from one of two categories; good and deficient. It could be in the good category if T≥T mean for the data and it was in the deficient category if T<T mean data. The scale of the data used was an interval.

The attitude questionnaire consisted of 6 questions, while subjective norms had 6 questions, perceived behavioral control had 16 questions, perceived vulnerability had 6 questions, perceived severity had 5 questions, perceived reward had 4 questions and the intention to perform the early detection of cervical cancer had 5 questions. The validity and reliability tests were conducted on 25 respondents. The test was carried out in the working area of the community health center that had similar characteristics with the place of research. The respondents of the validity and reliability test were women who were not the subjects of the main research. The analysis of the validity test used Pearson's product moment with a ρ value of 0.05 and r = 0.396 for N=25. All of the items were found to be valid questions because the r value was more than 0.396. The reliability test used Cronbach's alpha. The question was reliable if Cronbach's alpha was more than 0.65. The value of Cronbach's alpha of the attitude variable was 0.883, while subjective norms was 0.949, perceived behavioral control was 0.883, perceived vulnerability was 0.855, perceived severity was 0.949, perceived reward was 0.683 and intention was 0.880. It can be concluded that all of the items are reliable.

2.4 Data Analysis

Multiple linear regression analysis was used in this research to identify the factors related to the women's intention to perform the early detection of cervical cancer. The results can be concluded if ρ<0.05, which means that there is relation between two variables. The t test was used to determine the most dominant factor related to the women's intention to perform the early detection of cervical cancer. The results can be concluded using the biggest T statistic. All of the data was analyzed using SPSS 16.0

2.5 Ethical approval

All of the procedures of this study received a certificate of approval from the Health Research Ethics Commission (KEPK) of Airlangga University Surabaya registration number NO. 1295-KEPK.

3. Result

The data in this research was normally distributed. The normality test used the one sample Kolmogorov-Smirnov test on the unstandardized residuals with a significance value (ρ = 0.556). Table 1 describes the respondent's characteristic in this research. Most of the respondents were ages 30-39 years old (61%), had an income less than the regional minimum wage (54.5%) and were Javan (50.5%). Table 2 describes the results of the distribution frequency of the independent and dependent variables. Most of the respondent had a deficient attitude (61%), deficient subjective norm (53%), deficient perceived behavioral control (59%), deficient perceived vulnerability (60.5%), deficient perceived severity (53.5%) and good perceived reward (59%). The intention to perform the early detection of cervical cancer was in the good category by 58% and deficient category by 42%.

Table 1. Distribution Frequency of the Respondent's Characteristic

Characteristic	Frequency	Percent
Ages		
30-39	122	61%
40-50	78	39%
Income		
<Regional minimum wage	109	54.5%
> Regional minimum wage	91	45.5%
Ethnicity		
Java	101	50.5%
Madura	99	49.5%

Table 2. Distribution Frequency of Independent and Dependent Variables

Variable	Category	Frequency	Percent
Attitude	Good	78	39%
	Deficient	122	61%
Subjective norm	Good	94	47%
	Deficient	106	53%
Perceived behavioral control	Good	82	41%
	Deficient	118	59%
Perceived vulnerability	Good	79	39.5%
	Deficient	121	60.5%
Perceived severity	Good	93	46.5%
	Deficient	107	53.5%
Perceived reward	Good	118	59%
	Deficient	82	41%
Intention	Good	116	58%
	Deficient	84	42%

Table 3. The Summary of the Multiple Linear Regression Analysis

Variable	Correlation value	Coefficient Beta	T Statistic (*N*=200, *df*=193)	Sig.
Intention [a]				
Attitude	0.565	.205	2.994	.003
Perceived behavioral control	0.515	.198	3.110	.002
Perceived vulnerability	0.429	.212	3.865	.000
Subjective norm	0.468	.143	2.358	.019
Perceived severity	0.431	.166	2.956	.004
Perceived reward	0.379	.174	3.257	.001

[a] Dependent Variable: intention

The results of the multiple linear regressions analysis have been captured in Table 3. All of the variables have a positive correlation to the women's intention to perform the early detection of

cervical cancer. The attitude variable has a correlation value of 0.565, while subjective norm is 0.468, perceived behavioral control is 0.515, perceived vulnerability is 0.429, perceived severity is 0.431 and perceived reward is 0.379. All of the variables are significant. This can be seen from the ρ value being less than 0.05: the attitude variable (ρ = 0.003), subjective norm (ρ = 0.019), perceived behavioral control (ρ = 0.002), perceived vulnerability (ρ = 0.000), perceived severity (ρ = 0.004) and perceived reward (0.001) all indicate this. Table 3 shows that all of the variables have a T statistic greater than the T table. The value of the T table for df 193 is 1,653. The biggest value for the T statistics was perceived vulnerability at 3.865 with a β coefficient of 0.212. This shows that perceived vulnerability is the dominant factor related to the women's intention to perform the early detection of cervical cancer.

4. Discussion

The Theory of Planned Behavior explains that intention was influenced by three aspects: attitude toward behavior, subjective norms and perceived behavioral control [9][10]. This research showed that attitude toward behavior, subjective norms and perceived behavioral control are related to the women's intention to perform detection cervical cancer early. There are three aspects related to the individual beliefs: behavioral beliefs, normative beliefs and behavioral control beliefs. This is in accordance with the previous research explaining that one's beliefs about their health make the individuals participate in more in the early detection of disease [11]. The same study explained that strong subjective norms encourage individuals to perform early detection regularly [9]. The behavior of the early detection of cervical cancer was not already being done, but it was also related to regularity in performing the early detection of cervical cancer. Family, peer and health care support has a significant influence on women's regularity in terms of the early detection of cervical cancer. A positive attitude towards the early detection of cervical cancer was one aspect of a woman's early detection of cervical cancer [12]. A positive attitude can be shown when the women have beliefs about the benefits of the early detection that has been done. The early detection of cervical cancer can provide an earlier picture of the arrival of cancer cells so then action can be taken immediately before the cancer cells expand throughout the body [13].

Perceived behavioral control showed the presence of both inhibiting factors and driving factors as felt by individuals when it came to performing the early detection of cervical cancer. This is in accordance with the previous research which explained that cost is a limiting factor for women in Hong Kong when it comes to the HPV vaccines and the early detection of cervical cancer [13]. The male sex of the examiner was one of the inhibiting factors in terms of conducting the early detection of cervical cancer. Previous research on female inhibiting factors in terms of the early detection of cervical cancer explained that culture and religion are the barriers to the early detection of cervical cancer [14], especially when the early detection is carried out by male doctors [15]. The driving factors included feeling comfortable and finding it easy to consult regarding the health of their reproductive organs with the health workers, convenient access to the health services, self-confidence in the early detection of cervical cancer and the women's concern for the health of their reproductive organs. The previous research explained that one's self-confidence in the early detection of cervical cancer is an important factor when building the intention to detect cervical cancer early [11]

Protection Motivation theory is a social theory of cognition formulated by Roger in 1975 [7]. This theory explains that intention is formed by a threat appraisal which consisted of perceived vulnerability, perceived severity and perceived reward. This research explained that the three factors

had an effect on the women's intention to perform the early detection of cervical cancer. The perceived vulnerability factor was the most dominant factor besides attitude, subjective norms, perceived behavioral control, perceived severity and perceived reward. This was in accordance with the previous research which explained that perceived vulnerability shaped fear, so it encouraged them to take self-protection measures by performing the early detection of cervical cancer[16]. Research on women in Iran also explained that the women's perceptions of cancer shaped them when it came to taking protective measures [17]. This is in accordance with the previous studies indicating that the women's perceptions of the risk of cervical cancer affects the behavior related to the early detection of cervical cancer [19]. The perception of reward was also related to the women's intention to perform detection cervical cancer early. The perception of reward intends to induce an intrinsic reward and an extrinsic reward was obtained when they did not perform the early detection of cervical cancer. Based on the results of the research, it can be seen that the perception of reward was mostly in the good category. This showed that the reward when not perform the early detection of cervical cancer was lacking.

5. Conclusion

This research clearly illustrates that women with a positive attitudes towards the early detection of cervical cancer, the subjective norms, perceived behavioral control, perceived vulnerability, perceived severity and perceived reward will have good intentions when it comes to performing the early detection of cervical cancer. Continuing this line of research is needed with more respondents in order to identify the factors that influence the formation of attitudes, subjective norms, perceived behavioral control, perceived severity, perceived vulnerability and perceived reward. The women also need an intervention to increase the intention to perform the early detection of cervical cancer. The limitations of this study were related to collecting the data. The data taken was primary data based on a cross-sectional study so the relations between the variables were not clearly illustrated and the results thus need to be interpreted with caution.

References

[1] Bardají A, *et al*2018 Awareness of cervical cancer and willingness to be vaccinated against human papillomavirus in Mozambican adolescent girls Azucena*Papillomavirus Research***5:** 156-162

[2] Larasati L, Afiyanti Y, Rahmah H andMilanti A2018 Women's knowledge, beliefs, and behaviors toward the prevention of human papillomavirus transmission*Enferm Clin.* **28**:191–4

[3] Gu C, Chan CWH, Chow KM, Yang S, Luo Y, Cheng H andWang H2018Understanding the cervical screening behaviour of Chinese women : The role of health care system and health professions*Applied Nursing Research***39**:58–64

[4] Forman D, *et al*2018Time for a European initiative for research to prevent cancer : A manifesto for Cancer Prevention Europe (CPE)*J. Cancer Policy***17**:15–23

[5] Badan Penelitian dan Pengembangan Kesehatan2013*Riset Kesehatan Dasar (RISKESDAS)*. (Jakarta:Kementrian Kesehatan Republik Indonesia) pp1–384

[6] Komite Penanggulangan Kanker Nasional 2017 *Pedoman Nasional Pelayanan Kedokteran*(Jakarta: Kementerian Kesehatan Republik Indonesia)pp1-59

[7] Conner M and Norman P2005*Predicting Health Behaviour 2nd.*ed Conner M and Norman P

(London: Open University Press)pp 81-126, pp 170-223

[8] Kim HW2014 Awareness of pap testing and factors associated with intent to undergo pap testing by level of sexual experience in unmarried university students in Korea : results from an online survey*BMC Women's Health* **14**: 1–13

[9] Kahn JA, Goodman E, Slap GB, Huang B and Emans SJ 2015 Intention to return for papanicolaou smears in adolescent girls and young women *Pediatrics***108**: 333-41

[10] Ajsen I2005*Attitude, Personality, and Bahavior*(Buckingham: Open University Press)

[11] Gu C, Chan CWH, Twinn S and Choi KC2011The influence of knowledge and perception of the risk of cervical cancer on screening behavior in mainland Chinese women*Psycho-Oncology***21**: 1299-1308

[12] Perng P, Perng W, Ngoma T, Kahesa C, Mwaiselage J, Merajver D and Soliman AS2013Promoters of and barriers to cervical cancer screening in a rural setting in Tanzania*International Journal of Gynecology and Obstetrics***123**:221–5

[13] Visanuyothin S and Chompikul J2015 Determinants of cervical cancer screening adherence in urban areas of Nakhon Ratchasima Province , Thailand*J. Infect Public Health***8**:543–52

[14] Wang LD, Wing W, Lam T and Fielding R2015Cervical cancer prevention practices through screening and vaccination : A cross-sectional study among Hong Kong Chinese women*Gynecol. Oncol*. **138**:311–6

[15] Ganle JK, Otupiri E, Parker M and Fitzpatrick R2015 Socio-cultural barriers to accessibility and utilization of maternal and newborn healthcare services in Ghana after user-fee abolition*International Journal of Maternal and Child Health***3**: 1-14

[16] Wong Y, Chinna K, Mariapun J and Shuib R 2013 Correlates between risk perceptions of cervical cancer and screening practice*Prev. Med.* **57**:S24–6

[17] Khazaee-pool M, Yargholi F, Jafari F and Ponnet K2018 Exploring Iranian women's perceptions and experiences regarding cervical cancer-preventive behaviors*BMC Women's Health* **145**: 1–14

[18] Refaei M, Nayeri ND and Khakbazan Z2018Exploring Effective contextual factors for regular cervical cancer screening in iranian women : A qualitative study*Asian Pac. J. Cancer Prev*. **19**:533-9

[19] Williams M, Kuffour G, Ekuadzi E, Yeboah M, Elduah M and Tuffour P2013Assessment of psychological barriers to cervical cancer screening among women in Kumasi, Ghana using a mixed methods approach*African Health Sciences***13**: 1053-61

[20] Ndejjo R, Mukarna T, Musinguzi G, Halage AA, Ssempebwa JC and Musoke D Women's intention to screen and willingness to vaccinate their daughters against cervical cancer- a cross sectional study in eastern uganda *BMC Public Health***17**: 255

[21] Ogilvie GS, Smith LW, Niekerk D, Khurshed F, Pedersen HN, Taylor D, Thomson K, Greene SB, Babich SM, Fanco EL and Coldman AJ Correlates of women's intention to be screened for human papillomavirus for cervical cancer screening with an extended interval *BMC Public Health***16**: 213

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EFFECTIVENESS OF DEPRESSIVE THERAPY ON SUICIDAL IDEATION IN DEPRESSION PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Suicidal behavior is one of the health problems for all of age groups of humans. Depression therapy can be used to prevent the emergence of suicidal ideas and reduce risk of suicide. This objective of this review was to explain the effectiveness of depressive therapy to decrease of suicidal ideas based on various studies. This systematic review in line with PRISMA guidelines. Data retrieved from the ProQuest, Scopus, ScienceDirect, EBSCO, and PubMed databases. Articles pre-identified by using relevant keywords. Tweleve of about 240 articles both meet inclusion and exclusion criteria and were reviewed. The selection of articles using the following criteria: (1) Published between the years 2012-2018; (2) nursing journal area and Psychology; (3) Article using English language; (4) Randomized Control Trial. The depresive therapies that found in these studies were CBT, IPT, DBT, CBFT, MBCT, and ACT The results of this review indicate that CBT is one of the most effective therapies for dealing with suicidal ideation. CBT consist of counseling therapy discussing negative thoughts and negative distortions, sessions in CBT can reduce the impulsive and destructive stimulation that causes suicide ideas can reduce suicidal ideation.

Keywords: suicidal ideation, self harm, depressive therapy, treatment

1. Introduction

Suicidal ideas are a process that goes through the mind without the person taking action. A person will not reveal their idea of committing suicide if it is suppressed [1]. Suicidal ideas are a major risk factor for suicidal behavior in depressed individuals [2,5]. The relationship between depression, suicidal behavior and suicidal ideas is strongly related. More than half of the patients with Major Depressive Disorder (MDD) have suicidal desires and persistent suicidal thoughts. This is supported by the different psychological factors of each individual who is depressed [5].

Depression is involved in 59-87% of suicidal ideas and it is associated with an increase in the risk of suicide by 20 times. Suicide is estimated to have reached a rate of 800,000 cases every year. If depression is handled well, then there will be a 50-80% reduction in suicidal ideas[10]. In other studies, they said that suicide has continued to be a continuing public health problem around the world. More than one million people die of suicide every year and rates have increased by 60% in several countries over the past 45 years [16].

To reduce the risk of the idea of suicide and to reduce the number of suicides, suicide management based on therapy for depression should be a fundamental component of suicide prevention[10]. The management of suicide can be done through the use of psychopharmaceuticals

and psychotherapy. The aim of this form of management was to suppress the idea of suicide and to avoid suicidal behavior[3]. Psychotherapy consisted of 'treatment' OR 'CBT ' OR 'IPT' OR 'DBT' OR ‘CBFT' OR 'MBCT' OR 'ACT'. Journal searches were carried out on the database, with the limitation on the journal results being the year of publication being restricted from 2013 – 2019. They were focused on the nursing and psychology areas, as well as the journals that were in English. When searching using the keywords above with the restrictions used, 240 relevant journals were obtained and then a selection was made; 16 appropriate journals were decided. The 16 journals were reviewed using a randomized control trial. The RTC design was used to determine the effectiveness of the interventions used in the studies.

2. Method

2.1. Protocol

This systematic review was conducted using the procedures outlined in the Preferred Reporting Items for Systematic-Reviews (PRISMA).

2.2. Eligibility criteria

The journal articles were published in English from January 2013 through to January 2019. The search strategy used the PICOS framework to identify the keywords.

2.3 Search Strategy and selection of studies

The preparation of this systematic review began with the selection of the topics after which the keywords were determined. The keywords used were 'suicidal' OR 'self-harm' OR 'self-injury' AND/OR 'treatment’ OR ‘therapy CBT' OR 'IPT' OR 'DBT' OR ‘CBFT' OR 'MBCT' OR 'ACT’. The journal searches were conducted on the ProQuest, Scopus and ScienceDirect databases. We limited the results of the journals according to the year, with the restricted journal publications being from 2013-2018 focused on nursing journals and psychology in the English language. By searching using the keywords above with the restrictions used, 240 relevant journals were obtained. Following this, a selection was made and 16 appropriate journals were decided. The 16 journals were reviewed using the research design of a Randomized Control Trial.

2.4 Types of studies

This systematic review aims to explain the effectiveness of depressive therapy to decrease suicidal ideas based on various studies. Randomized controlled trial studies (RCTs) were used in this review.

2.5 Inclusion and exclusion criteria

The inclusion criteria for this article were articles that used English and that explained the program or effectiveness of depression therapy for suicidal ideation in depressed patients. Articles were excluded if the study did not use a randomized control trial (RCT).

2.6 Population, Interventions, Comparators, Outcomes and Study design (PICOS)

Population: the study population ranged from children through to adults with mild depression. The interventions were in the form of depression therapy including Cognitive Behavior Therapy (CBT), Interpersonal Therapy (IPT), Dialectical Behavior Therapy (DBT), Cognitive-Behavioral Family

Treatment (CBFT), Mindfulness-Based Cognitive Therapy (MBCT) and Acceptance and commitment therapy (ACT). These were used as suicidal therapies that can suppress the idea of suicide and reduce the risk of suicide as well.

Comparison: the participants were randomized to at least one control group with non-intervention conditions. For example, the wait list control group. For the output, there was both pre-and post-intervention data for the interventions and controls for one or more of the outcomes related to depression, including the main results of suicidal ideation observation and the hopelessness inventory. The study design for all was a Randomized control trial (RCT).

2.7 Meta-analysis

Meta-analysis was not possible as the studies were too heterogeneous in their type of intervention, the type of control group, the outcome measures used and the time of the follow-up.

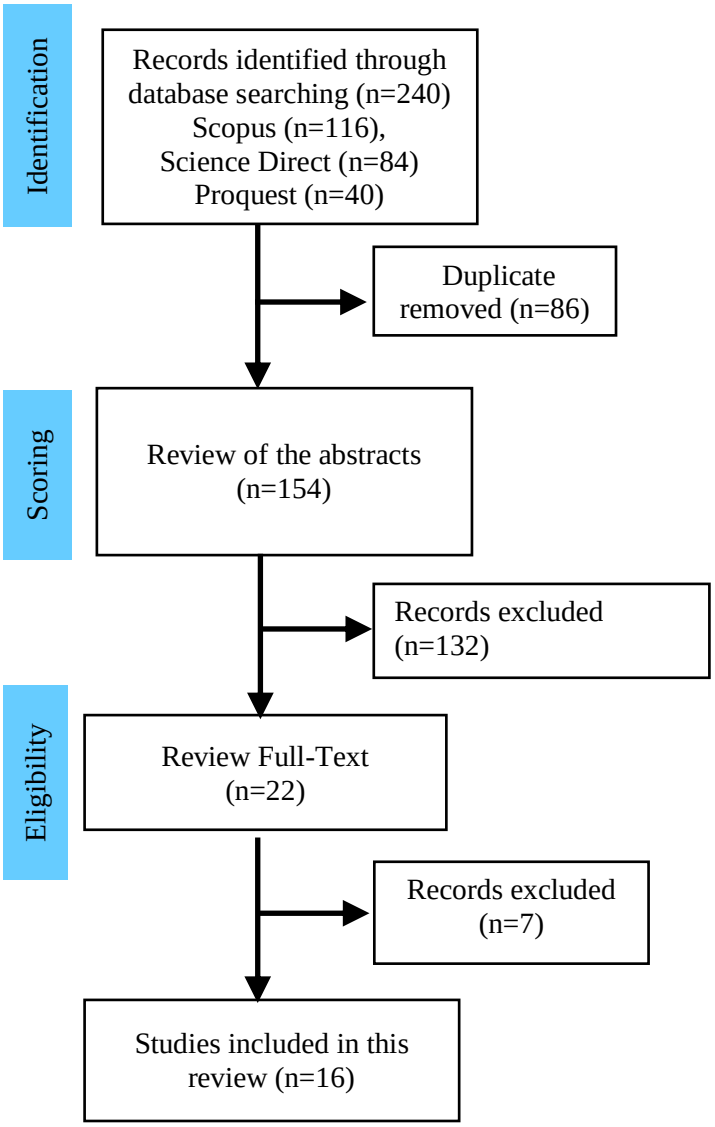

Figure 1. PRISMA flow diagram

3. Result

The total articles collected were 16. After reviewing the results, the total number of participants from

all studies was 2698 from children up to old adults. All had depressive disorders, hopelessness, suicidal ideation disorders and a suicidal history. The interventions used in all studies were multi-component interventions including CBT, IPT, DBT, CBFT, MBCT and ACT. The average duration of therapy was for 6 weeks with an average follow-up of 24 weeks. For all of the studies, most of them used the same measuring instruments, namely Beck's Cognitive Theory of Depression, the Beck Scale of Suicide Ideation and the Beck Scale for Hopelessness Inventory. Significant effects were found to be statistically evidenced from within internet-based CBT-I in terms of the post-intervention results and up until the follow-up. Significant results were found in the provision of CBT-I therapy through internet-based mobile and computerized media.

3.1 Cognitive Behavior Therapy (CBT)

There were seven articles that used Cognitive Behavior Therapy (CBT). Three articles were in the form of pure reviews related to cognitive behavior therapy and four articles were comparative to other depression therapies.

The research conducted by Abdullah & Firmansyah (2012) showed that depressed patients in the Tehran Psychology Clinic in Iran totaled 70 respondents. For those with mild depression, there were 29 respondents and for those with moderate depression, there were 41 respondents. There were three phases carried out for two weeks with the result that CBT can reduce the level of depression, suicidal ideas and increase ADL[1].

The research was carried out by Alavi, Sharifi, Ghanizadeh & Dehbozorgi, (2013) on 30 adolescents (ages 12-18 years) who were depressed with a history of suicide attempts. CBT was conducted once a week for 12 sessions. The CBT component consisted of causal analysis, planning and psychoeducation including developing reasons to hope and stay alive, including case conceptualization. CBT effectively reduces the idea of suicide, depression and hopelessness in adolescents who have a history of suicide attempts[2].

Mewton & Andrews (2015) used an internet-based i-CBT intervention on 484 depressed patients at St. Vincent's Hospital in Sydney. This involved the components of education, behavioral activation, cognitive restructuring, problem solving, graded exposure, relapse prevention and assertiveness skills. The content was presented in the form of illustrated stories where the main characters gained mastery over their symptoms of depression with the help of a therapist [10].

A review of several studies showed that CBT can be used as a successful, acceptable and measurable cost effective alternative and that this can be developed using the internet method. This research shows the usefulness of i-CBT for depression as a tool to reduce suicidal ideas that can be implemented on a large scale without imposing major structural changes at the community level.

3.2 Interpersonal Therapy (IPT)

There were two articles that used Interpersonal Therapy (IPT). According to Weitz, Hollon, Kerkhof & Cuijpers (2014), the management of drugs or pharmacotherapy and a placebo on sensitivity can be used as an alternative to reducing depression severity. This can be used to avoid the possibility of suicidal ideas. Internet-based programs can also be used as an alternative to reduce depression [16].

3.3 Dialectical Behavior Therapy (DBT)

There were four articles related to Dialectical Behavior Therapy (DBT). Research conducted by Priebe et al. (2012) showed that the interventions were carried out according to Linehan's treatment

and training skill instructions. DBT is based on the principles of cognitive behavioral therapy and it is devoted to mindfulness, validation and supportive therapy techniques. The intervention was carried out for 2 hours per week for 12 weeks. DBT is effective at reducing suicidal ideation within a personality disorder but this intervention requires greater costs [11].

Other studies say DBT has a more significant effect on EUC compared to a decrease in self-harm, suicidal ideas and depressive symptoms (Mehlum et al, 2014). Ward-Ciesielski et al. in 2013 and 2017 showed that the two conditions reported significantly reduced rates of suicidal desire, depression and anxiety, although the analysis showed there to be no significant difference between the conditions related to the main outcome measures of suicidal ideation, emotional dysregulation, skill use and depression [9].

3.4 Cognitive-Behavioral Family Treatment (CBFT)

There were two articles related to Cognitive-Behavioral Family Treatment (CBFT). Research by Asarnow, Hughes, Babeva & Sugar (2018) was conducted on 42 adolescents who had a history of suicide attempts and whose parents were interested in the study. SAFETY used the Cognitive Therapy Rating Scale (CTRS) and family / parent sessions were used to conduct MST with the results of the principles using MST Measure-Revised Adherence Therapist (TAM-R). SAFETY is effective at preventing suicidal behavior in adolescents using the Cognitive Behavioral Therapy approach and family approach [3]. Research according to Sandler, Tein, Wolchik & Ayers (2016) shows that the Family Bereavement Program can significantly influence a reduction in the emergence of suicidal ideas [12].

3.5 Mindfulness-Based Cognitive Therapy (MBCT)

There were two articles about MBCT that can be used in synergy to suppress the emergence of suicidal ideas caused by depression. A study by Barnhofer et al. (2015) said that in patients with minimal to moderate symptoms at the time of assessment, there was a correlation between depressive symptoms and suicidal cognition, thus indicating there to be a significant difference between the groups. Although suicide cognition was significantly related to the level of symptoms in the two control groups, there was no such relationship in the MBCT group. The findings indicate that in patients with a history of suicidal depression, training with a focus on awareness can help to weaken the relationship between depression symptoms and suicidal thoughts, thus reducing the important vulnerability to relapse in suicidal depression [4].

Research by Forkmann, Brakemeier, Teismann, Schramm & Michalak (2016) was aimed at treating clients with chronic depression. The interventions were divided into 3 intervention groups, namely: (a) Treatment as Usual (TAU) or usual treatment, where 35 patients were used as the samples. The patients are encouraged to continue treatment at this time and to have a meeting with their psychiatrist / psychotherapist. (b) MBCT; this program consists of individual pre-class interviews and 8 group sessions for 2.5 hours weekly. The group size was limited to 6 patients per class in this trial with the same group size in both psychotherapy and psychiatry. (c) The CBASP program consists of 2 individual treatment sessions and 8 group sessions for 2.5 hours weekly. With the results of MBCT and CBASP, it can be a successful psycho-therapy approach for group-based suicidal ideation treatment in chronic depressed patients [6]

3.6 Acceptance and commitment therapy (ACT)

There were 2 articles about Acceptance and Commitment Therapy (ACT). Research by Zettle (2015) shows that ACT can be used as an intervention in dealing with depression and the emergence of suicidal ideas. Research by Walser et al. (2015) shows that ACT-D causes a decrease in the level of depression and an increase in the value of acceptance and public awareness which is associated with a decrease in the severity of depression.

From the literature review above, the management of depression within the CBT model is the most effective and efficient therapy used as an alternative to reducing the severity of depression and to suppress the emergence of suicidal ideas [13]

4. Discussion

This systematic review provides evidence based on the effectiveness of depression therapy on decreasing suicidal ideas in depressed patients. There are six types of therapy that can be used to reduce suicidal ideas, namely CBT, IPT, DBT, CBFT, MBCT and ACT. The results of this review are certainly useful for nurses, both clinical nurses and community mental health nurses. Nurses can apply one of these health interventions as a form of preventing someone from developing depression. Clinical nurses can intervene and provide the appropriate innovations related to the development of information and technology in an effort to prevent and reduce the symptoms of depression.

Some studies explained that good mental health greatly determines a person's quality of life both physically and psychologically. It also contributes to their welfare. However, this study cannot be fully generalized. Bias can occur. This could be due to the various types of interventions available and the conditions of the study sample are less homogeneous.

The results of a review of various studies can be implicated in the area of mental nursing. Which cognitive behavioral therapy is one of the skills possessed by a specialist nurse. The existence of internet-based CBT-I through various types of technology can be used as an ***innovation in nursing interventions, especially mental health nursing. For its application in Indonesia, further research is needed by adjusting the characteristics of the clients to those commonly found in Indonesia.***

6. Conclusion

Research shows that internet-based CBT-I therapy through various types of technology has a significant influence on depressive symptoms which will lead to the emergence of suicidal ideas and a reduction of the risk of suicide. It is more effective and efficient compared to CBT-I therapy delivered directly by the therapist. This can be used as a reference for further research that is appropriate to the characteristics of the clients in Indonesia.

7. Acknowledgments

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References

[1] Abdullah, M., & Firmansyah, M. A. (2012). Critical appraisal on journal of clinical trials. Acta Medica Indonesiana, 44(4), 337–43. Retrieved from

http://www.ncbi.nlm.nih.gov/pubmed/23314977

[2] Alavi, A., Sharifi, B., Ghanizadeh, A., & Dehbozorgi, G. (2013). Effectiveness of Cognitive-Behavioral Therapy in decreasing suicidal ideation and hopelessness of the adolescents with previous suicidal attempts. Iranian Journal of Pediatrics, 23(4), 467–472. https://doi.org/10.1016/j.neurenf.2012.04.266

[3] Asarnow, J. R., Hughes, J. L., Babeva, K. N., & Sugar, C. A. (2017). Cognitive-Behavioral Family Treatment for Suicide Attempt Prevention: A Randomized Controlled Trial. Journal of the American Academy of Child and Adolescent Psychiatry, 56(6), 506–514. https://doi.org/10.1016/j.jaac.2017.03.015

[4] Barnhofer, T., Crane, C., Brennan, K., Duggan, D. S., Crane, R. S., Eames, C., … Williams, J. M. G. (2015). Mindfulness-based cognitive therapy (MBCT) reduces the association between depressive symptoms and suicidal cognitions in patients with a history of suicidal depression. Journal of Consulting and Clinical Psychology, 83(6), 1013–1020. https://doi.org/10.1037/ccp0000027

[5] Flink, N., Lehto, S. M., Viinamäki, H., Ruusunen, A., & Honkalampi, K. (2017). Early maladaptive schemas and suicidal ideation in. The European Journal of Psychiatry, 31(3), 87–92. https://doi.org/10.1016/j.ejpsy.2017.07.001

[6] Forkmann, T., Brakemeier, E.-L., Teismann, T., Schramm, E., & Michalak, J. (2016). The Effects of Mindfulness-Based Cognitive Therapy and Cognitive Behavioral Analysis System of Psychotherapy added to Treatment as Usual on suicidal ideation in chronic depression: Results of a randomized-clinical trial. Journal of Affective Disorders, 200, 51–57. https://doi.org/10.1016/j.jad.2016.01.047

[7] Handley, T. E., Kay-Lambkin, F. J., Baker, A. L., Lewin, T. J., Kelly, B. J., Inder, K. J., … Kavanagh, D. J. (2013). Incidental treatment effects of CBT on suicidal ideation and hopelessness. Journal of Affective Disorders, 151(1), 275–283. https://doi.org/10.1016/j.jad.2013.06.005

[8] Hetrick, S. E., Yuen, H. P., Bailey, E., Cox, G. R., Templer, K., Rice, S. M., … Robinson, J. (2017). Internet-based cognitive behavioural therapy for young people with suicide-related behaviour (Reframe-IT): a randomised controlled trial. Evidence Based Mental Health, 20(3), 76–82. https://doi.org/10.1136/eb-2017-102719

[9] Mehlum, L., Tørmoen, A. J., Ramberg, M., Haga, E., Diep, L. M., Laberg, S., … Grøholt, B. (2014). Dialectical behavior therapy for adolescents with repeated suicidal and self-harming behavior: A randomized trial. Journal of the American Academy of Child and Adolescent Psychiatry, 53(10), 1082–1091. https://doi.org/10.1016/j.jaac.2014.07.003

[10] Mewton, L., & Andrews, G. (2015). Cognitive behaviour therapy via the internet for depression: A useful strategy to reduce suicidal ideation. Journal of Affective Disorders, 170, 78–84. https://doi.org/10.1016/j.jad.2014.08.038

[11] Priebe, S., Bhatti, N., Barnicot, K., Bremner, S., Gaglia, A., Katsakou, C., … Zinkler, M. (2012). Effectiveness and cost-effectiveness of dialectical behaviour therapy for self-harming patients with personality disorder: A pragmatic randomised controlled trial. Psychotherapy and Psychosomatics, 81(6), 356–365. https://doi.org/10.1159/000338897

[12] Sandler, I., Tein, J. Y., Wolchik, S., & Ayers, T. S. (2016). The Effects of the Family Bereavement Program to Reduce Suicide Ideation and/or Attempts of Parentally Bereaved

Children Six and Fifteen Years Later. Suicide and Life-Threatening Behavior, 46(April), S32–S38. https://doi.org/10.1111/sltb.12256

[13] Walser, R. D., Garvert, D. W., Karlin, B. E., Trockel, M., Ryu, D. M., & Taylor, C. B. (2015). Effectiveness of Acceptance and Commitment Therapy in treating depression and suicidal ideation in Veterans. Behaviour Research and Therapy, 74, 25–31. https://doi.org/10.1016/j.brat.2015.08.012

[14] Ward-Ciesielski, E. F. (2013). An open pilot feasibility study of a brief dialectical behavior therapy skills-based intervention for suicidal individuals. Suicide and Life-Threatening Behavior, 43(3), 324–335. https://doi.org/10.1111/sltb.12019

[15] Ward-Ciesielski, E. F., Tidik, J. A., Edwards, A. J., & Linehan, M. M. (2018). Comparing brief interventions for suicidal individuals not engaged in treatment: A randomized clinical trial. Journal of Affective Disorders, 222(February), 153–161. https://doi.org/10.1016/j.jad.2017.07.011

[16] Weitz, E., Hollon, S. D., Kerkhof, A., & Cuijpers, P. (2014). Do depression treatments reduce suicidal ideation? the effects of CBT, IPT, pharmacotherapy, and placebo on suicidality. Journal of Affective

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TREATING PTSD: A SYSTEMATIC REVIEW FOR THE EFFECTIVENESS OF APPLYING CBT

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ABSTRACT

Post-traumatic stress disorder (PTSD) is an experience of someone who experiences a traumatic event that can cause disruption to an individual's personal integrity so that individuals are fearful, helpless and traumatized. Traumatic events that can trigger post- traumatic stress disorder include cruel personal attacks, natural disasters caused by humans, accidents and battles. Databases are used to identify articles that are potentially obtained from Scopus, Direct Science, Proquest is limited to publishing in the last 5 years from 2014-2019. The literature review uses the CBT keyword, PTSD in the search for articles using AND only 12 journals that meet the inclusion criteria. Based on research data that some of the articles reviewed show that CBT interventions are effective for individuals with PTSD. that CBT intervention is a therapy that uses a problem-solving approach by learning how to control the mind through changing perceptions of people or certain situations so that it is recommended to be applied to patients with posttraumatic stress disorder.

Keywords: CBT, PTSD, systematic review

1. Introduction

Post Traumatic Stress Disorder (PTSD), according to the American of Psychology Association (APA), is experienced by someone who experiences or witnesses a traumatic event that can cause disruption to an individual's personal integrity. The individuals become fearful, helpless and traumatized. PTSD is the result of a disaster or accident such as war, natural disasters, terminal disease and violence that occurs suddenly, takes place quickly and causes deep trauma to individuals of all ages. People with PTSD have frightening and persistent thoughts and memories. They may experience sleep problems, feel detached or numb or they are easily shocked. The proper and effective handling of PTSD is needed so then the disorder does not worsen or become a mental disorder. The management and treatment needs to be correct and appropriate in accordance with the results of recent research, one of which is cognitive behavior therapy (CBT). Cognitive behavioral therapy is a form of psychotherapy that emphasizes the importance of the process of thinking and acting. CBT focuses on the feelings of distress. These thoughts and behavior will later lead to positive change. Individuals who receive CBT are ultimately expected to have positive thoughts so then they will learn positive behavior while living their lives.

The prevalence of PTSD in the United States is estimated to be 1 to 14 percent of the population, while the data from the WHO states that patients with PTSD range from 10-20 percent of the population. In a survey conducted in 2007 about 3 years after the tsunami in Aceh, the data found showed that 35 percent experienced depression, 10 percent experienced PTSD and 39 percent experienced anxiety symptoms. It is estimated that 50 percent of the population in the affected areas experienced a significant psychological impact; around 10-30 percent of those who experience traumatic events will suffer from PTSD. Traumatic events that are not resolved in a healthy manner

can cause psychological trauma, but if it can be dealt with in a healthy and effective psychological way, then it is also possible for there to be an increase in individual abilities and a reduction of the adverse effects of a disaster. Therefore the proper handling of the victims of PTSD is needed. If it is not immediately treated, then PTSD may develop into a mental disorder. Psychotherapy can be used to treat Post Traumatic Stress Disorder (PTSD), one of which is cognitive behavior therapy (CBT) [1].

2.Method

2.1 Data sources and search

The journal search strategy began by asking the research questions, namely "How can CBT be effective in post traumatic stress disorder (PTSD)? The databases used for journal searches were Scopus, Science Direct and Proquest. The keywords used were “CBT for PTSD” And "CBT" and "PTSD." The journals were limited to 2014 - 2019 publications within the fields of nursing and medicine. They were English-language journals only.

2.2 Article criteria

The selection of the feasibility of the study was assessed using the Pico Population approach. The study population consisted of PTSD patients. The intervention used was the provision of CBT and the comparison output was the rate of reduction in the PTSD symptoms and the factors that discussed the patients with PTSD published before 2014.

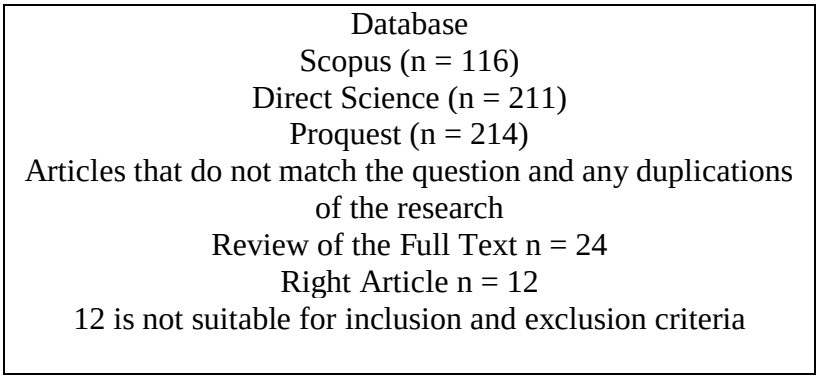

Figure 1. Study flow chart

2.3 Research design

Of the 12 articles chosen, most of them used an RCT design. Randomized controlled trials (RCTs) are a common method known in health science. This method is a controlled experimental comparative study where the researcher provides two or more inventions to the patients who are a part of the study sample. RCTs are commonly used to test the success or effectiveness of the medical actions undertaken. RCTs are required to use actual human / patient samples and they should not be replaced with experimental animals.

3. Results

This systematic review examined the 12 selected articles that met the inclusion criteria which came from communities and hospitals. We obtained several types of CBT intervention combined with other therapies. Some of these studies explain in detail how the intervention procedure was carried out and how long it was given for. The measuring instruments used were CAPS and UCLA.

3.1 Characteristics of Respondents

The number of respondents in the selected articles varied from 24 respondents and up to 1158 respondents. There were even respondents who were not specified. All of the respondents were individuals who experienced PTSD either in the hospital, or in the public area.

The following are the results of the analysis of the existing journals in the review:

Table 2. Article analysis

STUDY	POPULATION	INSTRUMENT	COMPARISON	OUTCOME	TIME
Changes in the trauma narrative of adolescents who receive cognitive behavioral therapy that focuses on trauma in connection with stress symptoms	The sample consisted of 12 non-respondents and 12 maximum-respondents who had reported for treatment (M = 14.3, SD = 2.35, range = 10-17; 75% women).	The adolescents were assessed by the Clinical PTSD Scale for Children and Adolescents both before and after treatment. Their first and last narratives were coded according to the standard coding manual.	Adolescents who received the TF-CBT developed narratives that contained more organized thinking and greater internal focus, both of which are considered to be beneficial for traumatized adolescents. However, a more coherent and organized trauma narrative is not related to the reduction of PTSS.	There were no significant differences found in the pre-treatment PTSS scores between the non-respondent and the maximum group. Furthermore, in line with our classification of the two groups, there was a significant difference in the PTSD change scores from before through to post-treatment between the groups, t (22) = 5.55, p = 0.029. More specifically, the participants in the max-responder group showed a significant decrease in PTSS during therapy, t (11) = 21.5, p <0.001, while participants in the non-respondent group did not, t (11) = - 0.76, p = 0.465. The majority of the sample was made up of women (75%). The non-respondent group had fewer boys (8%) than the max-responder group (42%), and the participants in the non-respondent group were slightly older (M = 15, SD = 1.81) compared to those at the maximum; M = 13.7, SD = 2.71).	
Pilot study comparing telephone	Regarding eligibility, 24 veterans were referred to in the study and 6 (25%) were found to be	Veterans with insomnia diagnosed with PTSD (n1212) or who had significant sub-threshold PTSD	It is not clear why the veterans respond more directly than in telephone	1. This study shows that using CBT-I to reach rural veterans, who might go without treatment, might be	Time is not determined but the

s with the provision of cognitive-behavioral therapy for trauma-related insomnia for rural veterans	ineligible because they did not have PTSD / PTSD (n1 sub-threshold 2 2), CAPS-rated insomnia (n41 ⁄1), or they had been positively screened for psychosis (n1⁄41) and substance dependence (n1⁄42) on SCID. Thus, 50% (16/24) completed a three-month follow-up assessment out of the 24 assessed for eligibility, 75% (18/24) fulfilled the requirements, 100% of which were registered; 67% (16/24) received allocated care; and 50% (12/24) completed all assessments. Two patients left after several sessions	symptoms (n1 n6) on a clinically managed PTSD scale were randomly assigned to receive CBT-I directly (n1 747) or by telephone (n1⁄411). This was to test the potential effectiveness, acceptance, and feasibility of giving CBT-I to the rural veterans. The six-week CBT-I protocol was given, and the veteran's insomnia was assessed at the post-treatment and follow-up.	groups. We required that six weeks of psychotherapy be completed in eight weeks, but we did not track how many weeks the participants needed to complete the protocol. It may be that those who receive CBT-I calls do not complete a lot of the homework or they take longer to complete the therapy than those who receive CBT-I directly.	effective. 2. We found that on average, the veterans reported being satisfied with care, regardless of the group assignments. While all of the veterans will recommend the treatment to others, regardless of their condition, fewer individuals in the telephone group felt the benefits. Acceptance ratings were assessed immediately after treatment, which is the point in time when the telephone group did not see an increase in treatment related to the symptom reduction. If we question usability three months after the treatment, then the findings may be more consistent across groups.	design of this study used an RCT (randomized controlled trial).
Treatment therapy uses an experimental case formulation for cognitive enhancement for PTSD	The nursing meant that 19 out of 23 participants who started the therapy completed it	The Clinically Managed PTSD Scale for DSM-5 (CAPS-5; Weathers, Blake, et al., 2013) and the MINI Neuropsychiatric Interview (MINI; Sheehan et al., 1997, for DSM-IV) were used to determine PTSD status and co-morbidity. The interviewers were trained by the first author and practiced by encoding.	Given that these findings are based on small-scale pilot studies without control groups or only with CPT comparisons, it cannot be concluded definitively that the client outcomes can be solely linked to the CF process, especially given that this process	The results showed a significant reduction in PTSD and depression severity and it did not help PTSD-related beliefs from pre to post-treatment (ds between 1.10-1.92). Treatment gains were maintained at 3 months follow-up.	

		The participants who met the inclusion criteria began weekly therapy sessions. A post-treatment assessment was completed within 2 weeks after treatment was stopped and again at 3 months.	is different for each client (as required by Real CF).	
IMPROVEMENT OF SYMPTOMS DURING EVERY TRAUMA CBT PHASE FOR PTSD	We recruited adolescents (ages 9-17 years) who had experienced interpersonal trauma and who sought treatment for PTSD symptoms. TF-CBT was given to the participants (N 145) at a local clinic (Child Clarity Guidance Center)	Licensed therapists trained in TF-CBT by certification. The symptom severity was measured by the UCLA PTSD Reaction Index before and after each TF-CBT phase. The total symptom severity and symptom subscale were analyzed using SPSS software by comparing the increase in symptoms between the phases.	Symptom change analysis at each phase showed a total trend of symptom improvement during the skill phase (p 1/4 0.058). There was no change during the narrative phase, and there was a significant improvement during the consolidation phase (p 1/4 0.009). Symptom change analysis for each subscale showed that negative thoughts and feelings (p 1/4 0.040) and hyperarousal (p 1/4 0.037) increased significantly during the skill phase, while avoidance (p 1/4 0.025) and hyperarousal (p 1/4 0.013) indicates a significant improvement during the	The total symptom score (and all symptom subscales) increased significantly from pretreatment through to the end of the treatment (p 1/4 0.002).

			consolidation phase		
A Brief, Early Cognitive-Behavioral Program for Cancer-Related PTSD, Anxiety, and Comorbid Depression	35 patients with PTSD were associated with acute cancer, anxiety and depression for the depressed HNC patients	The manual HNC-CBT program was managed individually and consisted of six weekly sessions for 90 minutes plus additional driving sessions conducted 1 month later	This program was developed to run in conjunction with patient care radiotherapy to help the patients to manage their distress during their medical care and through to the initial stages of recovery. We conducted a randomized controlled trial (RCT) to test the efficacy of our HNC-CBT program, which was compared with a nondirective supportive (SC) counseling program in a small sample of 35 HNC patients who were depressed. Both interventions were found to have the same effect in significantly reducing PTSD, anxiety and depression	Regarding the clinical significance, a higher proportion of patients completing the CBT program (67%) no longer met the criteria for anxiety and depression compared with 25% of patients who completed the SC program at 12 months follow-up (Kangas et al., 2013). The latest results have clinical importance because they highlight that the HNC-CBT program can treat acute psychological problems and prevent chronic psychopathology in newly diagnosed HNC patients.	Time is not specified but the study design uses an RCT
Comparison of Repeating Veterans vs. Non-Repeating Cognitive Behavior Therapy and Manuals	US military veterans who participated in single courses (n = 711) or on two separate courses (n = 87) CBT for PTSD through the Veterans Affairs	- CAPS was used to determine the diagnosis of DSM-IV PTSD. CAPS involves a structured clinical interview designed to assess DSM-IV	Veterans who repeated the CBT courses for PTSD did not show a significant degree of increase in PTSD symptom severity during their first	It was demonstrated that the reduction in PTSD symptoms during treatment was no different between those who completed the second and single CBT course for PTSD. However, for those who participated in two CBT programs for PTSD, a	Between June 2005 and June 2014

for Post-traumatic Stress Disorders	outpatient PTSD care program	PTSD symptoms - PCL-S is a 17-item self-report measure designed to assess the symptoms of DSM-IV PTSD. PCL-S was used to assess the severity of PTSD symptoms related to the trauma of each individual index - BDI-II is a 21-item self-report size of depressive symptoms – All of the data was collected as a part of the routine clinical care at PTSD VA outpatient clinics. This type of treatment is coded based on the veteran's electronic medical record review. The CBT treatment protocol ranges from around 9 to 15 sessions and the sessions are usually delivered every week. The CBT treatment protocol includes CPT.	therapy compared to the veterans who only completed one CBT course for PTSD. During the initial therapy, repeaters and non-repeaters showed significant and clinically significant improvements in their PTSD symptoms. However, the results showed that the veterans who repeated the treatments were more likely to leave prematurely.	recurrence of PTSD symptoms was observed between the first and second courses. This finding suggests that a second CBT sequence might be possible for those who experience PTSD symptoms	
Is CBT for disorders related to anxiety changing suicidal ideas? Findings	The participants (n = 355) were adults who sought treatment at the Center Of [X]. All of the participants	The diagnostic steps at the beginning, mid-treatment, and post-treatment by the principal, secondary, and tertiary diagnosis were	Patients with a diagnosis of either PTSD or SAD-supported SI are more often compared with patients with a diagnosis of a specific	Two weeks. BDI-II has very good internal consistency (α = 0.91) and this correlates well with other depression measures (Beck et al., 1996). For the rate of supporting suicidal ideas at the baseline with the	Betwe en Decem ber 2014 and Januar y 2017

from naturalistic samples	had completed the intake evaluation, 164 completed the publication of manuals for CBT that were empirically supported (Dugas&Robichaud) the assessment of middle care, 144 completed post-treatment in 2007; Roemer &Orsillo, 2010). All therapists emphasized exposure and 113 participants completed all three assessments. Finally Out of the 355 participants, 65.1% completed treatment, 15.2% dropped out of the treatment and 20.2% completed the intake assessments.	used to determine and confirm the diagnosis. During the initial evaluation, we used the Neuropsychiatric Mini-International scale. A multilevel mix of effects logistic regression models ran the Interview (MINI; Sheehan et al., 1998), which was short and structured with nesting observations in the Stata participants v. 14 (StataCorp, agnostic interview for DSM-IV and ICD-10 psychiatric disorders with 2015) use-to-treat analysis including all available psychometric properties (intention of Lindrier et al., 1997). After the compass, time was focused on post-treatment. The participants completed MINI. Many of the participants evaluated with additional assessments were mid-treatment for	phobia. These findings are consistent with the previous studies showing risk of elements for SI in PTSD (Brownet al., 2016) and SAD (Cougleet al., 2009). With hypothesis 1, individuals with PD did not report an initial increase in SI compared with other major anxiety disorders, but about a quarter (26.9%) of those with major panic disorder supported the idea of suicide. One possible reason is that groups of panic disorder do not increase relative to other anxiety disorders which may be due to the severity of the sample. Previous research has explored the relationship between PD and suicide in more severe samples, including psychiatric inpatients (Brown et al., 2010)	primary diagnosis of this study, only suicide items (BDI-II) were included, which ranged from 26.9% (for panic disorder) to 48.9% (for PTSD), not including questions about SI at 0- (I have no thoughts of suicide) for 3- (I specific phobias (4.4%) and the level of support for the basic ideology of suicide would be suicide if I had the opportunity) measured using a Likert scale point. This differed according to the main diagnosis [$\chi 2 = 17.57$, $p < 0.01$

		around 14 weeks (SD = 3.8) after taking the steps to confirm their diagnosis, including the Yale-Brown ob-assessment. They completed a post-treatment assessment of about 24 Compulsive Goodman, Price & Rasmussen Scale tests, weeks (SD (YBOCS; = 4.7) after time intake assessment was coded to reflect 1989), Posttraumatic stress Scale-Interview (PSS-I; Foa et al., 2016)		
Amygdala functional connectivity changes during cognitive reassessment predict a reduction in symptoms during cognitive focused-on coverage of adolescent girls with post traumatic stress disorder	Teenage girls with PTSD associated with physical or sexual assault (n = 34) were enrolled in TF-CBT	Delivered in a format of around 12 sessions in an open trial. Before and after the treatment, they were involved in the task of cognitive reassessment, investigating the neural mechanisms of the regulation of explicit emotions for 3 functional magnetic resonance imaging.	It was shown that a significant reduction in PTSD symptoms was caused by the skills development and childcare modules (i.e. in the module there was no development and processing of trauma narratives). As such, it might expand on the skills training module (e.g. doubling the number of sessions, training for some objective criteria, generalization	The current results indicate the possibility of targeting behavioral correlations and emotion regulation nerves. Specific behavioral data and imaging findings indicate that the suppression of the FC amygdalains during reassessment and the suspected downstream effect on emotional regulation ability is a reasonable target for augmentation strategies to improve the clinical response to TF-CBT.

			training etc) which might involve stronger targeted neurocircuitry. This leads to further better clinical improvements.		
Randomized Controlled Trial Group Cognitive Behavioral Therapy for Post-Traumatic Stress Disorder in Children and Adolescents Affected by Tsunamis in Thailand	Thirty-six children and adolescents (aged 10-15 years) and 10 men and 26 women who had been diagnosed with PSTD 4 years after the tsunami. They were allocated randomly to CBT or a waiting list	The participants were assigned to CBT and they were tested pre and post-treatment, as well as at 1 month in the follow-up with two actions. These steps are the Thai version of the Revised Impact Scale (CRIES) and the UCLA PTSD Reaction Index (PTSD-RI) which were completed at each time point of the assessment. CRIES is a 13-item self-reporting scale designed to be used by children aged 8 years and over to assess the symptoms of PTSD in three domains (Intrusion, Avoidance, and Arousal).	The participants who were randomly assigned to CBT showed a greater improvement in the standard measures than those that assessed themselves and their PTSD symptoms compared to those on the waiting list. The increase was not statistically significant in the CBT group for children with PTSD after the tsunami In the post-treatment. After a period of one month, the children were encouraged to monitor their symptoms and to use the relevant techniques to fight them as homework. A significant increase is observed. The size of the effect of increasing the measured score on post-treatment was in the small range (0.21-0.24), while the effect size at the 1-month follow-up was in the small to medium range (0.41-0.69).	The participants who received CBT showed a significant increase in PTSD symptoms at 1 month	This study was conducted from August to October 2009, more than 4 years after the tsunami RCT.

Adaptation of CBT to Traumatized South African Native Group: An example of Multiplex CBT for PTSD	A native of South Africa who had been traumatized	- Normalization and creating positive expectations about treatment - Mindfulness teaching techniques related to attention control.	Although there is evidence of the efficacy of CBT in English-speaking non-ethnic populations (for example, Blanchard et al., 2003; Cohen, Mannarino, & Murray, 2011), to date there has been no culturally sensitive treatment for CBT for African indigenous groups The south is a traumatized group that adheres to a blend of Christianity and traditional beliefs.	Multiplex CBT sessions increases acceptance and positive expectations by trying to create a culture that fits all of the techniques used. For example, by presenting treatment with metaphors and culturally appropriate cultural examples.	
Cognitive behavioral therapy that focuses on trauma with adolescents with illegal sexual behavior in safe housing care facilities	The participants totaled 107 men who were tried for committing a criminal offense and who were referred to care for a residential care program in a safe facility in the southeastern state. Approval was obtained for the 83 original participants	The TF-CBT Practice Concise Checklist was designed to evaluate the absorption of the therapists from the treatment components. TF-CBT can be summarized by the acronym PRACTICE: psychoeducation the trauma, the skill of parenting, relaxation skills, affective modulation skills, cognitive coping skills, trauma narration and the	The current study is among the first to examine the feasibility of implementing TF-CBT, which is an evidence-based trauma-based treatment for juvenile children in RTF arrangements for AISB. Overall, the efforts to implement TF-CBT were successful. That is, the TF-CBT therapists successfully completed the trauma screening,	The current studies show the results of positive feasibility for the successful implementation of TF-CBT with the AISB decided in RTF settings.	The training was between February 2015 and July 2017.

		cognitive processing of traumatic events. There were also trauma mastery in-vivo reminders and desensitization, parental sessions and improving the safety and trajectory of future developments.		facilitated treatment completion and provided TF-CBT loyalty in challenging RTF settings.
Biofeedback breathing in addition to exposure in Cognitive Behavior Therapy Accelerates Reduction of Symptoms of PTSD: Pioneer Study of Aura Symptoms	Eight (6 women and 2 men) were included. The participants had experienced a traumatic event which related to their breathing frequency. When the patient experiences a motor vehicle accident, sexual or physical abuse then they will decrease the correct breathing rhythm, with no sound offered. Their average age was 45 years old (with a range of 25-57).	During the actual therapy session, the procedure for the total sessions varied from time to time. Biofeedback devices were implemented in the exposure samples. The average number of sessions was 7.5 (with ranges) regarding the element of TF-CBT. This was used when focusing on the trauma for between 5 and 18 sessions), for all except for one patient. The procedure was similar for all patients. They responded in a range of 8-12 sessions, consistent. Feasibility was assessed based on the ease of the instructions of the CBT guidelines (Creamer et al. 2004).	By adding biofeedback components such as modifying further symptoms by promoting respiratory biofeedback, exposure treatment may be better disturbances or disturbances during exposure. This was based on the previous research (Zucker et al. 2009; Lande engagement. Especially during the first session, when et al. 2010), we hypothesized that both biofeed breathing and the transient symptoms can increase. Adding this breathing and conducting the treatment as usual will cause a significant decrease in the	Biofeedback has the additional effect of breathing exercises, showing that while it does not prevent the patient from clinically (although statistically borderline) being affected, it is significantly faster than direct exposure to traumatic events. There is a decrease in the PTSD symptoms compared to the treatment because they can experience high anxiety decreases (TF-CBT). Interestingly, the symptoms diminished during the session. This shows that breathing biofeedback is feasible and that it can be easily supplemented with TF-CBT. Although the PTSD symptoms decreased significantly from before through to post-treatment in both conditions, there was a clear tendency towards a faster symptom reduction ($p = 0.051$) in the biofeedback compared to ordinary TF-CBT. The most important limitation was the small sample size.

			components during exposure to reduce the pressure and to lessen the increase of the PTSD symptoms when compared with before the treatment. This results in habituation.	Rapid clinical improvement on the biofeedback conditions supports the idea that biofeedback breathing may be an effective complementary component for exposure in PTSD patients.
Constructive and Non-productive Processing of Traumatic Experiences in Trauma Focused Cognitive-Behavior for Youth	We examined the variables that were thought to be related to unproductive and constructive traumatic processes in a sample of 81 adolescents with increased symptoms of PTSD who received Trauma Focused Cognitive Behavior (TF-CBT) because of traumatic interpersonal abuse or loss.	TF-CBT consists of evidence-based care within 12 sessions for children, adolescents and their caregivers designed to treat PTSD, depression, and other trauma-related behavioral difficulties. TF-CBT can be divided into three phases. 1. The stabilization and building skills phase (Session 1-4) that focuses on the involvement of the therapists and psychoeducators about the prevalence, impact and trauma treatment, as well as the overcoming skills to manage emotional stress. 2. The trauma narratives and treatment phases of therapy (Sessions 5-10	TF-CBT interventions can be designed to reduce the unproductive processes that can disrupt changes and facilitate decomposition and accommodation.	Significant changes in the internalization symptoms and PTSD at the end of treatment were maintained during follow-up. The externalizing symptoms improved after treatment but worsened after follow-up.

	or 11) focus directly on gradual exposure to the traumatic memories through narrative development. 3. The consolidation and enhancing of the safety treatment phase (1-4 sessions) helps to integrate the learning from the previous sessions through mastery activities in vivo when needed. There are also parent-child conjoint trauma sessions that focus on sharing stories when appropriate. The clinical and personal development of safety skills supports the future development of the children.

4. Discussion

This systematic review provides evidence regarding the effectiveness of health interventions in dealing with and reducing post-traumatic stress disorder. The review results explained that all of the CBT interventions combined with multiplex CBT, CBT by telephone / web and CBT using explicit case formulations had the advantage of reducing PTSD. The results of this review certainly benefit both clinical nurses and community mental nurses. Nurses can apply these interventions to better the conditions in PTSD cases. As found in a number of journals, trauma-focused CBT shows that exposure-based care for post-traumatic stress disorder (PTSD) is effective. Emotional processing has been indexed primarily by reducing the fear in and between the sessions, although the original definition of processing includes cognitive change and emotional change [2]. CBT can also be developed within the HNC-CBT program by adapting and modifying the seven core components of the TF-CBT and BA procedures to create an appropriate care approach for newly diagnosed HNC patients who meet the threshold or full criteria for PTSD related to cancer and anxiety with or without

depression. Our HNC-CBT program, which is comparable to a nondirective supportive (SC) counseling program, was conducted on a small sample of 35 HNC patients who were depressed. Both interventions were found to have the same effect; namely significantly reducing PTSD, anxiety, and depression. However, in terms of their clinical significance, a higher proportion of the patients completing the CBT program (67%) no longer met the criteria for anxiety and depression compared with 25% of patients who completed the SC program at the 12 month follow-up [3]. Clinical improvement in the fast biofeedback conditions supports the idea that biofeedback breathing may be an effective complementary component for exposure in PTSD patients. The mechanism of action for biofeedback breathing may be related to competing [4].

Trauma-focused cognitive-behavioral therapy (TF-CBT) is a 'gold standard' psychological treatment for pediatric PTSD with many randomized clinical trials showing clear efficacy for PTSD symptoms, depression and behavioral problems [5]. In studies of trauma narratives before and after emotionally focused therapy for PTSD in patients exposed to abuse in childhood, the results showed that during therapy, there was a significant increase in positive words, temporal orientation and the exploration of subjective internal experiences. However, it is not consistent with the findings and the level of coherence in the narrative does not change significantly from pre- to post-treatment. There is a significant relationship between increasing temporal orientation and the post-treatment outcomes [6]. Positive results from several randomized controlled trials have demonstrated the efficacy of cognitive behavioral therapy (CBT) delivered individually for children and adolescents with PTSD after sexual abuse and traumatic events related to motor vehicle accidents and exposure to violence [7]. Adolescents who receive TF-CBT develop narratives that contain more organized thinking and greater internal focus, both of which are considered beneficial for traumatized adolescents. However, a more coherent and organized trauma narrative is not related to the reduction of PTSS. Some studies have found that the type and quality of cognitive processing after a traumatic event may have a significant effect on the narrative, which, in turn, is related to mental health and PTSS. For example, studies of traumatized adults show that individuals with PTSD have more narratives that are fragmented and disorganized than those who do not have PTSD [6]. In summary, these findings uphold and extend the previous research. In particular, the current pilot data indicates that CBT-I delivered by telephone may reduce the symptoms of insomnia related to trauma. In future, it is necessary to assess the effectiveness of CBT-I delivered to rural veterans with post-traumatic insomnia. The treatment of PTSD has to overcome the other symptoms. For example, two studies examined insomnia after CBT for PTSD and found that 48% and 70% had significant sleep problems after primary care. Furthermore, a study of insomnia after evidence-based psychotherapy for PTSD found that the symptoms of insomnia decreased but did not transmit [11]. Another study stated that CBT's effectiveness can be extended to the sleep problems related to PTSD which generally indicates that it is effective, even when the insomnia has not healed during the PTSD treatment [8].

Another intervention is CBT Multiplex. CBT is also used to reduce PTSD, and so CBT Multiplex Adapted Culture was developed, which has proven to be effective compared to waiting lists and applied muscle relaxation (AMR) in randomized controlled trials for Latino patients and for Southeast Asian refugee patients from Cambodia and Vietnam. Multiplex CBT for PTSD is based on a multiplex psychopathology model. This is a general model of psychology that was developed working with minorities, refugees and non-Western populations who are traumatized in order to explain the high rates of concomitant PTSD and GAD, worry, panic and somatization in these groups. The validity of this model of psychopathology and its relevance to minority and refugee populations has been explored in various studies. Based on this model, Multiplex CBT emphasizes sensory processing and emotion regulation [9].

The results of the research reviewed critically in this systematic review show that the best strategy for reducing or overcoming the symptoms in PTSD patients is CBT combined with various programs such as HNC CBT, CBTCT, CPTCBT Multiplex and TF-CBT. Although not all studies were significant in all parameters measured, the conclusions can be taken in the majority. The nurses

can optimize the nursing intervention program by modifying the method of giving the intervention and the media used, as well as that of the other parties involved in the intervention. A nurse as an intervention provider has several advantages including 1) the intervention method is relayed and can reduce the treatment time, 2) the media used is varied or it can be combined with other therapies and 3) the application is flexible as needed.

Reference

[1] R. T. Astuti, M. K. Amin, and N. Purboroni, "Manajemen Penanganan Post Traumatik Stress Disorder (PTSD)," 2018.

[2] A. M. Hayes *et al.*, "Constructive and Unproductive Processing of Traumatic Experiences in Trauma-Focused Cognitive-Behavioral Therapy for Youth," *Behav. Ther.*, vol. 48, no. 2, pp. 166–181, 2017.

[3] C. Milross, T. Chris, O. B. Lifehouse, P. Alfred, R. A. Bryant, and N. South, "A Brief, Early Cognitive-Behavioral Program for Cancer-Related PTSD, Anxiety, and Comorbid Depression," *Cogn. Behav. Pract.*, vol. 21, no. 4, pp. 416–431, 2014.

[4] A. Rosaura Polak, A. B. Witteveen, D. Denys, and M. Olff, "Breathing Biofeedback as an Adjunct to Exposure in Cognitive Behavioral Therapy Hastens the Reduction of PTSD Symptoms: A Pilot Study," *Appl. Psychophysiol. Biofeedback*, vol. 40, no. 1, pp. 25–31, 2015.

[5] J. M. Cisler *et al.*, "Changes in functional connectivity of the amygdala during cognitive reappraisal predict symptom reduction during trauma-focused cognitive-behavioral therapy among adolescent girls with post-traumatic stress disorder," *Psychol. Med.*, vol. 46, no. 14, pp. 3013–3023, 2016.

[6] M. Knutsen and T. K. Jensen, "Changes in the trauma narratives of youth receiving trauma-focused cognitive behavioral therapy in relation to posttraumatic stress symptoms," *Psychother. Res.*, vol. 29, no. 1, pp. 99–111, 2019.

[7] N. Pityaratstian, V. Piyasil, P. Ketumarn, N. Sitdhiraksa, S. Ularntinon, and P. Pariwatcharakul, "Randomized Controlled Trial of Group Cognitive Behavioural Therapy for Post-Traumatic Stress Disorder in Children and Adolescents Exposed to Tsunami in Thailand," *Behav. Cogn. Psychother.*, vol. 43, no. 5, pp. 549–561, 2015.

[8] C. Laurel Franklin *et al.*, "Pilot study comparing telephone to in-person delivery of cognitive-behavioural therapy for trauma-related insomnia for rural veterans," *J. Telemed. Telecare*, vol. 24, no. 9, pp. 629–635, 2018.

[9] B. Jalal, Q. Kruger, and D. E. Hinton, "Adaptation of CBT for Traumatized South African Indigenous Groups: Examples from Multiplex CBT for PTSD," *Cogn. Behav. Pract.*, vol. 25, no. 2, pp. 335–349, 2018.

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FALL RISK ASSESSMENT IN MATERNITY WARDS IN HOSPITAL

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ABSTRACT

Falls could be a cause of unintentional injury in patient in hospital. Falls might also be a risk factor for women admitted in hospital, especially during their pregnancy and postpartum. Falls risk assessment is needed to prevent the falls in hospital using a risk assessment tools such as Johns Hopkins Fall Risk Assessment Tools (JHFRAT). This study aimed to compare women patients at risk of fall between pregnancy women, postpartum vaginal delivery and postpartum with cesarean section using JHFRAT. This study was a comparative study. Total of fifty seven respondents recruited in the study. The respondents consisted of fourteen pregnancy women, thirteen postpartum women with vaginal delivery and thirty postpartum women with cesarean section. A Kruskall-Wallis test analysis revealed that there was a significant different of fall risk score between pregnancy women, postpartum vaginal delivery and postpartum with cesarean section ($H(2)= 36.769$; p value < 0.001). Interestingly, when comparing only two different sample using a Mann-Whitney test analysis, all the result was a significant different (p value <0.001), except fall risk score between the pregnancy women and postpartum women with vaginal delivery (p value 0.672). Further study is needed using larger respondents to support the findings.

Keywords: fall risk

1. Introduction

Assessing the risk of falling in patients is one of the priorities for patient safety [1]. It is noted that the first step to prevent patient fall is by assessing patients at risk of fall within 24 hours of admission, as well as identifying and educating patients in regard to the risk of falls [2].

Fall is the second leading cause of emergency admissions for pregnant and postpartum woman [3]. The death rate is 27 % for pregnant women, which is equal to the fall rate of 25 percent for people aged 70 years. The risk factors of falls in pregnant women include women aged ≤ 30 years, women with a height of ≥160 cm, and primigravida three times at risk of falling compared to multigravida [4]. In addition, stability of body decreases during pregnancy and continues to decrease at 6-8 weeks after delivery [5]. Therefore, special attention is needed for pregnant and postpartum women in the maternity room to prevent the occurrence of falls and injuries.

More than 5% of women report an injury during their pregnancy in which falling is the most common cause of their injury [6]. The injuries are caused by falls during their daily activities [7]. Between 5- 7% of all pregnancies are complicated by injuries and trauma in pregnancy which lead to common cause of fetal death [8]. According to Weiss and colleagues[3], around 5.4 per 1,000 fetal deaths were caused by maternal injury. A population-based study reports that 30% of women fall during pregnancy and 10% experience more than one miscarriage during pregnancy [9].

There are many assessment tools to reduce the incidence of falls in hospitals. One of the tools used

by many hospitals is called the Johns Hopkins Fall Risk (JHFRAT) approach[10]. JHFRAT is an evidence-based tool which is easy to be used by nurses to manage, score and interpret the fall risk in hospitals [10]. The JHFRAT is used to assess the risk of falls in adult hospitalized patients covering seven risk factors including age, fall history, elimination-bowel-urine, medications, patient care equipment, mobility and cognition [10].

Fall risk assessment for patients at maternity wards in hospitals is usually conducted using a common fall risk assessment such as JHFRAT.As mentioned before that the JHFRAT can be used for adult hospitalized patients, thus, it is claimed that JHFRAT can be used for patients at maternity wards. One of the reasons is women who are treated in midwifery units are usually young, healthy and are not considered to have a high risk of falling [11]. In other words, patients at the maternity wards are considered similar with other general patients in hospital.

Data from a private hospital in Indonesia in 2017 shows that there were nine incident falls (0.03%) in the hospital. Some of the causes include patients forcing themselves to carry out their activities, patients' weak conditions and patients feeling that they could do their daily activities without help from the nurse.

This study aims to identify the risk of fall using the JHFRAT at the maternity wards in a private hospital in the central part of Indonesia.

2. Method

This research applied a quantitative method [12], using a Johns Hopkins Fall Risk Assessment Tools (JHFRAT) to examine fall risk in maternity ward. Total of fifty seven respondents were recruited in the study. The respondents consisted of fourteen pregnancy women, thirteen postpartum women with vaginal delivery and thirty postpartum women with cesarean section. A Kruskal-Wallis test and a Mann-Whitney test analysis were conducted to analyze the findings of this study.

Ethics Committee at Faculty of Nursing Universitas Pelita Harapan approved this study ethical clearance. In addition, the private hospital in which the study took place gave permission to conduct this study.

3. Result and Discussion

The results of this study comprised types of in-patient at maternity wards, types of in-patient at maternity wards based on age and level of fall risk based on patients' type. Table 1 shows that most of the respondents were three types of patients at maternity wards including pregnant woman, postpartum woman with vaginal delivery and woman with post cesarean section. Most of the respondents in this study were women with post cesarean section (52.63%).

Table 1 Types of in- patient at maternity wards (n = 57)

Type of patients	n	%
Pregnant woman	14	24.56
Postpartum woman with vaginal delivery	13	22.8
Woman with post cesarean section	30	52.63
Total	57	100

Table 2 further shows that most of pregnant women (42.9%), postpartum women with vaginal delivery (53.8%) and woman with post cesarean section (50%) were between 26-30 years old. In addition, majority of women with age range 31-35 were in the condition of post cesarean section (43.3%).

Table 2. Types of in-patient at maternity wards based on age (n = 57)

Type of patient	Range of Age					Total
	≤ 20	21-25	26-30	31-35	36-40	
Pregnant woman	0	4	6	3	1	14
	0.0%	28.6%	42.9%	21.4%	7.1%	100.0%
Postpartum woman with vaginal delivery	1	3	7	2	0	13
	7.7%	23.1%	53.8%	15.4%	0.0%	100.0%
Woman with post cesarean section	0	1	15	13	1	30
	0.0%	3.3%	50.0%	43.3%	3.3%	100.0%

Table 3 reveals that the majority of pregnant women (92.85%) and postpartum women with vaginal delivery (92.3%) were at the level of low fall risk. Meanwhile, all woman with post cesarean section were at moderate level of fall risk (100%).

Table 3. Level of fall risk based on patients' type (n = 57)

Woman Patient	Level of Fall Risk	n	%	Kruskal-Wallis test results	Mann-Whitney test results
Pregnant woman	Low	13	92.85	H(2)= 36.769 p value < 0.001	Pregnant women- Postpartum with vaginal delivery (U= 82.5; z=-0.423; p value 0.672)
	Moderate	1	7.15		
	High	0	0		
	Total	14	100		
Postpartum woman with vaginal delivery	Low	12	92.3		Pregnant women- Post cesarean section (U=12; z=-5.4; p value <0.0001; r=-0.72)
	Moderate	1	7.7		
	High	0	0		
	Total	13	100		
Woman with post cesarean section	Low	0	0		Postpartum with vaginal delivery- Post cesarean section (U=27.5; z=-4.77; p value <0.0001; r=-0.632)
	Moderate	30	100		
	High	0	0		
	Total	30	100		

The results of this study reveals that patients type who had the highest risk of falling among the three types of patients was women with post caesarean section (52.6%), followed by pregnant woman (22.8%) and women with vaginal delivery (21.1%). The cause of moderate risk fall for women with post caesarean section was because of the effects of epidural anesthesia on patients. This is in line with the

study from Lockwood, & Anderson[13], using JHFRAT, that most postpartum were at moderate level of fall risk.

A number of authors stated that JHFRAT tool was good enough in identifying general adult patients in regard to the fall risk[14], [15]. This is also supported by the validity and reliability test of the tool generated by the authors. However, Heafner and colleagues introduced a new evidence-based fall risk assessment tool that is called 'the Obstetrics Fall Risk Assessment System (OFRAS)[11]. This tool identified fall risk factors for pregnant and postpartum women by assessing six categories of risk factors such as history of falls, cardiovascular, bleeding, neuro/anesthesia function, motoric/activity, and medications.

As mentioned in the introduction, the JHFRAT consisted of seven categories in assessing patients' fall risk such as age, fall history, elimination-bowel-urine, medications, patient care equipment, mobility and cognition [10]. Each category of the tool will be discussed further in the following paragraph.

Based on 57 respondents, most of the respondents were <60 years old with the highest age of 38 years. The respondents age were <60 years due to women age of reproduction. The age of menopause woman in Indonesia is relatively around 50 years[16].

The results of the assessment also revealed that 10% of patients had fall experience over the last one-year. A study argued that patients with history of previous falls will likely to have risk fall [17]. The assessment also revealed that 82% patients were assisted in regard to their daily activities. As noted by previous study, post-partum or post caesarean section patients have risk fall related to their first try to stand up and walk [13]. Thus, patients should be assisted in their activities such as sitting beside the bed, personal hygiene, and toilet.

In regard to the elimination pattern, the results of this current study showed that post caesarean section patients need to use a urinary catheter. A survey reported that for post caesarean section patients who were under regional anesthesia, most of them (82%) used urine catheters for both procedures and postoperatively, with minorities used only catheters for procedures or in-out catheters [18].

The assessment also provided findings related to sensory deficit, 7% of patients used bifocal glasses, so they were considered to have falls risk. The coordination of the musculoskeletal, neurological, and visual system can affect individuals' balance which could cause patients' falls [19].

In the category of patient care treatment, the findings showed that 70% of respondents were epidural patients and 56% were postoperative between 0-24 hours. As stated in the JHFRAT, patients with sedatives, epidurals or narcotics, were scored as three. Postpartum and postoperative patients <0-24 hours are still under the influence of analgesia that could lead to less sensation in the extremities, and side effects of drugs [13]. These patients condition can be categorized as having fall risk.

The results of mobility and cognition, the overall respondents had good orientation and were able to do the mobility independently. For patients with good orientation and mobility, the scores were zero. Adult or elderly patients with impaired cognitive status and balance disorders will have fall risk (Shin et al. 2011).

4. Conclusion

Women hospitalized in maternity wards are at risk for falls and this can be examined using a significant tool that guides nurses to identify those at risk and provide appropriate interventions. There is a need to develop a specific risk assessment tool for women in the maternity wards. The implementation of a standardized evidence-based nursing fall assessment tool for pregnant and postpartum woman will improve care in several ways.

References

Ahmad, N.A., Mohd Ali, M. (2011). The Relationship between Learning Styles and Strategies with Academic Achievement Based on Gender and Type of School. *The International Journal of Learning*, Volume 17, Number 10, 265-278.

Alumran, J.I.A. (2008). Learning Styles in Relation to Gender, Field of Study and Academic Achievement for Bahraini University Students. *Journal of Individual Differences Research*, Vol. 6, No. 4, pp. 303-316.

Donald, J. S., Frank, J. P., Scott, E. A. (2009). Personality Types and Performance on Aptitude and Achievement Tests: Implications for Osteopathic Medical Education. *The Journal of the American Osteopathic Association*, Vol. 109, 296-301.

Dungey, G., Yielder, J. (2016). Student personality and learning styles: A comparison between radiation therapy and medical imaging undergraduate students in New Zealand. *Journal of Radiography*, 23, 107-111.

Gholami, S., Bagheri, M.S. (2013). Relationship between VAK Learning Styles and Problem Solving Styles regarding Gender and Students' Fields of Study. *Journal of Language Teaching and Research*, Vol. 4, No. 4, pp. 700-706.

Imran, Z. (2007). *A Survey On Students' Perceptual Learning Style Preferences And Teachers' Teaching Strategies In Rural Secondary School In Sri Aman Town* (degree's thesis). University Malaysia Sarawak, Malaysia.

Komarraju, M., Steven, J. K., Ronald, R. S., Alen, A. (2011). The Big Five personality traits, learning styles, and academic achievement. *Journal Personality and Individual Differences*, 51, 472–477.

Li, M., Steven, J. A. (2015). The relationship between Kolb's experiential learning styles and Big Five personality traits in international managers. *Journal Personality and Individual Differences*, 86, 422-426.

Mark, D. T., Richard, A. W., Danielle, C. E. (2013). Personality Type and Learning Style: The Tie That Binds. *Journal of Career and Technical Education Research*, 38(1), pp.39-55.

Nuzhat, N., Salem, R.O., Al Hamdan, N., Ashou, N. (2013). Gender differences in learning styles and academic performance of medical students in Saudi Arabia. *Journal of Medical Teacher*, 35, 78–82.

Prajapati, B., Dunne, M., Bartlett, H., Cubbidge, R. (2011). The influence of learning styles, enrolment status and gender on academi performance of optometry undergraduates. *Journal of Ophthalmic & Physiological Optics*, 31, 69–78.

Ramesh, A. (2013). The influence of learning styles and personality profiles on undergraduate medical students' clinical performance. *Journal of Medical Teacher*, 35, 608–612.

Ryan, A.P., Alexandra, C.C. (2016). Are Surgeons Born or Made? A Comparison of Personality Traits and Learning Styles Between Surgical Trainees and Medical Students. *Journal of Surgical Education*, 768-773.

Teach.com: Learning styles (2017), retrieved from: https://teach.com/what/teachers-teach/learning-styles/

Umar Farooq, Study Lecture Notes: What is Personality - Definition, Meaning and Types of Personality (2011 December 8), retrieved from: http://www.studylecturenotes.com/social-sciences/sociology/119-personality-development-types-of personality

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HEALTH STATUS OF PATIENTS WITH CORONARY HEART DISEASE

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CHAPTER 1: INTRODUCTION

1.1 Background

Coronary heart disease (CHD) also called coronary artery disease (CAD), heart disease or ischemic heart disease (IHD). It is a results from hardening and narrowing of the artery walls in the heart where fatty deposits of cholesterol and other cellular waste. (The New York Times, 2013) This condition cause blockage of arteries (ischemia) and prevents oxygen-rich blood from reaching the heart. (The New York Times, 2013)

When a person did not get enough blood supply throughout the body, they easily get chest pain and discomfort which called angina. (Control of Disease Centre, 2015) Prolonged and untreated CHD lead to heart failure where a serious condition because of the heart muscle weaken. (Control of Disease Centre, 2015)

This condition can be diagnosed through electrocardiogram (ECG), echocardiogram, chest X-ray (CXR), coronary angiogram and cardiac catheterization. Someone can reduce the risk of getting CHD by changing their lifestyle, compliance to the medications and surgical procedures. This is where measuring health status of CHD patient takes place.

Health status is an individual's relative level of wellness and illness, taking into account the presence of biological or physiological dysfunction, symptoms, and functional impairment (American Thoracic Society, 2007). US National Library of Medicine defined health status is the level of health of the individual, group, or population as subjectively assessed by the individual or by more objective measures.

1.2 Problem Statements

Coronary heart disease (CHD) or ischaemic heart disease (IHD) is the leading cause of death worldwide in both lower-middle income countries and high income countries. The World Health Organization (WHO), 2016 reported 56.9 million deaths worldwide in 2016, in which 15.2 million deaths is accounted by ischaemic heart disease and stroke. CHD have remained the leading causes of death globally in the last 15 years. In developed and developing countries heart disease is the leading cause of death in men and women. In Europe CHD accounts for an estimated 1.95 million deaths each year ("Health Knowledge", 2006).

According to Department of Statistics Malaysia (2014), CHD remains the principal cause of deaths from 2005 to 2014 at 13.5% (10,432 out of 77,365). The National Cardiovascular Disease-Acute Coronary Syndrome (NCVD-ACS) Registries reported that Malays formed 49.2%, Chinese formed 20.6% and Indians 18.4% of the patients who presented with ACS between 2014 and 2015 (W.A Wan Ahmad, 2017). The WHO mortality estimates (2016) reported that CHD is the common cause of deaths accounted for 98.9 deaths per 100,000 population in Malaysia in 2012, or 29,400 deaths (20.1% of all deaths). The Ministry of Health Malaysia report documented that CHD accounted for 6.99% of total hospital admissions and 23.34% of all hospital deaths in government hospitals.

Contributing factors to the high mortality and morbidity among patients with CHD could be explained by the state of health status which includes cardiovascular risk factors such as hypertension, diabetic mellitus, smoking, high body mass index, hyperlipidaemia and others that still persist. It is estimated that 80-90% of people dying from CHD have one or more major risk factors that are influenced by lifestyle (Health

Knowledge, 2006). High blood pressure is one of the major risk factor for heart disease.

In people aged up to 50 years, both diastolic blood pressure (DBP) and systolic blood pressure (SBP) are associated with cardiovascular risk. In persons aged over 50 years

SBP is a far more important predictor of risk (Mackay & Mensah, 2004). Based on the Annual Report of NCVD-ACS Registry (2015), there are 5,671 out of 9,313 having hypertension which is 64.7%.

Smoking is a major risk factor for CHD. Cigarette smoking promotes atherosclerosis and increases the levels of blood clotting factors such as fibrinogen. Nicotine also accelerates heart rate and raises blood pressure. In Europe, smoking causes an estimated 32% of deaths from cardiovascular disease (CVD) in men aged 3569 years and 6% of CVD deaths in women of the same age (Health Knowledge, 2006). Based on the Annual Report of NCVD-ACS Registry (2015), there are 1,748 out of 9,313 quit smoking more than 30 days which is 19% and 3,423 out of 9,313 still smoking which is 37.3%.

Diabetes substantially increases the risk of CHD. Men with type 2 diabetes have a 2-4 fold greater annual risk of CHD, while women have an annual 3-5 fold greater risk of CHD. Diabetes also magnifies the effect of other risk factors including, raised cholesterol levels, raised blood pressure, smoking and obesity (Health Knowledge, 2006). Based on the Annual Report of NCVD-ACS Registry (2015), there are 3,991 out of 9,313 having diabetes which is 45.9%.

In addition to cardiovascular risk factors, health status indicators such as health –related quality of life (HRQoL) is an important parameter to explain the high comorbidities among patients with CHD. A previous study on general population using

Korean National Health and Nutrition Examination Survey (KNHANES) conducted by

Hyung et al. (2015) had shown that CHD had a significant impact on the reduction in HRQoL. The authors found overall HRQoL in CHD was impaired; and the impairment of HRQoL was relatively larger in the older age and female groups. To our best knowledge, there is lack of current data (e.g. less than 2 years) on HRQoL to reflect health status among patients with CHD in Malaysia.

Measuring health status is important to know the effectiveness of current treatment and health programme implemented for patient with CHD. If the health status show undesirable findings, it could indicates that current strategies are not sufficiently effective. In recent clinical posting, researcher had observed many patients readmitted due to disease recurrence or complications, still actively smoke, poor control of hypertension and other cardiovascular (CV) risk factors. Therefore, there is a need to assess health status that take account of CV risk factors and HRQoL among patients with CHD in Malaysia, specifically in Klang valley, to gauge the extent of disease prevalence and effectiveness of disease management.

1.3 Significance of Study

Patient

Study findings reflect the current health status of patients with CHD. Indirectly, patients who answered the survey were made aware of their cardiovascular health, specifically to aspects of physical health, psychological health, social relationship health and environment health. With such awareness, further action can be mapped out to improve health status at individual level.

Nursing practice

Nurses are first-liner and the closest person to the patient who delivered care to the patients. Nurses are involved in all stages of the disease, which h from prevention to end-of life-care. Findings from of this study will guide nurses when handling the patients with CHD. For example, if the patient population, in general, is poor in their physical health compared to other health domains, the nurses can give more focus on the nursing

care that improve physical health while not neglected the other aspects. The finding helps in prioritizing delivery of care. Similarly, nurses need to give more effort to address risk factor that is more prevalent in order to improve health status among patient population under their care. Measuring health status is important because it helps nurses to prioritize and to improve quality of care given to the patients with CHD.
Organisation

Organisation is the one who provides services and organisation must monitor the quality of services given to all patients. It will improve the level of satisfaction and got positive feedback from the patients and the nurses. Based on study findings, the Ministry of Health Malaysia or specifically the clinical setting involved in this study can improve CHD patients' health status by organising programmes or campaigns which focusing on awareness of CHD and CV risk factors. For hospital's organization, they may evaluate the effectiveness of the treatment given and improve the services such as providing proper equipment, conducive environment and make sure the staffs give treatment equally. Moreover, results revealed from this study will provide better-defined health care outcomes which will benefit the patients ultimately.

1.4 Objective

In this study, the objective is classified into general objective and specific objectives.

1.4.1 General objective

To determine health status among patient with coronary heart disease (CHD).

1.4.2 Specific objectives

In order to achieve the general objective, the specific objectives are determined as follows:

a. To assess health status in relation to risk factors profile and four health domains i.e. physical, psychological, social relationship and environment health)
b. To examine four health domains in relation to sociodemographic characteristics.
c. To determine correlation between physical, psychological, social relationship and environment health.

1.4.3 Research questions

a. What is health status in relation to risk factors profile and four health domains (i.e. physical, psychological, social relationship and environment health)?

b. What are the relationships or associations between the four health domains and sociodemographic characteristics?

c. What are the correlations between physical, psychological, social relationship and environment health?

1.5 Operational Definitions

Health Status

Health status defined as an individual's relative level of wellness and illness, taking into account the presence of biological or physiological dysfunction, symptoms, and functional impairment ("Health Status", 2007). This study referred biological or physiological dysfunction to the presence of cardiovascular risk factors, namely, hypertension, diabetic mellitus, high body mass index, dyslipidaemia and smoking. The individual's relative level of wellness and illness was referred to the concept of health related quality of life (HRQoL).
Risk factors profile

According to WHO (2004), risk factors profile is referred to any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury. In this study, hypertension, diabetic mellitus, body mass index, dyslipidaemia and smoking are as the risk factors profile of interest.
Health related quality of life (HRQoL).

Health-related quality of life (HRQoL) is a multi-dimensional concept that encompass those aspects of overall quality of life that can be clearly shown to affect health—either physical or mental. On the individual level, HRQOL includes physical and mental health perceptions (e.g., energy level, mood) and their correlates—including health risks and conditions, functional status, social support, and socioeconomic status ("HRQoL Concepts", 2018). In this study, HRQoL was measured using 26-item WHOQOL-BREF questionnaire that consist of four health domains related to physical, psychological, social relationship and environment health.

Physical health domains of QoL

According to WHOQOL-BREF questionnaire, physical health are referred to following aspects:

i. Pain – it is the unpleasant physical sensations experienced by an individual.

ii. Energy - it is the enthusiasm and endurance that a person has in order to perform the necessary tasks of daily living, as well as other chosen activities such as recreation. iii. Sleep - It is sleep pattern, rest and problems in this area, affect the person's quality of life.

iv. Mobility - The mobility is the person's general ability to go wherever he/she wants to go without the help of others regardless of the means used to do so.

v. Activities – it is an individual's ability to carry out activities of daily living.

vi. Working – it is an individual's use of his or her energy for work, which is the major activity in which the person is engaged.

vii. Medication - it is an individual's dependence on medication or alternative medicines (such as acupuncture and herbal remedies) for supporting his/her physical and psychological well-being.

Psychological health domains of QoL

According to WHOQOL-BREF questionnaire, psychological health are referred to following aspects:

i. Positive feeling – it consist contentment, balance, peace, happiness, hopefulness, joy and enjoyment of the good things in life.

ii. Thinking – it is alert, aware or awake, even though these underlie thinking, memory and concentration.

iii. Self-esteem – it is feeling of self-efficacy, satisfaction with oneself and control is also included in the focus of this item iv. Body image – it is satisfaction with the way he/she looks and the effect it has on his/her self-concept.

v. Negative feeling – it consists of despondency, guilt, sadness, tearfulness, despair, nervousness, anxiety and a lack of pleasure in life.

vi. Spirituality – it is personal beliefs and how spiritual affect quality of life.

Social relationship health domains of QoL

According to WHOQOL-BREF questionnaire, social relationship health are referred to following aspects:
i. Relationship – it is people feel the companionship, love and support they desire from the intimate relationship(s) in their life ii. Social support – it is when an individual feels the commitment, approval, and availability of practical assistance from family and friends.
iii. Sex life – it is an individual's urge and desire for sex, and the extent to which the individual is able to express and enjoy his/her sexual desire appropriately.
Environment health domains of QoL

According to WHOQOL-BREF questionnaire, environment health are referred to following aspects:
i. Safety – it is an individual's sense of safety and security from physical harm ii. Home environment – principal place where a person lives (and, at a minimum, sleeps and keeps most of his/her possessions), and the way that this impacts on the individual's life.
iii. Finance – an individual's financial resources (and other exchangeable resources) and which these resources meet the needs for a healthy and comfortable life style iv. Services – it is health and social care availability and quality is focusing on the individual's view of the health and social services.
v. Information – it is an individual's opportunity and desire to learn new skills, acquire new knowledge, and feel in touch with what is going on.
vi. Leisure – it is individual's ability, opportunities and inclination to participate in leisure, pastimes and relaxation.
vii. Physical environment – it is includes the noise, pollution, climate and general aesthetic of the environment and whether this serves to improve or adversely affect quality of life.
viii. Transportation – it is availability of transport for the individual to get around which allows the person to perform the necessary tasks of daily life as well as the freedom to perform chosen activities.

Coronary Heart Disease (CHD)

Coronary heart disease is an availability of transport for the individual to get around which allows the person to perform the necessary tasks of daily life as well as the freedom to perform chosen activities ("Definition of Coronary Heart Disease", 2017). In this study, the respondents for the survey done among patients with CHD.
Summary

In chapter 1, the researcher described the operational definition of this study, objectives specifically and generally, significance of the study and some of the background. Further understanding done throughout the literature in the next chapter,

Chapter 2.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

A literature review is discussing published information in a particular subject area and sometimes in particular subject area within certain time of period. Besides, it is another effective way in evaluate of selected documents on research based on the researcher's topic.

According to Dena Taylor, literature review is an account on what has been published of the topic by accredited scholars and researchers. The purpose of literature review is to convey reader on knowledge and ideas have been established on a topic.

Literature review also known as guiding concept.

There are many purposes literature review is important in research study. Literature review able to attain good knowledge of the field inquiry such as facts and others. Literature review itself helps to narrow a problem which from generally to specifically. So, researcher able to research more on the topic. Furthermore, it helps in generate hypothesis, research questions and others.

Literature review act as reference of previous studies to understand more of the topic. It is also able to know the technique they used for identifying the key issues and on how they done the research.

2.2 Search strategies

A literature review in the area of a survey on perceived of health status in patient with coronary heart disease published from year 2008 to 2018. Search strategies researcher used are electronic databases that subscribed by University of Malaya digital library: CINAHL, MEDLINE, SAGE Journals, ScienceDirect and Web of Science. Key words researcher used in databases are health related quality of life, health status, HRQoL, ischaemic heart disease, coronary heart disease and WHOQOL-BREF.

To be more precise in searching, the researcher filtered out irrelevant articles by keyed in inclusive criteria. There are including:

- English language articles
- Full text only
- Year 2006 to 2018

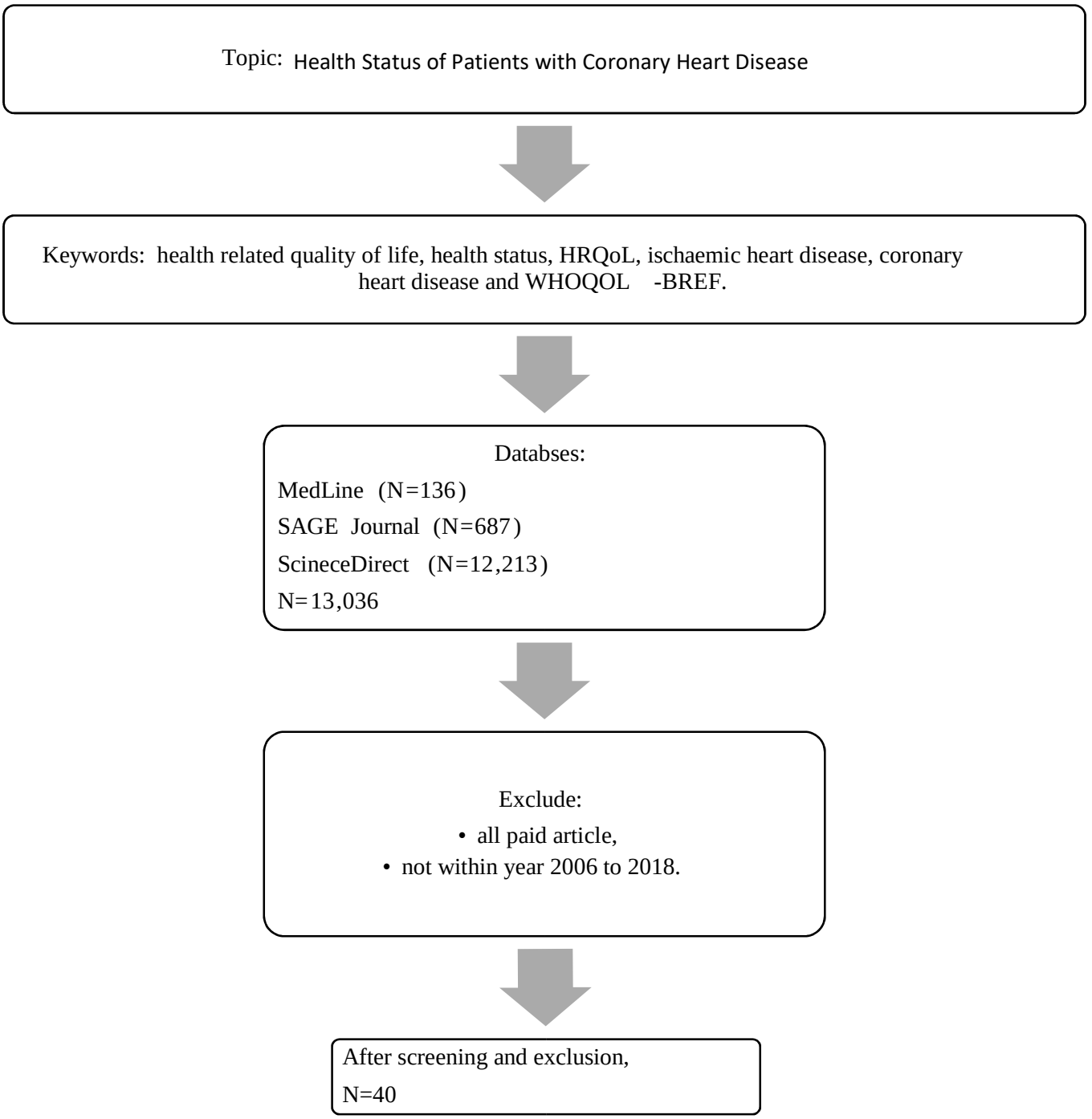

Figure 1: Flow chart of literature search

2.3 Burden of Coronary Heart Disease

The World Health Organization (2016), reported 56.9 million deaths worldwide in 2016, in which 15.2 million deaths is accounted by ischaemic heart disease and stroke. CHD have remained the leading causes of death globally in the last 15 years. In developed and developing countries heart disease is the leading cause of death in men and women. In Europe CHD accounts for an estimated 1.95 million deaths each year ("Coronary heart disease", 2006). Coronary heart disease (CHD) continues to be a leading cause of morbidity and mortality among adults worldwide (Gough, 2011)

Heart diseases and circulatory system (cardiovascular disease or CVD) are the major cause of death in the UK and accounted for almost 180,000 deaths in 2010. Almost half (45%) of all CVD deaths are from CHD and over a quarter (28%) are from stroke. Within England, North West showed the highest premature CHD death rates meanwhile South East and South West showed the lowest premature CHD death rates.

However, there were some fluctuations in death rates between 1998 and 2008, overall

Russia and Ukraine both experienced an increase in CHD mortality. At 2010 in United Kingdom, there are 396 men and 148 women deaths due to CHD. The death rates declined from 2009 which are 397 for men and 149 for women (Townsend et al, 2012).

However in Singapore, CHD is the second leading cause of death (Health Fact

Singapore, 2013). In addition, it has been reported that the proportional mortality from CAD is higher for Canadian men and women of South Asian descent (42% and 29%, respectively) than those of European (29% and 19%, respectively) or Chinese (18% and 11%, respectively) ancestry (Kevin et al, 2011). CHD responsible for one out of five lives, thus, it is remains as a major health problem in European countries (Delphine, Smedt & Clays, 2013). Even though, CHD has been decline in the past decades, the number of individuals with CHD increased in low and middle income country (Roth et al 2015).

According to World Health Organization (2015), CHD accounted for 98.9 deaths per 100,000 population in Malaysia in 2012, or 29,400 deaths (20.1% of all deaths); it is the most common cause of deaths in Malaysia. In year of 2016, WHO stated that in Malaysia there are 154,000 deaths out of 31,187,000 population. It is 35% of the deaths is due to cardiovascular diseases which is included the CHD. Therefore, there are increasing in the number of deaths due to CHD.

Study on CHD has done worldwide including Malaysia but it is already outdated. So, it is important to review the research done in Malaysia to have better understanding of the disease and the impact on clinical practice locally. However, in every study have their own limitation. In previous study, they have to go through several limitations such as that study might result in the underestimation of disease prevalence and selection bias. Besides, unable to adjust or change the cardiac function, number of heart attack or revascularization method. So, all these limitations have the possibilities in effecting the result of health status of patients with CHD (Hyung, 2014).

2.4 Health status among patients with CHD

Health status defined as an individual's relative level of wellness and illness, taking into account the presence of biological or physiological dysfunction, symptoms, and functional impairment ("Health Status", 2007).

Most of the patients consider the quality of the additional life years gained equally important as the length of life. This is because pain, physical and social restrictions, anxiety or depression, cardiovascular patients are particularly vulnerable to have an impaired self-perceived health status, often resulting in a reduced health-related quality of life (HRQoL). A few types of measurement tools being used to assess the importance of disease symptoms and their effect on everyday life as perceived by the patient. (Delphine et al, 2013). Quality of life, along with other health status measures (such as health utility and perceived health status), is useful for assessing the socioeconomic impact of CHD. It is an indicator of the burden of illness, effectiveness of interventions and treatments, and long-term mortality among patients after a cardiac event. (Xie et al, 2008)

World Health Organization Quality of Life – BREF (WHOQOL-BREF) is an instrument that used in several studies to measure health status or known as quality of life. In this instrument, it focused on 4 domains which are physical, psychological, social relationship and environment. (Monika, Garth & Marvin, 2009)

Ian et al. (2013), brief version (WHOQOL-BREF) was used to measure changes in quality of life. This is because it is internationally validated instrument for gynaecologic cancer. In this study it is used to estimate the lifetime gain in the HRQoL from early detection of cervical cancer.

QOL is a multidimensional concept that includes an individual's perception of his or her symptoms, well-being, physical and mental functional capacity, and social aspects of health (Strong et al, 2012).

2.4.1 Risk factors of CHD

Diabetes known as the risk of developing many types of diseases. Diabetes complications are various from acute manifestations such as coronary artery disease, stroke to severe systemic infection. The prevalence of diabetes in Malaysia increase with age in which 83% of population aged over 30 years has diabetes (Wnorlida et al,

2013).

In previous study, the South Asian non responders were significantly more likely to have received medical therapy, have renal disease, have diabetes mellitus type 2, be a current smoker, and have a prior myocardial infarction. They also found high rates of diabetes in the South Asian population. Even though well known as a major risk factor in the development of atherosclerosis. Hypertension and smoking tobacco are major risk factors for CHD, yet South Asians are much less likely to smoke and tend to have lower ambulatory blood pressures (Kevin et al, 2011).

Moreover, risk factors of CHD such as current smoker defined as individuals who reported smoking tobacco or cigarettes include who quit within a year. Meanwhile former smoker defined as smokers who quit more than a year. Obesity defined through ratio between hip and waist. Hypertension and diabetes were defined through selfreport. A previous study found out that risk factors which were more strongly associated with Myocardial Infarction (MI) in women compared to men included hypertension, diabetes, alcohol intake, and physical activity. Only former smoking was more strongly associated with MI in men compared to that in women (Sonia et al, 2008).

According to the World Health Organization, 11.6% of adults in the country have raised blood glucose, 28.8% have raised blood pressure, 10.4% are obese, and 43% of adult males are smokers. The high prevalence of coronary artery disease risk factors hypertension, diabetes mellitus, dyslipidaemia, smoking and obesity are

also consistently reported in the NCVD database registry which publishes annual reports. In terms of risk factor differences, Malays had higher body mass index (BMI), Chinese had higher prevalence of hypertension and hyperlipidemia, while Indians had higher rates of diabetes mellitus and family history of premature CAD (Ang & Chan, 2016). In a case-control study done by Suleiman (2006), and colleagues in Hospital

Kuala Lumpur, out of 102 patients who were admitted to the male medical ward, 44 were diagnosed as CAD and 58 with other diagnosis. Smoking and hypercholesterolemia were significant predictors of CAD diagnosis in this study. However, a study by Chang et al. (2012) in rural Sarawak found lower prevalence of risk factors: 13.5% hypertension, 1.5% diabetes, 15.4% smokers and 22.6% hypercholesterolemia.

2.4.2 HRQoL of Patient with Coronary Heart Disease

Over the past decade, health-related quality of life (HRQoL) has assumed increasing prominence as an important measure of health outcome (Cepeda-Valery, Cheong, Lee, & Yan, 2011). HRQoL is a multifaceted concept that measures the impact of diseases and treatments on the individual's physical, psychological and social wellbeing, such as changes in symptoms, physical functioning and social roles (Stafford, Berk, Reddy, & Jackson, 2007).

Coronary heart disease (CHD) is a major cause of death worldwide. In the past decades, the mortality rate associated with CHD has declined continuously as a result of advancements in disease prevention and treatment. Therefore, the importance of healthrelated quality of life (HRQoL) in survivors of CHD is growing. These days, the purpose of treatment has expanded from reducing morbidity and mortality to improving quality of life. Furthermore, one study suggested that HRQoL is a predictor of longterm mortality in patients with CHD. Accordingly, an understanding of HRQoL in CHD is needed to decide on proper treatment and to determine disease prognosis (Hyung et al, 2014).

In recent years, health-related quality of life (HRQOL) has become an important indicator of health outcome and is of particular interest for treatment strategies in CHD.

The therapeutic aim of any cardiovascular intervention is not only to improve survival but also to alleviate symptoms and improve functional activity (Kevin et al, 2011).

A study has been done in Korea (2014) where data taken from 2007 to 2011 of the Korea National Health and Nutrition Examination Survey. Topic of the study is Health-Related Quality of Life in Coronary Heart Disease in Korea. This study has been done in 2015. This study conducted by the Korean Centers for Disease Control and Prevention (KCDC). In addition, EQ-5D questionnaire used in this study. The result of this study shows that coronary heart disease has a significant impact on the reduction in HRQoL. The impairment of HRQoL occurred in dimensions of mobility, usual activities, pain/discomfort and anxiety/depression and the impairment of HRQoL can be seen more among elderly and female groups (Hyung et al, 2014).

A study has been done on a topic of self-reported health status in coronary heart disease patients and the study has been done in Belgium at 2013. To get the result, researcher need to compare EQ-5D scores in coronary heart disease patients with general population. The result of the study is similar to previous study done among German people. It stated that coronary heart disease patients are having problems on pain/discomfort, usual activities and anxiety/depression. In addition, women reported having symptoms such as angina, pain, nausea, fatigue, syncope, weakness, depression and loss of appetite. This evidence supported with different in physiologically may be the reason why women experience worse outcome. (Delphine et al, 2013)

Poorer health status had been reported compared to population without CHD (Mitchell et al 2015; Imran et al, 2014). Poorer health status caused by different factors, where associated among patient characteristics

and comorbid condition (Dickens, Cherrington, McGowan, 2012). Vascular comorbidities, heart failure and depression are not only effected the outcomes for CHD care but also individuals' health status (Tusek & Petek, 2016). Patients with poor HRQoL, in turn report worsening disease progression and poorer health outcomes (Škodová et al., 2011).

2.5 HRQoL and sociodemographic among patients with CHD

Individuals with higher socioeconomic status, higher education level, who are married and enjoy high levels of social support report better HRQoL (Barbareschi, Sanderman, Kempen, & Ranchor, 2009). On the other hand, females, individuals with a high number of cardiac co-morbidities and those experiencing increased severity of disease, anxiety and depression report poorer HRQoL (Stafford, Soljak, Pledge, & Mindell, 2012; Wang, Thompson, Ski, & Liu, 2012). Age is an inverse predictor with elderly individuals reporting better mental health whilst younger individuals report better physical health (Ford et al., 2008; Kimble et al., 2011; Lee, Choi, Chair, Yu, & Lau, 2012). These predictors would assist healthcare professionals in identifying individuals at risk for poor HRQoL and introducing tailored interventions to mitigate the negative impact of diminished HRQoL (Xie et al., 2008).

A study has done in Korea where impact of CHD on health status and the predictors of health status in Korean population could contribute to knowledge on health status in CHD. Based on Korean population, sample with CHD were generally older than those without CHD. In addition, sample with CHD were more likely to have spouse and lack of education. Sample with CHD had higher prevalence of CHD risk factors and comorbidities except for current smoking and them less likely to be a current smoker. General population in Korea, overall health status of patient with CHD has impaired. Health status adjusted reduction was specially greater in older age and female (Hyung et al, 2014).

CHD is one of the main causes of premature death in the UK (death before the age of 75). 28% of premature deaths in men and 19% of premature deaths in women were from CHD in 2010. (Townsend et al, 2012). Married individuals reported significantly better physical health compared to unmarried ones, possibly due to the presence of a spouse that assists in monitoring the diet and physical activity of the patient (Barry et al., 2006). Higher income individuals reported better physical health, a finding reported elsewhere (Barbareschi et al., 2009). The mechanisms underpinning the observed difference could involve increased access to better healthcare services or even affordability of fitness clubs that could substantially improve physical health outcome (Stafford et al., 2012).

This is because CHD has much bigger impact on younger age due to their productive age compared to older age (Xie et al, 2008). Higher income of individuals also have better physical health which effected their health status (Barbareschi et al, 2009). Better understanding of illness, better education, enhanced behavioural modification and better adherence to management plans lead to improve health status outcomes (Yu et al, 2009). From the study the researcher found out that unemployed individuals reported has better health outcomes especially mental health compared to employed individuals (Skodova et al 2011).

Patients with higher education has better health status and better mobility compared to lower education (Tusek & Petek, 2016). Based on another previous study, CHD effected more on male where 74.1% from 3775 patients with CHD (Delphine et
al, 2015).

There may be varied impact on HRQoL amongst the different ethnic groups that warrants attention given the presence of ethnic differences in CHD in Asian countries such as Singapore; with Indian residents facing higher risk of acute myocardial infarction compared to Chinese and Malay residents (Wong et al., 2012).

2.6 Correlations between domains of HRQoL

However, a study done by Ian, Alan and Carolyn (2013), showed different results where the 6 items of physical health shows mean of 0.61 (SD = 1.95) and it is significant ($p< 0.0001$). Psychological health showed a non-significant result $p>0.05$ ($p = 0.185$). Next, social relationship health showed non-significant which is $p>0.05$ ($p = 0.188$). Environmental health showed non- significant, $p>0.05$ ($p = 0.63$). Mean for psychological, social relationship and environment health is -0.01, 0.42 and 0.19 as respectively. Moreover, this study also showed the result for combination of four health domains which is significant, $p<0.0001$. The total score for the combined scale showed strong correlations with item 1 which assessed patient's perception of overall QoL (Spearman's Rho = 0.64, $p<0.00001$). The scale was very well targeted in the population as none of the patients were found to have a logit value outside of the range of the items.

From the previous study done by Utsav et al. (2017), they found out QOL scores for various domains were obtained with the mean±SD; environmental domain (53.17±15.59), psychological domain (51.23±18.61), social domain (49.86±21.64), and physical domain (45.93±16.90). There were statistically significant correlations among all domains ($p<0.05$ in all cases). Analysis of the strength of correlation among various domains showed moderate inter domain correlation between social and environmental domains (Pearson's $r>0.3$ and <0.5) and strong inter domain correlation among rest of the domains (Pearson's $r>0.5$).

Summary

In this chapter, researcher discussed search strategies done and how it is done to find relevant articles for literature review. The researcher stated the total amount articles in the databases and total amount researcher used after screening and exclusion criteria keyed in. The purpose of literature review is to guide the researcher to have better understanding of the current issue of the research topic and discuss the item content in questionnaire or instrument will be used for this study. It also helps to plan future study methodology after referring to the previous studies done.

CHAPTER 3: METHODOLOGY

3.1 Introduction

In this chapter, researcher will explain the study design, study setting, population and sampling, research instrument, questionnaire, data collection method, validity and reliability. The research design was important to ensure the data collected fair and no bias. Identification of the study setting and population has helped researcher to have a clearer picture in processing data. Identified study design helped in avoiding any irrelevance data, so that it was not included and effected the result. Meanwhile research instrument was help researcher in exact data where answer the research questions and achieved research objectives. Before collecting data, researcher was ethically approved by the respondents and the teaching hospital. Last but not least, data screening is done to process any unrelated data such as incomplete questionnaire or respondent with exclusion criteria.

3.2 Study Design

A cross sectional survey design was chosen when the study was conducted to estimate the prevalence outcome of the interest for a population at the same time. This quantitative design enable researcher to collect a large amount of data in a short time frame which is feasible for researcher. Commonly a cross sectional study was using a survey form. Questionnaire was distributed based on inclusion criteria. Medical records for the period

of February 2018 until September 2018 of selected subjects reviewed and used for data collection form. Self-administered questionnaire used to gather their response.

3.3 Study Setting

This study conducted at University Malaya Medical Centre (UMMC) at Kuala Lumpur. The rationale for selecting this study setting was mainly influenced by available resources. Due to logistical resource, time allowance available was largely influential to selection of the subject hospital because the primary investigator was conducted study with very limited budget. UMMC is the largest university hospital located at southwest corner of Kuala Lumpur. The strategic geographical location, rapidly growing city of over half million inhabitants and near the geographical centre of Peninsular has 1,643 beds which are distributed by 44 wards throughout the medical centre serving a population 1,782,375 for the district of Petaling Jaya. Therefore, patients with chronic diseases like heart disease, diabetes, hypertension or others was easily accessible and to gather enough samples required for this study. The participants will be selected at respective wards.
In UMMC there are 2 places with cardiac problem, namely, Interventional Cardiac Ward (ICW) and Cardiac Ward (4S). ICW consist of 30 beds and patients admitted for cardiac interventional procedures such as angiogram, PCI and stenting.
Meanwhile, 4S located at fourth floor of Menara Selatan consist of 54 beds.

3.4 Population and Sampling

Populations are a complete set of persons or objects that possess some common criteria based on researcher's interest. For target population, it consists of people or objects that meet the designated set of criteria of interest to the researcher. Commonly researcher will use in the study accessible population or study population. However, the data obtained from accessible population.
Samples are elements or members of populations are selected from sampling frame which involve all the elements of a population. Sampling frame is a document or record which contains a list of population or subjects of analysis that can be drawn as respondent or subjects of research. Convenience sampling was used to select sample for this study. All eligible cardiac patients who had voluntarily participated in the survey.
3.4.1 Sample Calculation

Sample size was calculated by using G*Power Software, a statistical power analysis software with ability to calculate power for a wide variety of statistical tests including t-tests, F-tests, and chi-square-tests, among others. A minimum sample of 280 was needed to run one way ANOVA test based on effect size = 0.25, α = 0.05, power = 0.95 and degree of freedom =3. No additional samples were added as survey was interview-administered.
3.4.2 Inclusion and Exclusion Criteria

Sample is selection of the total population or universe that one desired to study. The followings were the inclusion and exclusion criteria for the respondent.
Inclusion criteria

i. Indexed hospital diagnosis of CHD or IHD; ii. Adult aged more than 18 years old.
iii. Clinically stable and physically fit to answer the questions in the questionnaire forms.
iv. Cognitively intact with orientated to person, place and time and not influence by any drug or alcohol.
v. Able to communicate and read in Malay or English.

Exclusion criteria

i. Lodger patients who were not diagnosed with CHD; ii. Foreigner because study focused on local data to examine health status of local patients with CHD.

3.5 Research instrument

Among several questionnaires measuring health-related quality of life (HRQoL) such as PROMIS-29, WOMAC and others, this study used WHOQOL –BREF questionnaire as it was easily available for free and in both English and Malay version.

3.5.1 Questionnaire

The shorter 26-item WHOQOL-BREF was developed from original longer version of 100-item WHOQOL-100. WHOQOL-BREF was a well-established and widely used HRQoL questionnaire used in research. More than 10 languages had tested the reliability. WHOQOL-BREF focuses upon respondents' "perceived" quality of life. The researcher chose this questionnaire to assess each patient's health status because it is one of the best tools developed for cross-cultural comparisons of QOL. Lastly, this questionnaire is concise and easy to administer.

3.5.1.1 Scoring Algorithm

Table 3.1 shows the scoring algorithm. There is no total score and cut of point in computing scoring of WHOQOL-BREF. First two items (Q1 and Q2) were categorized under global domain to reflect overall quality of life and general health. Remaining 24 out of 26 items were divided into 4 domains which were physical health (Domain 1), psychological health (Domain 2), social relationship health (Domain 3) and environment health (Domain 4). The WHOQOL-BREF has 5 points Likert-like scales.

Table 3.1: Scoring algorithm

	Equations for computing domain scores	Raw score	Transformed scores*	
			4-20	**0-100**
Domain 1	(6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		
Domain 2	Q5 + Q6 + Q7 + Q11 + Q19 + (6-Q26) ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		
Domain 3	Q20 + Q21 + Q22 ☐ + ☐ + ☐	=		
Domain 4	Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25 ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐ + ☐	=		

3.5.1.2 Data collection on patient background information

The sociodemographic section consist of 7 items, namely, age, gender, ethnicity, marital status, highest education, employment status and total household income per month. Information gathered from electronic medical record included height, weight, co-morbidities (smoking, hypertension, diabetes mellitus and dyslipidaemia) and others.

3.5.2 Validity and Reliability

Although previous studies had reported good reliability and validity WHOQOLBREF, this instrument was not used for patients with CHD in Malaysia. Therefore, face validity of WHOQOL-BREF was verified by 2 cardiac consultants, 4 nursing personnel who had post basic in coronary care nursing. All items were deemed relevant and no modifications of items were made.

Internal consistency reliability was checked by administering questionnaire to 30 patients. Cronbach's alpha values (α) were 0.76 for physical health, 0.79 for psychological health, 0.80 for social relationship health and 0.87 for environment health.

3.6 Data collection method

Patients who met the inclusion criteria were approached and informed consent was obtained from all patients after explaining purposes and benefits of study using Patient Information Sheet. The questionnaire took approximately 10 to 15 minutes to complete. Questionnaires were interview-administered once with researcher merely reading out the items.

3.7 Data Analysis

Data collected has been checked thoroughly and problem corrected before entering into computer. The questionnaires were processed and numbered. The response has been filled up according to variables and analysed by using Statistical Package for the Social Sciences (SPSS) version 25. The results were analysed by using Independent T-test, ANOVA and Correlation test to identify the significance between patients' with coronary heart disease and health status.

3.8 Ethical consideration

Ethical clearance was obtained (MRECID.NO: 201814-5932). Questionnaires were coded excluding patient's name and were placed in envelope in order to maintain anonymity and confidentiality. The respondents were given the adequate information from the primary investigator about the aim and procedure of the study. Inform consent taken and respondents were informed that the participation was optional and they can withdraw from the study at any time they wanted too. Respondents also informed that their answers were confidential and respondents' anonymities assured by using only code numbers. The study brought no harm to the respondents and the information mainly used for academic purposes. All the information gathered was strictly confidential and only used to carry out this study. All questionnaires were enclosed with cover letter of researcher's identification and purposes of this study. All the questionnaire were collected and kept in covered box.

3.9 Pilot study

Pilot study was a trial study or small study which represents a bigger one to come. It can predict the outcome of a major study in terms of recruitment success, response rate, and material resources requirement among others. Pilot study had been conducted once ethical approval received to see reliability of the study tools among participants. 10% from the total of sample size which is 30 patients were selected in
UMMC, Kuala Lumpur. Although the questionnaire had been validated in context of Malaysia settings but it is never done among patients with CHD in Malaysia. Pilot study was carried out on the 1st March 2018.

Summary

In this chapter, it explained the study design which answered the objectives constructed where the purpose of planning methodology is to guide the research in proper and correct track. The correct methodology enhances the data collection which interpreted in the next chapter. Population and sampling enables the researcher to

study the population based on the subsets as targeted sample. Researcher used convenience sampling with inclusive criteria in selecting the respondents. G*Power software used in calculation of sample size for this study. Research instrument is crucial to be reliable through pilot study and validation from experts in cardiology. Data collection was done systemically to make sure that all items in questionnaire are answered truthfully with the consent of participants.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

This chapter describes the analysis of data collected. The findings relate to the research objectives that guided the study. Data were analysed to assess perceived health status among patient with CHD. However, New York Heart Association (NYHA) and Canadian Cardiovascular Society (CCS) were taken but did not analyse due to huge number of missing data.

4.2 Data screening and data management

In the initial stage of data analysis, all the data collected were entered based on identification numbers tagged to the questionnaire with accordance to the respondents' identification to avoid double entry. All the data were screened and no missing values detected. Normality test was done on the dependant variables (domains of health status) as shown in Table 4.1. All health domains were normally distributed.

Table 4.1: Normality test

	Skewness		Kurtosis		Conclusion
	Statistic	Std. error	Statistic	Std. error	
Physical health	-0.594	0.162	-0.767	0.323	Normally
Psychological health	-0.551	0.162	-0.090	0.323	distribution
Social relationship health	-0.055	0.162	-0.217	0.323	
Environment health	-0.022	0.162	-0.314	0.323	

*. Normally distributed when skewness between -2 to 2

4.3 Response rate

A total of 280 questionnaires were distributed and collected. However, only 225 of data were completed. This represented a response rate of 80% (n=225). All of distributed questionnaires were collected on the spot. 55 respondents were incomplete data due to several reasons. For examples, double answered for an item, confusing and others. Moreover, the researcher had time constrained to collect another data.

4.4 Description of demographic data of the respondents

Table 4.2 display the details of demographic characteristics of the respondents. This study recruited a total of 225 respondents. The highest percentage of respondents are among patient age less than 58 years old, male, Malay, married, secondary school as highest education, with RM2001-RM4000 total household income per month and employment with wages.

Mean for age 57.44 with standard deviation of 11.940. Mean for the weight (kg) of respondents is 69.058. Median for the height (cm) of respondents is 67.00 with interquartile range of 48 to 104.

Table 4.2: Demographic data of respondents (N=225)

Characteristics	n (%)
Gender	
Male	161 (71.6)
Female	64 (28.4)
Ethnicity	
Malay	96 (42.7)
Chinese	78 (34.7)
Indian	51 (22.7)
Marital status	
Married	205 (91.1)
Single	13 (5.8)
Others (separated / divorced / widowed)	7 (3.1)
Highest education	
Primary school	8 (3.6)
Secondary school	154 (68.4)
Tertiary (college / institute / university)	63 (28.0)
Total household income per month	
Less than RM2000	39 (17.3)
RM2001-RM4000	140 (62.2)
RM4001-RM6000	43 (19.1)
More than RM6000	3 (1.3)

Employment status	
Employment for wages	70 (31.1)
Self-employed	45 (20.0)
Looking for work	1 (0.4)
Not looking for work	1 (0.4)
Unable to work	25 (11.1)
Retired	57 (25.3)
Homemaker	26 (11.6)

4.5 Health status in relation to risk factors profile and four health domains.

Parameters in this study referring the health status by level which are physical, psychological, social relationship and environment health domains. BMI and risk factors of CHD also included as parameters for health status among patients with CHD.

4.5.1

Items	n (%)				
	Very poor	Poor	Neither poor nor good	Good	Very good
1. How would you rate your quality of life?	0 (0)	7 (3.1)	70 (31.1)	124 (55.1)	24 (10.7)
	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2. How satisfied are you with your health?	0 (0)	32 (14.2)	80 (35.6)	97 (43.1)	16 (7.1)

Description of respondents' scoring to WHOQOL-BREF

As shown in table 4.3, it is description of respondents for every items of instrument used. It is 5 Likert scale and there are 26 items. Item 1 refer as “Perception in overall quality of life” and Item 2 refer as “Perception in health status” of patients with CHD.

Table 4.3: Distribution of score among respective by items.

Table 4.3: Distribution of score among respective by items.

Items	n (%)				
	Not at all	A little	A moderate amount	Very much	An extreme amount
	0 (0)	12 (5.3)	78 (34.7)	103 (45.8)	21 (9.3)
3. To what extent do you feel that physical pain prevents you from doing what you need to do?					
4. How much do you need any medical treatment to function in your daily life?	12 (5.3)	30 (13.3)	161 (71.6)	11 (4.9)	11 (4.9)
5. How much do you enjoy life?	23 (10.2)	20 (8.9)	123 (54.7)	48 (21.3)	11 (4.9)
6. To what extent do you feel your life to be meaningful?	0 (0)	38 (16.9)	81 (36.0)	104 (46.2)	2 (0.9)
7. How well are you able to concentrate?	0 (0)	30 (13.3)	118 (52.4)	77 (34.2)	0 (0)
8. How safe do you feel in your daily life?	16 (7.1)	0 (0)	137 (60.9)	70 (31.1)	2 (0.9)
9. How healthy is your physical environment?	0 (0)	18 (8.0)	133 (59.1)	70 (31.1)	4 (1.8)
	Not at all	A little	Moderately	Very much	Extremely

10. Do you have enough energy for everyday life?	27 (12.0)	42 (18.7)	105 (46.7)	0 (0)	51 (22.7)
11. Are you able to accept your bodily appearance?	24 (10.7)	0 (0)	96 (42.7)	0 (0)	105 (46.7)
12. Have you enough money to meet your needs?	12 (5.3)	34 (15.1)	132 (58.7)	18 (8.0)	29 (12.9)
13. How available to you is the information that you need in your day-to-day life?	0 (0)	44 (19.6)	110 (48.9)	65 (28.9)	6 (2.7)
14. To what extent do you have the opportunity for leisure activities?	12 (5.3)	29 (12.9)	132 (58.7)	0 (0)	52 (23.1)

Table 4.3: Distribution of score among respective by items.

Items	n (%)				
	Very poor	Poor	Neither poor nor good	Good	Very good
15. How well are you able to get around?	0 (0)	31 (13.8)	118 (52.4)	74 (32.9)	2 (0.9)
	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16. How satisfied are you with your sleep?	25 (11.1)	51 (22.7)	65 (28.9)	73 (32.4)	11 (4.9)
17. How satisfied are you with your ability to perform your daily living activities?	16 (7.1)	46 (20.4)	61 (27.1)	102 (45.3)	0 (0)
18. How satisfied are you with your capacity for work?	36 (16.0)	46 (20.4)	43 (19.1)	89 (39.6)	11 (4.9)
19. How satisfied are you with yourself?	34 (15.1)	49 (21.8)	45 (20.0)	57 (25.3)	40 (17.8)

20. How satisfied are you with your personal relationships?	20 (8.9)	33 (14.7)	73 (32.4)	71 (31.6)	28 (12.4)
21. How satisfied are you with your sex life?	4 (1.8)	39 (17.3)	98 (43.6)	73 (32.4)	11 (4.9)
22. How satisfied are you with the support you get from your friends?	0 (0)	13 (5.8)	102 (45.3)	87 (38.7)	23 (10.2)
23. How satisfied are you with the conditions of your living place?	32 (14.2)	22 (9.8)	24 (10.7)	110 (48.9)	37 (16.4)
24. How satisfied are you with your access to health services?	0 (0)	26 (11.6)	65 (28.9)	86 (38.2)	48 (21.3)
25. How satisfied are you with your transport?	12 (5.3)	26 (11.6)	82 (36.4)	63 (28.0)	42 (18.7)
	Never	Seldom	Quite often	Very often	Always
26. How often do you have negative feelings such as blue mood, despair, anxiety, depression?	0 (0)	9 (4.0)	115 (51.1)	83 (36.9)	18 (8.0)

4.5.2 Health status by HRQoL

Table 4.4 shows the summary of result of 4 health domains which are physical, psychological, social relationship and environment health.
Environment health shows the highest mean with 104.94 and social relationship health shows the lowest mean with 39.95.

Table 4.4: Perceived health status across according to WHOQOL-BREF

Health domains	Range	Mean (SD)
Physical health	52 – 108	83.56 (16.129)
Psychological health	44 – 100	73.48 (14.532)
Social relationsip health	24 – 56	39.95 (7.478)
Environment health	64 – 144	104.94 (19.922)

4.5.3 Health status by BMI and risk factors of CHD.

Body mass index (BMI) calculated by dividing weight (kg) with height multiple height (m^2). As shown in table 4.5, more than half of the respondents have normal body mass index. Only 4 respondents have underweight which is 1.8%. The range of BMI as
stated in the table.

Table 4.5: Body Mass Index (N=225)

	Range	n (%)	Mean (SD)
Underweight	<18.5	4 (1.80)	24.33 (0.674)
Normal BMI	18.5-24.9	137 (61.71)	
Overweight	25.0-29.9	62 (27.93)	
Obesity	>30	19 (8.56)	

Table 4.6 shows the frequency of the risk factors of CHD. Most of the respondents shows that they never smoke, with hypertension, diabetes mellitus and no dyslipidaemia. Table 4.6: Risk factors of CHD (N=225)

Risk factors	n (%)	Mean (SD)
Smoking		0.37 (0.484)
No	142 (63.1)	
Yes	83 (36.9)	
Hypertension		0.66 (0.474)
No	76 (33.8)	
Yes	149 (66.2)	
Diabetes mellitus		0.63 (0.485)
No	84 (37.3)	
Yes	141 (62.7)	
Dyslipidaemia		0.27 (0.446)
No	164 (72.9)	
Yes	61 (27.1)	

4.6 Four health domains in relation to sociodemographic characteristics

Sociodemographic characteristics are consist of age, gender, ethnicity, marital status, highest education, employment status and total household income per month.
These characteristics tested using independent T-test and analysis of variances (ANOVA). Sociodemographic characteristics and level of WHOQOL-BREF (physical, psychological, social relationship and environment health) done the test to determine any differences or not.

4.6.1 Differences between Age and WHOQOL-BREF

Independent T-test was used. As table 4.7 shows no differences between all the health domains and age.

Table 4.7: Age and health domains of WHOQOL-BREF

Sociodemographic	Physical health	Psychological health	Social relationship health	Environment health
	r	r	r	r
Age	-0.110	-0.151*	-0.074	-0.067

*. Correlation is significant at the 0.05 level (2-tailed)

4.6.2 Differences between gender and WHOQOL-BREF

As shown in table 4.8, only gender and environment health shows significantly difference in male (M=105.54, SD=18.815) and female (M=103.44, SD=22.558) conditions; t (223) = 0.714, p=0.44. Moreover, other health domains does not show any differences with gender.

Table 4.8: Gender and health domains of WHOQOL-BREF (male; n=161, female; n=64)

	Gender		t	p
	Male M (SD)	Female M (SD)		
Physical health	85.17 (15.650)	79.50 (16.722)	2.403	0.582
Psychological health	74.48 (14.071)	70.94 (15.455)	1.658	0.196
Social relationship health	40.30 (7.557)	39.06 (7.259)	1.119	0.816
Environment health	105.54 (18.815)	103.44 (22.558)	0.714	0.044

*. M=mean, SD=standard deviation, t=t-value, p=p value
*. Significant when $p < 0.05$

4.6.3 Differences between selected sociodemographic and level of WHOQOL-

BREF

One Way Analysis of Variances (ANOVA) was carried out to analyse sociodemographic (i.e ethnicity, marital status, highest education, total household income per month and employment status) and health domains of WHOQOL-BREF. As shown in table 4.9, only ethnicity between psychological health and social relationship health were statistically significant.

Participants were classified into three groups: Malay (n = 96), Chinese (n = 78) and India (n = 51). Psychological health increased from the Malay (M = 77.04, SD = 13.097), Chinese (M = 69.59, SD = 15.887) and India (M = 72.71, SD = 13.522) ethnicity groups. Psychological health was statistically significantly different between different ethnicity groups, F (2, 222) = 6.008, W^2 = 0.002. Post hoc test showed there is statistically significant higher psychological health mean score in Malay compare to Chinese.

Participants were classified into three groups: Malay (n = 96), Chinese (n = 78) and India (n = 51). Social relationship health increased from the Malay (M = 41.33, SD = 6.932), Chinese (M = 39.38, SD = 7.976) and India (M = 38.20, SD = 7.346) ethnicity groups. Social relationship health was statistically significantly different between different ethnicity groups, F (2, 222) = 3.336, W^2 = 0.04. Post hoc test showed there is statistically significant higher social relationship health mean score in Malay compare to Indian.

Table 4.9: WHOQOL-BREF health domains according to sociodemographic characteristics (N = 225)

Variable		n	Mean	SD	df	t	p	W^2
Physical health								
Ethnicity	Malay	96	86.04	15.573	224	2.148	0.119	
	Chinese	78	82.31	16.556				
	Indian	51	80.78	16.140				
Marital status	Married	205	83.65	16.040	224	1.087	0.339	
	Single	13	78.77	17.541				
	Others (separated/divorced/ widowed)	7	89.71	15.976				
Highest education	Primary school	8	86.50	15.991	224	0.178	0.837	
	Secondary school	154	83.25	15.808				
	Tertiary (college/institute/ university)	63	83.94	17.114				
Total household income per month	< RM2K	39	82.46	16.786	224	0.118	0.950	
	RM2K-RM4K	140	83.60	15.371				
	RM4K-RM6K	43	84.19	18.371				
	> RM6K	3	86.67	15.144				
Employment status	Employment for wages	70	84.63	16.367	224	1.268	0.273	
	Self-employed	45	86.22	15.101				
	Looking for work	1	68.00					
	Not looking for work	1	72.00					

	Unable to work	25	79.04	15.970				
	Retired	57	84.77	15.482				
	Homemaker	26	78.77	18.164				
Psychological health		n	Mean	SD	df	t	p	W2
Ethnicity	Malay	96	77.04	13.097	224	6.008	0.003	0.002
	Chinese	78	69.59	15.887				
	Indian	51	72.71	13.522				
Marital status	Married	205	73.50	14.692	224	0.130	0.879	
	Single	13	72.00	13.856				
	Others (separated/divorced/ widowed)	7	75.43	12.313				
Highest education	Primary school	8	75.50	7.540	224	0.839	0.434	
	Secondary school	154	72.62	15.079				
	Tertiary (college/institute/ university)	63	75.30	13.773				
Total household income per month	< RM2K	39	72.92	13.779	224	0.533	0.660	
	RM2K-RM4K	140	72.86	15.186				
	RM4K-RM6K	43	76.00	13.494				
	> RM6K	3	73.33	4.619				
Employment status	Employment for wages	70	76.29	12.508	224	1.790	0.102	
	Self-employed	45	74.76	13.452				
Looking for work		1	68.00					
Not looking for work		1	44.00					
Unable to work		25	74.08	16.618				
Retired		57	71.02	15.789				
Homemaker		26	69.85	15.146				
Social relationship health		n	Mean	SD	df	t	p	W2
Ethnicity	Malay	96	41.33	6.932	224	3.336	0.037	0.040
	Chinese	78	39.38	7.976				
	Indian	51	38.20	7.346				

Marital status	Married	205	40.10	7.488	224	1.196	0.304	
	Single	13	36.92	7.511				
	Others (separated/divorced/ widowed)	7	41.14	6.817				
Highest education	Primary school	8	41.50	6.024	224	0.187	0.829	
	Secondary school	154	39.84	7.373				
	Tertiary (college/institute/ university)	63	40.00	7.968				
Total household income per month	< RM2K	39	39.79	6.420	224	0.109	0.955	
	RM2K-RM4K	140	39.86	7.608				
	RM4K-RM6K	43	40.47	8.105				
	> RM6K	3	38.67	8.327				
Employment status	Employment for wages	70	40.11	6.843	224	1.193	0.311	
	Self-employed	45	40.89	7.180				
	Looking for work	1	24.00					
Not looking for work		1	32.00					
Unable to work		25	38.88	10.035				
Retired		57	40.14	7.891				
Homemaker		26	39.38	5.389				

Environment health		n	Mean	SD	df	t	p	W2
Ethnicity	Malay	96	108.29	19.058	224	2.506	0.084	
	Chinese	78	101.79	20.605				
	Indian	51	103.45	19.872				
Marital status	Married	205	105.11	20.186	224	0.561	0.572	
	Single	13	100.00	19.528				
	Others (separated/divorced/ widowed)	7	109.14	11.246				
Highest education	Primary school	8	112.00	20.508	224	0.961	0.384	
	Secondary school	154	103.87	19.254				
	Tertiary (college/institute/ university)	63	106.67	21.433				

Total household income per month	< RM2K	39	101.33	22.126	224	1.122	0.341
	RM2K-RM4K	140	104.91	18.708			
	RM4K-RM6K	43	108.84	21.814			
	> RM6K	3	97.33	12.858			
Employment status	Employment for wages	70	107.89	16.527	224	1.280	0.267
	Self-employed	45	106.31	19.808			
	Looking for work	1	76.00				
	Not looking for work	1	84.00				
	Unable to work	25	105.60	22.833			
	Retired	57	103.58	21.603			
	Homemaker	26	98.92	21.092			

Note: significant p-value in bold print

4.7 Correlation between domains of WHOQOL-BREF

Table 4.10 shows the results of correlation between physical, psychological, social relationship and environment health. Spearman's Rho Correlation test was done. Result for correlation between physical and psychological health as shown. The r value is 0.350. The p value is 0.000 ($p<0.05$). Thus, there is moderate positive significant. The higher the physical health, the higher the psychological health.

The r value is 0.688. The p value is 0.000 ($p<0.05$). Thus, there is strong positive significant correlation between physical and social relationship health. The higher the physical health, the higher the social relationship health.

The r value is 0.611. The p value is 0.000 ($p<0.05$). Thus, there is strong positive significant correlation between physical and environment health. The higher the physical health, the higher the environment health.

The r value is 0.534. The p value is 0.000 ($p<0.05$). Thus, there is strong positive significant correlation between psychological and social relationship health. So, the higher the psychological health, the higher the social relationship health.

The r value is 0.636 and the p value is 0.000 ($p<0.05$). Thus, there is strong positive significant correlation between psychological health and environment health. So, the higher the psychological health, the higher the environment health.

The r value is 0.741 and p value is 0.000 ($p<0.05$). Thus, there is strong positive significant correlation between social relationship and environment health. So, the higher the social relationship health, the higher the environment health.

Table 4.10: Correlation between domains of WHOQOL-BREF

Health domains	Physical health	Psychological health	Social relationship health	Environment health
	r	r	r	r
Physical health		0.350**	0.688**	0.611**

Psychological health	0.350**		0.534**	0.636**
Social relationship health	0.688**	0.534**		0.741**
Environment health	0.611**	0.636**	0.741**	

**. Correlation is significant at the 0.01 level (2-tailed)

Summary

In this chapter, data that collected in this study was screen and manage. An analysis was done by researcher to answer all the objective to be achieve in this study. Majority of the respondents that participate in this study has higher mean in environment health compared to social relationship health. In addition, physical health has higher median than psychological health. However, Spearman's correlation test show that there was significant relationship between four health domains. ANOVA, Independent T-test and Spearman's correlation were done for association between sociodemographic and four health domains. Next chapter, a discussion on all of the results as compare to the literature or result from other studies will be done. Implication of study result, recommendation and limitation of the study will be included in the next chapter.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 Introduction

In this chapter, result of this study was compared with previous study with almost same topic or using the same instrument which are health status of Coronary Heart Disease patient and WHOQOL-BREF respectively. Discussion was separated into
several parts included:

- Demographic data
- Health status in relation to risk factors profile and four health domains (i.e.

physical, psychological, social relationship and environment health)

- Four health domains in relation to sociodemographic characteristics.
- Correlation between physical, psychological, social relationship and environment health.

Additionally, the implication of this study to our nursing profession, nursing education and nursing research would be discussed further in this chapter based on the findings that the researcher obtained through the study periods. There were several limitations happened to this study which caused the findings to be effected the results generalization. Recommendation would be explored further in order to enhance the future study.

5.2 Discussion

5.2.1 Demographic data

Based on this study, male has 71.6% and female has 28.4% from a total of 225 respondents. Most of the respondents are married with 91.1% (n = 205). Moreover, the highest educational level of respondents is secondary education with 68.4% (n = 154) and the lowest is primary education with 3.6% (n=8). 62.2% (n = 140) respondents has monthly income of RM2001-RM4000 and 31.1% (n=70) respondents has employment for wages as their employment status.

Similar result of the respondents shown in previous study done by Tchicaya & Lorentz (2016) which consist of 70.7% male and 29.3% female. This study shows that percentage of male respondents is higher than percentage of female respondents. In Southern Brazil and South Australia, married respondents are the highest and respondents with others (widowed/divorced) is the lowest (Viviane et al, 2018). The majority of the subjects was Malay and married (Wnorlida et al, 2013). For highest education, 54.2% had secondary education, 14.7% had primary education and 6.1% had tertiary education (Monika, Garth & Marvin, 2009). According to Litza et al (2012), the majority of the samples were male (67.5%) and married (75.6%).

According to Monika, Garth and Marvin (2009), opposite results was shown when there is 43% males and 57% females from total of 491 patients participated. Most were 'single' (88%) with only 10% being married. Only 51.5% were employed
currently.

5.2.2 Health status in relation to risk factors profile and four health domains

Based on this study, all four of health domains shows normally distributed. The highest mean scores is environment health and the lowest mean scores is social relationship health. The results are 104.95 and 39.95 as respectively.

However, this previous study shows different result compared to this current study. The mean scores for the physical health and environmental health were lower than the other domain scores (Monika, Garth and Marvin, 2009).

Body mass index (BMI) calculated by dividing weight (kg) with height multiple height (m^2). More than half of the respondents have normal body mass index. Only 4 respondents have underweight which is 1.8%. Most of the respondents shows that they never smoke, with hypertension, diabetes mellitus and no dyslipidaemia.

According to the World Health Organization, 11.6% of adults in the country have raised blood glucose, 28.8% have raised blood pressure, 10.4% are obese, and 43% of adult males are smokers (Choon Seong & Kok Meng, 2016). Compared to this study only blood glucose level and blood pressure showed similar finding.

However, different finding shown through previous study done by Sonia et al,

(2008), risk factors which were more strongly associated with Myocardial Infarction (MI) in women compared to men included hypertension, diabetes, alcohol intake, and physical activity. Only former smoking was more strongly associated with MI in men compared to that in women.

5.2.3 Four health domains in relation to sociodemographic characteristics.

In this study, age is categorized into less than 58 years old and more than 58 years old. After done the test, the results shows that mean for age less than 58 years old has the highest mean in all four health domains. Male has higher mean in all health domains than female. Primary group for educational level shows the highest

mean in physical, psychological, social relationship and environment health. The mean are 86.50, 75.50, 41.50 and 112.00 respectively. Others (separated/divorced/widowed) group for marital status has the highest mean in all health domains.

Similar finding shown in a study done by Emdadul et al, (2012) physical, psychological, social relationship and environment health had the highest mean score among male respondents. The mean score are 55.8, 56.8, 66.9 and 59.0 as respectively.

However, different finding shown in previous study done by Viviane et al, (2018) the physical health in both studies were higher in males, younger individuals with higher educational level or higher family income.

According to Utsac Joshi et al, (2017) age is only significant difference for social relationship health ($p = 0.005$). Moreover, male has higher mean for physical health and psychological health (M = 47.2: 51.7) but female has higher mean for social relationship health and environmental health (M = 50.0: 53.6). For physical health, secondary and tertiary had the same mean which is 48.3. Educational level for psychological, social relationship and environmental health are higher among tertiary level. The mean are 55.4, 53.9 and 55.1 respectively. The same study was found out that unmarried respondents has higher mean in all health domains except environmental health. It is significant difference between income with psychological health and environmental health ($p<0.05$).

A study done by Po-Chin Strong et al. (2012), where they different between the gender of CABG patients and physical, psychological, social relationship and environment health. Female shows that has higher mean compare to male in all health domains. The result for female is (M=57.60, SD = 12.01), (M=73.8, SD = 16.20), (M=72.60, SD = 13.05) and (M=70.20, SD = 7.82) which is physical, psychological, social relationship and environment health, as respectively.

5.2.4 Correlation between physical, psychological, social relationship and environment health

In this study, there is strong positive significant between all health domains except relationship between physical and psychological health which shows moderate positive significant.

However, a study done by Ian, Alan and Carolyn (2013), showed different results where the 6 items of physical health shows mean of 0.61 (SD = 1.95) and it is significant ($p< 0.0001$). Psychological health showed a non-significant result $p>0.05$ ($p = 0.185$). Next, social relationship health showed non-significant which is $p>0.05$ ($p = 0.188$). Environmental health showed non- significant, $p>0.05$ ($p = 0.63$). Mean for psychological, social relationship and environment health is -0.01, 0.42 and 0.19 as respectively. Moreover, this study also showed the result for combination of four health domains which is significant, $p<0.0001$. The total score for the combined scale showed strong correlations with item 1 which assessed patient's perception of overall QoL (Spearman's Rho = 0.64, $p<0.00001$). The scale was very well targeted in the population as none of the patients were found to have a logit value outside of the range of the items.

5.3 Implication of finding

5.3.1 Patient management

Patient management here refers to on how patient care was delivered. Is it cost effective or not? From this study, the researcher found out that there is strong relationship between all health domains except relationship between physical health and psychological health which showed moderate relationship. So, the researcher conclude that when one health domain increase, another health domain will be increase.

Delivery patient care can be improvise since there are relationship between the health domains. This is because the health domains in this study measure the major health domains which are physical health, psychological health, social relationship health and environment health.

Aware of cultural function, belief and practices in the community especially among patients with CHD. The cultural awareness helps in providing cultural care. This study shows the adaptation process among male patients are higher compared to female patients. This is because male is more dependent in seeking the treatment compared to female.

5.3.2 Patient education

From this study, nurses know the risk factors of CHD. So, the nurses might take actions to educate patient on how to prevent the recurrent CHD. This is because CHD can be reoccur due to unhealthy lifestyle and the risk factors are uncontrolled such as diabetes, hypertension, BMI, smoking and lipid level. Moreover, this study can be used in patient education on how to maintain their health status and the risk factors of CHD.

Every patient has different learning ability. Before starting the patients' education, nurses should assess and consider the education level, teaching method, language used, level of knowledge, and others during the assessment. In order to create an environment that is conducive to patient education, nurses should develop a supportive relationship with their patients. Patients equipped with knowledge can make lifestyle changes and remain self-sufficient even if they have a chronic medical condition. Education can increase the likelihood of successful outcomes and improve patient safety and satisfaction (Nurse Journal, 2018).

5.3.3 Nursing education and research

Based on the findings, it was helpful in educate the patients of CHD. Nurses knows what should be educate to patients of CHD. For example, most of them passed the secondary education so, they might lack of information regarding their health condition. Nurses educate the patient based on their education level. Hence, the organization might encourage or plan for health promotion on the coronary heart disease. This study found out that the characteristics of patients the most are Malay, married, total household income per month of RM2001-RM4000 and employment for wages as their employment status. These characteristics shows that these people need to be prioritized for any education or exposure.

There is limited literature review on the health status of patients with coronary heart disease especially using the same tools, WHOQOL-BREF. There are a lot of studies done using same instrument but the study is focus on another chronic disease such as psychiatric, diabetes type 2, chronic kidney disease and others. It is importance for nurses to perform evidence-based practice regarding health status of patients with CHD. There is the needs in enhancing and increasing the number of research regarding health status among the patients. It helps in improving nursing care in the future and the competency.

5.4 Limitation

There were a few of limitation has been identified by the researcher throughout the study periods. First and foremost, limitation identified in this study is the population is too small and conducted only at a single medical center. The participants who took part in this study may not have been a representative sample of the populations examined. It is cross-sectional design, which prohibits definitive conclusion about causality. It is interviewed based survey. Therefore, the researcher might be misinterpreting the respondents' answer. Variety of version was limited only Malay and English. However, there were some patients unable to read or understand both languages.

5.5 Recommendation

Researcher had come out a few of recommendations for future research related to health status among patient with CHD. This study had only involved small group of sample and focusing on only one medical center. Thus, it would be ideal if the study can involve more medical center and conducted large sample. Future study

can be done by involving different medical centre and compare the results.

5.6 Conclusion

In Malaysia, there were many considerable research had been done. The findings continues to show that CHD is the major cause of mortality and morbidity in the country. A high prevalence of risk factors for CHD is present in the population. Greater efforts must be made towards especially educate public to change dietary habits and other at risk lifestyles such as smoking, and to increase awareness of healthy living such as regular exercise, and others, in order to reduce the prevalence of CHD in the country.

Greater efforts at secondary prevention are also needed to improve outcomes once CHD is diagnosed. From this study, the researcher can conclude, the health domains are strongly significant except physical and psychological health. Physical and psychological health are shows positive moderate significant. For the risk factors of CHD, most of the respondent showed non-smoker, having hypertension, diabetes, normal BMI and no dyslipidaemia. The results able to help local authorities to initiate various interventions

to improvise the health status among patients with CHD. Limitations and recommendations of the study had been stated clearly in this chapter which would help the next researcher who interest in the same field to improve future study and ensure the results able to generalize to the population. Measuring health status of patient might help in allows personnel to provide physical, psychological and social support to the affected patients.

REFERENCES

(2018, May 16). Retrieved from https://www.who.int/gho/mortality_burden_disease/en/

Admin. (2010, June 27). Coronary heart disease. Retrieved from https://www.healthknowledge.org.uk/public-health-textbook/disease-causationdiagnostic/2b-epidemiology-diseases-phs/chronic-diseases/coronary-heart-disease

Admin. (2010, June 27). Coronary heart disease. Retrieved from https://www.healthknowledge.org.uk/public-health-textbook/disease-causationdiagnostic/2b-epidemiology-diseases-phs/chronic-diseases/coronary-heart-disease

American Heart Association. Heart disease and stroke statistics 2015 update. Circulation 2015; 131: e29-e322.

Asnani, M. R., Lipps, G. E., & Reid, M. E. (2009). Utility of WHOQOL-BREF in measuring quality of life in Sickle Cell Disease. Health and Quality of Life

Outcomes,7(1), 75. doi:10.1186/1477-7525-7-75

Barbareschi, G., Sanderman, R., Kempen, G., & Ranchor, A. (2009).Socioeconomic status and the course of quality of life in older patients with coronary heart disease.

International Journal of Behavioral Medicine, 16(3), 197–204.

Barry, L. C., Stanislav, V. K., Lichtman, J., Vaccarino, V., & Krumholz, H. M. (2006).Social support and change in health-related quality of life 6 months after coronary artery bypass grafting.Journal of Psychosomatic Research, 60, 185–193.

Caceres VdM, Stocks N, Adams R, Haag DG, Peres KG, Peres MA, et al. (2018) Physical activity moderates the deleterious relationship between cardiovascular disease, or its risk factors, and quality of life: Findings from two population-based cohort studies in Southern Brazil and South Australia. PLoS ONE 13(6): e0198769. https://doi.org/10.1371/journal.pone.0198769

Caceres, V. D., Stocks, N., Adams, R., Haag, D. G., Peres, K. G., Peres, M. A., & González-Chica, D. A. (2018). Physical activity moderates the deleterious relationship between cardiovascular disease, or its risk factors, and quality of life: Findings from two population-based cohort studies in Southern Brazil and South Australia. Plos One,13(6). doi:10.1371/journal.pone.0198769

Chang CT, Lee PY, Cheah WL. The prevalence of cardiovascular risk factors in the young and middle-

aged rural population in Sarawak, Malaysia. Malays J Med Sci.
2012; 19(2): 27-34.
Definition of Coronary artery disease. (n.d.). Retrieved from https://www.medicinenet.com/script/main/art.asp?articlekey=10267
Definitions for health status health status. (n.d.). Retrieved from https://www.definitions.net/definition/health status
Delphine D.S., Els Clays, Lieven A., Sofie P., Kornelia K. & Dirk D.B. (2015). Selfreported health status in coronary heart disease patient: A comparison with the general population, 14(2) 117-125
Dickens, C., Cherrington, A., & McGowan, L. (2012).Depression and health-related quality of life in people with coronary heart disease: A systematic review.European Journal Cardiovascular Nursing, 11, 265–275
Ford, E., Mokdad, A., Li, C., McGuire, L., Strine, T., Okoro, C., et al. (2008).Gender differences in coronary heart disease and health-related quality of life: Findings from 10 states from the 2004 Behavioral Risk Factor Surveillance System.Journal of Women's Health, 17(5), 757–768.
Gough, D. (2011).Coronary heart disease.Practice Nurse, 41(10), 12–17
HRQOL Concepts | CDC. (n.d.). Retrieved from https://www.cdc.gov/hrqol/concept.htm
Hyung T.L, Jinho S, Young-Hyo Lim, Kyung S.K, Soon G.K, Jeong H.K et al (2014). Health related quality of life in coronary heart disease in Korea: the Korea national health and nutrition examination survey 2007 to 2011, 66(4) 326-332
Joshi, U., Subedi, R., Poudel, P., Ghimire, P. R., Panta, S., & Sigdel, M. R. (2017).
Assessment of quality of life in patients undergoing hemodialysis using WHOQOLBREF questionnaire: A multicenter study. International Journal of Nephrology and Renovascular Disease,Volume 10, 195-203. doi:10.2147/ijnrd.s136522
Kimble, L. P., Dunbar, S. B., Weintraub, W. S., McGuire, D. B., Manzo, S. F., & Strickland, O. L. (2011).Symptom clusters and health-related quality of life in people with chronic stable angina.Journal of Advanced Nursing, 67(5), 1000–1011
Kimble, L. P., Dunbar, S. B., Weintraub, W. S., McGuire, D. B., Manzo, S. F., & Strickland, O. L. (2011).Symptom clusters and health-related quality of life in people with chronic stable angina.Journal of Advanced Nursing, 67(5), 1000–1011
Kiropoulos, L. A., Meredith, I., Tonkin, A., Clarke, D., Antonis, P., & Plunkett, J. (2012).
Increased Psychosocial Stress in Greek-Born Immigrants Compared to AngloAustralians with Coronary Heart Disease: The Healthy Heart, Healthy Mind Study. Heart, Lung and Circulation, 21(12), 794-802. doi:10.1016/j.hlc.2012.07.018
Lee, D. T. F., Choi, K. C., Chair, S. Y., Yu, D. S. F., & Lau, S. T. (2012). Psychological distress mediates the effects of socio-demographic and clinical characteristics on the physical health component of health-related quality of life in patients with coronary heart disease. European Journal of Preventive Cardiology, 1–10, http://dx. doi.org/10.1177/2047487312451541.
Marı´a S.T., Soledad M.C., Ignacio R.D., Antonio B.C., Fernando L.F & Inmaculada Failde Martı´nez (2014). Health-related quality of life in coronary heart disease compared to norms in Spanish population, 13: 1401-1407.
Mitchell PM, Al-Janabi H, Richardson J, Iezzi A, Coast J. The relative impacts of disease on health status and capability wellbeing: a multi-country study. PLoS One. 2015; 10(12):e0143590
Muhammad I, He HG, Kowitlawakul Y & Wang W. Narrative review of health-related quality of life and its predictors among patients with coronary heart disease. Int J Nurs
Pract. 2014; 27(3) 175–80
Pomeroy, I., Tennant, A., & Young, C. (2013). Rasch analysis of the WHOQOL-BREF in post-polio syndrome. Journal of Rehabilitation Medicine, 45(9), 873-880. doi:10.2340/16501977-1186
Risk factors. (2017, October 05). Retrieved from https://www.who.int/topics/risk_factors/en/
Škodová, Z. P., Nagyová, I., Rosenberger, J., Ondušová, D., Middel, B., & Reijneveld, S. A. (2011). Psychosocial predictors of change in quality of life in patients after coronary interventions.Heart & Lung, 40(4), 331–339
Sonia S. Anand, Shofiqul Islam, Annika Rosengren, Maria Grazia Franzosi, Krisela Steyn, Afzal Hussein Yusufali, Matyas Keltai, Rafael Diaz, Sumathy Rangarajan, Salim Yusuf, on behalf of the INTERHEART Investigators; Risk factors for myocardial infarction in women and men: insights from

the INTERHEART study, European Heart Journal,
Volume 29, Issue 7, 1 April 2008, Pages 932–940, https://doi.org/10.1093/eurheartj/ehn018

Stafford, M., Soljak, M., Pledge, V., & Mindell, J. (2012).Socio-economic differences in the health-related quality of life impact of cardiovascular conditions. European Journal of Public Health, 22(3), 301–305.

Stafford, M., Soljak, M., Pledge, V., & Mindell, J. (2012).Socio-economic differences in the health-related quality of life impact of cardiovascular conditions. European Journal of Public Health, 22(3), 301–305.

Strong, P., Lee, S., Chou, Y., Wu, M., Hung, S., & Chou, C. (2012). Relationship between quality of life and aerobic capacity of patients entering phase II cardiac rehabilitation after coronary artery bypass graft surgery. Journal of the Chinese Medical Association,75(3), 121-126. doi:10.1016/j.jcma.2012.02.005

Suleiman A, Md Idris MN. Risk factors of coronary heart disease among male patients in Kuala Lumpur Hospital: a case-control study,1995. Jurnal Kesihatan Masyarakat. 2006: 11-2

Syed, E. H., Poudel, K. C., Sakisaka, K., Yasuoka, J., Ahsan, H., & Jimba, M. (2012).

Quality of Life and Mental Health Status of Arsenic-affected Patients in a Bangladeshi Population. Journal of Health, Population and Nutrition,30(3). doi:10.3329/jhpn.v30i3.12289

Tchicaya, A., & Lorentz, N. (2016). Socioeconomic inequalities in health-related quality of life between men and women, 5 years after a coronary angiography. Health and Quality of Life Outcomes,14(1). doi:10.1186/s12955-016-0570-z

The Nurse's Role in Patient Education. (2018, March 22). Retrieved from https://degree.astate.edu/articles/nursing/nurses-role-patient-education.aspx

The top 10 causes of death. (n.d.). Retrieved from https://www.who.int/en/news-room/factsheets/detail/the-top-10-causes-of-death

Townsend N, Wickramasinghe K, Bhatnagar P, Smolina K, Nichols M, Leal J, LuengoFernandez R, Rayner M (2012). Coronary heart disease statistics 2012 edition. British Heart Foundation: London.

Tušek-Bunc and PetekHealth and Quality of Life Outcomes (2016) 14: 159 DOI 10.1186/s12955-016-0560-1

Virpi Kemppainen, Kerttu Tossavainen, Hannele Turunen; Nurses' roles in health promotion practice: an integrative review, Health Promotion International, Volume 28, Issue 4, 1 December 2013, Pages 490–501, https://doi.org/10.1093/heapro/das034

Wang, W., Thompson, D. R., Ski, C. F., & Liu, M. (2012). Health-related quality of life and its associated factors in Chinese myocardial infarction patients. European Journal of Preventive Cardiology, http://dx.doi.org/10.1177/2047487312454757(in press).

WHOQOL: Measuring Quality of Life. (2014, March 11). Retrieved from https://www.who.int/healthinfo/survey/whoqol-qualityoflife/en/index5.html

Wnorlida, W.I. & Norsa'adah, Bachok & Aniza, A.A. & Norakmar, G & Aljunid, Syed. (2013). Associated factors of coronary heart disease in patients with type 2 diabetes mellitus. International Medical Journal. 20. 668-671. World Health Organization. Country statistics and global health estimates, 2015.

Wong, C. P., Loh, S. Y., Loh, K. K., Ong, P. J. L., Foo, D., & Ho, H. H. (2012).Acute myocardial infarction: Clinical features and outcomes in young adults in Singapore.

World Journal of Cardiology, 4(6), 206–210.

World Health Organization. Country statistics and global health estimates, 2015

Xie, J., Wu, E. Q., Zheng, Z. J., Sullivan, P. W., Zhan, L., & Labarthe, D. R. (2008).Patient reported health status in coronary heart disease in the United States - Age, sex, racial, and ethnic differences. Circulation, 118, 491–497.

ASSOCIATION OF PERSONALITY TYPES AND PERCEIVED LEARNING STYLES OF NURSING STUDENTS IN CLASSROOM LESSONS

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ABSTRACT

Background: Association between learning styles and personality types has been studied across different student populations with mixed findings being observed. How personality types influence learning styles among nursing student populations lack empirical evidence.
Objectives: This study aimed to examine learning styles preferences during classroom lessons and the personality types among nursing students across different demography and academic background.
Methods: A cross-sectional study conducted in 2018. A total of 160 diploma nursing students and 160 baccalaureate nursing students from three learning institutions had self-administered two questionnaires, namely, the Learning Style Survey and Ten Item Personality Inventory.
Results: Majority of respondents were visual learner (n=207, 64.7%) and have more than one personality type (n=68, 21.2%). Unlike personality types, learning styles was found to be associated with nursing student type (diploma vs baccalaureate). Four significant but weak correlations ($r \approx 0.12$ to 0.16; $p < 0.05$) were observed between the three categories of learning styles and five categories of personality.
Conclusion: The diploma and baccalaureate nursing students have different learning styles; thus, requiring different approach to classroom teaching. Students who predominantly prefer visual learning styles could be more likely to have extraversion, conscientiousness and emotional stability personality types; while students who prefer kinesthetic learning styles tend to have emotional stability personality type. Further study with larger sample size or/and using different instrument measuring learning styles and personality types is recommended.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Learning styles refers to the preferential way in which the student absorbs, processes, comprehends and retains the information. Learning style also can be described as a factors, behaviors, and attitudes that assist learning for an individual in any situation (Teach.com, 2017). Personality type is a collection of personality traits that are thought to exist together, especially as determined by a certain pattern of responses to a

personality inventory. It also refers to the habits, attitudes as well as physical traits of an individual which are not similar but have vary from group to society, everyone has personality, which may be good or bad, impressive or unimpressive (Umar, 2011).

The quality of students' thoughts is critical to learning which also can be associated with their personality and could potentially determine their academic achievement. Universities students differ in how they process, encode, recall, organize, and apply the information they learned (Meera, 2011).

The majority of previous studies have examined the relationship between personality types and learning styles via the Myers-Briggs Type Indicator (MBTI). One such study by Fallan (2007) said that a student's personality type is related with the most effective form of learning and if this thing ignored, can present a conflict in the process of education.

Another study conducted by Meera Komarraju (2011) also said that personality and learning styles are both likely to play significant roles in influencing academic achievement. College students which is 308 undergraduates completed the Five Factor Inventory and the Inventory of Learning Processes and reported their grade point average. Two of the Big Five traits, conscientiousness and agreeableness, were positively related with all four learning styles which are synthesis analysis, methodical study, fact retention, and elaborative processing. The Big Five together explained 14% of the variance in grade point average (GPA), and learning styles explained an additional 3%, suggesting that both personality traits and learning styles contribute to academic performance.

Fazarro, Pannkuk, and Pavelock (2009) conducted another study, which examined how learning styles can be affected by an individual's personality types. This study specifically focused on how CTES teachers could improve their instruction by diversifying curriculum and pedagogy to accommodate student-learning preferences. A sample of 87 Agricultural students revealed that 'Structure' was the most prevalent learning style. By implementing "Structure" into the classes and laboratories, educators of career and technical students could better prepare their instruction plans to cater to this preferred learning style (Fazarro, et al., 2009).

There are several themes that can be observed by examining the related personality and learning style literature. First, a relationship between personality and learning style has been identified in select educational settings (Fallan, 2007). Second, the majority of studies, which found a relationship between personality and learning style, used the MBTI (Fallan, 2007). Thus, research on the relationship between personality and learning style within an educational setting could yield valuable data regarding how to better meet the educational needs of students in preparation for the world-of work.

1.2 Problem Statement

Differences in learning style and personality for every individual have long been considered a fundamental factor determining individual behavior and performance (Ming Li & Armstrong, 2015). Yet whether or not learning style is a wholly integral part of personality theory remains unclear (Ming Li et. al, 2015). Some studies concluded that learning style is a sub-set of personality based on consistent correlations between the those two whereas other studies have concluded that learning style is distinctive and worthy of investigation separately from personality due to shared variance between the

two constructs being low (Ming Li et. al, 2015). While sample, sample size and analytical methods adopted by different studies, and interpretations by researchers all contribute to different conclusions from previous studies, further investigations that can contribute to this scholarly debate is needed (Chamorro-Premuzic & Furnham, 2009; Ming Li et. al, 2015).

From many studies that have been done, every student has their own unique way in learning and personality types (Zayeed, 2007). They learn by visualizing, hearing, reflecting, acting, logically, intuition and memorizing (Zayeed, 2007). So, because of this unique characteristic, educators cannot assume that students would be able to learn well by depending on what the educator believes to be the best (Zayeed, 2007). When we look at university typical lectures and classroom with many students, it is important for the lecturers to identify the students learning styles (Zayeed, 2007).

Educators tend to teach the way they were taught, and a strong relationship exists between their teaching style and preferred learning style (Hickcox, 2006; Mark, Richard, Danielle, 2013). These critical findings show a problem that need attention as we do not all come from the same mold in regard to our specific learning style or personality type (Hickcox, 2006; Mark et.al, 2013). All learning style research and application efforts must focus on the development of the individual and the whole learner (Hickcox, 2006; Mark et.al, 2013). Learning styles, as well as personality types should be accounted for when considering the topics of curriculum development and instruction (Hickcox, 2006; Mark et.al, 2013). With the overload of curricular assessment demands, and a vast amount of learning style models, teachers and lecturers may find themselves in a state of confusion regarding the use of learning style models during teaching in the classroom (Hickcox, 2006; Mark et.al, 2013).

While several studies have examined the relationship between learning style and personality type, just a few have examined if there any relationship between personality types and the learning styles of nursing students and registered nurses (Fallan, 2006). But all of the studies is being done regarding on learning styles and personality types during clinical practice and there was no studies being done during classroom lessons among nursing students and registered nurses.

Thus, this study sought to determine whether a relationship exists between the perceived learning styles and personality types among nursing students during classroom lessons. This topic was examined for the purpose of providing more information regarding how to better serve the educational needs in preparing this nursing student population for the world-of-work in hospital. Other than that, the importance of this study is to make the students aware with their learning styles and personality types in order to match their learning styles with personality types.

1.3 Significance of Study

1.3.1 Educators

Learning styles indicate an individual's preferential focus on different types of information, the different ways of perceiving information, and the rate of understanding information. Having an understanding of the learning style preferences of students can provide effective learning strategies for teachers to use. Other than that, educators also can promote problem-solving skills by using student's specific learning styles during

classroom lessons. By making students aware of their learning style educators also can encourage them to know the significance of suitable learning styles for different subjects and that such styles may hopefully be changed to suit changing learning situations. After that, by educators providing a learning environment that suitable with the learning styles of students, students can learn better and feel more comfortable in their own learning styles instead of need to adapt themselves to the different of teaching styles of educators. Educator also can become more flexible in knowing their students learning styles due to the fact that educators show their teaching styles and learning environment. In addition, having an educator who can understands the learning style of a student also can minimize problems that may come up during learning session.

1.3.2 Students

By matching a student learning style to their personality types, it can increase student achievement and satisfaction. According to Naimie et al. (2010), "learning style specialists have confirmed the theory that students will learn more and enjoy the class experience and environment when they can use their preferred learning styles" (Naimie et al., 2010). By making the students aware with their learning styles, it can gives students a head start and maximizes their learning potential and also help students customized their techniques to score better on tests and exams. Other than that, it can help the student by showing them how to overcome the limitations of poor instructors, reduces the stress and frustration of learning experiences and expands their existing learning and studying strategies. In addition, when the student aware their learning styles and personality types, it can increases their self-confidence, improves their self-image and gives them insight into their strengths, weaknesses, and habits. Lastly, when the students know their learning styles that suit with their personality types, it will enables them to enjoy any learning process during classroom lessons.

1.4 Objectives

1.4.1 General Objective

To investigate association between perceived learning styles preferences profile and personality types among nursing students during classroom lessons.

1.4.2 Specific Objectives

1. To identify learning styles preferences during classroom lessons among nursing students across different demography and academic background.
2. To examine personality types of nursing students across different demography and academic background.
3. To determine association between learning styles preferences and personality types of nursing students.

1.5 Research Questions

1. What is learning style preferences among nursing students during classroom lessons?
2. What is predominant personality types of nursing students?
3. Is there any relationship between learning style preferences and nursing student's demography and academic background?

4. Is there any relationship between personality types and nursing student's demography and academic background?
5. What is the association of personality types towards learning style preferences among nursing students?

1.6 Operational Definitions

Learning Styles

The word "learning styles" tells that every student learns differently. Technically, learning styles refers to the preferential way in which the student absorbs, processes, comprehends and retains the information. Learning style also can be described as a factors, behaviors, and attitudes that assist learning for an individual in any situation (Teach.com, 2017). In this study, learning styles refers to three types of learning styles which are kinesthetic, visual and auditory.

Personality Types

Personality type is a collection of personality traits that are thought to exist together, especially as determined by a certain pattern of responses to a personality inventory. It also refers to the habits, attitudes as well as physical traits of an individual which are not similar but have vary from group to society, everyone has personality, which may be good or bad, impressive or unimpressive (Umar Farooq, 2011). In this study, personality types refer to five types of personality which are extraversion, agreeableness, conscientiousness, emotional stability and openness to experiences which use the ten item personality measure (TIPI). This TIPI is based on Big Five dimensions.

Nursing Student

Nursing student is a student in a program leading to certification in a form of nursing and usually applied to students in an RN or practical nurse program (Medilexicon, 2017). Nursing student also is someone who is studying or training to be a nurse (Collins Dictionary, 2017). In this study, nursing student refers to diploma nursing and undergraduate nursing students from University Malaya Medical Centre (UMMC), University of Malaya (UM) and MARA University of Technology Malaysia (UITM) from year 1 to year 4. Nursing students also have lessons in classroom and lecture like students from other courses. Hence, they also have different learning style preferences during classroom lessons.

Classroom Lessons

Classroom is a place where classes are taught in a school, college or university (Merriam-Webster, 2018) while lesson is a fixed period of time when people are taught about a particular subject or taught how to do something (Collins Dictionary, 2018). Usually involves one or more students being taught by a teacher or instructor. Lessons are generally taught in a classroom but may also take place in a situated learning environment. For this study, classroom lessons were referred as lessons that related with nursing course or subjects that take place in university or college.

1.7 Summary

Learning styles refers to the preferential way in which the student absorbs, processes, comprehends and retains the information while personality type is a collection of personality traits that are thought to exist together, especially as determined by a certain pattern of responses to a personality inventory. The majority of previous studies have examined the relationship between personality types and learning styles and mostly said that a student's personality type is related with the most effective form of learning and if this thing ignored, can present a conflict in the process of education. Hence, all nursing students are expected to have their own learning style preferences and also their own personality types. From that, the association of both personality types and learning styles can be done.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

In research, literature review is a key step in research process. Before starting any

research study, literature review of previous studies related to the proposed research study should be done. Literature review of previous study can contribute to new study, ideas, knowledge and information. Usually quantitative design of research can get many research articles and journals while qualitative design of research may find a little to access the articles or journals even though the phenomena have been studies before.

A literature review is an evaluative report of information found in the literature related to selected area of study. The review should describe, summarise, evaluate and clarify this literature. It should give a theoretical base for the research and help the author determine the nature of research. Works which are irrelevant should be discarded and those which are peripheral should be looked at critically.

To search for literature reviews, a systematic way should be used in order to get the most related literature to the studies. Information and Technology course has taught students to utilize database wisely. In this study, literature review search strategies will be explained.

2.2 Search Strategies

Literature review in the area of Association of among students published over the past 10 years was conducted. The electronic search was performed on the following databases subscribed by the University of Malaya digital library: PubMed, CiNaHL@EBSCO, ScienceDirect, Medline. The keywords used in the databases search included learning styles and personality types.

To search for the precise literatures, relevant keywords should be keyed to filter out irrelevant articles. The inclusion and exclusion criteria were established to guide the search for related articles. The following inclusion criteria were used:

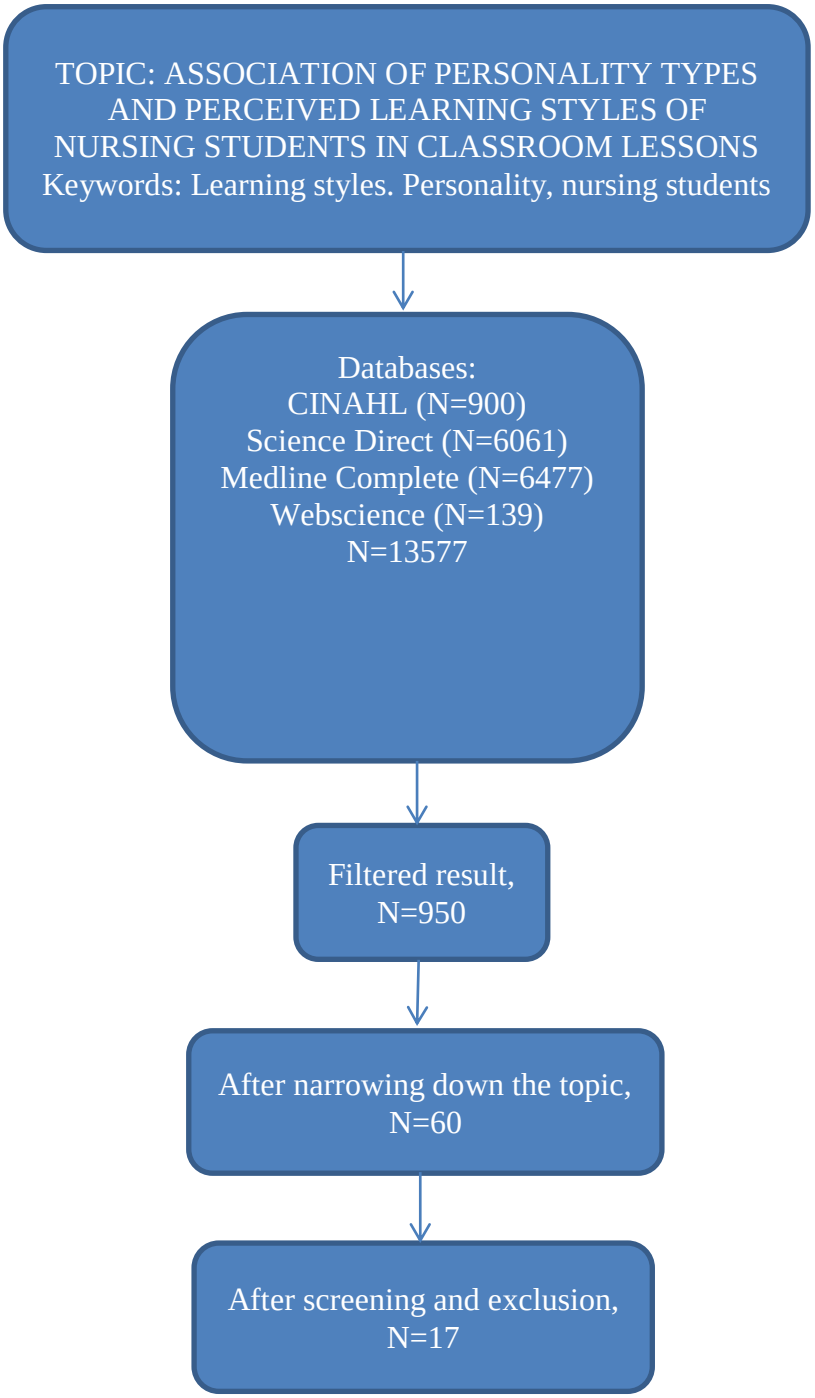
- English language articles
- Primary search articles
- Articles published within year 2007-2017
- Title only

The exclusion criteria were:

- Qualitative research design

As shown in Figure 2.1, the keywords used to search the precise literatures in database were learning styles, personality and nursing. About 13577 literatures were found which consisted from CINAHL, Science Direct, Medline Complete and Webscience. After filtered the literatures, narrowed down it topics, screened and made the exclusion, only about 17 literatures that can be used for literature review in this study.

Figure 2.1: Search Engine



2.3 Learning styles

Learning style refers to how we describe the approach which a person use in acquiring new language or learning. Learning style involves complex manner in processing, storing and recall what they are attempting to learn. The idea of individualized learning styles originated during 1970's and recently has gained popularity. Learning styles are crucial because learning styles are the education relevant expressions of the uniqueness of the person. Some students find that the theory more easier to understand while others may find that practical work more interesting and easy. Learning depends on many factors such as environment, position in class, previous learning and other factors (Shodhganga, 2007).

The term learning style is varied and many researchers have investigated different aspects of learning styles and can be divided into three categories which are cognitive learning styles, learning styles and personality learning styles (Zayeed, 2007). Zayeed Imran (2007) also stated that learning style is a blend of cognitive, affective, and behavioral elements. Most educators agreed that every person learns differently as they have their own learning styles (Zayeed, 2007). Learning styles may simply mean the ways a student prefers to go about learning or the ways each learner starts to focus on, process and retain new and difficult information (Zayeed, 2007).

A study conducted in Sri Aman town by Zayeed Imran (2007) on student's perceptual learning styles preferences. 637 students from three rural secondary schools were selected as respondents. In this study, the researcher classifies the learning styles into six categories and the findings revealed that generally, students were major in all six categories of learning styles (Zayeed, 2007).

Another study conducted by Ryan A.Preece and Alexandra C.Cope on medical students and surgical trainees to compare both their learning styles. The LSI questionnaire was completed by 53 students and 37 trainees. No significant difference for learning styles preference was detected between the two groups with the visual modality being the preferred learning style for both medical students and surgical trainees (Ryan & Alexandra, 2016).

So for my study, it was conducted on nursing student's perceived learning styles during classroom lessons and the respondents involved are about 320 nursing students from diploma and undergraduate. Through this study, it was revealed what major learning styles used by the nursing students.

2.4 Personality Types

Personality has been derived from the Latin word "persona" which means "mask" used by the actors to change their appearance. Personality is the product of social interaction in group life. It refers to the habits, attitudes as well as physical traits of a person which are not same but have vary from group to group and society to society, everyone has personality, which may be good or bad, impressive or unimpressive (Umar, 2011). Personality type is collection of personality traits which are thought to occur together consistently, especially as determined by a certain pattern of responses to a personality inventory.

However, it is clear that personality has a big impact on life. In fact, personality has been found to correlate strongly with life satisfaction (Boyce, Wood, & Powdthavee, 2013). With such a large potential impact on life, it is important to have a reliable way to

conceptualize and measure personality. The most prevalent personality framework is the "Big Five," or the five-factor model of personality. Not only does this theory of personality apply in multiple countries and cultures around the world (Schmitt et al., 2007), there is a valid and reliable assessment scale for measuring the five factors. The five factors identified as primary factors of personality in this Big Five theory are, extroversion, agreeableness, conscientiousness, emotional stability and openness to experience.

A study conducted by Mark D. Threeton, Richard A. Walter and Danielle C. Evanoski (2013) on personality type and learning style: the tie that binds. The target population for this study was postsecondary automotive technology students and method used for measuring the personality types was Holland's theory of vocational personalities. After calculating the results of the SDS, it was determined that the Realistic personality type was the predominant classification of 148 (84.1%) participants within this study (Mark et. al, 2013).

Another study also conducted which by Ming Li and Steven J. Armstrong (2015) on the relationship between learning styles and personality traits in international managers. 269 managers completed the questionnaire and the result showed that the highest mean among five personality types was conscientiousness followed by agreeableness, extraversion, openness to experience and neuroticism respectively.

2.5 Association of Learning Styles and Personality types

A large portion of previous research has focused on identifying learning styles, personality types, intelligence, and adaptive strategies of teaching to meet the learning needs of students. Learning style research has also provided valuable insights regarding the relationship between personality type and learning style. The majority of previous studies have examined the relationship between personality and learning via the Myers-Briggs Type Indicator (MBTI). One such study by Fallan (2007) suggested that a student's personality type relates to the most effective form of learning and, if ignored, can present a conflict in the educational process.

Another study conducted by Meera Komarraju (2011) also said that personality and learning styles are both likely to play significant roles in influencing academic achievement. College students which was 308 undergraduates completed the Five Factor Inventory and the Inventory of Learning Processes and reported their grade point average (Meera, 2011). Two of the Big Five traits, conscientiousness and agreeableness, were positively related with all four learning styles which are synthesis analysis, methodical study, fact retention, and elaborative processing (Meera, 2011).

Another study conducted by Ming Li (2016) on the relationship between Kolb's experiential learning styles and Big Five personality traits in international managers. About 269 managers completed the questionnaire and regression analyses revealed that extraversion was positively related to concrete experience and negatively related to abstract conceptualization (Ming Li et. al, 2016). Extraversion was also positively related to active experiment and negatively related to reflective observation (Ming Li et. al, 2016).

2.6 Association of Demographic Characteristics and Academic Performances with Learning style

Improving student learning and teaching is a key issue in higher education. In order to do so efficiently, it is necessary to have a better understanding of the factors that influence academic performance in the first place. Males and females were found to use different learning styles (Jihan, 2008). Students in different fields of study were also found to have different learning styles (Jihan, 2008).

A study conducted by Bhavna Prajapati, Mark Dunne, Hannah Bartlett and Robert Cubbidge (2011) on the influence of learning styles, enrolment status and gender on academic performance of optometry undergraduates. A total of 270 students consisted of 106 first year students, 89 second year students and 75 final year students gave voluntary informed consent for their data to be analyzed (Bhavna et. al, 2011). Females represented 63% of the sample in all 3 year groups (Bhavna et. al, 2011). There were no statistically significant differences on learning styles across the three year groups (Bhavna et. al, 2011). The majority of students had a balanced learning style (Bhavna et. al, 2011). For gender, there were also no statistically significant differences between the sensing-intuitive and the sequential-global learning styles in males and females (Bhavna et. al, 2011). However, there was a statistically significant difference in the active-reflective and the visual-verbal learning styles (Bhavna et. al, 2011). It showed that females were more likely to have a reflective and visual learning style in comparison to males (Bhavna et. al, 2011). Next for academic performance, there were also no statistically significant variations in the academic performance of students with different learning style profiles (Bhavna et. al, 2011).

Another study conducted by Nor Aniza Ahmad (2011) on the relationship between learning styles and strategies with academic achievement based on gender and type of School (Nor Aniza, 2011). The questionnaires were distributed to 400 students aged 15 years old from single gender and co-educational schools (Nor Aniza, 2011). The finding showed that direct relationship occurred between learning styles, gender and academic achievement (Nor Aniza, 2011).

A study also conducted on learning styles in relation to gender, field of study, and academic achievement for Bahraini University students by Jihan I.A. Alumran (2008). The sample consisted of 877 students which aged between 17 to 30 years (Jihan, 2008). Results revealed that there were significant differences between learning styles with gender and fields of study (Jihan, 2008). Males students were more intuitive learners while females students were more sensing learners (Jihan, 2008). For academic achievement, the results revealed that learning styles were good predictors of student's CGPA were visual/verbal and sequential/global learning styles (Jihan, 2008).

2.7 Association of Demographic Characteristics and Academic Performances with Personality types

Based on previous results, women reported higher Big Five extraversion, agreeableness, and neuroticism scores than men. However, more extensive gender differences were found at the level of the aspects, with significant gender differences appearing in both aspects of every Big Five trait. For extraversion, openness to experience and conscientiousness, the gender differences were found to diverge at the aspect level, rendering them either small or undetectable at the Big Five level. These results show the nature of gender differences in personality and focus on the utility of measuring personality at the aspect level.

Other studies also shown that the personality types of students affect performance on aptitude and achievement examinations. As an example, a study was carried out by Donald J. Sefcik, Frank J. Prerost & Scott E. Arbet (2009) to determine if personality type is associated with performance on aptitude and achievement tests taken by osteopathic medical students. Among the 263 respondents, there is no personality types were associated with high or low scores on the Medical College Admissions Test (Donald et. al, 2009). However, students in the intuition-feeling group had statistically significant lower scores on COMLEX-USA Level 1 (Donald et. al, 2009).

2.8 Summary

Chapter 2 discussed the search strategies and the presentation of relevant literature review. The purpose of doing literature review is to guide the researcher to have better understanding of the current issue of the research topic. It also helps to plan future study methodology after referring to the previous studies done.

CHAPTER 3 METHODOLOGY

3.1 Introduction

Research methodology is the process used to collect information and data for the purpose of making business decisions. The methodology may include publication research, interviews, surveys and other research techniques, and could include both present and historical information. This chapter also provided an overview on the methodology that had used to obtain useful information about the personality types and learning styles of the nursing students. The topic included were study design, study setting, population and sampling, research instrument, data collection method, data analysis, ethical consideration and pilot study.

3.2 Study Design

A quantitative descriptive survey was deemed appropriate and feasible study design to achieve study objectives aiming at determining cross-sectionally the association or relationship between personality types and learning styles of the nursing students during classroom lessons. Descriptive study is the precise measurement of phenomena. Surveys were carried out to provide an accurate portrayal of a group of subjects with specific characteristics. Descriptive designs described what actually exists, determined the frequency with which it occurs, and categorized the information. It was also a cross-sectional study which involved a one-time interaction with groups of people. Among the three types of descriptive study which are observational, case study and cross-sectional survey, cross-sectional survey was used in this study. A set of questionnaire were handed out to targeted population to discuss the related topic in their own opinion.

3.3 Study Setting

The study setting of this study was at University of Malaya (UM), MARA University of Technology Malaysia (UITM) and University Malaya Medical Centre (UMMC). Quota was employed to determine balance ratio of samples from a much larger population of diploma nursing students and a small population of undergraduate nursing students from the three settings. For University of Malaya (UM), Faculty of Medicine became a place to collect the data from the undergraduate nursing students while for University Malaya Medical Centre (UMMC), the nursing college became the setting for collecting the data from the diploma nursing students. For MARA University of Technology Malaysia (UITM), the data collected from diploma and undergraduate nursing students at Faculty of Science Health.

3.4 Population and Sampling

Population is a complete set of persons or objects that possess some common characteristics that is of interest to the researcher. Population composed of two groups which are target population and accessible population. Sample is subset of population or a group of people selected to represent the population. The purpose of sampling is to gather data about the population in order to make an inference that can be generalized to the population.

3.4.1 Target Population

Target population also called the universe composed of the entire group of people or objects to which the researcher wishes to generalize the findings of a study. The target population consists of people or objects that meet the designated set of criteria of interest to the researcher. For this study, the target population were undergraduate and diploma nursing students from University of Malaya, MARA University of Technology Malaysia (UITM) and University Malaya Medical Centre (UMMC). The total of undergraduate of nursing students were 210 students, while for Diploma of nursing students were 800. So the total target population was 1010 of nursing students.

3.4.2 Sampling Method

Due to markedly disproportionate population of diploma and undergraduate populations of nursing students, this study employed disproportional stratified random sampling. Disproportional sampling is a probability sampling technique used to address the difficulty researcher encounter with stratified samples of unequal sizes. This sampling method divides the population into subgroups or strata but employs a sampling fraction that is not similar for all strata; some strata are oversampled relative to others. For this study, the researcher divided the population into subgroup of nursing program which was Diploma of nursing and Bachelor of nursing. The researcher ensured ratio of two subgroups (i.e. diploma and undergraduate nursing students) approximate 1:1.

In order to select respondents in respective subgroup on equal probability, a systematic sampling was employed. Systematic sampling is a probability sampling method where the elements are chosen from a target population by selecting a random starting point and selecting other members after a fixed ‘sampling interval’. Sampling interval is calculated by dividing the entire population size by the desired sample size. In this study, the list name and total of the nursing students from year 1 until year 4 were given to the researcher by the lecturers of each study setting. Then, the total population for each nursing program divided with the total sample size for each nursing program in order to get the sampling interval (k). After that, the researcher selected a random number generated using Microsoft Excel between 1 to k (including k) from the list names given. Then, the researcher added the sampling interval (k) to the chosen random number to add the next respondent to a sample and repeat this procedure to add remaining respondents of the sample.

3.4.3 Sample Calculation

The sample calculation was calculated by using software G Power. Sample calculation using this G Power software was performed based on alpha of 0.05 and power of 95% to detect chi-squared test (DF=5) at modest effect size of 0.25. A minimum sample

size of 317 was estimated. Additional 5% for incomplete to that total sample which is total 330 sets of questionnaire will be distributed to account for potential value and estimate non response.

3.4.4 Inclusion and Exclusion Criteria

The inclusion criteria of this study were undergraduate and diploma nursing students of University of Malaya (UM), MARA University of Technology Malaysia (UITM) and University Malaya Medical Centre (UMMC). The exclusion criteria of this study were undergraduate and diploma students from other courses except nursing course. Other than that, postgraduate university students and international students also have been excluded out as the research was carried out to assess on diploma nursing students, undergraduate nursing students and Malaysian students.

3.5 Research Instrument

Research instrument is the device used to collect data. In this study, questionnaire was used to collect data. The questionnaire consisted of a series of questions and required the respondents to answer all the questions. The questionnaire are modified from the questionnaire of previous study done by Kappler Mikk, Cohen & Paige with title of "Learning style survey: Assessing your own learning styles" and by department of psychology, University of Texas after obtained the approval from the authors/researchers.

3.5.1 Questionnaire

Two publicly available questionnaires were used: Learning Style Inventory by Kappler Mikk, Cohen & Paige (2009) and Ten item personality measure (TIPI) by department of psychology, University of Texas (2014). The TIPI and Learning Style Inventory comprised Part A and B respectively, while the Part c was the demography and academic information. The existing English version of questionnaires was used. It was a simple questionnaire which consists of 48 items.

a) Demographic Background

Respondents were asked on their demographic background including age, gender, highest academic qualification, score in the MUET or any English paper like SPM, current nursing program, current year, latest CGPA and family total household income.

b) Ten item personality measure (TIPI)

Ten items were assessing the student's personality types. This part included all the items for each type of personality types. The answer option are disagree strongly, disagree moderately, disagree a little, neither agree nor disagree, agree a little, agree moderately and agree strongly. Only one answer can be selected and the respondents cannot guess the answer. In this part, score 1 is for disagree strongly, 2 is for disagree moderately, 3 is for disagree a little, 4 is for neither agree nor disagree, 5 is for agree a little, 6 is for agree moderately and 7 is for agree strongly.

To score this TIPI, firstly recode the reverse-scored items (i.e., recode a 7 with a 1, a 6 with a 2, a 5 with a 3, etc.). The reverse scored items are 2, 4, 6, 8, & 10. Then, take the average of the two items (the standard item and the recoded reverse-scored item) that make up each scale. Example using the Extraversion scale: A participant has scores of 5 on item 1 (Extraverted, enthusiastic) and and 2 on item 6 (Reserved, quiet). First, recode the reverse-scored item (i.e., item 6), replacing the 2 with a 6. Second, take the average of the score for item 1 and the (recoded) score for item 6. So the TIPI Extraversion scale score would be: (5 + 6)/2 = 5.5. Then, the highest mark will show the personality type of the respondent. Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness; 3, 8R; Emotional Stability: 4R, 9; Openness to Experiences: 5, 10R with "R" denotes as reverse-scored items. For more explanation, Table 3.1 showed the scoring of this TIPI instrument as shown below.

Table 3.1: Scoring of TIPI Instrument for Personality Types

Domains of TIPI (Types of Personality)	Item Number	Scoring algorithm (By averaging all Likert-like scale #)
Extraversion	1 & 6R	Mean = (Item 1+ Item 6r)/2
Agreeableness	2R & 7	Mean = (Item 1+ Item 6R)/2
Conscientiousness	3 & 8R	Mean = (Item 1+ Item 6R)/2
Emotional Stability	4R & 9	Mean = (Item 1+ Item 6R)/2
Openness to Experience	5 & 10R	Mean = (Item 1+ Item 6R)/2

Note. * R = Reverse scored; #Likert-like scale were: 1= disagree strongly, 2= disagree moderately, 3 = disagree a little, 4=neither agree nor disagree, 5= agree a little, 6 = agree moderately and 7 = agree strongly; Personality was categorised by the highest mean score e.g. A respondent has Extraversion personality if scored highest mean for extraversion domain.

c) Learning Style Inventory

Thirty items of close ended question in form of multiple choices that were used to assess learning style of the students. This part included all the items for each type of learning styles. Each type of learning styles has ten question that needed to answer by respondents. The answer option are never, rarely, sometimes, often and always. Respondents need to answer all of the items by circling one number among the numbers provided. Only one answer can be selected and the respondents cannot guess the answer. In this part, score 0 is for never, 1 is for rarely, 2 is for sometimes, 3 is for often and 4 which is the highest marks is for always. Then, all the answer for the item in each types of learning styles will be sum to get the highest score. As an example, if a respondent got highest mark in auditory types, it shows that the learning style of that respondent is auditory. For more explanation, Table 3.2 showed the scoring of this Learning Style Survey instrument as shown below.

Table 3.2: Scoring of Learning Style Survey instrument

Domains (Types of Learning Styles)	Item Number	Scoring algorithm (By summation of all Likert-like scale #)
Visual	1 to 10	Sum all the score from item No. 1 until 10

Auditory	11 to 20	Sum all the score from item No. 11 until 20
Kinaesthetic	21 to 30	Sum all the score from item No. 21 until 30

Note. * R = Reverse scored; #Likert-like scale were: 0 = never, 1=rarely, 2= sometimes, 3= often and 4 = always; Learning style was categorised by the highest sum score e.g. A respondent has visual learning style if scored highest sum for visual domain

3.5.2 Reliability and Validity

The questionnaire need to possess validity and reliability to ensure a higher quality of data collected. Reliability of the questionnaire is the degree to which an assessment tool or questionnaire produces stable and consistent result (Colin and Julie, 2005). In this study, internal consistency reliability was assessed using Cronbach's Alpha as the questions had more than more than two response options of Likert-like scales. The instruments of Cronbach's Alpha in SPSS version 25.0 will be used to test for the reliability of questionnaire as the questions were using Likert scale. Good internal reliability was indicated by $\alpha > 0.7$ and < 0.95. But, for heterogenous and small number of items, it is still acceptable if the value of $\alpha > 0.5$. Pilot study was conducted to test the reliability of the questionnaire with duration about one month. The pilot study took about 10% from the total sample size which was 32 nursing students but they are not included in real study as respondents.

Table 3.3: Reliability test using Cronbach's Alpha

Instrument Tool	α
Personality Types	0.697
Visual Learning Style	0.730
Auditory Learning Style	0.728
Kinaesthetic/Tactile Learning Style	0.695

All internal consistency reliability coefficients were acceptable (0.690 to 0.730) Validity can be referred as how well a questionnaire or instrument measures what it purported to measure (Colin and Julie, 2005). Therefore, the questionnaire must be appropriate and related with the objective of the study. The type of validity used in this study was face-to-face validity in which the validity checked by expert and nursing lecturer. In this study, the face validity of the questionnaires had undergo a validity test was verified by Associate Professor from Faculty of Education, University of Malaya and two nursing lecturer from Department of Nursing Science, University of Malaya.

3.6. Data Collection Method

The study had carried out after researcher obtained ethical approval from every each of study setting. The data collected by using self-administered questionnaire at one point to ensure a good response rate. The data collected at University Malaya, MARA University of Technology Malaysia (UITM) and also University Malaya Medical Centre. The researcher approached and attained the respondents which fulfilled the inclusion criteria to participate in the study. The questionnaire was put in an envelope when passed to each respondent to ensure privacy and confidentiality. Consent also taken from the respondent which indicated they agree to fill up the questionnaire. Then, the respondents

were given some time to answer the survey. The researcher waited there until the respondents finish the questionnaire. Time for the respondents to answer the questionnaire was about 10 to 15 minutes. The data started to collect on April 2018 and finished on July 2018.

3.7 Data Analysis

Analysis of data is a process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision making. Data analysis is important in discovering useful information to achieve all the objectives, answer the research questions as well as suggesting conclusion and supporting the decision making. The data collected from this study analysed by Statistical Package Social Sciences (SPSS) Version 25.0. Description data analysis used in analysing the demographic data, parametric test was used to analyse the independent variable and non-parametric test was used to analyse the dependent variable.

3.8 Ethical Consideration

Ethical approval obtained from the University Malaya Medical Centre (UMMC) ethic committee to carry out the research at UMMC. Ethical approval from University of Malaya (UM) and MARA University of Technology Malaysia (UITM) also obtained. Informed consent also given to the respondents as an agreement for their participation in this study. Participants were voluntarily in joining in this study without any force and have right to refuse. Cover letter contained title of study, purpose of study, study objective and other important details were given to the respondents to read before answering the questionnaire. Any clarification of respondents had been made by the researcher before filling the questionnaire.

3.9 Pilot Study

Pilot study is a small-scale, trial run of the actual research study. A group of people similar to the study subjects should be tested in conditions similar to those that will be used in the actual research study. A pilot study should be conducted whenever a new instrument is being develop or when a pre-existing instrument is being used with people who have different characteristics from those for which the instrument was originally developed. The purpose of the pilot study is to help the researcher to determine whether a more substantial study is warranted and the researcher will be able to take a pragmatic view on the main study's potentialities and feasibility (Basavanthappa, 2014). For this study, pilot study carried out after the researcher has got the ethical approval from University Malaya Medical Centre (UMMC), University of Malaya (UM), MARA University of Technology Malaysia (UITM) and also validation of questionnaire by experts. About 10% from the total sample size of this study involved in pilot study. Researcher approached them one by one and obtained the response from them. The respondents from the pilot study were excluded from the actual sample for the research. At the end of the pilot study, the result analysed showed no major modification for questionnaire items and data collection method needed. Furthermore, all questionnaire items must be retained as permission to modify questionnaires were not obtained.

3.10 Summary

This chapter explains the study design use for this study research which answer the objective constructed. The purpose of planning this methodology is to guide the study research in proper way. The right methodology will enhances the data collection which will be interpreted in next chapter. Population and sampling enables the researcher to study the population based on the subset as targeted sample. Sample size was calculated by using G Power software. Research instrument is important to be reliable and valid through validation from experts and pilot study. Data collection also done systematically to make sure that all items in questionnaire were answered honestly with the consent from respondents.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

This chapter described the analysis of data collected from respondents followed by a discussion of research finding. After coding and entering the data, the researcher analysed the data using the Statistical Package Social Science (SPSS) version 25. Data were analysed by using descriptive statistics and inferential statistics. Descriptive statistics were used to present the overall demographic characteristics of respondents and their satisfaction towards the care provided at a clinic. The researcher also used the Pearson Chi-square test to test the association between two categorical variables. The results also displayed in the form of tables and graphs accompanied with narrative explanation.

The questionnaire comprised of three sections and data generated will be presented as follows. The first section (Section A) comprised of background information or demographic characteristics of respondents while the second section (Section B) comprised of data regarding on personality types of the respondents. In third section (Section C), data obtained from the respondents were regarding the three types of learning styles which is visual, auditory and kinaesthetic or tactile.

4.2 Data Screening and Data Management

In the initial stage of data analysis, all the data collected were entered into the SPSS version 25 based on the identification number tagged to the questionnaire with accordance to the respondents' identity code number like 001, 002, 003 etc. to avoid double entry. All the data was being screened and there was a few missing values detected.

4.3 Data Normality Checking

During the stage of data management, normality test had been done on the dependent variables which were personality types and types of learning styles to determine whether the sample data had been drawn from a normally distributed population. The normality test helped the researcher in selecting the proper statistical test either parametric or non-parametric test to analyse the data. The results of normality test for dependent variables were shown as below.

Table 4.1: Normality test of Students' Personality Types

Variables	Mean (SD)	Median	Std Deviation	Skewness			Kurtosis		
				Statistic	Std Error	Z-scores	Statistic	Std Error	Z-scores
Extraversion	4.48	4.50	0.861	0.198	0.136	1.456	0.549	0.272	2.018
Agreeableness	4.29	4.00	0.976	0.133	0.136	0.978	0.039	0.272	0.143
Conscientiouness	4.60	4.50	0.980	0.076	0.136	0.559	-0.072	0.272	-0.265

Emotional Stability	4.54	4.50	0.965	0.008	0.136	0.059	0.822	0.272	3.022
Openness to Experience	4.53	4.50	0.907	0.116	0.136	0.853	-0.085	0.272	-0.313

According to Table 4.1, the mean value for extraversion personality scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that extraversion personality scores were normally distributed.

Other than that, the mean value for agreeableness personality scores also was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that agreeableness personality scores were normally distributed.

In addition, the mean value for conscientiouness personality scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that conscientiousness personality scores were normally distributed.

Furthermore, the mean value for emotional stability personality scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that emotional stability personality scores were normally distributed.

Lastly, the mean value for openness to experience personality scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that openness to experience personality scores were normally distributed.

Table 4.2: Normality test of the students' learning styles

Variables	Mean (SD)	Median	Std Deviation	Skewness			Kurtosis		
				Statistic	Std Error	Z-scores	Statistic	Std Error	Z-scores
Visual	27.61	27.00	4.526	0.322	0.136	2.368	-0.264	0.272	-0.971

Auditory	23.58	24.00	4.797	-0.202	0.136	-1.485	-0.375	0.272	1.379
Kinaesthetic	22.27	22.50	5.361	-0.008	0.136	-0.059	-0.321	0.272	-1.180

According to Table 4.2, the mean value for visual learning style scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that visual learning style scores were normally distributed.

Other than that, the mean value for auditory learning style scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that auditory learning style scores were normally distributed.

Furthermore, the mean value for kinaesthetic learning style scores was almost equal with median value and standard deviation smaller than mean. The skewness and kurtosis value were between +2 and -2. Both Z-scores for skewness and kurtosis also were between +3.29 to -3.29. The histogram also presented bell shaped which showed normally distributed. So from that result, it also shows that kinaesthetic learning style scores were normally distributed.

4.4 Response Rate

A total of 330 questionnaires were distributed by researcher through face to face with the respondents and collected back on the same day. Thus, the response rate for this study was 100%. However only 320 questionnaires were can be used for data analysis because 10 sets more the respondents did not complete the questionnaire in one or more subsections.

4.5 Demographic Characteristics of Respondents

Table 4.3: Demographic Characteristics of Respondents (n=320)

Characteristics		Frequency (n)	Percentage (%)	Mean	Standard Deviation (SD)
Gender	Male	47	14.7		
	Female	273	85.3		
Age	18-21 years old	232	72.5	20.92	1.217
	22 years old and above	88	27.5		

Highest academic qualification	SPM	147	45.9		
	STPM	29	9.1		
	Others	144	45.0		
English proficiency	Good	312	97.5		
	Moderate	8	2.5		
Current nursing program	Diploma	160	50.0		
	Bachelor	160	50.0		
Current year	Year 1	89	27.8		
	Year 2	104	32.5		
	Year 3	94	29.4		
	Year 4	33	10.3		
CGPA	2.50 to 2.97	29	9.1	3.3319	.28459
	2.98 to 3.45	173	54.1		
	3.46 and above	118	36.9		
Total household income	<RM3000	161	50.3		
	RM3000 – RM5000	112	35.9		
	>RM5000	47	14.7		

Note. SD= standard deviation

Based on the Table 4.9, the demographic characteristics data including age, gender, highest academic qualification, English proficiency, current nursing program, current year of studies, CGPA and total household income. Among 320 respondents, majority of them were female, 273 (85.3%) while another 47 (14.7%) were male nursing students. Besides that, majority of respondents were between 18 to 21 years old, 232 (72.5%) while another 88 (27.5%) were 22 years old and above. As for highest academic qualification, most of the respondents already qualified from SPM and others (Matriculation and Foundation) while only 29 (9.1%) students qualified from STPM. Furthermore, for English proficiency, majority of the respondents had good English proficiency, 312 (97.5%).

In term of current nursing program, half of the respondents were from Diploma in nursing and another half were from Bachelor in nursing, 160 (50%). In addition, the most respondents came from Year 2 nursing students, 104 (32.5%) while the least came from Year 4 nursing students, 33 (10.3%). For CGPA, most of the respondents had CGPA between 2.98 to 3.45, 173 (54.1%) while least of the respondents had CGPA between 2.50 to 2.97, (29, 9.1%). Lastly, most of the respondents had total household income less than RM3000, (161, 50.3%) while least of them had total household income more than RM5000, (47, 14.7%)

4.6 Distribution of Responses to Questionnaire Items

Table 4.10, Table 4.11, Table 4.12 and Table 4.13 show the distribution of responses across the Likert-like scale for Personality Types and Learning Styles of

respondents in respectively**.**

Table 4.4: Descriptive Frequency for Students' Personality Types. (n=320)

Students' Personality Types	Frequency, n (%)						
	Disagree strongly	**Disagree moderately**	**Disagree a little**	**Neutral**	**Agree a little**	**Agree moderately**	**Agree strongly**
Socially confident	15 (4.7%)	31 (9.7%)	59 (18.4%)	122 (38.1%)	59 (18.4%)	33 (10.3%)	1 (0.3%)
Critical, quarrelsome	2 (0.6%)	4 (1.3%)	22 (6.9%)	119 (37.2%)	78 (24.4%)	80 (25.0%)	15 (4.7%)
Dependable, self-disciplined	0 (0.0%)	5 (1.6%)	24 (7.5%)	91 (28.4%)	96 (30.0%)	82 (25.6%)	22 (6.9%)
Anxious. Easily upset	18 (5.6%)	40 (12.5%)	45 (14.1%)	96 (30.0%)	75 (23.4%)	37 (11.6%)	9 (2.8%)
Open to new experiences, complex	0 (0.0%)	4 (1.3%)	11 (3.4%)	75 (23.4%)	111 (34.7%)	89 (27.8%)	30 (9.4%)
Reserved, quiet	13 (4.1%)	27 (8.4%)	51 (15.9%)	91 (28.4%)	77 (24.1%)	52 (16.3%)	9 (2.8%)
Sympathetic. Warm	0 (0.0%)	8 (2.5%)	23 (7.2%)	96 (30.0%)	92 (28.7%)	88 (27.5%)	13 (4.1%)
Disorganized, careless	23 (7.2%)	48 (15.0%)	64 (20.0%)	93 (29.1%)	54 (169%)	30 (9.4%)	8 (2.5%)
Calm, emotionally stable	1 (0.3%)	8 (2.5%)	26 (8.1%)	97 (30.3%)	83 (25.9%)	84 (26.3%)	21 (6.6%)
Ordinary, uncreative	12 (3.8%)	25 (7.8%)	61 (19.1%)	117 (36.6%)	51 (15.9%)	42 (13.1%)	12 (3.8%)

According to the Table 4.4, more than one-third of the respondents were being neutral in socially confident (122, 38.1%) and critical, quarrelsome (119, 37.2%) while only one respondent answer agree strongly in socially confident, (1, 0.3%). Other than that, thirty percent of the respondents being agreed a little (96, 30.0%) while none of the respondents being disagreed strongly on dependable, self-disciplined. After that, about

thirty percent of the respondents were chose neutral (96, 30.0%) on anxious, easily upset while less than three percent agreed strongly (9, 2.8%) on being anxious, easily upset. After that, for open to new experiences and complex, about one-third of the respondents agreed a little (111, 34.7%) while none of the respondents disagreed strongly. In addition, most of the respondents were neutral on reserved and quiet (91, 28.4%) while only nine respondents agreed strongly on reserved and quiet (9, 2.8%). Furthermore, for sympathetic and warm, most of respondents answered neutral (96, 30.0%) while none of them answered disagree strongly. Next, most respondents answered neutral for disorganized and careless (93, 29.1%) while least of them agreed strongly (8, 2.5%). On the other hand, for calm and emotionally stable, most of respondents also neutral (97, 30.3%) while only one respondents disagreed strongly (1, 0.3%). Lastly, highest number of respondents were chose neutral for ordinary and creative (117, 36.6%).

For Table 4.5, it showed the descriptive frequency for visual learning style. According to it, most of the respondents often remembered something better when they write it down (138, 43.1%) and none of them never remembered something better when they write it down while most of them sometimes take detailed notes during lectures (129, 40.3%) and only two respondents never take detailed notes during lectures. Other than that, more than forty percent of the respondents when they listen, they often visualize pictures, numbers or words in their head (133, 41.6%) but only one respondent never visualize pictures, numbers or words in their head during listening (1, 0.3%). At the same time, more than one third of the respondents prefer to learn with TV or video rather than other media sometimes (115, 35.9%) while only five percent of respondents never prefer to learn with TV or video rather than other media (16, 5.0%). After that, about more than one-third of the respondents also use colour-coding to help them as they learn or work sometimes (112, 35.0%) while least of them never use colour-coding to help during learn or work.

Table 4.5: Descriptive Frequency for Students' Visual Learning Style. (n=320)

Visual Learning Styles	**Frequency, n (%)**				
	Never	**Rarely**	**Sometimes**	**Often**	**Always**
I remember something better if I write it down	0 (0.0%)	8 (2.5%)	73 (22.8%)	138 (43.1%)	101 (31.6%)
I take detailed notes during lectures.	2 (.6%)	26 (8.1%)	129 (40.3%)	110 (34.4%)	53 (16.6%)
When I listen, I visualize pictures, numbers or words in my head.	1 (.3%)	13 (4.1%)	88 (27.5%)	133 (41.6%)	85 (26.6)
I prefer to learn with TV or video rather than other media.	16 (5.0%)	48 (15.0%)	115 (35.9%)	90 (28.1%)	50 (15.6%)

I use colour-coding to help me as I learn or work.	12 (3.8%)	43 (13.4%)	112 (35.0%)	97 (30.3%)	56 (17.5%)
I need written directions for tasks.	4 (1.3%)	18 (5.6%)	124 (38.8%)	122 (38.1%)	52 (16.3%)
I have to look at people to understand what they say.	2 (.6%)	25 (7.8%)	77 (24.1%)	122 (38.1%)	94 (29.4%)
I understand lectures better when professors write on the board	1 (.3%)	11 (3.4%)	106 (33.1%)	114 (35.6%)	88 (27.5%)
Charts, diagrams and maps help me understand what someone says.	3 (.9%)	7 (2.2%)	87 (27.2%)	120 (37.5%)	103 (32.2%)
I remember peoples' faces but not their names.	2 (.6%)	23 (7.2%)	77 (24.1%)	105 (32.8%)	113 (35.3%)

From the Table 4.5 also shown about thirty eight percent of participants often (122, 38.1%) and sometimes (124, 38.8%) need written directions for tasks while only four students never need written directions for tasks (4, 1.3%). In addition, most of the respondents often have to look at people to understand what they say (122, 38.1%) while only two of them never have to look at people to understand what they say (2, 0.6%). Furthermore, highest number of participants often understand lectures better when professors write on the board (114, 35.6%) while lowest number of participants never understand lectures better when professors write on the board. The result also shown that most the students often understand what someone says on charts, diagrams and maps (120, 37.5%) while only three of them never understand what someone says on charts, diagrams and maps (3, 0.9%). Lastly, more than thirty five percent of respondents always remember peoples' faces but not their names (113, 35.3%) but two of them never remember peoples' faces but not their names (2, 0.6%).

Table 4.6: Descriptive Frequency for Students' Auditory Learning Style (n=320)

Auditory Learning Styles	**Frequency, n (%)**				
	Never	**Rarely**	**Sometimes**	**Often**	**Always**
I remember things better if I discuss them with someone.	2 (.6%)	5 (1.6%)	79 (24.7%)	139 (43.4%)	95 (29.7%)
I prefer to learn by listening to a lecture rather than reading.	2 (.6%)	39 (12.2%)	116 (36.3%)	109 (34.1%)	54 (16.9%)

I need oral directions for a task.	4 (1.3%)	27 (8.4%)	143 (44.7%)	111 (34.7%)	35 (10.9%)
Background sound helps me think.	20 (6.3%)	59 (18.4%)	127 (39.7%)	82 (25.6%)	32 (10.0%)
I like to listen to music when I study or work.	21 (6.6%)	49 (15.3%)	95 (29.7%)	97 (30.3%)	58 (18.1%)
I can understand what people say even when I cannot see them.	7 (2.2%)	63 (19.7%)	144 (45.0%)	82 (25.6%)	24 (7.5%)
I remember peoples' names but not their faces.	28 (8.8%)	94 (29.4%)	114 (35.6%)	60 (18.8%)	24 (7.5%)
I easily remember jokes that I hear.	5 (1.6%)	34 (10.6%)	118 (36.9%)	110 (34.4%)	53 (16.6%)
I can identify people by their voices.	3 (.9%)	51 (15.9%)	123 (38.4%)	97 (30.3%)	46 (14.4%)
When I turn on the TV, listen to the sound more than I watch the screen.	24 (7.5%)	76 (23.8%)	102 (31.9%)	90 (28.1%)	28 (8.8%)

According to the Table 4.16 above, more than forty percent of the respondents often remember things better if they discuss them with someone (139, 43.4%) but less than one percent of them never remember things better if they discuss them with someone (2, 0.6%). At the same times, more than thirty five percent of students prefer to learn by listening to a lecture sometimes rather than reading (116, 36.3%) while only two students never prefer to learn by listening to a lecture rather than reading (2, 0.6%). Afterwards, most of the respondents sometimes need oral directions for a task (143, 44.7%) and background sound sometimes help them think (127, 39.7%) while least of them never need oral directions for a task (4, 1.3%) and background sound never help them think (20, 6.3%). Furthermore, more than thirty percent of the respondents often like to listen to music when study or work (97, 30.3%) while less than ten percent of them never like to listen to music when study or work (21, 6.6%) and there were forty five percent of them sometimes can understand what people say even when they cannot see them (144, 45.0%) but only about two percent of them never could understand what people say even when they cannot see them (7, 2.2%). In addition, more than thirty five percent of the respondents sometimes remember peoples' names but not their faces (114, 35.6%) and easily remember jokes that they hear (118, 36.9%) while the least of respondents always remember peoples' names but not their faces (24, 7.5%) and never easily remember jokes that they hear (5, 1.6%). Lastly, most of the respondents sometimes can identify people

by their voices (123, 38.4%) and sometimes when they turn on the TV, they listen to the sound more than they watch the screen (102, 31.9%) while least of participants never could identify people by their voices (3, 0.9%) and when they turn on the TV, they never listen to the sound more than they watch the screen (24, 7.5%).

According to Table 4.7, almost half of the respondents sometimes prefer to start doing things rather than checking the direction first (146, 45.6%) but only eight of them always prefer to start doing things rather than checking the direction first (8, 2.5%) and more than forty percent of the respondents often need frequent breaks when I work or study (140, 43.8%) while only one students never need frequent breaks when I work or study. Other than that, most of the respondents often need to eat something when read or study (117, 36.6%) but least of them never need to eat something when read or study (7, 2.2%). In addition, more than thirty percent of the respondents sometimes if they have a choice between sitting and standing, they rather stand (97, 30.3%) and sometimes get nervous when they sit still too long (101, 31.6%) while at the same time about only seven percent of students always rather stand if they have a choice between sitting and standing (23,7.2%) and always get nervous when they sit still too long (24, 7.5%).

Table 4.7: Descriptive Frequency for Students' Kinaesthetic Learning Style. (n=320)

Kinaesthetic Learning Styles	Frequency, n (%)				
	Never	**Rarely**	**Sometimes**	**Often**	**Always**
I prefer to start doing things rather than checking the direction first.	11 (3.4%)	94 (29.4%)	146 (45.6%)	61 (19.1%)	8 (2.5%)
I need frequent breaks when I work or study.	1 (.3%)	19 (5.9%)	101 (31.6%)	140 (43.8%)	58 (18.1%)
I need to eat something when I read or study.	7 (2.2%)	36 (11.3%)	99 (30.9%)	117 (36.6%)	61 (19.1%)
If I have a choice between sitting and standing, I'd rather stand.	54 (16.9%)	93 (29.1%)	97 (30.3%)	53 (16.6%)	23 (7.2%)
I get nervous when I sit still too long.	47 (14.7%)	87 (27.2%)	101 (31.6%)	61 (19.1%)	24 (7.5%)
I think better when I moved around.	16 (5.0%)	31 (9.7%)	109 (34.1%)	102 (31.9%)	62 (19.4%)
I play with or bite on my pens during lectures.	57 (17.8%)	74 (23.1%)	84 (26.3%)	79 (24.7%)	26 (8.1%)

Manipulating objects help me to remember what someone says.	18 (5.6%)	50 (15.6%)	124 (38.8%)	95 (29.7%)	33 (10.3%)
I move my hands when I speak.	5 (1.6%)	18 (5.6%)	90 (28.1%)	122 (38.1%)	84 (26.3%)
I draw lots of pictures in my notebook during lectures.	24 (7.5%)	77 (24.1%)	85 (26.6%)	78 (24.4%)	56 (17.5%)

From the table 4.7 also shown that more than one third of the respondents sometimes think better when they moved around (109, 34.1%) but a few of them never think better when they moved around (16, 5.0%). Furthermore, more than one fourth of the respondents sometimes play with or bite on my pens during lectures (84, 26.3%) while less than one tenth of them always play with or bite on my pens during lectures (26, 8.1%). Afterwards, most of the respondents also sometimes by manipulating objects, help them to remember what someone says (124, 38.8%) and often move their hands when they speak (122, 38.1%) but least of them never help them to remember what someone says by manipulating object (18, 5.6%) and never move their hands when they speak (5, 1.6%). Lastly, about more than one fourth of the respondents sometimes draw lots of pictures in their notebook during lectures (85, 26.6%) while less than ten percent of students never draw lots of pictures in their notebook during lectures (24, 7.5%).

4.7 Proportion of Dominant Personality Types and Learning Styles

Table 4.8 and 4.9 shows the proportion of dominant personality types and learning styles in respectively. Some respondents had more than one dominant characteristic as they had highest scores in more than one domain of personality and learning styles.

According to the Table 4.8, one fifth of the respondents which is the most possessed more than one personality type (68, 21.2%) which some of them had two or three personality types at the same time through their scores for Personality Types Item in questionnaire while the least were the respondents that possessed extraversion personality (38, 11.9%).

Table 4.8: Frequency of Students' Personality Types (n=320)

Personality Types	Frequency (n)	Percentage (%)
Extraversion	38	11.9
Agreeableness	55	17.2
Conscientioness	52	16.3

Emotional Stability	57	17.8
Openness to Experience	50	15.6
More Than One Personality Type	68	21.2
Total	320	100

Note: Subgrouping was based which personality type domain had the highest mean score.

According to the Table 4.9, most of the respondents possessed visual learning styles (207, 64.7%) while less than ten percent of them possessed more than one learning styles which some of them had two or three different learning styles at the same time.

Table 4.9: Frequency of Students' Learning Styles (n=320)

Learning Styles	Frequency (n)	Percentage (%)
Visual	207	64.7
Auditory	56	17.5
Kinaesthetic	32	10.0
More Than One Learning Style	25	7.9
Total	320	100

Note: Subgrouping were based on which learning styles domain had highest sum scores

4.8 Personality Types of Nursing Students Across Different Demographic and Academic Background

As stated in specific objective #1, the personality types (i.e. 6 subgroups) of nursing students across different demography and academic background were examined as follows:

Independent variables	Dependent variables	Statistical tests
6 subgroupings of personality type (Extraversion, agreeableness, conscientiousness, emotional stability,	Age, CGPA	One-way ANOVA
	Gender, highest academic qualification, current	Chi- square test of independence

openness to experience and more than one personality types)	nursing program, current year of studies and total household income per month	

4.8.1 Mean Difference of Age and CGPA of Respondents Across Personality Type Subgroups

A one-way ANOVA was conducted to determine if respondents' mean age (Table 4.10) and CGPA achievement (Table 4.11) were different across 6 subgroups of personality types. There were no outliers, as assessed by boxplot.

Table 4.10: Differences Between Personality Types and Age of the Respondents (n=320)

Source	Sum of Squares	df	Mean Square	F Ratio	F Probability
Between Groups	13.714	5	2.743	1.876	.098
Within Groups	459.007	314	1.462		
Total	472.722	319			

There was homogeneity of variances, as assessed by Levene's test of homogeneity of variances (p = .098). So, there was no mean differences between age and personality types of respondents, F (5, 314) = 1.876, p > .05, ω2 = 0.014 (see Table 4.26). The personality types had no relationship with age.

Table 4.11: Differences Between Personality Types and CGPA of the Respondents (n=320)

Source	Df	Sum of Squares	Mean Square	F Ratio	*p*-value
Between Groups	5	.486	.097	1.203	.307
Within Groups	314	25.350	.081		
Total	319	25.836			

There was homogeneity of variances, as assessed by Levene's test of homogeneity of variances (p = .307). So, there was no differences between CGPA and personality types of respondents, F (5, 314) = 1.203, p > .05, ω2 = 0.003.

4.8.2 Proportions Difference of Personality Type Subgroups Across Gender, Highest Academic Qualification, Current Nursing Program, Current Year of Studies and Total Household Income Per Month

For sociodemographic variables of categorical data, Chi-square test of independent was employed to determine any significant different proportions of six personality subgroupings across gender, highest academic qualification, current nursing

program, current year of studies and family total household income per month.

Based on the Table 4.12, the Pearson Chi-Square analysed revealed a non-significant relationship existed between personality types of the respondents and their gender, X^2 (5, N=320) = 6.141, p > 0.05. From that table, it showed that most of male and female students were had more than one personality types.

Table 4.12: Association Between Personality Types with Demographic and Academic Background (n=320)

Demographic Characteristics (n)	Personality Types, n (%)								
	Extraversion	Agreeableness	Conscientiousness	Emotional Stability	Openness to Experience	More Than One Personality Types	df	X^2	*p*-value
Gender									
Male (47)	6 (12.8%)	4 (8.5%)	6 (12.8%)	7 (14.9%)	10	14 (29.8%)	5	6.141	0.293
Female (273)	32 (11.7%)	51 (18.7%)	46 (16.8%)	50	(21.3%)	54 (19.8%)			
Total	38 (11.9%)	55 (17.2%)	52 (16.3%)	(18.3%)	40	68 (21.3%)			
				57	(14.7%)				
				(17.8%)	50				
					(15.6%)				
Higher Academic Qualification									
	18 (12.2%)	24 (16.3%)	26 (17.7%)	21	23	35 (23.8%)			
SPM (147)	1 (3.4%)	5 (17.2%)	7 (24.1%)	(14.3%)	(15.6%)	14 (13.8%)			
STPM (29)	19 (13.2%)	26 (18.1%)	19 (13.2%)	7 (24.1%)	5 (17.2%)	29 (20.1%)			
Others (144)	38 (11.9%)	55 (17.2%)	52 (16.3%)	29	22	68 (21.3%)	10	7.684	0.660
Total				(20.1%)	(15.3%)				
				57	50				
				(17.8%)	(15.6%)				
Current Nursing Program									
Diploma (160)	17 (10.6%)	26 (16.3%)	27 (16.9%)	25	27	38 (23.8%)			
Bachelor (160)	21 (13.1%)	29 (18.1%)	25 (15.6%)	(15.6%)	(16.9%)	30 (18.8%)			
Total	38 (11.9%)	55 (17.2%)	52 (16.3%)	32	23	68 (21.3%)	5	2.782	0.733
				(20.0%)	(14.4%)				
				57	50				
				(17.8%)	(15.6%)				
Current Year of Course									
Year 1 (89)	11 (12.4%)	8 (9.0%)	19 (21.3%)			21 (23.6%)			

Year 2 (104)		15 (14.4%)	21 (20.2%)	18 (17.3%)	16	14	17 (16.3%)			
Year 3 (94)		10 (10.6%)	20 (21.3%)	11 (11.7%)	(18.0%)	(15.7%)	24 (25.5%)	15	14.21	0.509
Year 4 (33)		2 (6.1%)	6 (18.2%)	4 (12.1%)	19	14	6 (18.2%)		7	
	Total	38 (11.9%)	55 (17.2%)	52 (16.3%)	(18.3%)	(13.5%)	68 (21.3%)			
					14	15				
					(14.9%)	(16.0%)				
					8 (24.2%)	7 (21.2%)				
					57	50				
					(17.8%)	(15.6%)				
Family Total Household										
Income		18 (11.2%)	28 (17.4%)	25 (15.5%)	29	25	36 (22.4%)			
<RM3000 (161)		15 (13.4%)	16 (14.3%)	22 (19.6%)	(18.0%)	(15.5%)	23 (20.5%)	10	4.096	0.943
RM3000-RM5000 (112)		5 (10.6%)	11 (23.4%)	5 (10.6%)	19	17	9 (19.1%)			
>RM5000 (47)		38 (11.9%)	55 (17.2%)	52 (16.3%)	(17.0%)	(15.2%)	68 (21.3%)			
	Total				9 (19.1%)	8 (17.0%)				
					57	50				
					(17.8%)	(15.6%)				

Other than that, from the Table 4.12, the Pearson Chi-Square analysed revealed a non-significant relationship existed between personality types of the respondents and their higher academic qualification, X^2 (10, N=320) = 7.684, p > 0.05. Among the 320 respondents, among the students who had SPM as their higher academic qualification, most of them had more than one personality types, (35, 23.8%) which also same with students who had STPM (14, 13.8%) and others (29, 20.1%) as their higher academic qualification. However, among students who had SPM and STPM as their higher academic qualification, least of them had extraversion personality type, (18, 12.2%) and (1, 3.4%) respectively.

Furthermore, based on the Table 4.12 also showed the Pearson Chi-Square analysed revealed a non-significant relationship existed between personality types of the respondents and their current nursing program, X^2 (5, N=320) = 2.782, p > 0.05. Among the nursing students who had diploma as their current nursing program, most of the students had more than one personality types (38, 23.8%) while the least of them were had extraversion personality type (17, 10.6%). At the same time, for baccalaureate nursing students, most of the students were had emotional stability personality type (32, 20.0%) while least of them also had extraversion personality type (21, 13.1%).

In addition, the Pearson Chi-Square analysed also revealed a non-significant relationship existed between personality types of the respondents and their current nursing program, X^2 (15, N=320) = 14.217, p > 0.05. Among the Year 1 nursing students, most of the students had more than one personality types (21, 23.6%) while only eight students had agreeableness personality type (8, 9.0%). However, for Year 2 nursing students, most of them were possessed on agreeableness personality type (21, 20.2%) while the least were openness to experience personality type (14, 13.5%). Different with Year 3 nursing students, most of them had more than personality types which same like Year 1 (24, 25.5%) but least of them had extraversion personality type (10, 10.6%). For the Year 4 nursing students which were final year, most of them had emotional stability personality type (8, 24.2%) while least of them had extraversion personality type (2, 6.1%).

Lastly, based on the Table 4.12, the Pearson Chi-Square analysed revealed a non-significant relationship existed between personality types of the respondents and their family total household income per month, X^2 (15, N=320) = 14.217, p > 0.05. Among the nursing students who had family total household income per month that below than RM3000, most of them were had more than personality types (36, 22.4%) which also same goes with the nursing students who had family total household income per month that between RM3000 to RM5000 (23, 20.5%) while for least of them, both also had extraversion personality type, (18, 11.2%) and (15, 13.4%) respectively. Different with the nursing students who had family total household income per month that more than RM5000, most of them were had agreeableness personality type (11, 23.4%) while least of them were had extraversion and conscientiousness personality type which both were shared same result (5, 10.6%).

4.9 Learning Styles Across Different Demographic and Academic Background

To achieve specific objective #2, learning styles in relation to different demography and academic background were identified as follows:

Independent variables	Dependent variables	Statistical tests
4 subgroupings of learning styles (visual, auditory, kinaesthetic and more than one learning styles	Gender, highest academic qualification, current nursing program, current year of studies and total household income per month	Chi- square test of independence
	Age, CGPA	One-way ANOVA

4.9.1 Proportions Difference of Learning Styles Subgroups Across Gender, Highest Academic Qualification, Current Nursing Program, Current Year of Studies and Total Household Income Per Month

For sociodemographic variables of categorical data, Chi-square test of independent was employed to determine any significant different proportions of 4 learning styles subgroupings across gender, highest academic qualification, current nursing program, current year of studies and total household income per month.

Table 4.13: Association Between Learning Styles with Demographic and Academic Background of the Respondents (n=320)

Demographic Characteristics	Learning Styles, n (%)						
	Visual	Auditory	Kinaesthetic	More than One	df	X^2	*p*-value
Gender							
Male	24 (51.1)	13 (27.7)	6 (12.8)	4 (8.5)			
Female	183 (67.0)	43 (15.8)	26 (9.5)	21 (7.7)	3	5.286	.152
Total	207 (64.7)	56 (17.5)	32 (10.0)	25 (7.8)			
Higher academic qualification	75 (51.0)	37 (25.2)	23 (15.6)	12 (8.2)			
SPM	18 (62.1)	5 (17.2)	3 (10.3)	3 (10.3)			
STPM	114 (79.2)	14 (9.7)	6 (4.2)	10 (6.9)	6	28.853	.001
Others	207 (64.7)	56 (17.5)	32 (10.0)	25 (7.8)			
Total							
Current Nursing Program	83 (51.9)	41 (25.6)	24 (15.0)	12 (7.5)			
Diploma	124 (77.5)	15 (9.4)	8 (5.0)	13 (8.1)	3	28.232	.001
Bachelor	207 (64.7)	56 (17.5)	32 (10.0)	25 (7.8)			
Total							
Current Year							
Year 1	60 (67.4)	12 (13.5)	8 (9.0)	9 (10.1)			
Year 2	69 (66.3)	21 (20.2)	8 (7.7)	6 (5.8)	9	5.342	.804
Year 3	56 (59.6)	18 (19.1)	13 (13.8)	7 (7.4)			
Year 4	22 (66.7)	5 (15.2)	3 (9.1)	3 (9.1)			
Total	207 (64.7)	57 (17.5)	32 (10.0)	25 (7.8)			
Family Income per Month							
< RM3000	101 (62.7)	26 (16.1)	16 (9.9)	18 (11.2)			
RM3000 – RM5000	71 (63.4)	24 (21.4)	11 (9.8)	6 (5.4)	6	7.746	.257
> RM5000	35 (74.5)	6 (12.8)	5 (10.6)	1 (2.1)			
Total	207 (64.7)	56 (17.5)	32 (10.0)	25 (7.8)			

According to table 4.13, for the gender, the Pearson Chi-Square analysed revealed a non-

significant relationship existed between learning styles of the respondents and their gender, X2 (3, N=320) =5.286, p > 0.05. Male students usually more possessed on visual learning style (24, 51.1%) while least of them were had more than one learning styles (4, 8.5%). Same goes with female students, they also more possessed on visual learning style (183, 67.0%) while least of them were had more than one learning styles (21, 7.7%).

Other than that, the Pearson Chi-Square analysed revealed a significant association between learning styles of the respondents and their higher academic qualification, X2 (6, N=320) =28.853, p < 0.05. Students who had SPM as their higher academic qualification, most of them were possessed with visual (75, 51.0%) as their learning styles while least of them were had more than one learning styles (12, 8.2%). This result also same towards students who had STPM as their higher academic qualification which were most of them have visual learning styles (18, 62.1%) while least of them have more than one learning styles and also kinaesthetic learning styles, (18, 62.1%). For students with others (matriculation or foundation) as their higher academic qualification, majority of them were had visual learning styles (114, 79.2%) while only about four percent of them were possessed with kinaesthetic learning style (6, 4.2%).

For the current nursing program, the Pearson Chi-Square also analysed revealed a significant relationship existed between learning styles of the respondents and their current nursing program, X^2 (3, N=320) =28.232, p < 0.05. Among the 320 respondents, most of diploma nursing students more possessed on visual learning style (83, 51.9%) which also same with baccalaureate nursing students (124, 77.5%). Meanwhile, least of diploma nursing student were had more than one learning styles (12, 7.5%) while only five percent of baccalaureate nursing students were possessed kinaesthetic learning styles (8, 5.0%).

Furthermore, the Pearson Chi-Square analysed revealed a non-significant relationship existed between learning styles of the respondents and their current year of course, X^2 (9, N=320) =5.342, p > 0.05. Among the 320 respondents, most of Year 1 until Year 4 nursing students more tend to had visual learning styles, (60, 67.4%), (69, 66.3%), (56, 59.6%) and (22, 66.7%) respectively. Meanwhile, among Year 1 nursing students, least of them were kinaesthetic learner (8, 9.0%) but among Year 2 and Year 3 nursing students, least of them were had more than one learning styles, (6, 5.8%) and (7, 7.4%) respectively. For Year 4 nursing students, least of them were kinaesthetic and had more than one learning styles which showed the same result, (3, 9.1%).

Lastly, the Pearson Chi-Square analysed also revealed a non-significant relationship existed between learning styles of the respondents and their family total household income per month, X^2 (6, N=320) =7.746, p > 0.05. Among the 320 respondents, among nursing students who had family total household income per month less than RM3000, they more possessed on visual learning styles (101, 62.7% while least of them were kinaesthetic learner which consisted only less than ten percent among them (16, 9.9%). Same goes with nursing students who had family total household income per month between RM3000 to RM5000 and more than RM5000, most of them also possessed more towards on visual learning styles, (71, 63.4%) and (35, 74.5%) respectively but least of them for both also were had more than one learning styles, (6, 5.4%) and (1, 2.1%) respectively.

4.9.2 Mean Difference of Age and CGPA of Respondents Across Learning Style Subgoups

A one-way ANOVA was conducted to determine if respondents' mean age (Table 4.14) and CGPA achievement (Table 4.15) were different across 4 subgroups of learning styles. There were no outliers, as assessed by boxplot**.**

Table 4.14: Differences Between Learning Styles with Age of the Respondents (n=320)

Source	df	Sum of Squares	Mean Square	F Ratio	F Probability

Between Groups	3	1.113	.371	.249	.862
Within Groups	316	471.609	1.492		
Total	319	472.722			

There was homogeneity of variances, as assessed by Levene's test of homogeneity of variances (p = .862). So, there was no differences between age and learning styles of respondents, F (3, 316) = .249, p > .05, ω2 = -0.007. Learning styles have no relationship with age.

Table 4.15: Differences Between Learning Styles with CGPA of the Respondents (n=320)

Source	df	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	3	.203	.068	.832	.477
Within Groups	316	25.633	.081		
Total	319	25.836			

There was homogeneity of variances, as assessed by Levene's test of homogeneity of variances (p = .862). So, there was no differences between CGPA and learning styles of respondents, F (3, 316) = .832, p > .05, ω2 = -0.002. Learning styles have no relationship with CGPA achievement.

4.10 Relationship Between Personality Types and Learning Styles

To achieve specific objective #3, the relationship between learning styles and personality types of nursing students were examined on the extent the distribution of the personality scores correlated with learning styles scores.

Table 4.16: Correlation Between Personality Types and Learning Styles of the Respondents (n=320)

	Visual (r)	Auditory (r)	Kinaesthetic (r)
Extraversion	.160*	.014	.049
Agreeableness	.062	-.044	-.049
Conscientiousness	.122*	-.037	-.053
Emotional Stability	.115*	.041	.132*
Openness to Experience	.099	-.035	.011

*. Correlation is significant at the 0.05 level (p-value < 0.05)

A Pearson's product moment correlation also was run to assess the association between personality types of and their learning styles. Based on the Table 4.16, study conclusions are as follows:

a) A significant weak positive correlation between extraversion and visual, r = .160, p < .05. So, there is small possibility that students who inclined towards extraversion personality maybe also preferred visual learning styles.
b) A significant weak positive correlation between conscientiousness and visual, r = .122, p < .05. So, there is small possibility that students who inclined towards conscientious personality maybe also preferred visual learning styles.

c) A significant weak positive correlation between emotional stability and visual, $r = .115$, $p < .05$. So, there is small possibility that students who had emotional stability personality maybe also preferred visual learning style.

d) A significant weak positive correlation between emotional stability and kinaesthetic, $r = .132$, $p < .05$. So, there is small possibility that students who had emotional stability personality maybe also preferred kinaesthetics learning style.

CHAPTER 5: DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Introduction

In this chapter, the researcher discussed the finding of the research in detail and some comparisons were made with the previous studies. Besides that, some limitations that associated to this study were identified. To minimize these limitations in further studies that related to this research topic, some suggestions were recommended.

5.2 Discussion

Discussion of the findings were based on the objective of the study as below:

1. To identify learning styles preferences during classroom lessons among nursing students across different demography and academic background.
2. To examine personality types of nursing students across different demography and academic background.
3. To determine association between learning styles preferences and personality types of nursing students.

5.3 Association Between Personality Types with Demographic and Academic Background

The demographic and academic background that tested in this study were age, gender, higher academic qualification, current nursing program, current year of the course, CGPA and family total household income per month of the respondents. There is no association between personality types with any demographic and academic background in this study. From my study, it shows that demographic characteristics like age, gender and family income did not influence personality of an individual. A quite same study also conducted by Ming Li (2013) and the result showed that some demographic characteristics like age and gender not associated with personality types.

Meanwhile in another study also done which was by Meera Komarraju (2011) with the title of The Big Five Personality Traits, Learning Styles and Academic Achievement. From the study, it is interesting that three personality traits which are openness to exprience, agreeableness, and conscientiousness were positively correlated with CGPA (Meera, 2011). Conscientiousness appears to assist a variety of effective learning strategies and may be an useful trait for attaining high levels of academic achievement (Meera, 2011). Students who are careless and do not study systematically are more likely to see their performance down (Meera, 2011). Both agreeableness and openness also were positively associated with CGPA (Meera, 2011). This suggests that besides being conscientious, students may also benefit from being cooperative and intellectually curious (Meera, 2011).

The association of personality type to academic achievement development is of approximately the same magnitude as the association of home environment, maternal education, or family income to academic achievement development. All of these associations are small, but they are genuinely meaningful for understanding individual differences in development. So, other study showed that personality types were associated with academic background and academic achievement meanwhile this study showed the vice versa. It might be because of some limitations through this study like the respondents used were only from specific setting and the total respondents were not large enough.

5.4 Association Between Learning Styles with Demographic and Academic Background

The demographic and academic background that tested in this study were age, gender, higher academic qualification, current nursing program, current year of the course, CGPA and family total household income per month of the respondents. The findings of this study showed that the learning styles of the nursing students during classroom lessons were significantly associated with higher

academic qualification and current nursing program of the respondents while others were not significantly associated with learning styles.

Nursing students who had SPM as their higher academic qualification possessed more towards auditory and kinaesthetic as their learning styles while students who had STPM as their higher academic qualification more possessed on more than one learning styles. For the visual learning styles, students who had others like matriculation and foundation as their higher academic qualification were more prone to it. It suggested that this may due to different approaches and teaching method used by teachers and lecturers during secondary education and tertiary education. During secondary school, usually teachers tend to give instructions, provide verbal reinforcement, always held some activities which allow students to participate in learning and encourage notetaking. That was suggested why students who had SPM as their higher academic qualification possessed more towards auditory and kinaesthetic as their learning styles. At the same time, during matriculation and foundation, lecturers tend to use video equipment like projector and slide, providing assignments in writing and using charts and pictures during teaching and learning process. That might be the answer why students who had matriculation and foundation as their higher academic qualification more possessed on visual learning style.

For the current nursing program, among the 320 respondents, diploma nursing students more possessed on auditory and kinesthetic as their learning styles while bachelor nursing students more tend to had visual as their learning styles and also had more than one learning styles. This may due to diploma nursing students mostly had SPM as their higher academic qualification while bachelor nursing students mostly had STPM, matriculation and foundation as their higher academic qualification.

But a past study which done by Bhavna Prajapati (2011) on The Influence of Learning Styles, Enrolment Status and Gender on Academic Performance of Optometry undergraduates showed that there were no significant relationship between demographic backgrounds of the students include gender, enrolment status and also their academic performance with learning styles.

Another study also conducted which showed that there is no direct relationship between learning styles and student's academic background and achievement (Nur Aniza, 2011). But according to her, learning styles have significant relationship with learning strategies, which are significantly correlated with achievement (Nur Aniza, 2011). From her study, it can be concluded that learning styles have an indirect relationship with achievement through learning strategies (Nur Aniza, 2011).

However, the effect of learning style preferences on academic performance still needs further investigation. The inappropriate use of learning style inventories make the students confine to one or more group of styles (Murphy et al. 2004). Students also may need to adapt to the real environment, and refrain from adhering to their own preferred styles (Murphy et al. 2004).

Meanwhile, a few studies also examined the relationship between the learning styles and academic achievement of university students. Some of these studies found that learning styles of high achieving students were significantly different from those of the low achieving students (Jihan, 2008). Another body of research in this area found that instructors, if tailored their instructional styles to the students' learning styles, would improve the academic achievement of their students (Jihan, 2008).

5.5 Association Between Personality Types and Learning Styles

Result of this study established a number of interesting linkages between relationship between the personality types and learning styles. Taken as a whole, these findings yield a number of insights with potential practical implications on the dynamic interplay between personality types and learning styles. Three personality types which are extraversion, conscientiousness and emotional stability were positively significant but weak with the visual learning style, while emotional stability also had a significant weak positive correlation with kinaesthetic.

It suggested that students who were socially confident, dependable, self-disciplined, calm and emotionally stable are more likely to use visual learning style while the students who were calm and emotionally stable also more likely to use kinaesthetic learning style in maximizing their learning. Such students are likely to be very thorough, good in presentation, understand quickly what the information that consists from the video and picture, know how to relate what they are learning to previous knowledge and to their own lives, and to study in a systematic way (Meera, 2011). For emotionally stable and kinaesthetic learning style, such students usually calm and know how to handle any project or conducting any experiments well.

On the other hand, a study done which was by Mark D. Threeton (2013) on Personality Types and Learning Styles: The tie that binds. In this study, they used Holland's theory of vocational personalities and environment and Kolb's experiential learning theory (ELT). The results also showed that no significant association between personality types and learning styles. But it is difficult to compare the results of this study to past personality and learning style correlational studies as they utilized different instrumentation such as the Myers - Briggs Type Indicator (MBTI) and Kolb's LSI (Mark D. Threeton, 2013).

Another study also conducted which was by Meera Komarraju (2011) with the title of The Big Five Personality Traits, Learning Styles and Academic Achievement. The results showed that Correlation analyses indicated a number of significant relationships. Specifically, consistent with their predictions, openness was positively related with the two reflective learning styles (synthesis-analysis and elaborative processing), neuroticism was negatively related with all the four learning styles, and agreeableness and conscientiousness were positively related to all the four learning styles (Meera, 2011). Finally, extraversion was positively related with fact retention and elaborative processing (Meera, 2011).

5.6 Implication of Study

Nursing Students

There are a few implication of this study towards the nursing students especially who were became the respondents. After they done answering the questionnaire, it may help them to know what their current learning styles and personality types during classroom lessons. This is important to raise their awareness of their own learning style preferences and personality types. When they already aware what their learning styles and preferences, it will encourage the students to expand their learning style repertoire and explore their own personality types. Other than that, it also will help them get to know each other and foster respect for and awareness of diversity in learning styles and personality types.

Nursing Education

There are also a few implication of this study towards the nursing education. Firstly, when the students already know what their own learning styles and personality types, already expanded and explored and got to know their peers' learning styles and personality types, it might help them on improving their academic achievement which may improve the quality of nursing education. Other than that, lecturers also will get to know what learning styles each of their students possessed which may help them to create and apply new teaching methods to use during classroom lessons. This also may help the students to more improve their academic achievement and CGPA.

Nursing Research

Some implication towards nursing research also could be explored through this study. If most students in every universities already knew their learning styles and personality types, it will be more accurate to gain the results if another future research of the same studies are being done between personality types, learning styles and academic background and achievement. At the same time, a few years onwards, the number of students who have high critical skills could be produced which could help in improving the quality not only nursing education, nursing organization, nursing management but also nursing research.

5.7 Recommendation for the Study

Based on the findings presented, some recommendations are suggested especially to students and also lecturers which may help in future research study and also students itself in term of academic achievement and perhaps clinical performances and working performances.

It is good to have the schools and universities let the students know what their learning styles and personality types. Each style preference offers significant strengths in learning and working which help them to take advantage of ways to learn best. The students also can enhance their learning and working power by being aware of and developing the style areas that they do not normally use. Tasks that do not seem quite as suited to their style preferences will help them stretch beyond their ordinary comfort zone, expanding their learning and working potential.

Other than that, by let them knew what their learning styles and personality types, it may help them to raise their awareness, encourage them to expand their learning style repertoire and explore their own personality types and also help them get to know each other and foster respect for and awareness of diversity in learning styles and personality types. From that, it might influence their academic achievement which also may help the future research to validate more whether there is a huge association between personality types, learning styles and academic achievement.

Strategies for teaching auditory students

Educators need to provide as much auditory stimuli as possible. They should provide verbal reinforcement, hold group activities and class discussions (Zayeed, 2007). Other than that, educators can use drills, have students read aloud, and let them make the information into a rhythmic pattern like poem, song, or rap. Educators also should advise the students to make some tapes of class notes and then listen to them which can help to remember details by trying to hear previous discussions, involving in class discussions, ask questions and volunteer in class and tell themselves new information to when they are alone (Zayeed, 2007).

Strategies for teaching visual students

Educators need to provide as many visual information as possible. Strategies for teaching Visual students include using video equipment, giving assignments in writing and encourage in using charts and pictures (Zayeed, 2007). Educators also should use bright colours, encourage students to take notes and draw pictures in their notes to relate with information that they already learnt (Zayeed, 2007). Students should also occasionally change the colour of ink in pens, observe at all the pictures, charts, and graphs in the textbook, read all of assignment directions, visualize new ideas or information presented, read the class title before it is discussed and visualize the details of what is read (Zayeed, 2007).

Strategies for teaching kinaesthetic students

Educators need to hold many activities to allow students to join in learning process. Educators also need to provide hands-on activities, provide for physical movement in the classroom, and encourage in taking notes (Zayeed, 2007). If possible, educators should provide stories filled with action. Additionally, educators also should advise the students to learn by doing, touching, or practicing, write notes to help remember information, take notes during lectures and discussions,

highlight important information in the textbook, always stand up and having stretch breaks, draw pictures of what is learned and build projects to present the ideas (Zayeed, 2007). Students also should summarize their daily activities in the notes to read later (Zayeed, 2007).

5.8 Limitation of the Study

Although our research sheds some valuable insights into the joint influence of personality traits and learning styles on demographic characteristics, academic background and academic achievement, we must acknowledge that it has some limitations. Most notably, future research could seek participants' permission to obtain grades from the records instead of relying on students' self-reported CGPA because it might be the students lied on their CGPA. The questionnaire also only available in English version which may cause some of the students could not get or understand the meaning of certain words and statement and thus could affect the results. On the other hand, the research participants were only nursing students from University of Malaya, UMMC and UITM and therefore, are not representative of all nursing students across Malaysia. Furthermore, data collection was done during class time which might cause the students rushing in answering the questionnaire due to time constraint. So, it might be some students did not answer the question honestly and properly which may lead in difficulty to gain more accurate results.

So, in the future research, it is more better if the questionnaire available not only in English but also in Malay so that all the students could understand all the items in the questionnaire. Number of respondents also should be more larger to gain more accurate results and at the same time the setting of the study also should be more wider which may cover across the Malaysia. Most notably, future research could seek participants' permission to obtain grades from the records instead of relying on students' self-reported CGPA.

5.9 Conclusion

This study revealed that personality types were not associated with any demographic characteristics, academic background and academic achievement eventhough most of the past studies showed that personality types were significantly associated with academic achievement. This might be because of some limitations of this study which caused inaccurate results. Other than that, this study also revealed that learning styles were not associated with demographic characteristics and academic achievement except higher academic qualification and current nursing program. It showed that learning styles of the diploma nursing students and bachelor nursing students were different. Lastly, for association of personality types and learning styles, correlation analysis were conducted and showed that the students who had extraversion, conscientiousness and emotional stability personality type are positively associated with visual learning style. Meanwhile, the students who had emotional stability as their personality type also are positively associated with kinaesthetic learning style.

REFERENCES

Ahmad, N.A., Mohd Ali, M. (2011). The Relationship between Learning Styles and Strategies with Academic Achievement Based on Gender and Type of School. *The International Journal of Learning*, Volume 17, Number 10, 265-278.

Alumran, J.I.A. (2008). Learning Styles in Relation to Gender, Field of Study and Academic Achievement for Bahraini University Students. *Journal of Individual Differences Research*, Vol. 6, No. 4, pp. 303-316.

Donald, J. S., Frank, J. P., Scott, E. A. (2009). Personality Types and Performance on Aptitude and Achievement Tests: Implications for Osteopathic Medical Education. *The Journal of the American Osteopathic Association*, Vol. 109, 296-301.

Dungey, G., Yielder, J. (2016). Student personality and learning styles: A comparison between radiation therapy and medical imaging undergraduate students in New Zealand. *Journal of Radiography,* 23, 107-111.

Gholami, S., Bagheri, M.S. (2013). Relationship between VAK Learning Styles and Problem Solving Styles regarding Gender and Students' Fields of Study. *Journal of Language Teaching and Research*, Vol. 4, No. 4, pp. 700-706.

Imran, Z. (2007). *A Survey On Students' Perceptual Learning Style Preferences And Teachers' Teaching Strategies In Rural Secondary School In Sri Aman Town* (degree's thesis). University Malaysia Sarawak, Malaysia.

Komarraju, M., Steven, J. K., Ronald, R. S., Alen, A. (2011). The Big Five personality traits, learning styles, and academic achievement. *Journal Personality and Individual Differences*, 51, 472–477.

Li, M., Steven, J. A. (2015). The relationship between Kolb's experiential learning styles and Big Five personality traits in international managers. *Journal Personality and Individual Differences*, 86, 422-426.

Mark, D. T., Richard, A. W., Danielle, C. E. (2013). Personality Type and Learning Style: The Tie That Binds. *Journal of Career and Technical Education Research*, 38(1), pp.39-55.

Nuzhat, N., Salem, R.O., Al Hamdan, N., Ashou, N. (2013). Gender differences in learning styles and academic performance of medical students in Saudi Arabia. *Journal of Medical Teacher*, 35, 78–82.

Prajapati, B., Dunne, M., Bartlett, H., Cubbidge, R. (2011). The influence of learning styles, enrolment status and gender on academi performance of optometry undergraduates. *Journal of Ophthalmic & Physiological Optics*, 31, 69–78.

Ramesh, A. (2013). The influence of learning styles and personality profiles on undergraduate medical students' clinical performance. *Journal of Medical Teacher*, 35, 608–612.

Ryan, A.P., Alexandra, C.C. (2016). Are Surgeons Born or Made? A Comparison of Personality Traits and Learning Styles Between Surgical Trainees and Medical Students. *Journal of Surgical Education*, 768-773.

Teach.com: Learning styles (2017), retrieved from: https://teach.com/what/teachers-teach/learning-styles/

Umar Farooq, Study Lecture Notes: What is Personality - Definition, Meaning and Types of Personality (2011 December 8), retrieved from: http://www.studylecturenotes.com/social-sciences/sociology/119-personality-development-types-of-personality

PHP-763

HEALTHY LIFESTYLE BEHAVIOURS AMONG NURSING AND MEDICAL SCIENCES STUDENTS

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ABSTRACT

Background: Healthy lifestyle behaviours are important and depend on the early practice of healthy living habits. Health-related behaviour in early stages of life will affect the illness risk that related to lifestyle in later periods of life. As a future health care provider, nursing and medical sciences students need to be healthy as they will be a person who will provide a care to those in ill for the next generation. This study among nursing and medical sciences students will to be useful and will provide a larger view of younger people's condition towards their health.

Aim/ Objective: The aim of this study is to investigate healthy lifestyle behaviour among nursing and medical sciences students of Faculty of Medicine, University of Malaya. Following specifically to examine the level of healthy lifestyle behaviour, comparing the mean differences in the domain of healthy lifestyle behaviours among students and determine association between the level of healthy lifestyle behaviour with the selected demographic characteristics of the student.

Methodology: This is a Cross-Sectional survey research. Method used is Convenience Sampling. Questionnaire used for data collection for students studying is 1176 students of Bachelor of Nursing Science, MBBS, Bachelor Biomed, and Bachelor of Pharmacy. All science programs will be invited to participate. The questionnaire use is 52-item of Health-Promoting Lifestyle Profile II (HPLP II) (Walker, 1996) which composes of six subscales (spiritual growth, interpersonal relations, nutrition, physical activity, health responsibility, and stress management).

Results: 72.6% of the respondents had moderate healthy lifestyle behaviours. The highest mean score for categories of healthy lifestyle behaviours was spiritual growth. Meanwhile, the lowest mean score was physical activity. Family income and student's academic performance (CGPA) both shown significant association with the level of healthy lifestyle behaviours which are p-value 0.01 and 0.04 respectively.

Conclusion: Healthy lifestyle behaviour in this early life influences later risk for lifestyle that leads to chronic disorders. Thus, it is importance to investigate the healthy lifestyle behaviour among university student especially among medical faculty students.

Keywords: Healthy lifestyle behaviour, nursing and Medical Sciences Students, and Dimensions of Health Promoting Lifestyle Profile II.

1.1 Introduction

In this chapter, researcher explained briefly about the introduction and summary to study that has been conducted. The chapter consists of study background, problem statement, significant of the study, objective which includes general and specific objectives, conceptual definition, and the operational definition.

1.2 Study Background

Malaysia is a multicultural and fast-developing country and in these process of achieve a developed and successful nation status in 2020, all citizen have to take part and must be more aware of the importance of healthy lifestyle behaviour which are closely related with living in order to avoid many chronic illness or disease and non-communicable disease (NCD) like diabetes, hypertension, and other heart problem. Healthy lifestyle behaviours can be refer to general activities that will help to improve and increase self-realization and sense of well-being that include acts that assist individuals in maintaining and getting healthy lifestyles behaviour. Healthy lifestyle behaviour in this early life influences later risk for lifestyle that leads to disorders thus, it is importance to investigate the healthy lifestyle behaviour among university student especially among medical faculty students. World Health Organization has determined the age range for this population is between 15 to 24 as youth (WHO, 2017).

Healthy lifestyle behaviour is important in avoidance of many illness and disease. Research has established a genetic links for disease and found that there is relationship between behaviours and disease whereas environmental will influences and brought in progression of diseases (Al-naggarra, 2017).

It is well stated that a healthy lifestyle behaviour is advantage and beneficial in preventing chronic disease such as cancer hence promotion of well-being. Thus, it is importance for determine lifestyle practice and associated factors among university student in Malaysia specifically (Al-naggarra, 2017).

The investigation about healthy lifestyle behaviour among nursing and medical science students are proved to be very useful and benefited complement and it will provide a larger view of younger people's condition towards their health. According to Bergeron, Sebastian, and Eric (2017), it was stated that there is a poor lifestyle choices associated with an increased risk of developing chronic disease in the general population. Nevertheless, there was limited data regarding lifestyle practices of health care professional students. There was an evidence indicates that better health practices among health care professional has relationship with increased confidence and frequency of person going for counselling regarding lifestyle and diet. There is a research conducted to 145 000 United States (US) physicians and results shown that those with a normal body mass index (BMI) were more confident and more likely to exercise and diet rather than those whom obese or overweight. It also stated that female physicians showed that training and self-confidence in nutrition and diet were act as predictors of weight and nutrition. The healthy lifestyle behaviours of health care professionals have been shown to affect credibility regarding their body weight (Bergeron et all., 2017).

Furthermore, according to Bergeron (2017), most of the findings in health care professional students have focused on exercise and a study conducted on medical students were recommended that it is important for them to spent about 150 minutes per week to do moderate activity or 75 minutes per week of vigorous intensity activity that contribute higher physical activity in their future behaviour. As future health care providers in diverse setting, nutrition provide clear and empowering messages about healthier diet and lifestyle behaviour to their

patient one day. Healthy lifestyle behaviour can improve intermediate risk factors for heart disease (cardiovascular) and diabetes and also contribute to avoid chronic diseases in high risk person (DiMaria-Ghalili, 2014). There is a few health care professional programs adequately practical students on nutrition-related issues so that they feel responsible to counsel their patients about healthy lifestyle (Kris-Etherton, 2014).

Healthy lifestyle can be defined as a way of living that lowers the risk of being a seriously sick and not all illness and disease is preventable. Nevertheless, a large proportion of deaths, particularly those from CHD (Coronary heart disease) and also lung cancer. Healthy lifestyle also is a way of living that will help to enjoy more aspects of life and it mainly not just about avoiding a disease or illness. However, it is about physical, mental, and social well-being too. Moreover, healthy lifestyle is a way of living that helps whole family which is when adopting a healthy lifestyle; a person will provide a more positive role model for other people in their family, particular children as well. Healthy lifestyle will help to create a better environment for individual and community to grow up in by helping them to follow a healthier lifestyle that will be contributing to their wellbeing and enjoyment of life now and in the future. For overall picture, healthy lifestyle is not just about avoiding disease, it is also about physical, mental and social wellbeing (Kznhealthgovza, 2017).

Healthy lifestyle behaviour leaves a person fit, energetic, and also it will help to reduced risk for getting disease based on the choices make about daily habits. Daily exercise, sufficient nutrition, and adequate sleep are the foundations for continuing good health. Thus, managing stress in positive ways, instead of through smoking or drinking alcohol, reduces wear and tear on body at the hormonal level. For a comfortable and longer procedure, to be more lifestyle for a healthy lifestyle and live up to it (Clarke, 2017).

1.3 Problem Statement

In any research studies, there are must be have problem statement because it is essential steps in order to identify the problem occur clearly. According to this researcher which is Hernon & Schwarts (2007), a problem statement must be seen specifically, systematically in arrangement, manageable, and the written was done to stimulate other reader interest to spend their time on reading the research work.

Healthy lifestyle behaviours depends on the early practice of heathy living habits and unhealthy lifestyle among student are strongly linked to unhealthy habits in adulthood. Therefore, health-related behaviour in early stages of life will affected the illness risk that related to lifestyle in later periods of life. This is because they are difficult to change these unhealthy habits that adults have adopted in their youth, many effects of healthy risk factors among adults especially student are avoidable if these behaviour are found and changed at an early phase. That way it is important to increase healthy lifestyle behaviour among young people like university student. (Wang et al.,, 2009).

Healthy lifestyle behaviours are closely related to current and subsequent health status. Health has an important and significant place in the lives of all humans being. Humans need to develop healthy lifestyle behaviour to enhance their quality of life, health status and protect their own health. If they perceive their duty, they will try to avoid risky activities and practice behaviour that protects and increase their health status as well. Health is optimal well-being that will help to contributes to a good quality of life of a person. It is more than freedom or away from illness, diseases, or even sickness, though freedom and away from disease is a vital thing to obtain good health. In addition, an optimal health includes high level mental, social, spiritual,

emotional, and also include physical wellness within the limits of one's heredity and individual abilities.

Besides that, university students was represented a major segment of young adult sample and population of teenager. Previous research study on healthy lifestyle indicate that larger amount of younger university students are minimally engaged in healthy lifestyle behaviours such as tobacco use, substance abuse, improper diet control, alcohol consumption, and other improper physical activity (Wang et al., 2013).

World Health Organization given defined health targets for all in 21st century, and also target four aims in order to enhance the health of young people and improve their social responsibilities in assuming roles in society by the year 2020 (WHO 2017). By referring to the study that had done in our country as well as other countries too, it is found that the students practice healthy lifestyle behaviour only at medium level.

In another studies from Turkey, it was stated that 95.6% of university students wanted to be informed about health-related cases, and 23.5%, 18.1%, and 6.6% needed to be informed about protection from diseases, nutrition and their solution, respectively (Hacihasanoglu, 2011). This investigation shown that health problem experienced by university students were caused by lack of information and practice. Moreover, Savci, Ozturk, Arikan, Ince, and Tokgozoglu (2006) determined in their study that physical activity levels of 68% of university students were very low. It is needed to investigate this problem because of student's healthy lifestyle behaviour because of university student were the person who will constitute a large part of the young population (Savci et al., 2006).

Moreover, the study from Eastern Turkey (Hacihasanoglu et al., 2011) also stated that there are decreases in physical activity and unhealthy eating habits that will lead to an increase in obesity among young people and this usually bring a risk factor for health if these kind of habits or attitude are pursed also in adulthood in future.

As a future health care provider, students of Bachelor of Medicine and Bachelor of Surgery (MBBS), Bachelor of Nursing Science, Bachelor of Biomedical Science (Biomed), and Bachelor of Pharmacy need to be healthy as they will be a person who will provide a care, give health education and be role model to client of the next generation and future. The investigations about healthy lifestyle behaviour among nursing and medical science students were proved to be very useful and benefited complement and it will provide a larger view of younger people's condition towards their health status.

1.4 Significant Of Study

1.1.2 1.4.1 Student of Faculty of Medicine, University of Malaya

This research will be benefited to Faculty of Medicine in University of Malaya student especially Nursing students and Medical Sciences students as well. It main purpose is investigate the level of health among Nursing, Bachelor of Medicine and Bachelor of Surgery (MBBS), Pharmacy, and Biomedical students. In fact, healthy lifestyle behaviour in early phase of life effect the disease risk related to lifestyle in later periods of life. Furthermore, it is crucial that this study finding can be used to enhance or improve healthy lifestyle behaviours among young people. This is because, nursing students and all of these medical science students consist of a part of the young population and it is vital to investigate their healthy lifestyle behaviour. Moreover, student will comprehend the importance of health protection and improvement behaviour and transfer their knowledge into practice in life. The student's awareness on healthy lifestyle can be increased too so that chronic disease can be reduced to the minimal prevalence.

Thus, the prevention of diseases from young are very vital like performing and engaging themselves in their daily activities. Therefore, it also can reduce the cost of medical care treatment either from the student herself/himself or the organization of the whole community.

1.1.3 1.4.2 Nursing Profession

The upcoming result of this research study can be used as a guideline to enhance the nursing practice regarding the healthy lifestyle behaviours among nursing students and medical science students by developing a health programs or health education regarding the important of practicing healthy lifestyle behaviour to community especially to students. Besides that, it also can be used as a foundation or base of further research of this study in the next research. Furthermore, apart from the nurse having to strategies on patients' healthcare plans and to produce programs for healthy lifestyle behaviours among nursing students and also medical science students towards improving wellness, nurses can learn many kind of new things and increase their critical thinking on some practicable ideas for creating student education program in order to be a good nurses both now and for future as this can create a healthy generation from many aspect both in mental and physical health.

1.1.4 1.4.3 Organization

The study also marks an impact on Faculty of Medicine, University of Malaya. From the result, the healthy lifestyle behaviour status in Faculty of Medicine can be undated. By the research study of the problem in depth will help in providing the relevance result which can be used as a guideline in controlling the chronic disease in that area. Therefore, the health status of the population in the Faculty can be improves ideally and can lead to the healthy surrounding. The increase in practicing the healthy lifestyle behaviours will provide many advantage and benefit to the university which will decrease the level of illness and chronic diseases among university student in Faculty of Medicine. It also helps in reducing the treatment cost to who have disease and need expensive medical treatment. At the same time, student will not suffer from high, intolerable costs in medical care unit. This surely shown the understanding and cooperation within the organization itself and can also indirectly improve their professionalism and goodness.

1.5 Research Objectives

1.1.5 1.5.1 General Objective

The general objective of this study is to investigate the healthy lifestyle behaviour among nursing and medical science students of Faculty of Medicine, University of Malaya.

1.1.6 1.5.2 Specific Objectives

There are several specific objectives underlying in this research study which is:

1. To examine the level of healthy lifestyle behaviour perceived by the students.
2. To compare the mean differences in the domain of healthy lifestyle behaviours among students.
3. To determine the association between the level of healthy lifestyle behaviour with the selected demographic characteristics of the students.

1.6 Research Questions

The study is conducted to answer the following research objectives:

1. What is the level of healthy lifestyle behaviour among university student?
2. What is the mean difference in the domain of healthy lifestyle behaviour among students?

3. Does the healthy lifestyle behaviour have any association the demographic characteristics of the students?

1.7 Operational Definition

1.1.7 1.7.1 Healthy Lifestyle behaviour

Healthy is a good physical or mental condition, in good health. Whereas lifestyle is a choice a person makes about how to live and behave, according and based on their attitudes, testes, and values. Therefore, healthy lifestyle is a good condition which is appropriate physical and mental to make a choice on how they live and behave (Oxford Dictionaries, 2017). According to the World Health Organization (WHO), Health encompasses with three dimensions which is a complete state of physical, mental, and social well-being and it is not merely absence of diseases or infirmity (WHO, 2017). According to Clarke (2017), a healthy lifestyle leaves a person fit, energetic and at reduced risk for disease, based on the choices a person make about their daily habits. Good nutrition, daily exercise and adequate sleep are the foundation for good health (Clarke, 2017).

In this study, Healthy Lifestyle Behaviour is the process of empowering the students to improve control over their health and its determinants through health effort and multisector action to improve healthy behaviours. This process include many activities for the students at huge or for populations at increased risk of negative health outcomes. This healthy lifestyle is directed toward individual responsibility for health through 6 domains which health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and also stress management (Walker, 1995).

1.1.8 1.7.2 Behaviour

Behaviour is defined as the way in which one acts or conducts oneself, especially towards others (Oxford Dictionaries, 2017). While, in this study, behaviour in this study can be defined as an attitude or practice toward a healthy lifestyle in order to know the level of healthy lifestyle of each person. It is also refer to the daily activity on what they do towards achieving a good goal in health lifestyle.

1.7.3 Nursing Students

Nursing students are student in a program that will leading to certification in a form of nursing, usually applied to students in a Registered Nurse or practical nurse program (Medilexicon, 2017). Student nurse also can be defined as a person who is training to be a nurse at a nursing school or hospital (Collin English Dictionary, 2017). In other word, nursing student is someone who is studying or training to be a nurse in the future (Collin English Dictionary, 2017).

In this study, nursing student that will be selected was undergraduate nursing student from Faculty of Medicine, University of Malaya. There are 65 students of nursing that will be participants in this study.

1.1.9 1.7.4 Medical Sciences Students

Medical science can be defined as the branch of science concerned with the study of the diagnosis, treatment, and prevention of disease (Oxford Dictionaries, 2017).

Medical sciences are an art and are concerned with the maintenance of health and the prevention, alleviation, or cure of disease. Meanwhile, the field of medicine as it relates to human health is well known, the medical sciences comprise a wide number of specialties (the sciences | Medical science, 2017). Medical science student is a person who, while gifted in the

art of chemistry, biology, and other bodily issues (Urban Dictionary: Health, 2017). According to Oxford (2017), student is a person who is studying at a university or other place of higher education. Based on Webster's New World (2014), student is a person who studies, or investigates and also a person who enrolled for study at a school, or college. They also define it as someone who is learning at a school, or in any teaching environment. Medical science students also can be defined as a person who learning at a college or university (Oxford Dictionaries, 2017)

The application of knowledge to improve health and patient-centred health care requires basic skills in Health Services Research (HSR). HSR is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, affect access to health care, the quality and cost of health care, and ultimately our health and well-being. HSR has a strong foundation in the social- and management sciences (University of Twente, 2017). In addition, it focuses on the design and evaluation of medical-technological, behavioural and organizational interventions as well as the application of that knowledge to improve health and patient centred health care, and to ultimately improve the quality of life (University of Twente, 2017).

While, in this study, student was referred to the person that involving in healthy lifestyle behaviours which is among university student from Faculty of Medicine, University of Malaya. The student consist of undergraduate students from four different course which Pharmacy, Biomedical and also Medicine and Bachelor of Surgery (MBBS) students. In this study, MBBS student can be defined as medical student from Faculty of Medicine, University of Malaya.

Pharmacy students can be defined as an individual who is enrolled as a student in a school or college of pharmacy approved by the Board or accredited by the Accreditation Council for Pharmacy Education (Code of Maryland, 2018). Whereas in this study, pharmacy student defined as a students who studied in pharmacy in Faculty of Medicine, University of Malaya.

Biomedical science student can be defined as a students who focuses on how cells, organs, and systems function in the human body, an exciting and dynamic area that was highly relevant to the understanding and treatment of human disease (Oxford University, 2018). Whereas in this study, pharmacy student defined as a students who studied in biomedical science in Faculty of Medicine, University of Malaya.

1.8 Summary

The first introduction chapter seeks to explain and give an idea on the researcher's background of the study as to make the direction of this paper clearer, easy to understand and provided more detailed on it. The background of the study explained about healthy lifestyle behaviours among nursing students and medical sciences students that include MBBS, Pharmacy, and Biomedical sciences students. Moreover, in this chapter, the impact of healthy lifestyle behaviour provides a greater because of it can affect the whole population in the faculty in the university. The faculty itself will be also getting affected in term of increase in health status. Fewer studies are conducted to assess the populations on healthy lifestyle behaviours. Mainly, the purpose of this research study is to investigate healthy lifestyle behaviours among nursing and medical sciences students.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

The aim of this second chapter of this research study is lies in carrying out a critical review or previous study that related to the 'Healthy Lifestyle Behaviours Among Nursing and Medical Sciences Students'. In fact, literature review can serve a number of important functions in the study process and a high role for nurses to develop an evidence-based practice. The entire searching of materials has been done through the Database which is University of Malaya Library Interactive Database and it is available to all students. Medline, PubMed, Google Scholar, Science Direct, Academic Search Elite @ESBSCOhost, and CINAHL Complete @EBSCOhost were selected as the search materials for the period of 2007 – 2017. This is beneficial for the researcher to know and obtain the latest computer development that has been progressing in nursing education.

Researcher used the keywords "Healthy lifestyle behaviours, physical activity, the dimensions/domains of health lifestyle, university students, the effect of socio-economic status on healthy lifestyle behaviour, and the dimensions of healthy lifestyle behaviour, and relationship between each domain of healthy lifestyle behaviour" to facilitate and accelerate the searching process to be more sufficient. From the literature search, the researcher had extracted 363 articles from PubMed, 322000 from Google Schoolar, 10047 from Science Direct, 3318 from Academic Search Elite @ESBSCOhost, and 2463 from CINAHL Complete @EBSCOhost. However, out of these articles, only 80 articles have been selected, because of those articles have provided full text review and are directly related to this research study and after researcher screening and exclusion more briefly, the researcher found that only 38 related and linked article that can be used in this study.

According to Burns et al., 2011, literature can be defined as a broad, systematic, comprehensive in depth, and a critical review of scholarly publication, unpublished scholarly print materials, personal communication and also audio-visual materials. This 'Scholarly Literature' is representing to published and unpublished database literature and conceptual literature materials found in print and also non-print from database resources are reports as a complete research study. To research for literature review, in order to get the most related and linked literature which is has relationship to the studies, a systemic way must be implied in the study in formation and technology course has taught students to find and search database wisely and easily. Thus, in this chapter, the search strategies and review of any related literature will be explained more and in depth (Burns et al., 2011).

2.1.1 Search Strategies

Search strategy was conducted by using keywords based on the research question. In this research study, the researcher use keywords such as healthy lifestyle behaviours, Association Healthy lifestyle behaviour With Demographic Characteristics, The Effect of Socio-economic Status on Healthy Lifestyle Behaviour, and The Dimensions of Healthy Lifestyle Behaviour, and Relationship between Each Domain of Healthy Lifestyle Behaviour. There are many different database were used in this study which are Medline, PubMed, Google Scholar, Science Direct, Academic Search Elite @ESBSCOhost, and CINAHL Complete @EBSCOhost. All articles are search from a fix year which was between 2007 to 2017 only.

This is because, the researcher would like to know the current status and issues that happen about healthy lifestyle behaviours among the university students.

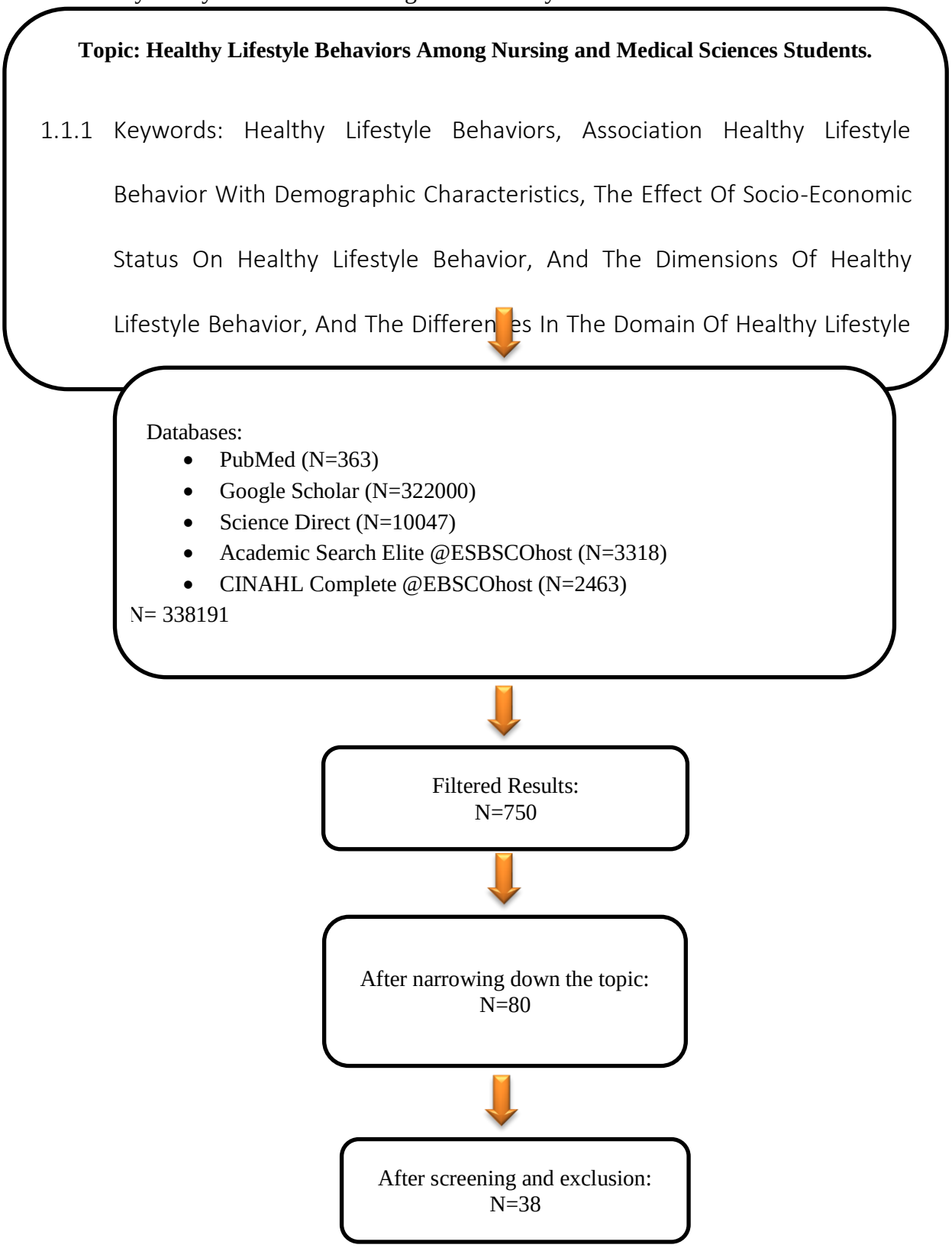

Figure 2.1 Flow Chart of Literature Search

In searching for precise literature, relevant keywords must be highlighted to filter out irrelevant article. The inclusion criteria and characteristics were used to establish a guideline to search for these relevant articles. The following are inclusion criteria were used in this research study:

1. English language articles.
2. Primary search articles (peer-reviewed search, dissertations, evidenced-based practice guidelines)
3. Full text of article only
4. Article that published between year 2007 – 2018

2.2 Result of Key Studies/ Review of the literature

1.1.10 2.2. 1 Healthy Lifestyle Behaviour

Health lifestyle behaviour can be considered as the science and art which will give help to others to change their lifestyle in order to gain an optimal health in life. Health lifestyle behaviour give a person the ability to make a correction and control health, so that it will help to make a person to enjoy health potential and continue to have a healthy lifestyle. Moreover, lifestyle comprises of the decisions on diet, health responsibilities, exercise, stress management and also the action that one takes to achieve those decision making (Paudel, Bhandari, and Arjyal, 2017).

In placing more emphasis to Hancihasanoglu et al., 2011, health related behaviour in early life will provide or produce influences later risks for lifestyle related disorders on a person. Thus, one of these risky groups in society nowadays includes adolescents and young individuals. Therefore, it is crucial to investigate health behaviour among young people since university students is representing a major segment of this population (Hancihasanoglu et al., 2011). Health responsibilities, physical activity, nutrition, interpersonal relationship, stress management and also self-actualization can be include as health improvement behaviours and it act as indicators of an individual's healthy way of life (Hancihasanoglu et al., 2011). So, as a result in many countries, they shown a decrease physical activity and unhealthy eating habits lead to an increase in obesity among young people and this problem distribute a risk for health (Hancihasanoglu et al., 2011).

This claim can also supported by World Health Organization (WHO) (2010), they target for health in the 21st century and they target about four aims to increase health status of young people and their social responsibilities in assuming roles in society by the year of 2020. Furthermore, in an observation-based carried out in Turkey, there are about 95.6% university students who wanted to be informed about health issues, and 23.5%, 18.1% and 6.6% were needed to be informed about protection from diseases, nutrition and psychological problems and their solutions respectively. Thus, due to this study, it shows that health problems experienced by students are caused by lack of information.

There is some review of literature that provided important evidence of increasing unhealthy behaviours among students regarding to dietary, physical activity, drug use, and smoking, there is evidence that students are adopting risky behaviours detrimental to health (Kenny, Holahan, & Taha, 2008). In recent studies, most of the studies found that more female students practice unhealthy behaviours rather than male students especially to physical and dietary habits (Vickers, Patten, Bronars, Lane, Stevens, Croghan, Schroeder, and Clark, 2004). Consequently, the research study were indicated a need for more studies on the health status and lifestyle behaviours of adolescents (especially university students) that represented a vital

group in any nation and country because of education given and leaders for future prospect and model.

The limitation that found in the study of El Ansari (2011) is the population is too small to generalize the results to all university students especially to physical and dietary habit (El Ansari et al., 2011). Therefore, replication of the study with a larger sample and multiple geographic locations may increase the generalizability of the finding. Thus, in my study, researcher will use student from many program which is nursing, MBBS, Pharmacy, and Biomedical Sciences.

According to Gillis (1994), Healthy lifestyle behaviours of individuals are important determinants of health status. In the United States and Canada, about 50% of all health care costs are said to be attributable to unhealthy lifestyle (Gillis, 1994). The International Association for Adolescent Health postulates that the health-compromising behaviours of young people underpin many of their health problems (Tonkin, 2000). Young people represent the future of families, communities, and nations. Unhealthy health practices and behaviours at this stage will continue into adulthood and jeopardize their health status in later life. However, young people are considered to be at a relatively healthy stage of life and, as such, are not viewed as a priority in healthy lifestyle efforts throughout the world (World Health Organization, 1998).

In previous study in Jordan, it is recorded that the total Healthy Lifestyle Behaviours score was 2.5 (SD=0.37) and the result shown that the highest score on the subscales was self-actualization (spiritual growth) which is 2.8 (SD=0.51). Therefore, the score were lower on interpersonal support which is 2.7 (SD= 0.51), nutrition 2.7 (SD=0.58), and health responsibility 2.1 (SD=0.550. Meanwhile, the lowest score was physical activity which is 1.4 (SD= 0.49) (Nassar & Shaheen, 2014).

2.2.2 The Dimensions of Healthy Lifestyle Behavior

1.1.10.1 2.2.2.1 Spiritual Growth

According to Dosse et al., 1989, Spiritual growth focuses on the development of inner resources and is achieved through transcending, developing, and also connecting where transcending puts a person in touch with most balanced selves as it proved with inner peace and opens to possibilities of creating new options for becoming something more by going beyond who and what it is. Whereas connecting is the feeling of harmony, wholeness, and connection with the universe while developing consist of maximizing human potential for wellness through searching for meaning, finding a sense of aim or purpose, and working toward goals in life

1.1.10.2 2.2.2.2 Interpersonal Relations

Interpersonal relations entails utilizing communication to achieve a sense of intimacy and closeness within meaningful, rather than more casual, close and good relationships with others person. Communication involves the sharing of thoughts and feelings through verbal and also nonverbal messages (Travis & Ryan, 1988; Walker et al., 1987). According to Hacihasanoglu (2017), it was stated that score average for female students was higher than male students in this subscale. In this study, there also stated that no significantly difference between gender and interpersonal relations.

2.2.2.3 Nutrition

Based on Ardell (1986), nutrition consists of knowledgeable selection and consumption

of foods essential for sustenance, health, and also well-being. This includes choosing a healthy daily diet consistent with guidelines provided by the Food Guide Pyramid.

According to Thaleia (2015), there was 45% healthy/good health of students considered their diet/nutrition in healthy/good health and it was shown that only 1% having poor healthy lifestyle. According to Bergeron (2017), claims about 59% of pharmacy and medical students were exposed to medium nutrition and 53% of the student have good nutrition (Bergeron, 2017).

Many studies from international were reported on an inadequate consumption of the important foods groups by university students, especially towards dairy products, and also fruits and vegetables. There are only a few South African studies have been conducted on the dietary patterns of Health Science students, and these support some of international trends for example inadequate fruits, vegetables intake and also inactivity. In this previous study, it shown that the dietary intake of Health Science students was not compared with that of other university students. It found that healthier eating and activity patterns in Health Science students were reported in one study, although there are 83% of the sample was found to have an insufficient dairy intake in their life. (Gresse, Steenkamp, & Pietersen, 2015)

1.1.10.3 2.2.2.4 Physical Activity

According to Bouchard, Shepard, Stephens, Sutton, & McPherson, 1990; Dishman, 1988, physical activity were involves regular participation in light, moderate, and/or vigorous activity. Physical activity also may occur within a planned and monitored program for the sake of fitness and health or incidentally as a part of daily life or leisure activities (Bouchard et al., 1990 & Dishman, 1988).

Based on studied from University of Edinburgh, Thaleia Deniozou, June 2015, students was appeared to be overall physically active since majority of the student in the University already met the recommended guidelines for this physical activities. Statistic from this study shown about 42% was categories to be physically active for half an hour or more for 3 to 4 days, for over the past week, whereas about 29% for 5 or more days. In addition, from those student who active in physical activity for 4 days or less, about 62% were indicated that they already active for at least 150 minutes over the course of the past week (Thaleia, 2015). Based on Thaleia's studies, 84% of students self-rated their physical health as good (43%) and poor (3%) only (Thaleia, 2015). There are a guideline that had been published by four UK chief medical officer, Wwwgovuk (2011) recommended that adults should aim to be active daily and over a week. The result comes out about only 29% of students are meeting the recommendation of health for 30 minutes of physical activity most days of the week, encouraging a further 62% are active for 150 minutes. Thus, it shown that majority of students are meeting the time of recommended activity time for adults but not the frequency and this is why it appears to be need to encourage students to be more active that before and always do physical activity more often.

In addition, based on British School (Corder, 2010), not more than half students in British School meet the physical activity guideline and the rest are active students and most of their parent have wrong perception towards their children attending in this physical activity. The purpose of this research is to study student awareness and their parent's perception on the student participation in school activity (Corder, 2010).

Furthermore, other research that aiming university student in Istanbul shows that there are different level of participation on physical activity which are trainer education, physical education and sport teaching. Nevertheless, this research still did not get any result in gender differences of level participation in physical activity (Agopyan, 2015).

1.1.10.4 2.2.2.5 Health Responsibility

Health responsibility involves an active sense of accountability for one's own well-being. It includes paying attention to one's own health, educating oneself about health, and exercising informed consumerism when seeking professional assistance from others (Ardell, 1986).

1.1.10.5 2.2.2.6 Stress Management

According to Antonovsky (1987), stress management entails the identification and mobilization of psychological and physical resources to effectively control or reduce tension. Stress management is valuable for mental health and functioning, include in productive activities and relationship fulfilling (Antonovsky, 1987). According to Krause (1986), they suggest that women seem to be more vulnerable than men to the effects of stressful life events and chronic life stresses, whereas women tend to report more feelings of stress than men despite having larger social network and greater support. In addition, rural women will experience both economic and physical stress due to the distressed farming economy and the high rate of many cases of accidents and injury (Krause, 1986).

2.2.3 The Relationship between Each Domain of the Healthy Lifestyle Behaviour.

According to Pullen et al., 2001, the perceived health status or healthy lifestyle behaviours and the spiritual growth are significantly increased. Therefore, all spiritual has relationship between interpersonal relations, nutrition, physical activity, health responsibilities, and the most significant is stress management. Moreover, for interpersonal relations was explained that it has related which physical activity and nutrition. Interpersonal relation also has related with stress management and both increased significantly. Besides, interpersonal relations also have strong relationship between physical activities. Furthermore, from all of this results, it shown that nutrition have relationship between spiritual, interpersonal relation, nutrition, physical activity, health responsibilities, and also stress management. For physical activity, it was significantly associated or relation between the healthy lifestyle domain except with stress management. According to this study, it shown that health information or health responsibilities was significantly increased with stress management and made a statistically significant independent contribution and related to others domain too. Furthermore, for stress management, it was recorded that all domains have related with each other based on all this results (Pullen et al., 2001).

2.2.4 Association Healthy Lifestyle Behaviour with Demographic Characteristics

2.2.4.1 Age and Gender.

Based on the research study from Eastern Turkey (Hacihasanoglu, 2017) stated that one of the highest risky groups in community includes adolescents and also young individuals. They also found that university student represent a major segment of the young population. According to WHO (1997), the young group is the healthiest person but they also are the most risky one. WHO also has determine that the age range between 10 and 19 years as adolescence and the age range between 15 and 24 as youth as the youth is a period of holistic maturation take part and it is a stage of preparation for their own life. At this stage, youth also a period of transition from childhood to adulthood in which there are many relationship between mental, physical changes, and social relationships. Thus, if each individual get through this period healthy, their chances to be healthy in adult is high. There are many statistics demonstrate that behavioural factors are generally vital and crucial in cases that cause illness or disease in youth as this behavioural are also the indicators of an individual's healthy way of life.

In the study of Eastern Turkey (Hacihasanoglu, 2017), the limitations that been highlighted which is difficult to compare their findings to those from other countries as different measure of healthy lifestyle behaviour were used. Nevertheless, Iran has a 70 million of people that include about 23.7 million of adolescents, therefore this situation contribute a large share of adolescent population in world. Thus, since there are more adolescent in this country, researcher uses university students as participant and sample of study.

According to Sabbah et al., 2013, physical activity is an crucial determinant of quality of life and life satisfaction, among university students (Sabbah et al., 2013). Salami (2010) and Schmidt (2012) were support the results of this study and these studies were provided a collateral explanation for the gender differences in quality of life. For instance, there is an evidence that women are less likely to be physically active than men, and they were found participate in home-based activity like walking (Salami, 2010; & Schmidt, 2012). Overall, men are more likely in vigorous physical activities such as running, or weight lifting rather than women (Huang et al., 2003; Quadros et al., 2009; El Ansari et al., 2011). According to El Ansari et al., 2011, university aged students have high risk of unhealthy lifestyle that might affect their health and also wellbeing (El Ansari et al., 2011).

Based on the research study by Walker et al., 1995, stated that healthy lifestyle behaviour is greater among older people and in the landmark Alameda Country studies that a greater proportion of those older age had good healthy lifestyle behaviour especially concerned with the pattern of nutrition, sleeping, and physical activity than younger age. Later, next studies also have found that older age has significantly higher of healthy lifestyle behaviour especially in nutrition and stress management behaviour. Moreover, regarding to gender, it is reported that female have significant to engage in healthy lifestyle behaviours (Walker et al., 1995).

2.2.4.2 Weight (BMI).

The weight control can escalate to dangerous when a person in other health compromising behaviours while engaging in unhealthy weight control behaviours. A significant relationship between unhealthy weight control behaviour and suicidal ideation in young population was found by Neumark-Sztainer et al., (1998). When linking with gender, previous studies reported that male students are likely to try to lose weight compared to female students (Wardle & Steptoe, 2003). Unfortunately, the desire to be thin creates a pressure on female student to lose their weight continuously and this may be promote unhealthy weight control behaviours for example skipping meals, taking laxatives, diet, pills, food restrictions, or even fasting (Tiggeman, 2006; Pomerleau & Saules, 2007).

Based on the research study from Eastern Turkey (Hacihasanoglu et al., 2011), there are decreases in physical activity and unhealthy eating habits that will lead to an increase in obesity among young people and this usually bring a risk factor for health if these kind of habits or attitude are pursed also in adulthood (Hacihasanoglu et al., 2011).

WHO, 2006 was defined that Body Mass Index (BMI) as the weight in kilograms divided by the square of the height in meters kg/m^2. It is divided into four different categories which is normal weight (BMI 18-2 kg/m^2), underweight (kg/m^2), overweight (kg/m^2), and obesity (BMI >30 kg/m^2). In the study, overweight and obesity are crucial determinants of health and has been associated with adverse metabolic changes for instance increased of blood pressure, cholesterol level, stroke, diabetes mellitus are associated with overweight and obesity (WHO, 2017; Lytie & Black, 2003).

Moreover, some studies shown that BMI is significantly higher among low socio-

economic that middle and high socio-economic groups (Dea, 1999), with lower socio-economic status (SES) being associated with accelerated weight gain during adulthood (Ali & Crowther, 2009; Scully, 2014). According in as study in Eastern Nigeria by Chukwuonye et al., 2013, they shown that the prevalence arises through greater ability of the rich to afford better and excess amount of food sources, and been better educated with higher education, they tend to have office job and rather stay linger in cars (Chukwuonye et al., 2013). Whereas, the person who was poor walk to their class, and this can engaging more in physical activity than the rich was do (Chukwuonye et al., 2013).

1.1.11 2.2.4.3 The Effect of Socio-economic Status.

There are several studies have reported the effect of socio-economic status on healthy lifestyle behaviour. According to Ali and Crowther (2009), they found that the effect of socio-economic status on the prevalence of overweight which is unhealthy health may be mediated by low income which will limit the availability of the more healthy food option and variety type of healthy choices (Ali & Crowther, 2009). There are a study that examined the correlation of mental health and income among students in one of university in Brazil and the result showed a positive relationship between student's income status and mental health (Ali & Crowther, 2009). This is because, income status and social support plays directly and indirectly will affecting health status as well, by restricting the ability to attend hospital and paying for medications and treatment, restricting several lifestyle like consuming healthy food, living in comfort environment, be able to pay for gymnasium for regular exercises and some other luxuries that will makes one live a happy healthy life. However, it stated that most of the respondent had moderate family income (Ali and Crowther, 2009).

2.2.4.4 Academic Performance and Program.

According to Savci et al., (2006), they have determined that in their study physical activity level of 68% of university students were very low. The health problems experienced by students are caused by lack of information (Savci et al., 2006). Based on the educational study that had been carried out by Hsio et al., (2005), there are a significant increases were reported in the total and subscale score averages of healthy lifestyle behaviours. Moreover, Yeh, Chen, Wang, Wen, and Fetzer, (2005) reported that there is positive changes in the healthy lifestyle behaviours of students to increase their healthy lifestyle behaviours (Yeh et al., 2005).

According to Nathalie Bergeron, (2017), clams about 59% of pharmacy and medical students were exposed to medium healthy lifestyle behaviour and 53% of the students have good healthy lifestyle behaviour. Almost majority if the students (74%) were stated to emphasize lifestyle behaviour. Besides, the majority of the students were stated that they have strong healthy lifestyle behaviour especially in nutrition and physical activity (Bergeron et al., 2017). The limitation in their study was the relatively small sample size, originating from Medical students, nursing, pharmacy and biomedical sciences in the state of California. However, the higher healthy lifestyle behaviour are medical students and pharmacy because had meet medium healthy lifestyle behaviour that been recommended (Bergeron et al., 2017). Nevertheless, majority population in faculty of medicine of the students is medical students and pharmacy students (Bergeron et al., 2017).

According to El Ansari et al., 2011, in order to achieve goal of university education, healthy lifestyle would developed to improve the academic performance and avoid ignored health education (El Ansari et al., 2011). From the findings, it shown that uninformed students could lead to inaccurate and incomplete nations regarding health and healthy lifestyle such as

physical activity and fitness as well as weight nutrition consumed (El Ansari et al., 2011). Therefore, as university students are still vulnerable, there is a must to provide research based evidence in order to educate younger students about the lifelong implications that may influenced their healthy lifestyle behaviours (El Ansari et al., 2011).

2.3 Summary

1.1.12 In this chapter, there are many studies which usually discussed about the healthy lifestyle behaviour. Different country have their own result of research study but it is usually depends on the population and the educational level of the people lived in that area. Even the result from every study shown the impressive result, but there is still shows a moderate of healthy lifestyle behaviour among themselves. As a conclusion based on the literature reviewed above, it is well defined that healthy lifestyle can provide effect to the life. This chapter has provided the literature review including introduction of research study, search strategy used are Research Gate, PubMed, Google Scholar, Science Direct, Academic Search Elite @ESBSCOhost, and also CINAHL Complete @EBSCOhost to find research topic related to this study and the use of key term as "healthy lifestyle behaviours", "Association Healthy Lifestyle Behaviour With Demographic Characteristic", and "The Dimensions of Healthy Lifestyle Behaviour", "the differences in the domain of healthy lifestyle behaviours", and "Relationship Between Each Domain Of Healthy Lifestyle Behaviour" to find out more knowledge and understanding about the study being conducted. Furthermore, in this chapter, the researcher more understanding about research topic by dividing it into the subtitles according to study to be conducted. Thus, it will become easier to understand about the study.

CHAPTER 3
METHODOLOGY

3.1 Introduction

In this chapter, the researcher discusses the methodology of the study by explaining in details regarding the study design, study setting, population and sample that were chosen, inclusion and exclusion criteria, research instrument (questionnaires), validity and reliability, ethical considerations, pilot study, data collection method, and data analysis. Furthermore, all the part in methodology is very crucial in order to make sure the study conducted appropriately, properly, and successfully. The ethical and pilot study is also explained. The chosen methodology played an important role in explaining on how the data were obtained and interpreted.

3.2 Study Design

This study is a quantitative study, descriptive cross-sectional surveys design. In quantitative research, it is a formal, rigorous, objective, systematic process to generate numerical information. This study design also were aim to describe new situations, events, or even concepts (Burns & Grove, 2011).

Research design is the process that can help in guiding researchers the ways on how to collect, analyse and also interpret observations. Therefore, in this research study, researcher will use non-experimental, cross-sectional survey and the survey took place at Faculty of Medicine, University of Malaya. Survey was used by researcher to obtain or collect data and any information from the participant that could be involved.

In this study, the researcher will investigate healthy lifestyle behaviour among nursing and medical science students. The researcher gathered objective HLB data directly by using standardized questionnaire. This is because of quantitative study is numeric information that results from some type of formal measurement and that was analysed with statistical procedure (Polit & Beck, 2004). Whereas, descriptive research is the descriptive and exploration of the phenomenon in real life situation or condition. This descriptive research provides an accurate account of characteristic of particular individuals, situation, or groups (Burns & Grove, 2011). The outcomes of this descriptive design research consist of concept, identification of possible relationship between concepts, and development of related hypothesis to the study.

The researcher had chosen this design due to the suitable time consuming. In this study, researcher used Likert Scale questionnaire to discover new information, meaning, and describe what happen in healthy lifestyle behaviour especially among university students. In certain condition, this type of research study design was really helpful and beneficial to the researcher in order to obtain the outcomes of a certain problems occur.

Moreover, this study focused on the healthy lifestyle behaviour among nursing and medical sciences student. Non-experimental research was suitable for the study of student due to several reasons which are: i) human characteristics are inherently not subject to experimental manipulation, for example healthy lifestyle behaviours of the student, ii) non-experimental research are more feasible for researcher that had research constraints on time, personal and type of respondents (nursing and medical sciences students) and the data that being collected at one point in time. Besides, quantitative research approach allowed research to collect data using questionnaire to apply on a large sample size in a shorter period of time and it can be easily analysed using statistical computer programmed (SPSS).

3.3 Study Setting

This research study will be conducted at Faculty of Medicine (FOM), University of Malaya. There are four undergraduate program conducted in the Faculty which is MBBS, Nursing, Biomed and also Pharmacy.

University of Malaya is located in the south-west corner of Kuala Lumpur, the dynamic capital of Malaysia. The name of University of Malaya or 'Universiti Malaya' or UM (in short for both names).

3.4 Population and Sampling

In this section, the researcher explained about the target population and the study sample too which is:

3.4.1 Target Population

Target population can be defined as a survey that the entire set of units for which the survey data to be used to make an inferences (Lavrakas, 2008). Therefore, the target population defines those units for which the findings of the survey are meant to generalize and it is specifically defined as the definition determines whether sampled cases are eligible or ineligible for the survey to carry out (Lavrakas, 2008). Population can be spread into 2 groups which are target population and the other one is accessible population. Target population can be defined as any inferences from a sample refer only to the defined population from which the sample has been properly selected as respondent (Banerjee & Chaudhury, 2010) whereas accessible population can be defined as people from available group that the researcher take into the study. Nevertheless, due to several barrier for example, time, money and personnel, accessible population will be used instead of target population to pursue the study.

Target populations in this study were university students in Faculty of Medicine (FOM), UM. The target population is a large population whom the research study results are to be generalized, so that researcher will select the accessible population of university student from Faculty of Medicine who are currently studying in four undergraduate programs which are Bachelor of Nursing Science, Bachelor of Medicine and Bachelor of Surgery (MBBS), Bachelor of Biomedical Sciences, and Bachelor of Pharmacy. The participant will be filter with inclusion and exclusion criteria.

3.4.2 Sampling Method

Sample is the subset of a population selected as a representative to the population in that area or study setting. While sampling can be defined as the process that been used in a statistical analysis in which a predetermined number of observations are taken from larger population (Investopedia, 2007). Meanwhile, the aim of sampling is to obtain and gather data bout a certain population in order to make an inferences that can be generalized to the population stated.

Meanwhile, the method used in this study is Convenience Sampling. The reason why researcher want to use this convenience sampling as the method of sampling was due to it is the best ways and easy to conduct and inexpensive (Lavrakas, 2008). The researcher will approach and identify the right which is participant who are fulfilling the inclusion and exclusion criteria. The researcher unable to conduct a random sampling method because of the researcher have difficulty to get the participant using sampling frame due to difficulty in distributing the questionnaire to the potential participant of each programs. This is because of the researcher was unable to use probability sampling method due to large sampling frame and having difficulty distributing to student that scattered in various clinical area during data collection period.

The researcher chooses a representative from each program to distribute the questionnaire to students who were available and willing to participate in the study at that particular data collection period. Students from all programs are invited to participate through the program's representative.

1.1.13 3.4.3 Sample Size

In this study, there are about 1245 of undergraduate students in the Faculty of Medicine, University of Malaya in total that include all program of Nursing, MBBS, Biomedical, and Pharmacy. The specific value in their total students for each program was MBBS 800 students, Nursing 63 students, Biomedical 159 students, and for Pharmacy are 223 students.

Researcher using Raosoft calculation to estimate the sample size of the total students and the result from the calculation was 294 samples. It is essential to include attrition rate once the required sample size is calculated. An addition of 10% to 20% from the required sample size will be adequately buffered the attrition bias if there are dropouts or incomplete questionnaires in the study (Rose, Spinks & Canhoto, 2015). Hence, by adding another 10% to 294 participants, the final sample size is 330 participants. The participant was given the questionnaire through representative of each program. All nursing students which are 63 participants were invited in this study (from first year until forth year). Thus, the balance of 330 which is 267 respondents was divided among the three programs through representative. Representative from Pharmacy and Biomedical Sciences have distributed around 90 (from first year until forth year) and 70 respectively (from first year until forth year). Therefore, the balance was given to MBBS students (from first year until fifth year). Postgraduate Master and PhD Student are excluded in this study. Hence, the total amount of the questionnaire that given to each program for this study was; Nursing 56 students, MBBS 114 students, Pharmacy 90 students, and Biomedical Sciences was 70 students. Total respondents were 330 students.

Table 3.1 Calculation of sample size using Raosoft Sample Size Calculator

Description	Calculation
Margin of Error	5%
Confidence Level	95%
Population Size	1245
Response Distribution	50%
Recommend Sample Size	294
Approximate Sample Size	330

1.1.14 3.4.4 Inclusion Criteria

Participants in this study were all students who are currently studying in the four undergraduate programs at Faculty of Medicine, University of Malaya namely Nursing Science, MBBS, Biomed and Pharmacy. The participants who are willing to take part in this research study also the included in this study.

3.5 Research Instrument

The instrument used in this study was questionnaire. The questionnaire was used to collect the data, consisted a series of questions and required the respondents to answer the entire question stated in the questionnaires. Research instrument is a questionnaire used to obtain data. The tool is in English version.

The target populations were university students from Faculty of Medicine, University

of Malaya. All the four programs are conducted in English and the students able to read, write, speak, and understand English language. Therefore, no Malay version needed in the questionnaire for the participants. English language is a requirement to enter this university.

This questionnaire was used to collect and gather the information about healthy lifestyle behaviour of the subject. This questionnaire contains statements about present way of life or personal habits. This research instrument also was adopted from previous research study done by Susan Noble Walker 1995 (Walker et al., 1995).

1.1.15 3.5.1 Questionnaire

In this study, the researcher used questionnaire adapted from Susan Noble Walker (1995) that is previously used in Turkey. The research also has got permission from the respected author. The questionnaire was divided into two section which are Section A and Section B. This set of questionnaire is requiring respondents about 15 to 20 minutes to answer it. This questionnaire contains statement about present way of life or personal habits. Researcher will include 2 sections which are socio-demographic data (7 items), and healthy lifestyle behaviour (52 items).

There are 52-item of Health-Promoting Lifestyle Profile II (HPLP II) questionnaire which is composed of total scale and six subscales to measure behaviours in the theorized dimensions of healthy lifestyle behaviour like spiritual growth, interpersonal relations, nutrition, physical activity, health responsibility, and stress management. All the participants are needed to answer the questions by tick (/) or write the answer at the blank line provided.

1.1.15.1 Part A – Demographic data

The researcher will select demographic variables into 7 items such as age, gender, race or ethnicity, current weight and height (to find their BMI), Program (courses), current academic performance (CGPA) results, and social economic status which include family income. The question of age is used open ended question while the others using multiple choices of question. Demographic is collected to describe the study sample included age, gender, ethnicity, BMI, program (course), family income, and current academic performance of CGPA result.

1.1.15.2 Part B – Health-Promoting Lifestyle Profile II (HPLP II)

There are 52-item of HPLP II that composed of total scale and six subscales to measure behaviours in theorized dimensions of healthy lifestyle behaviours like spiritual growth, interpersonal relations, nutrition, physical activity, health responsibility, and also stress management was included. All the questionnaires used were Likert Scale. This revised tool consists of 52 items, rated on a four-point response format which is never, sometimes, often, and routinely by Walker, Sechrist, and Pender (1995).

The question of the dimension will be separated or divided into each subscales which is consist of 6 items of spiritual growth, 6 items of interpersonal relations, 9 items of nutrition, 9 items of physical activity, 12 items of health responsibility, and there are 10 items of stress management dimension.

The scoring for each level of each domain/subscale for healthy lifestyle behaviour was calculated based on their number of questions (depends on their domain) and it were divided into three categories which are poor, moderate, and good. The calculation was number of questionnaire (times with 4. Because of there were 4 Likert Scale and the maximum number for the Likert Scale was 4) minus with number of questionnaire (times with 1. Because of the minimum number for Likert Scale was 1) then divide by three groups (for scaling them into poor, moderate, and good). The summary calculation for each domain and total HLB as

follows;

Spiritual Growth	(6x4) – (6x1) ÷ 3 = 6 range ∴ 6-12 (poor) 13-19 (moderate) 20 and above (good)
Interpersonal Relations	(6x4) – (6x1) ÷ 3 = 6 range ∴ 6-12 (poor) 13-19 (moderate) 20 and above (good)
Nutrition	(9x4) – (9x1) ÷ 3 = 9 range ∴ 9-18 (poor) 19-28 (moderate) 29 and above (good)
Physical Activity	(9x4) – (9x1) ÷ 3 = 9 range ∴ 9-18 (poor) 19-28 (moderate) 29 and above (good)
Health Responsibility	(12x4) – (12x1) ÷ 3 = 12 range ∴ 12-24 (poor) 25-37 (moderate) 38 and above (good)
Stress Management	(10x4) – (10x1) ÷ 3 = 10 range ∴ 10-20 (poor) 21-31 (moderate) 32 and above (good)
Healthy Lifestyle Behavior	(52x4) – (52x1) ÷ 3 = 52 range ∴ 52-104 (poor) 105-157 (moderate) 158 and above (good)

Figure 3.1 Summary Calculation For Each Domain And Total HLB

The overall healthy lifestyle behaviour score was obtained by calculating the mean of all 52 items which is six subscales measuring the following components of a healthy lifestyle were calculated (health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and also stress management). The subscale scores were determined by calculating the mean for the items in the scale and then were divided into number of items for

each domain. This is because, to make sure all the mean was equally divided since each domain contain different number of items. Hence, higher scores indicate a higher level of healthy lifestyle behaviours.

1.1.16 3.5.2 Validity and Reliability

In this study, the face validity was used to measure variable of interest, which can be examined through the use of expected content area. Validity was defines as how well a questionnaire measures what it purported to measure (Colin & Julie, 2005). Therefore, the questionnaire must be appropriate and suit with the objectives of the study. The expert panel were consist of specialists in the field of nursing science, who are 2 lecturers that consist from nursing departments from the Department of Nursing Science of University of Malaya; supervisor (Madam Norsiah Binti Rahmat), other senior (Dr. Chui Ping Lei), and another senior lecturer from other department of Biomedical Sciences (Dr. Nur 'Ain Salehen). For face validity, the experts were asked if all the items in the questionnaires that are relevant to this study.

All the comments and suggestions from the content expert mostly regarding the way of the statement being told as inappropriate word were used. 'I' was added at the beginning of the items to make sentences becomes more appropriate.

While the reliability is the degree to which an assessment tool produces stable and consistent results. Cronbach's Alpha will be used to examine the reliability of the instrument after the pilot study is done since the pilot study will be conducted on March 2018. Reliability must be includes the consistency and stability of the study that will be conducted. The questionnaire had been corrected after evaluation and validation in order to achieve the objectives of the study.

From the validity referral to Susan Nobel Walker (1987). Data from 712 adults aged 18 to 92 were used to assess validity and reliability. Content validity was established by literature review and content experts' evaluation. Construct validity was supported by factor analysis that confirmed a six-dimensional structure of health-promoting lifestyle. Therefore, the alpha coefficient of internal consistency for the total scale was 0.939 by using Cronbach's alpha, alpha coefficients for subscales ranged from 0.824 to 0.892. (Walker et al., 1995).

Reliability of the questionnaire refers to the degree to which an assessment tool (questionnaire) produces stable and consistent result (Colin & Julie, 2005). In this study, the type of reliability used was Cronbach's alpha as the questions had been answer were answer with Likert scale. The instruments of Cronbach's alpha in SPSS version 23.0 and correlation will be used to test for the reliability of questionnaire as the questions were using Likert scale. The acceptable reliability was indicated by a coefficient greater than 0.6 ($r > 0.6$).

The questionnaire tested within the duration of one weeks and pilot study had conducted to test the questionnaire whether it is reliable or not. The pilot study took around 10% from the sample size which was 30 students from Faculty of Medicine, University of Malaya and not used as sample for the real study. From this study for pilot test reliability, the alpha coefficient by using Cronbach's Alpha from the Statistical Package for Social Science (SPSS) version 23 for overall was 0.843. The results is greater than 0.6. Hence, it was reliable for this study. The results of the Cronbach's Alpha for each domain were stated as below:

Table 3.2 Reliability test using Cronbach's Alpha

Instrument Tool	***R***
Spiritual Growth	0.830

Interpersonal Relations	0.797
Physical Activity	0.856
Health Responsibility	0.828
Stress Management	0.895
Overall Healthy Lifestyle Behaviours	0.843

3.6 Ethical Consideration

The study was conducted at the Faculty of Medicine, University of Malaya and the sample populations were the university students of Nursing, MBBS, Biomed and Pharmacy. Hence, the ethical consideration necessary to get permission from 'Student Welfare of University of Malaya' (HEPA), University of Malaya. Thus, a permission letter will be written to HEPA for obtaining a permission to conduct the research study. The researcher provide a letter stating the purpose of this study and to obtain consent from the respondents to participate in this study. The informed consent obtained using cover letter and envelope used to ensure the confidentiality of the data collection.

3.7 Pilot Study

Pilot study is a small scale version, or trial run, and this pilot study was done in preparation for major research study (Lavrakas, 2008). Pilot study was conducted in March 2018. This purpose were test the effectiveness of the questionnaire and it is for the questionnaire fitness to identify any problems that may be arise. The objective of the pilot study was to ensure that the respondent were understood the terminologies, instructions used, questions being asked, and clarity was observed and the instrument used in the study (Lavrakas, 2008).

According to Thabane (2010), pilot study is atrial studies that carry out before a research design is finalized to assist in defining the research question or to test the feasibility, reliability, and validity of the proposed study design (Thabane, 2010). It also can be defined as a small study often done to assist the preparation of a larger and more comprehensive study (Thabane, 2010). The Free Dictionary defines a Pilot Study as a small-scale experiment or set of observations undertaken to decide on how and whether to launch a full-scale project.

In this study, the pilot study was conducted to 10 percent from the total of sample size. Each participant was given about 20 minutes to complete the questionnaire. It is done in March 2018. Therefore, about 30 participants were given the questionnaire. The pilot study took around 10% from the sample size which was 30 students from Faculty of Medicine, University of Malaya and not used as sample for the real study. Therefore, 7 students from Nursing, 7 students from MBBS, 8 students from Pharmacy, and 8 students from Biomedical Sciences were selected in pilot study. Researcher approached the students one by one and obtained the response from them. The participants from the pilot study were excluded from the actual sample for the research. At the end of the pilot study, the result were analysed and some modification had done on the questionnaire before proceed to the collection of data for actual study.

3.8 Data Collection

According to Burns & Grove (2011), data collection is the precise, systematic data gathering of information that relevant to the research purpose or the specific objectives, questions, or even hypotheses of the study (Burns & Grove, 2011). The data collection will be performed on nursing students and medical science students who studying in Faculty of Medicine, University of Malaya that concludes Nursing, MBBS, Pharmacy, and Biomedical

students.

The researcher approaches and identifies the right which is participant who are fulfilling the inclusion and exclusion criteria. A brief and clear explanation of the study and a structured questionnaire were given to the participants. Researcher chooses a representative from each program or courses and provides the question according to the amount of the student for every program. To collect back the questionnaire that had been answered, researcher approached the representative and collects the data.

The data in this study was collected from March until July at Faculty of Medicine, University of Malaya. Respondents' names are not required in the form of questionnaires and all the data collected will be kept confidential and safe. Nevertheless, the participants are allowed to take more time in case of they needed more time to complete the questionnaire. The questionnaires were obtained and envelope will be used to ensure the confidentiality of the data collection. In the questionnaire was attached also with consent form for the participant who indicated they agreed to fill up the questionnaire. Besides, this was a cross-sectional study which examined the subject at one point of time. Therefore, participants were suggested to take 15 to 20 minutes to answer and fill in the questionnaire. The questionnaires recollected by the researcher through the representative after finished answering by the respondents.

3.9 Data Analysis

In this study, the analysis of the data started with the raw data collected from the questionnaire and then was transferred to the computer by using Statistical Package for the social Sciences Version 23.0 (SPSS). Next, the data was analysed using descriptive statistics and it was organized then was summarized the numerical data, gathered from the population and samples. Next, this study was analysed by using inferential statistic which is concerned with population and used sample data to make an inference about the population. The sample is chosen for the study is the representative for the population. The results were presented in percentages (%), means, frequency (*f)* tables, charts, and standard deviation too. In this study, descriptive statistics will be run based on respondent's socio-demographic characteristics and healthy lifestyle behaviour of the students. For inferential statistic, Chi-Square Test was used to analyse and compare the sets of data in the form of frequencies or percentage.

3.10 Gantt Chart

Gantt chart is used in order to help the researcher to plan the work given and finishing time on the accurate and perfect time. Refer Appendix VII.

3.11 Summary

In this chapter, research methodology describes the ways and methods to be implemented in the research survey. The researcher already explained the activity and described the design and method that has been used for this research study. Moreover, this method will give researcher an idea about the implementations of studies to be performed. Questionnaire must be relevant, clear and should be meaningful. For instance, in the demographic data, there is only relevant items specified for each of which will be analysed and linked to other items. Questionnaire should also be compatible with the surrounding community in order to achieve the objectives of the survey. In addition, validity and reliability should also be stated that this of questionnaire stated indicate that can be used for this research project. Besides that, ethical approval for the process is crucial before the study being started. This is vital steps to obtain

permission from the institution and from the participant themselves as well.

CHAPTER 4
DATA ANALYSIS/ RESULT

4.1 Introduction

In this chapter, all the results were analysed to get the research finding and to understand the quantitative information. Data were entered in computer system using Statistical Package for the social Sciences Version 23.0 (SPSS) to analyse the data. Data analysis is a process that involves inspecting, cleaning, and transforming into useful information. In fact, the useful information usually answered the research objective, suggestion hypothesis and conclusion which supporting the decision-making (Farrugia, Petrisor, Farrokhyar, and Bhandari, 2010). This chapter is the main part of research part where all the data will be summarize to know the basic pattern in the data, interpret that data pattern and generalize it. There are two common types of statistical analysis, which is descriptive analysis, and inferential analysis. The descriptive analysis will analyse the demographic characteristic that involve in the research whereas the inferential statistic will elaborate the information that related to association (Chi-Square Test), and relationship (Pearson's Test) (Farrugia et al, 2010).

The data gathered from the samples then were analysed, organized and summarized in a form numerical data. The sample chosen for the study is the representative for the population. Descriptive statistics used were based on respondent's socio-demographic characteristics and healthy lifestyle behaviour of the student. For inferential statistic, Chi-Square test will be used to analyse in order to elaborate the information. The objectives underlying this research is to examine the level of healthy lifestyle behaviour perceived by the students, to compare the mean differences in the domain of healthy lifestyle behaviours among students, and to determine the association between the level of healthy lifestyle behaviour with the demographic characteristics of the students.

4.2 Data Screening

Data screening is very vital and crucial as it will check the correctness and find other potential problems that might occur before analyse the data obtained. The exact goal and aim of this screening and checking data prior to proceeding to final interpretation and testing were to check the correctness of the data and the assumptions were meet.

In the initial stage or phase of the data analysis, all the data that been collected were entered based on the ID number (Questionnaire number) tagged to the questionnaires in accordance to the respondent identification for example, 001, 002, 003 etc. This is performed by the researcher to avoid from double entry of the data. All the data were being screened and no missing value detected. That is why all data entered were checked few times when entered the data in the SPSS 23.0 version to avoid from entered the data wrongly missing data.

4.3 Data Management and Testing the Normality among the Study Variables

For the stage of data management, a normality test had been done on the dependent variables which were the healthy lifestyle behaviours to determine whether the sample data had been drawn from a normality distribution from normality distributed population. Meanwhile, the normality test helped the researcher in selecting the appropriate statistical tests either parametric or non-parametric test in order to analyse the data (Nayak & Hazra, 2011). The results of normality test for dependent variables were shown as below which in Table 4.1.

The test of normality of the healthy lifestyle behaviour among nursing and medical sciences students of Faculty on Medicine, University of Malaya is seen in Table 4.1. All

Skewness and Kurtosis were in range between -2 and 2. The value of mean and median was almost same, and the SD value was less than mean value. Therefore, it was normally distributed.

Table 4.1 Normality test

	Mean (SD)	**Median**	**Variance**	**Skewness**		**Kurtosis**	
				Statistic	**Std. Error**	**Statistic**	**Std. Error**
Spiritual Growth	18.44 (3.09)	18.00	9.565	-0.138	0.140	-0.393	0.279
Interpersonal Relations	18.16 (3.35)	18.00	11.233	-0.056	0.140	-0.632	0.279
Nutrition	20.70 (4.50)	20.00	24.991	0.239	0.140	0.097	0.279
Physical Activity	20.40 (5.68)	20.00	32.337	0.145	0.140	-0.480	0.279
Health Responsibility	30.05 (6.18)	30.00	38.190	0.047	0.140	-0.472	0.279
Stress Management	27.03 (5.37)	27.00	28.857	0.123	0.140	-0.130	0.279
Total HLB	134.78 (20.94)	133.00	438.418	0.109	0.140	-0.753	0.279

4.4 Response Rate

A total of 330 questionnaires were distributed by researcher though representative of each program and collected back on the same day. However, only 317 questionnaires were received with 13 sets were missing as some respondents took the questionnaires and did at another place which at the end went missing. This represented a response rate of 96.06%. Out of 317 questionnaires, 14 respondents did not complete the questionnaire in one or more subsections so that that questionnaire were omitted. Thus, only 303 questionnaires were usable for this study and met the inclusion criteria as discussed in previous chapter. The flow of distribution of questionnaire was displayed in Figure 4.1.

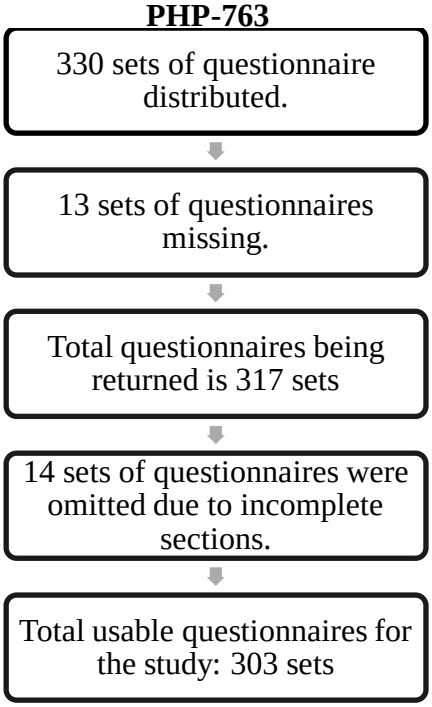

Figure 4.1 Flow of the distribution of questionnaire

4.5 Demographic Analysis

Based on Table 4.2, the demographic characteristics data including age, gender, race/ethnicity, Body Mass Index (BMI), family income, program (course) of the respondents currently studying, and academics performance (CGPA) of the respondents.

Among 303 respondents, there were 73.6% (n=223) were aged between 20 to 22 years old which contributed the highest percentages of the respondents and indicate as younger age, and only 26.4% (n=80) of the respondents were aged 23 and above which contributed the lowest percentage in this study. Besides that, as shown that 65% (n=197) were female respondents which contributed the highest while remaining were male respondents that contribute to 35.0% (n=106).

The ethnicity consists of four ethnics that were Malay, Chinese, Indian and others (Iban, Kadazan, Bajau, and Murut). From the table, it shows that the Malay occupied highest percentage in this study that was 73.6% (n=223), while Indian ethnic contributed only 2.3% (n=7) which was the lowest percentage of the respondents. Meanwhile, Chinese occupied 21.2% (n=64) and the rest was of other ethnicity.

The body mass index (BMI) of the respondents consists of four groups that were underweight, normal, overweight, and obese. Form the table, it shows that the underweight BMI occupied highest percentage in this study that was 65.3% (n=198), while obese BMI contributed only 1.0% (n=3) which was the lowest percentage of the respondents. Meanwhile, normal BMI occupied 30.7% (n=93) and the rest was overweight.

There were 35.6% (n=108) of the respondents had monthly household income range between RM3001 – RM6275 which contributed the highest percentage among the respondents. Meanwhile, only 29.7% (n=90) of the respondents had monthly household income range between RM6276 and above, which contributed the lowest percentage of the respondents. This shows that majority of the respondents were having monthly household income per month between RM3001 – RM6275.

Next, for program (course) aspect, there were 33.0% (n=100) of respondents were

MBBS students, which contributed the highest percentage of the respondents and 18.5% (n=56) of the respondents were Nursing Sciences which contributed the lowest percentage of the respondents. This shows that majority of the respondents in this study were MBBS students.

Lastly, the academic performance (CGPA) of the respondents categorized into three groups: pass, good, and distinction. From the table, it shows that the good CGPA occupied highest percentage in this study that was 71.3% (n=216), while pass CGPA contributed only 9.9% (n=30) which was the lowest percentage of the respondents. Meanwhile, distinction CGPA occupied 18.8% (n=57).

Table 4.2: Demographic characteristic of respondents (n=303)

Demographic characteristic		**Frequency (N)**	**Percent (%)**
Age	20 – 22 years old (younger age)	223	73.6
	23 years old and above (older age)	80	26.4
Gender	Male	106	35.0
	Female	197	65.0
Ethnics	Malay	223	73.6
	Chinese	64	21.2
	Indian	7	2.3
	Other	9	3.0
BMI	Underweight (11.7-18.4)	198	65.3
	Normal (18.5-24.9)	93	30.7
	Overweight (25.0-29.9)	9	3.0
	Obese (30 and above)	3	1.0
Family Income (monthly)	Below than RM3000	105	34.7
	RM3001 – RM6275	108	35.6
	RM6276 and above	90	29.7
Program (Course)	Nursing	56	18.5
	MBBS	100	33.0
	Pharmacy	81	26.7
	Biomedical Science	66	21.8
Student's Academic Performance (CGPA)	Pass (2.50-2.99)	30	9.9
	Good (3.0-3.69)	216	71.3
	Distinction (3.70 and above)	57	18.8
	Total	**303**	**100**

4.6 Descriptive Frequency for Healthy Lifestyle Behaviour

Table 4.3 Frequency table for respondent Healthy Lifestyle Behaviour (N=303)

Statement	Frequency, n (%)				Mean (SD)
	Never	**Sometimes**	**Often**	**Routinely**	
Feel I am growing and changing in positive ways.	7 (2.3)	105 (34.7)	151 (49.8)	40 (13.2)	2.739 (0.710)
I praise other people easily for their achievements	**0 (0.0)**	64 (21.1)	150 (49.5)	89 (29.4)	3.083 (0.707)
I believe that my life has purpose	1 (0.3)	44 (14.5)	123 (40.6)	135 (44.6)	3.294 (0.721)
I accept those things in my life which I cannot change	5 (1.7)	70 (23.1)	146 (48.2)	82 (27.1)	3.001 (0.755)
I look forward to the future	4 (1.3)	61 (20.1)	127 (41.9)	111 (36.6)	3.139 (0.777)
I am aware of what is important to me in life	8 (2.6)	42 (13.9)	140 (46.2)	113 (37.3)	**3.182 (0.766)**
Maintain meaningful and fulfilling relationships with others	3 (1.0)	38 (12.5)	**173 (57.1)**	89 (29.4)	3.149 (0.662)
I spend time with close friends	9 (3.0)	59 (19.7)	129 (43.0)	103 (34.3)	3.092 (0.792)
Touch and I am touched by people I care about	7 (2.3)	59 (19.5)	139 (45.9)	98 (32.3)	3.083 (0.778)
I find ways to meet my needs for a good relationship with others	1 (0.3)	80 (26.4)	146 (48.2)	76 (25.1)	2.980 (0.728)

I feel connected with some force greater than myself	8 (2.6)	97 (32.0)	127 (41.9)	71 (23.4)	2.861 (0.802)

Table 4.3, continued.

Frequency table for respondent Healthy Lifestyle Behaviour (N=303)

Statement	**Never n (%)**	**Sometimes n (%)**	**Often n (%)**	**Routinely n (%)**	**Mean (SD)**
I choose a diet low in fat, saturated fat, and cholesterol	45 (14.9)	157 (51.8)	73 (24.1)	28 (9.2)	2.277 (0.827
I limit use of sugars and food containing sugar (sweets)	46 (15.2)	124 (40.9)	92 (30.4)	41 (13.5)	2.422 (0.909)
I eat about 3 servings of carbohydrate (such as bread, cereal, rice and pasta) each day	29 (9.6)	114 (37.6)	99 (32.7)	61 (20.1)	2.634 (0.910)
I eat 2-4 servings of fruits each day	66 (21.8)	172 (56.8)	46 (15.2)	19 (6.3)	2.052 (0.787)
I eat 3-5 servings of vegetables each day	47 (15.5)	137 (45.2)	86 (28.4)	33 (10.9)	2.347 (0.870)
I eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day	18 (5.9)	118 (38.9)	135 (44.6)	32 (10.6)	2.597 (0.757)
I reads labels to identify nutrients, fats, and sodium content in packaged food	65 (21.5)	136 (44.9)	65 (21.5)	37 (12.2)	2.244 (0.928)
Do you aware about calories of food consumption per day?	104 (34.3)	99 (32.7)	66 (21.8)	34 (11.2)	2.099 (1.002)

I exercise vigorously for 20 minutes or more at least three times a week (such as brisk walking, aerobic dancing, using a stair climber)	49 (16.2)	131 (43.2)	81 (26.7)	42 (13.9)	2.383 (0.916)
I take part in light to moderate physical activity (such as sustained walking 30-40 minutes for 5 or more times a week)	31 (10.2)	137 (45.2)	97 (32.0)	38 (12.5)	2.469 (0.841)
I take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling)	47 (15.5)	139 (45.9)	88 (29.0)	29 (9.6)	2.327 (0.851)
Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking)	17 (5.6)	110 (36.3)	128 (42.2)	48 (15.8)	2.683 (0.805)

Table 4.3, continued.

Frequency table for respondent Healthy Lifestyle Behaviour (N=303)

Statement	**Never n (%)**	**Sometimes n (%)**	**Often n (%)**	**Routinely n (%)**	**Mean (SD)**
I check my pulse rate when exercising	102 (33.7)	110 (36.3)	62 (20.5)	29 (9.6)	2.059 (0.961)
I reach my target heart rate when exercising	104 (34.3)	112 (37.0)	65 (21.5)	22 (7.3)	**2.017 (0.922)**
I pace myself to prevent tiredness	62 (20.5)	112 (37.0)	104 (34.3)	25 (8.3)	2.304 (0.888)
Report any unusual signs or symptoms to a physician or other health professional.	47 (15.5)	124 (40.9)	100 (33.0)	32 (10.6)	2.386 (0.872)
Have a good quality of sleep (about 6-8 hours)	27 (8.9)	138 (45.5)	102 (33.7)	36 (11.9)	2.485 (0.817)

I read article or watch media such as TV programs about improving health	10 (3.3)	139 (45.9)	122 (40.3)	32 (10.6)	2.581 (0.723)
I ask detail or further information to health professionals in order to understand their instructions about healthy lifestyle	27 (8.9)	113 (37.3)	137 (45.2)	26 (8.6)	2.535 (0.775)
I get an advice when I have query about my own health status	16 (5.3)	125 (41.3)	136 (44.9)	26 (8.6)	2.568 (0.724)
I discuss my health concerns with health professionals	28 (9.2)	138 (45.5)	113 (37.3)	24 (7.9)	2.439 (0.769)
I aware about long-term goals in my life	11 (3.6)	87 (28.7)	143 (47.2)	62 (20.5)	2.845 (0.784)
I inspect my body once a month for physical changes/danger signs	54 (17.8)	127 (41.9)	91 (30.0)	31 (10.2)	2.327 (0.885)
Balance my time between study and leisure	20 (6.6)	107 (35.3)	151 (49.8)	25 (8.3)	2.597 (0.734)
I ask for information from health professionals about how to take good care of yourself	41 (13.5)	130 (42.9)	119 (39.3)	13 (4.3)	2.343 (0.764)

Table 4.3, continued.

Frequency table for respondent Healthy Lifestyle Behaviour (N=303)

Statement	**Never n (%)**	**Sometimes n (%)**	**Often n (%)**	**Routinely n (%)**	**Mean (SD)**
Expose myself to new experiences and challenges	16 (5.3)	115 (38.9)	129 (42.6)	43 (14.2)	2.657 (0.785)
Discuss my problems and concerns with people close to me.	15	105	128	55	2.736

	(5.0)	(34.7)	(42.2)	(18.2)	(0.812)
I take some time for relaxation each day	7	61	157	78	3.010
	(2.3)	(20.1)	(51.8)	(25.7)	(0.744)
I concentrate on pleasant thoughts at bedtime	20	79	152	52	2.779
	(6.6)	(26.1)	(50.2)	(17.2)	(0.806)
I feel content and at peace with myself	17	89	139	58	2.786
	(5.6)	(29.4)	(45.9)	(19.1)	(0.816)
I find it easy to show concern, love and warmth to others.	10	80	155	58	2.861
	(3.3)	(26.4)	(51.2)	(19.1)	(0.755)
I use specific methods to control my stress	8	87	143	65	2.875
	(2.6)	(28.7)	(47.2)	(21.5)	(0.770)
I find each day interesting and challenging	16	115	132	40	2.647
	(5.3)	(38.0)	(43.6)	(13.2)	(0.775)
I practice relaxation technique or meditation for at least 15-20 minutes daily	76	123	76	28	2.185
	(25.1)	(40.6)	(25.1)	(9.2)	(0.916)
I get support from a network of caring people	20	88	146	49	2.739
	(6.6)	(29.0)	(48.2)	(16.2)	(0.806)
I seek guidance or counselling when necessary	55	104	108	36	2.413
	(18.2)	(34.3)	(35.6)	(11.9)	(0.920)

The overall results of the respondent's HLB are presented in frequency and percentages as displayed in Table 4.3, It is shown that majority of the participants responded "often maintain meaningful and fulfilling relationships with others" were 57.1% (n=173). Besides that, the least of the respondent "never praise other people easily for their achievements" were 0.0% (n=0). The highest mean score for the items is item "I am aware of what is important to me in life" that is 3.294. Meanwhile, the lowest mean score is item "Feel I am growing and changing in positive ways" that is 3.182. This shows that most of the respondents had high healthy lifestyle behaviours in term of aware of what is important to them in life. However, respondent had low healthy lifestyle behaviours with feel growing and changing in positive ways.

4.7 Descriptive Frequency for Domain of Healthy Lifestyle Behaviour (HLB)

4.7.1 Descriptive Frequency for Spiritual Growth Domain of HLB

In Table 4.4, majority of the total respondents chosen the most often practicing that are i) Feel I am growing and changing in positive ways 49.8% (n=151), ii) I praise other people easily for their achievements 49.5% (n=150), iii) I accept those things in my life which I cannot change 48.2% (n=146), iv) I look forward to the future 41.9% (n=127), and v) I am aware of what is important to me in life 46.2% (n=140). Besides, 44.6% (n=135) of total respondents routinely believe that life has purpose.

The least of the respondent never practicing were in the domain of spiritual growth of healthy lifestyle behaviours in feel growing and changing in positive ways 2.3% (n=7), praise other people easily for their achievements 0.0% (n=0), believe that my life has purpose is 0.3% (n=1), accept those things in my life which I cannot change 1.7% (n=5), look forward to the future 1.3% (n=4), and aware of what is important to me in life 2.6% (n=8).

The highest mean score for the items in the domain of spiritual growth is item "I believe that my life has purpose" that is 3.294. Meanwhile, the lowest mean score is item "Feel I am growing and changing in positive ways" that is 2.739. This shows that most of the respondents had high spiritual growth towards healthy lifestyle behaviours in term of believe that their life has purpose. However, respondent had low spiritual growth in statement "feel growing and changing in positive ways".

Table 4.4 Healthy Lifestyle Behaviours: Spiritual Growth (N=303)

Statement	**Frequency, n (%)**				**Mean (SD**
	Never	**Sometimes**	**Often**	**Routinely**	
Feel I am growing and changing in positive ways.	**7 (2.3)**	105 (34.7)	**151 (49.8)**	40 (13.2)	**2.739 (0.710)**
I praise other people easily for their achievements	**0 (0.0)**	64 (21.1)	**150 (49.5)**	89 (29.4)	3.083 (0.707)
I believe that my life has purpose	**1 (0.3)**	44 (14.5)	123 (40.6)	**135 (44.6)**	**3.294 (0.721)**
I accept those things in my life which I cannot change	**5 (1.7)**	70 (23.1)	**146 (48.2)**	82 (27.1)	3.001 (0.755)
I look forward to the future	**4 (1.3)**	61 (20.1)	**127 (41.9)**	111 (36.6)	3.139 (0.777)

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I am aware of what is important to me in life	**8 (2.6)**	42 (13.9)	**140 (46.2)**	113 (37.3)	3.182 (0.766)

4.7.2 Descriptive Frequency for Interpersonal Relations Domain of HLB

Based on Table 4.5, majority of the respondents often in maintain meaningful and fulfilling relationships with others 57.1% (n=173), spend time with close friends 43.0% (n=129), touch and touched by people care about is 45.9% (n=139), find ways to meet my needs for a good relationship with others 48.2% (n=146), feel connected with some force greater than myself 41.9% (n=127), and settle conflicts with others through discussion and compromise 46.5% (n=141).

The least of the respondent never practicing interpersonal relations towards healthy lifestyle behaviours in maintain meaningful and fulfilling relationships with others 1.0% (n=3), spend time with close friends 3.0% (n=9), touch and touched by people care about is 2.3% (n=7), find ways to meet my needs for a good relationship with others 0.3% (n=1), feel connected with some force greater than myself 2.6% (n=8), and settle conflicts with others through discussion and compromise 0.7% (n=2).

The highest mean score for the items of interpersonal relations towards healthy lifestyle behaviours is item "Maintain meaningful and fulfilling relationships with others" that is 3.149. Meanwhile, the lowest mean score is item "I feel connected with some force greater than myself" that is 2.861. This shows that most of the respondents had high interpersonal relations towards healthy lifestyle behaviours in term of maintaining meaningful and fulfilling relationships with others. However, respondent had low interpersonal relations towards healthy lifestyle behaviours with feel connected with some force greater than them.

Table 4.5 Healthy Lifestyle Behaviours: Interpersonal Relations (N=303)

Statement	**Frequency, n (%)**				**Mean (SD)**
	Never	**Sometimes**	**Often**	**Routinely**	
Maintain meaningful and fulfilling relationships with others	**3 (1.0)**	38 (12.5)	**173 (57.1)**	89 (29.4)	**3.149 (0.662)**
I spend time with close friends	**9 (3.0)**	59 (19.7)	**129 (43.0)**	103 (34.3)	3.092 (0.792)
Touch and I am touched by people I care about	**7 (2.3)**	59 (19.5)	**139 (45.9)**	98 (32.3)	3.083 (0.778)
I find ways to meet my needs for a good relationship with others	**1 (0.3)**	80 (26.4)	**146 (48.2)**	76 (25.1)	2.980 (0.728)
I feel connected with some force greater than myself	**8 (2.6)**	97 (32.0)	**127 (41.9)**	71 (23.4)	**2.861 (0.802)**
Settle conflicts with others through discussion and compromise	**2 (0.7)**	79 (26.1)	**141 (46.5)**	81 (26.7)	2.993 (0.746)

4.7.3 Descriptive Frequency for Nutrition Domain of HLB

In Table 4.6, majority of the total respondents sometimes in taking nutrition for healthy

lifestyle behaviours which are i) I choose a diet low in fat, saturated fat, and cholesterol 51.8% (n=157), ii) I eat 2-4 servings of fruits each day 56.8% (n=172), iii) I eat 2-3 servings of milk, yogurt or cheese each day 53.1% (n=161). Besides, there were 44.6% (n=135) of total respondents often in taking nutrition that it is eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day. However, 34.3% (n=104) of the total respondents never aware about calories of food consumption per day.

Apart from that, the least of the respondent is routinely which are choose a diet low in fat, saturated fat, and cholesterol 9.2% (n=28), eat 2-4 servings of fruits each day 6.3% (n=19), and eat 2-3 servings of milk, yogurt or cheese each day 3.6% (n=11). However, 9.6% (n=29) was never eat about 3 servings of carbohydrate each day, 5.9% (n=18) never eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day, and 11.2% (n=34) was routinely aware about calories of food consumption per day.

The highest mean score for the items of nutrition domain of healthy lifestyle behaviours is item "I eat about 3 servings of carbohydrate (such as bread, cereal, rice and pasta) each day" that is 2.634. Meanwhile, the lowest mean score is item "I eat 2-3 servings of milk, yogurt or cheese each day" that is 2.023. This shows that most of the respondents had high nutrition towards healthy lifestyle behaviours in term of eat about 3 servings of carbohydrate. However, respondent had low nutrition towards healthy lifestyle behaviours with at 2-3 servings of milk, yogurt or cheese each day.

Table 4.6 Healthy Lifestyle Behaviours: Nutrition (N=303)

Statement	**Frequency, n (%)**				**Mean (SD)**
	Never	**Sometimes**	**Often**	**Routinely**	
I choose a diet low in fat, saturated fat, and cholesterol	45 (14.9)	**157 (51.8)**	73 (24.1)	**28 (9.2)**	2.277 (0.827
I limit use of sugars and food containing sugar (sweets)	46 (15.2)	124 (40.9)	92 (30.4)	41 (13.5)	2.422 (0.909)
I eat about 3 servings of carbohydrate (such as bread, cereal, rice and pasta) each day	**29 (9.6)**	114 (37.6)	99 (32.7)	61 (20.1)	**2.634 (0.910)**
I eat 2-4 servings of fruits each day	66 (21.8)	**172 (56.8)**	46 (15.2)	**19 (6.3)**	2.052 (0.787)
I eat 3-5 servings of vegetables each day	47 (15.5)	137 (45.2)	86 (28.4)	33 (10.9)	2.347 (0.870)
I eat 2-3 servings of milk, yogurt or cheese each day	73 (24.1)	**161 (53.1)**	58 (19.1)	**11 (3.6)**	**2.023 (0.761)**
I eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day	**18 (5.9)**	118 (38.9)	135 (44.6)	32 (10.6)	2.597 (0.757)
I reads labels to identify nutrients, fats, and sodium content in packaged food	65 (21.5)	136 (44.9)	65 (21.5)	37 (12.2)	2.244 (0.928)
Do you aware about calories of food consumption per day?	104 (34.3)	99 (32.7)	66 (21.8)	34 (11.2)	2.099 (1.002)

4.7.4 Descriptive Frequency for Physical Activity Domain of HLB

As displayed in Table 4.7, majority of the total respondents sometimes doing physical activity for healthy lifestyle behaviours which are items i) I exercise vigorously for 20 minutes or more at least three times a week (such as brisk walking, aerobic dancing, using a stair climber) 43.2% (n=131), ii) I take part in light to moderate physical activity (such as sustained walking 30-40 minutes for 5 or more times a week) 45.2% (n=137), and iii) I take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling) 45.9% (n=139). However most of the students often get exercise during usual daily activities 42.2% (n=128), and never follow a planned exercise program 43.2% (n=131).

Apart from that, the least of the respondent is "routinely" are items: reach target heart rate when exercising 7.3% (n=22), pace self to prevent tiredness 8.3% (n=25), and 5.3% (n=16) are follow a planned exercise program. However, 10.2% (n=31) never take part in light to moderate physical activity (such as sustained walking 30-40 minutes for 5 or more times a week), and 5.6% (n=17) never exercise during usual daily activities.

The highest mean score for the items of physical activity domain of healthy lifestyle behaviours is item "Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking)" that is 2.683. Meanwhile, the lowest mean score is item "I follow a planned exercise program" that is 1.839. This shows that most of the respondents had high physical activity towards healthy lifestyle behaviours in term of exercise during usual daily activities. However, respondent had low physical activity towards healthy lifestyle behaviours with follow a planned exercise program**.**

Table 4.7 Healthy Lifestyle Behaviours: Physical Activity (N=303)

Statement	**Frequency, n (%)**				**Mean (SD)**
	Never	**Sometimes**	**Often**	**Routinely**	
I exercise vigorously for 20 minutes or more at least three times a week (such as brisk walking, aerobic dancing, using a stair climber)	49 (16.2)	**131 (43.2)**	81 (26.7)	42 (13.9)	2.383 (0.916)
I take part in light to moderate physical activity (such as sustained walking 30-40 minutes for 5 or more times a week)	**31 (10.2)**	**137 (45.2)**	97 (32.0)	38 (12.5)	2.469 (0.841)
I take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling)	47 (15.5)	**139 (45.9)**	88 (29.0)	29 (9.6)	2.327 (0.851)
Do stretching exercises at least 3 times per week	55 (18.2)	**124 (40.9)**	96 (31.7)	28 (9.2)	2.320 (0.876)
Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking)	**17 (5.6)**	110 (36.3)	**128 (42.2)**	48 (15.8)	**2.683 (0.805)**

	PHP-763				
I check my pulse rate when exercising	102 (33.7)	**110 (36.3)**	62 (20.5)	29 (9.6)	2.059 (0.961)
I reach my target heart rate when exercising	104 (34.3)	**112 (37.0)**	65 (21.5)	**22 (7.3)**	2.017 (0.922)
I pace myself to prevent tiredness	62 (20.5)	**112 (37.0)**	104 (34.3)	**25 (8.3)**	2.304 (0.888)
I follow a planned exercise program	**131 (43.2)**	106 (35.0)	50 (16.5)	**16 (5.3)**	**1.839 (0.886)**

4.7.5 Descriptive Frequency for Health Responsibility Domain of HLB

Table 4.8 shows majority of the total respondents chosen "sometimes" in health responsibility for healthy lifestyle behaviours which are items i) Have a good quality of sleep (about 6-8 hours) 45.5% (n=138), ii) I read article or watch media such as TV programs about improving health 45.9% (n=139), and iii) I discuss my health concerns with health professionals 45.5% (n=138). Besides, there were 45.2% (n=137) of total respondents chosen "often" in asking detail or further information to health professionals in order to understand their instructions about healthy lifestyle, 47.2% (n=143) often aware about long-term goals in life, 49.8% (n=151) often balance time between study and leisure, and 42.6% (n=129) often expose self to new experiences and challenges.

Besides that, the least of the respondent never practicing health responsibility in the domain of HLB were read article or watch media 3.3% (n=10), get an advice when query about own health status 5.3% (n=16), aware about long-term goals in life 3.6% (n=11), expose self to new experiences and challenges 5.3% (n=16). The least chosen "routinely" were 7.9% (n=24) discuss my health concerns with health professionals, 4.3% (n=13) ask for information from health professionals about how to take good care of themselves and 8.3% (n=25) attend educational programs on personal health care.

The highest mean score for the items of health responsibility towards healthy lifestyle behaviours is item "I aware about long-term goals in my life" that is 2.845. Meanwhile, the lowest mean score is item "I attend educational programs on personal health care" that is 2.284. This shows that most of the respondents had high health responsibility towards healthy lifestyle behaviours in term of aware about long-term goals in life. However, respondent had low health responsibility towards healthy lifestyle behaviours is attending educational programs on personal health care**.**

Table 4.8 Healthy Lifestyle Behaviours: Health Responsibility (N=303)

Statement	**Frequency, n (%)**				**Mean (SD)**
	Never	**Sometimes**	**Often**	**Routinely**	
Report any unusual signs or symptoms to a physician or other health professional.	47 (15.5)	124 (40.9)	100 (33.0)	32 (10.6)	2.386 (0.872)
Have a good quality of sleep (about 6-8 hours)	**27 (8.9)**	**138 (45.5)**	102 (33.7)	36 (11.9)	2.485 (0.817)
I read article or watch media such as TV programs about improving health	**10 (3.3)**	**139 (45.9)**	122 (40.3)	32 (10.6)	2.581 (0.723)

I ask detail or further information to health professionals in order to understand their instructions about healthy lifestyle	27 (8.9)	113 (37.3)	**137 (45.2)**	26 (8.6)	2.535 (0.775)
I get an advice when I have query about my own health status	**16 (5.3)**	125 (41.3)	136 (44.9)	26 (8.6)	2.568 (0.724)
I discuss my health concerns with health professionals	28 (9.2)	**138 (45.5)**	113 (37.3)	**24 (7.9)**	2.439 (0.769)
I aware about long-term goals in my life	**11 (3.6)**	87 (28.7)	**143 (47.2)**	62 (20.5)	**2.845 (0.784)**
I inspect my body once a month for physical changes/danger signs	54 (17.8)	127 (41.9)	91 (30.0)	31 (10.2)	2.327 (0.885)
Balance my time between study and leisure	**20 (6.6)**	107 (35.3)	**151 (49.8)**	25 (8.3)	2.597 (0.734)
I ask for information from health professionals about how to take good care of yourself	41 (13.5)	**130 (42.9)**	119 (39.3)	**13 (4.3)**	2.343 (0.764)
I attend educational programs on personal health care	58 (19.1)	**126 (41.6)**	94 (31.0)	**25 (8.3)**	**2.284 (0.868)**
Expose myself to new experiences and challenges	**16 (5.3)**	115 (38.9)	**129 (42.6)**	43 (14.2)	2.657 (0.785)

4.7.6 Descriptive Frequency for Stress Management Domain of HLB

According to Table 4.9, majority of the total respondents were often in stress management for healthy lifestyle behaviours which is i) I take some time for relaxation each day 51.8% (n=157), ii) I concentrate on pleasant thoughts at bedtime 50.2% (n=152), and iii) I find it easy to show concern, love and warmth to others 51.2% (n=155). Besides that, there were 40.6% (n=123) of total respondents practice relaxation technique or meditation for at least 15-20 minutes daily.

The least of the respondent were never managing stress of healthy lifestyle behaviours are 2.3% (n=7) take some time for relaxation each day, find it easy to show concern, love and warmth to others 3.3% (n=10), and use specific methods to control stress 2.6% (n=8). However, there are 9.2% (n=28) and 11.9% (n=36) get support from a network of caring people and seek guidance or counselling when necessary respectively.

Table 4.9 Healthy Lifestyle Behaviours: Stress Management (N=300)

Statement	**Frequency, n (%)**				**Mean (SD)**
	Never	**Sometimes**	**Often**	**Routinely**	
Discuss my problems and concerns with people close to me.	15 (5.0)	105 (34.7)	128 (42.2)	55 (18.2)	2.736 (0.812)
I take some time for relaxation each day	**7 (2.3)**	61 (20.1)	**157 (51.8)**	78 (25.7)	**3.010 (0.744)**
I concentrate on pleasant thoughts at bedtime	20 (6.6)	79 (26.1)	**152 (50.2)**	52 (17.2)	2.779 (0.806)

I feel content and at peace with myself	17 (5.6)	89 (29.4)	139 (45.9)	58 (19.1)	2.786 (0.816)
I find it easy to show concern, love and warmth to others.	**10 (3.3)**	80 (26.4)	**155 (51.2)**	58 (19.1)	2.861 (0.755)
I use specific methods to control my stress	**8 (2.6)**	87 (28.7)	143 (47.2)	65 (21.5)	2.875 (0.770)
I find each day interesting and challenging	16 (5.3)	115 (38.0)	132 (43.6)	40 (13.2)	2.647 (0.775)
I practice relaxation technique or meditation for at least 15-20 minutes daily	76 (25.1)	**123 (40.6)**	76 (25.1)	**28 (9.2)**	**2.185 (0.916)**
I get support from a network of caring people	20 (6.6)	88 (29.0)	146 (48.2)	49 (16.2)	2.739 (0.806)
I seek guidance or counselling when necessary	55 (18.2)	104 (34.3)	108 (35.6)	**36 (11.9)**	2.413 (0.920)

From the table 4.9, the highest mean score for the items of stress management towards healthy lifestyle behaviours is item "I take some time for relaxation each day" that is 3.030 Meanwhile, the lowest mean score is item "I practice relaxation technique or meditation for at least 15-20 minutes daily" that is 2.185. This shows that most of the respondents had high stress management towards healthy lifestyle behaviours in term of take some time for relaxation. However, respondent had low stress management towards healthy lifestyle behaviours is practice relaxation technique or meditation for at least 15-20 minutes daily**.**

4.8 Level of Healthy Lifestyle Behaviours perceived by respondent

4.8.1 Level of Healthy Lifestyle Behaviour: Spiritual Growth

The overall level of spiritual growth perceived by students is 2.38 (0.526). The level of spiritual growth was divided into three categories: poor spiritual growth with the range of score 6 to 12, moderate spiritual growth with the range of score 13 to 19 and good spiritual growth with the range of score 20 and above. As shown in Table 4.10, more than half, 57.8% (n=175) of the respondents had moderate spiritual growth and only 2.0% (n=6) of the respondents had poor spiritual growth of healthy lifestyle behaviour.

Table 4.10 Spiritual *Growth Level (N=303)*

	Range of score	Frequency (n)	Percent (%)
Poor	6 – 12	6	2.0
Moderate	13 – 19	175	57.8
Good	20 & above	122	40.3

4.8.2 Level of Healthy Lifestyle behaviour: Interpersonal Relations

The overall level of interpersonal relations perceived by students is 2.29 (0.558). The level of interpersonal relations was divided into three categories: poor interpersonal relations with the range of score 6 to 12, moderate interpersonal relations with the range of score 13 to 19 and good interpersonal relations with the range of score 20 and above. As shown in Table 4.11, more than half,

60.7% (n=184) of the respondents had moderate interpersonal relations and only 5.3% (n=16) of the respondents had poor interpersonal relations of healthy lifestyle behaviour.

Table 4.11 ***Interpersonal Relations Level (N=303)***

	Range of score	Frequency (n)	Percent (%)
Poor	6 – 12	16	5.3
Moderate	13 – 19	184	60.7
Good	20 & above	103	34.0

4.8.3 Level of Healthy Lifestyle behaviour: Nutrition

The overall level of nutrition perceived by students is 1.74 (0.600). The level of nutrition was divided into three categories: poor nutrition with the range of score 9 to 18, moderate nutrition with the range of score 19 to 28 and good nutrition with the range of score 29 and above. As shown in Table 4.12, more than half, 57.4% (n=174) of the respondents had moderate nutrition and only 8.3% (n=25) of the respondents had good nutrition of healthy lifestyle behaviour.

Table 4.12 ***Nutrition Level (N=303)***

	Range of score	Frequency (n)	Percent (%)
Poor	9 – 18	104	34.3
Moderate	19 – 28	174	57.4
Good	29 & above	25	8.3

4.8.4 Level of Healthy Lifestyle behaviour: Physical Activity

The overall level of physical activity perceived by students is 1.67 (0.606). The level of physical activity was divided into three categories: poor physical activity with the range of score 9 to 18, moderate physical activity with the range of score 19 to 28 and good physical activity with the range of score 29 and above. As shown in Table 4.13, more than half, 52.5% (n=159) of the respondents had moderate physical activity and only 7.3% (n=22) of the respondents had good physical activity of healthy lifestyle behaviour.

Table 4.13 ***Physical Activity Level (N=303)***

	Range of score	Frequency (n)	Percent (%)
Poor	9 – 18	122	40.3
Moderate	19 – 28	159	52.5
Good	29 & above	22	7.3

4.8.5 Level of Healthy Lifestyle behaviour: Health Responsibility

The overall level of health responsibility perceived by students is 1.88 (0.553). The level of health responsibility was divided into three categories: poor health responsibility with the range of score 12 to 24, moderate health responsibility with the range of score 25 to 37 and good health

responsibility with the range of score 38 and above. As shown in Table 4.14, more than half, 68.0% (n=206) of the respondents had moderate health responsibility and only 9.9% (n=30) of the respondents had good health responsibility of healthy lifestyle behaviour.

Table 4.14 ***Health Responsibility Level (N=303)***

	Range of score	Frequency (n)	Percent (%)
Poor	12 - 24	67	22.1
Moderate	25 - 37	206	68.0
Good	38 & above	30	9.9

4.8.6 Level of Healthy Lifestyle behaviour: Stress Management

The overall level of stress management perceived by students is 2.04 (0.547). The level of stress management was divided into three categories: poor stress management with the range of score 10 to 20, moderate stress management with the range of score 21 to 31 and good stress management with the range of score 32 and above. As shown in Table 4.15, more than half, 70.0% (n=212) of the respondents had moderate stress management and only 12.9% (n=39) of the respondents had poor stress management of healthy lifestyle behaviour.

Table 4.15 ***Stress Management Level (N=303)***

	Range of score	Frequency (n)	Percent (%)
Poor	10 – 20	39	12.9
Moderate	21 – 31	212	70.0
Good	32 & above	52	17.2

4.8.7 Level of Overall Healthy Lifestyle Behaviours

The overall level of healthy lifestyle behaviours perceived by students is 2.09 (0.517). The level of healthy lifestyle behaviours was divided into three categories: poor healthy lifestyle behaviours with the range of score 52 to 104, moderate healthy lifestyle behaviours with the range of score 105 to 157 and good healthy lifestyle behaviours with the range of score 158 and above. As shown in Table 4.16, more than half, 72.6% (n=220) of the respondents had moderate healthy lifestyle behaviours and only 9.2% (n=28) of the respondents had poor healthy lifestyle behaviours.

Table 4.16 ***Healthy Lifestyle Behaviours Level (N=303)***

	Range of score	Frequency (n)	Percent (%)
Poor	52 – 104	28	9.2
Moderate	105 – 157	220	72.6
Good	158 & above	55	18.2

4.9 Compare the Mean Differences in the Domain of Healthy Lifestyle Behaviours among Students

Table 4.17 shows the details of the categories of healthy lifestyle behaviours among students and its representative mean score and standard deviation (SD). Overall mean score for healthy lifestyle behaviour among students was 2.59. The highest mean score for categories of healthy lifestyle behaviours was 3.07 which was spiritual growth.. Meanwhile, the lowest mean score was an physical activity that was 2.27. This showed that the most healthy lifestyle behaviour that commonly used among students were spiritual growth. However, the least healthy lifestyle behaviour that commonly used among students was physical activity.

Table 4.17 The means scores of each domain of HLB.

Healthy Lifestyle Behaviours	Mean	Standard Deviation
Spiritual Growth	3.07	3.09
Interpersonal Relations	3.03	3.35
Nutrition	2.30	4.50
Physical Activity	2.27	5.68
Health Responsibility	2.50	6.18
Stress Management	2.70	5.37

4.10 Association between Level of Healthy Lifestyle Behaviours with the Selected Demographic Characteristics of the Students

Table 4.18 shows the chi-square test was conducted between level of healthy lifestyle behaviours and demographic characteristics of the students. The first test is between age and level of healthy lifestyle behaviours. All expected cell frequencies were greater than five. The chi-square analyses reveal no significant difference exist between age and level of healthy lifestyle behaviours, $\chi 2$ (2, N=303) = 1.844, p=.398. Therefore, the result showed that there was no significant association existed between age and level of healthy lifestyle behaviours.

Next, Association between gender and level of healthy lifestyle behaviours also was tested by using chi-square test as shown in the table 4.18. All expected cell frequencies were greater than five. The chi-square analyses reveal no significant difference exist between age and level of healthy lifestyle behaviours, $\chi 2$ (2, N=303) = 3.848, p=.146. Therefore, the result showed that there was no significant association existed between gender and level of healthy lifestyle behaviours.

Association between ethnics and level of healthy lifestyle behaviours also was tested by using chi-square test as shown in the table 4.18. All expected cell frequencies were greater than five. The chi-square analyses reveal no significant difference exist between ethnics and level of healthy lifestyle behaviours, $\chi 2$ (6, N=303) = 6.204, p=.401. Thus, the result showed that there was no significant association existed between ethnics and level of healthy lifestyle behaviours.

Next, for association between Body Mass Index (BMI) and level of healthy lifestyle behaviours also was tested by using chi-square test as shown in the table 4.18. All expected cell frequencies were greater than five. The chi-square analyses reveal no significant difference exist between ethnics and level of healthy lifestyle behaviours, $\chi 2$ (6, N=303) = 5.515, p=.480. Thus, the result showed that there was no significant association existed between BMI and level of healthy lifestyle behaviours.

Table 4.18 Association between level of healthy lifestyle behaviours with the selected demographic characteristics of the students (N=303)

Demographic characteristic	Level of healthy lifestyle behaviours				Chi-square		
	Poor n(%)	Moderate n(%)	Good n(%)	Total n(%)	x^2	df	*p-value*
Age					1.844	2	.398
20-22 (younger)	18 (8.1)	162 (72.6)	43 (19.3)	223 (100)			
23 and above (older)	10 (12.5)	58 (72.5)	12 (15.0)	80 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			
Gender					3.848	2	.146
Male	11 (10.4)	70 (66.0)	25 (23.6)	106 (100)			
Female	17 (8.6)	150 (76.1)	30 (15.2)	197 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			
Ethnics					6.204	6	.401
Malay	21 (9.4)	162 (72.6)	40 (17.9)	223 (100)			
Chinese	6 (9.4)	49 (76.6)	9 (14.1)	64 (100)			
Indian	1 (14.3)	4 (57.1)	2 (28.6)	7 (100)			
Other	0 (0.0)	5 (55.6)	4 (44.4)	9 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			
BMI					5.515	6	.480
Underweight (less than 18.4)	15 (7.6)	146 (73.7)	37 (18.7)	198 (100)			
Normal (18.5-24.9)	12 (12.9)	63 (67.7)	18 (19.4)	93 (100)			
Overweight (25.0-29.9)	1 (11.1)	8 (88.9)	0 (0.0)	9 (100)			
Obese (30 and above)	0 (0.0)	3 (100.0)	0 (0.0)	3 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			
Program (course)					3.442	6	.752
Nursing	2 (3.6)	43 (76.8)	11 (19.6)	56 (100)			

MBBS	10 (10.0)	70 (70.0)	20 (20.0)	100 (100)			
Pharmacy	8 (9.9)	60 (74.1)	13 (16.0)	81 (100)			
Biomedical Science	8 (12.1)	47 (71.2)	11 (16.7)	66 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			
Family Income					13.049	4	.011*
Below than RM3000	12 (11.4)	80 (76.2)	13 (12.4)	105 (100)			
RM3001 – RM6275	12 (11.1)	67 (62.0)	29 (26.9)	108 (100)			
RM6276 and above	4 (4.4)	73 (81.1)	13 (14.4)	90 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			
CGPA					9.766	4	.043*
Pass (2.50-2.99)	0 (0.0)	26 (86.7)	4 (13.3)	30 (100)			
Good (3.0-3.69)	23 (10.6)	147 (68.1)	46 (21.3)	216 (100)			
Distinction (3.70 and above)	5 (8.8)	47 (82.5)	5 (8.8)	57 (100)			
Total	28 (9.2)	220 (72.6)	55 (18.2)	303 (100)			

*significant at 0.05 level

For association between program (course) and level of healthy lifestyle behaviours also was tested by using chi-square test as shown in the table 4.18. The chi-square analyses revealed no significant difference exist between program and level of healthy lifestyle behaviours, $\chi 2$ (6, N=303) = 3.442, p=.752. Thus, the result showed that there was no significant association existed between program (course) and level of healthy lifestyle behaviours.

Furthermore, from the table 4.18, it shows that family income have significant association with the level of healthy lifestyle behaviours which is the p-value is less than 0.05. The chi-square analyses reveal that there was a significant difference exist between family income and level of healthy lifestyle behaviours, $\chi 2$ (4, N=303) =13.049, p=.011. Hence, there was association between family income with level of healthy lifestyle behaviours.

Last but not least, from the table 4.18, it shows that Current Academic performance (CGPA) have significant association with the level of HLB which is the p-value is less than 0.05. The chi-square analyses reveal that there was a significant difference exist between CGPA and level HLB, $\chi 2$ (4, N=303) =9.766, p=.043. Hence, there was association between CGPA with level of HLB.

4.11 Summary

Researcher had analysed and interpreted the research findings. Data obtained earlier, were

analysed using SPSS 2.3 Version Software. For the analysis of the data, the researcher had used the descriptive analysis to really look for the relevancy of the findings with the objectives of the research study. In this chapter, in order to describe the characteristic of the study respondent with HLB, student's academic performance, and demographic data of the students, statistical approaches were used to determine any association. The result of the statistical tests were displayed in table and explained in detail through text. Definitive interpretation of the foregoing result will be discussed in the succeeding chapter. Therefore, in this study, it shows that 72.6% of the respondents had moderate HLB. The highest mean score for categories of HLB was health responsibility. Meanwhile, the lowest mean score was an interpersonal relation. Family income and Current Academic Performance (CGPA) has significant association with the level of HLB.

CHAPTER 5
DISCUSSION, RECOMMENDATION, AND CONCLUSION

5.1 Introduction

In this chapter, researcher will interpret the results, analysis and describe all the data finding that have been done in chapter 4 which is data analysis based on the 3 objectives stated earlier in the previous chapter. Thus, in this chapter, researcher discussed detail regarding the level of healthy lifestyle behaviour perceived by the students, the relationship between each domain of healthy lifestyle behaviour, and the association between the level of healthy lifestyle behaviour with the selected demographic characteristics of the students (age, gender, ethnics, BMI, socio-economic status, program, and academic performance (CGPA)). The discussion described in greater detail of the study. Following of the discussion, researcher focused on similarity and comparison of the study findings with others literature review. In order to complete the discussion, researcher discussed the implication, limitation and recommendation to nursing practice as well a conclusion. Therefore, the researcher discussed and elaborates more about the limitation of the research to the research study.

5.2 Discussion of findings

The discussions of the finding were according to the specific objectives that the researcher wanted to achieve which were:

1. To examine the level of healthy lifestyle behaviour perceived by the students.
2. To compare the mean differences in the domain of healthy lifestyle behaviours among students.
3. To determine the association between the level of healthy lifestyle behaviour with the selected demographic characteristics of the students.

5.2.1 Demographic Characteristic Data of the Students

From the total sample of 303 of respondents, most of the students who participate in this study are from younger age which is 20 years old to 22 years old. This finding is similar with the previous study on healthy lifestyle indicates that amount of students, younger university students are higher in population compare to older people (Wang, 2013). Moreover, in this study, mostly all the students involved in this research were female which is same from study conducted in Nebraska (Walker et al., 1995).

From the finding, for ethnicity, Malaysia was having more than one ethnicity, the students' majority were Malay students. Moreover, in the present study shown that most of the respondent is underweight. The result differ from previous study among students in Saudi Arabia which is found that most of the students were reported overweight (Al-Rethaian, Fahmy, & Al-Shwaiyat, 2010). This might because of university students in Malaysia strict large consumption of unhealthy diet for example fat, junk food, fast food, and cholesterol.

In this study, majority of the students had moderate family income (monthly). The result is consistence with the previous result from study by Ali & Crowther (2009). The present study also revealed that MBBS students are the majority among the other courses. It stated that majority population in faculty of medicine of the students is medical students and pharmacy students. The present study shown that the most who in charge at each condition student's academic performance (CGPA) was good result.

5.2.2 Level of Healthy Lifestyle Behaviour among Students.

The result of this study showed that more than half of the respondents were had moderate spiritual growth level, interpersonal relations, nutrition, physical activity, health responsibility, and stress management. The result constant with the result from Hacihasanoglu, the level for all the domains was in moderate level (Hacihasanoglu et al., 2011).

Moreover, for the overall level of healthy lifestyle behaviours in this study showed that majority of the respondents had moderate level of healthy lifestyle behaviour. There is similar finding were reported that students healthy lifestyle behaviours in moderate level (Hacihasanoglu et al., 2011). On the other hand, there is some review of literature that provided important evidence of increasing unhealthy behaviours among students regarding to dietary, physical activity, drug use, and smoking, there is evidence that students are adopting risky behaviours detrimental to health (Kenny et al., 2008). The findings was very worrying as the wrong believe can lead to an ineffective preventive planning and measure in order to apply a correction method to increase the problem.

5.2.3 Comparison in mean difference in the domain of Healthy Lifestyle Behaviours.

In current study, the highest mean score for categories of healthy lifestyle behaviours was spiritual growth. Meanwhile, the lowest mean score was physical activity. This showed that the most healthy lifestyle behaviour that commonly used among students were spiritual growth. However, the least healthy lifestyle behaviour that commonly used among was physical activity.

In a survey by Al Maaitah et all., 1999, it stated that the lowest mean was interpersonal relation and the highest ranking in comparison was stress management subscales (Al Maaitah et all., 1999). It is contradict compare to present study whereby spiritual growth was the highest whereas physical activity was the lowest. This is because of Malaysia students think that they have awareness toward healthy lifestyle more.

Next, current study was similar with other previous study in Jordan where it is recorded that the total Healthy Lifestyle Behaviours score was shown the highest score on the subscales was self-actualization (spiritual growth). Therefore, the score were lower on interpersonal support, nutrition, and health responsibility. Meanwhile, the lowest score was physical activity (Nassar & Shaheen, 2014). Hence, it was similar with previous study whereby spiritual growth was the highest score while the lowest score was physical activity (Nassar & Shaheen, 2014). This is might because of both study was conducted to university students and they usually had same type of knowledge regarding healthy lifestyle behaviour and this might influenced the highest score for domain of healthy lifestyle behaviour.

Moreover, the present study shown a contrast result compared to previous study in Nebraska by Pulen et al. (2001), among the domain of interest, the respondents scored highest result on the nutrition domain and the lowest was physical activity domain. It was reported this is because, the Nebraska's respondents was focus on their diet, meals, and calories in their lifestyle but they prefer to never or sometimes in doing physical activity to increase their healthy lifestyle. Meanwhile, in Malaysia, most of the nursing and medical sciences students more focus on spiritual growth in order to think more focus on their future.

Furthermore, other related study also shown similar result with Pulen et al. (2001) which is the score mean of nutrition domain was the highest and the lowest was physical activity. Hence, the previous study stated that physical activity was the lowest because of lack of feasible exercise

program in order to enhance their healthy lifestyle behaviours (Pullen et al, 2001).

5.2.4 Association between the level of healthy lifestyle behaviour with the selected demographic characteristics of the students (age, gender, ethnics, BMI, socio-economic status, program, and academic performance (CGPA).

Age

In this study, it was noted that younger students had higher level of healthy lifestyle behaviours than older students and it reveal that no significant difference exist between age and level of healthy lifestyle behaviours. Therefore, the result showed that there was no significant association existed between age and level of healthy lifestyle behaviours. This finding is similar with the previous study on healthy lifestyle indicates that amount of students, younger university students are more engaged in healthy lifestyle behaviours (Wang, 2013). This might because of their ability and strengths to do perform a healthy lifestyle was more easier during young age compared to older age and this also might because of older age may had many commitment towards their study, assignments, and works.

Gender

In this study, it was noted that female had higher level of healthy lifestyle behaviours than male and it reveal that no significant difference exist between gender and level of healthy lifestyle behaviours. Therefore, the result showed that there was no significant association existed between gender and level of healthy lifestyle behaviours. Salami (2010) and Schmidt (2012) were support the results of this study and these studies were provided a collateral explanation for the gender differences in quality of life. Contrasly, there is an evidence that women are less likely to be physically active than men, and they were found participate in home-based activity like walking (Salami, 2010; & Schmidt, 2012). Overall, men are more likely in vigorous physical activities such as running, or weight lifting rather than women (Huang, 2003; Quadros, 2009; El Ansari, 2011). Other than that, most of the studies found that more female students practice unhealthy behaviours rather than male students especially to physical and dietary habits (Vickers et al., 2004). From this study, it shown that female has higher level of healthy lifestyle behaviour might because of they have more awareness about their health status and want to achieve good body image as in this faculty, they need to communicate with other person to deliver care.

Ethnics

From the study, it reveals that there was no significant difference exists between ethnics and level of healthy lifestyle behaviours. Besides that, in the present study, ethnics Malay had higher level of healthy lifestyle behaviours than other ethnics. This might because of the population of Malay was higher than the other ethnics. Nevertheless, there is no any evidence to support this finding.

Body Mass Index (BMI)

In this study, it was noted that underweight had higher level of healthy lifestyle behaviours than normal, overweight, and obese and the result reveal that there was no significant difference exist between BMI and level of healthy lifestyle behaviours. There was another similar study support the finding, it shown that student's healthy lifestyle behaviour are lower due to obesity and overweight (Ali & Crowther, 2009). Nevertheless, there was a study stated that inactive people might spend their long hours watching television, surfing internet, eating junk food and snacks, and also might sitting long hours in cars or sleeping long hours daily (Ali & Crowther, 2009; Chukwuonye et al., 2013). This might because of all of these unhealthy behaviours are becoming a common routine among

university students. Despite of busy life and many assignments to be submitted, they might cannot focus on their healthy lifestyle behaviour. Other than that, this might due to their weight that makes them feel lazy to do any physical activities.

Socio-economic status: Family Income (monthly).

In the present study, there shows that family incomes have significant association with the level of healthy lifestyle behaviours. It shown that there was association between family income with level of healthy lifestyle behaviours. Nevertheless, there are a study that examined the association of mental health and income among students in one of university in Brazil and the result showed a positive association between student's income status and health (Ali & Crowther, 2009). This is because, income status will affecting health status as well, by restricting the ability to attend hospital and paying for medications and treatment, restricting several lifestyle like consuming healthy food, living in comfort environment, be able to pay for gymnasium for regular exercises and some other luxuries that will makes one live a happy healthy life.

Academic Performance (CGPA) and Program (courses)

In the present study, it was noted that good result of CGPA had higher level of healthy lifestyle behaviours than pass and distinction and there shows that there was association between CGPA with level of healthy lifestyle behaviours. According to Savci et al., (2006), they have determined that in their study physical activity level of university students were very low and the higher the academic performance, the lower their healthy lifestyle (Savci et al., 2006). This is might because, the health problems experienced by students in the study are caused busy life and due to too much commitment toward study, they cannot focus on their healthy lifestyle. Nevertheless, there is no other any evidence to support this finding.

In this present study, it reveals that there was no significant difference exist between program (course) and level of healthy lifestyle behaviours. Therefore, the result showed that there was no significant association existed between program (course) and level of healthy lifestyle behaviours. According to Nathalie Bergeron, (2017), clams about 59% of pharmacy and medical students were exposed to medium healthy lifestyle behaviour and 53% of the students have good healthy lifestyle behaviour (Bergeron, 2017). It stated that majority population in faculty of medicine of the students is medical students and pharmacy students.

5.3 Implication of the Study

The result from the study indicated that healthy lifestyle behaviours are important in order to reduce disease and illness and could bring a few implications. Generally, the findings from the research give implication to nursing students and medical sciences students, nursing practice, and nursing research.

5.3.1 Nursing and medical sciences students

In medical lines and clinical practice, nursing and medical sciences students need to be taught the advantage and benefits regarding the healthy lifestyle behaviours. As nursing and medical sciences students, it is importance to investigate the healthy lifestyle behaviour among university student especially among medical faculty students. As a health care provider, nursing and medical sciences students need to be healthy as they will be a person who will provide a care to those in ill for the next generation and future. The investigation about healthy lifestyle behaviour among nursing and medical sciences students are proved to be very useful and benefited complement and it will

provide a larger view of younger people's condition towards their health. It is also an individual responsibility to reinforce the knowledge and information that has been given to increases the level of healthy lifestyle behaviours.

As a part of medical team, health education and health motoring care was very important in order to achieve their aim in increasing the level of the healthy lifestyle behaviours. The level of health among Nursing, Bachelor of Medicine and Bachelor of Surgery (MBBS), Pharmacy, and Biomedical Sciences students is enhanced. In fact, healthy lifestyle behaviour in early phase of life effect the disease risk related to lifestyle in later periods of life. Moreover, student will comprehend the importance of health protection and improvement behaviour and transfer their knowledge into practice in life. The student's awareness on healthy lifestyle can be increased too so that chronic disease can be reduced to the minimal prevalence. Next, they will also perform and engage themselves in their daily activities undistracted, if they are not experience illness.

5.3.2 Nursing Practice

Form this study, it shown that nurse has a big role and responsibilities in giving nursing care to those who need a treatment. Nurses are health care providers who also act as a leader, advocator and educator too. Therefore, nurses need to spend time and give health education to the individual who are unhealthy and this could bring a huge challenge to nurses. A proper nursing practice with a very good quality nursing care will give a good image to nursing professional by doing their skills. The health education to public is very crucial as from the findings we knew that future generation especially university students were not in a very good healthy lifestyle behaviours. All the consequences from poor heathy lifestyle behaviours should be included in the health education to the public and community as it can alert and therefore help future generation to detect earlier and gain earlier awareness to prevent further illness. Apart from the nurse having to strategies on patients' healthcare plans and to produce programs for healthy lifestyle behaviours among nursing students and also medical science students towards improving wellness, nurses can learn much kind of new things and increase their critical thinking on some practicable ideas for creating student education program.

Moreover, a good and professional nurses will provide education as it is the crucial part to the teenagers especially university students. Build a team of educational program and provide a proper standard of teaching about healthy lifestyle behaviours to the nursing and medical sciences students as well as university students. They will gain some benefits knowledge and understanding about their condition on their level of healthy specifically. From this study, it is used as a guideline to enhance the nursing practice regarding the healthy lifestyle behaviours among nursing students and medical science students by developing a health programs or health education regarding the important of practicing a healthy lifestyle behaviour to community especially to students.

5.3.3 Nursing Research

This is a study conducted in one setting and only in one faculty. It is a research should be conducted to include other faculty and nationwide to evaluate nursing student in other university in the country to be able to generalize the finding. An experimental study will be conducted in future in order to improve the level of healthy lifestyle behaviour among students.

5.4 Limitation of the Study

The limitation of this study is that, the study only focuses to one faculty only. This is because,

other study were involving other university students and not specific on one faculty. This may result in limitation of the generalization of the final results to the health organization as well. Apart from that, the researcher used Not proportional Sampling Method (Convenience Sampling Method) that may result inaccuracy of the finding data. This is because of researcher could not randomized and generalized the sample size of the respondent. This sampling method had to be used because of the number of nursing student does not many. Moreover, other than that, the literature review on this study from Malaysia limits the ability and accessibility of the research to compare the findings of this research with local setting. Besides than that, the researcher were unable to rule out possibility that social desirability bias affected the results. This is due to all respondent were from Faculty of Medicine and educated. Next, the researcher used Convenience Sampling method that might bring a lot of biases throughout the data collection taken and the study only used quantitative approach that might not focus or observe on the real behaviour of the students.

5.5 Recommendations in Future

According to the results obtained from this research, there are some recommendations and it is suggested that health protection and improvement courses should be included in the curriculum of all departments at the faculty and also university. Furthermore, education programs on health protection and improvement should be offered for university students at a certain intervals. In this way, it is believed that university students will comprehend the importance of healthy lifestyle behaviour, improvement of the healthy lifestyle behaviours, and also transfer their knowledge into practice.

In addition, prevalence of overweight in this university also increases not only obesity. Therefore, students should practice more healthy diet and perform physical activity. Result in present study also shown that students not practice good healthy lifestyle might because of busy life and need to give commitment to their assignments and study. Hence, healthy steps toward healthy lifestyle should be practice and follows all the recommended programs about improving healthy lifestyle.

Moreover, other than that, the study recommends that university authorities and health departments are engaged in a coordinated healthy lifestyle behaviours programs. These programs should include health awareness and health education, which should be tailored towards giving positive lifestyles. The importance of physical activity and healthy diets as stated above must be emphasized to all the students. Furthermore, the present study recommends that governments in this country together with the universities authorities should establish program to encourage healthy diet on the campus area. There should be video shows on overweight and obesity documentaries, including health awareness, and education seminars. For example, there should be also pamphlets, leaflets, and food-based dietary guidelines too. Students should be encouraged to do juggling and other vigorous exercises for at least 3 to 4 times of about 30 minutes duration per week. This is because, physical activity can be used to address preventable lifestyle-related diseases such as obesity, depression and heart problems.

Next, further study could be conducted to examine demographic variables. Comparisons between female and male students from different faculty of medicine in various universities would be an interesting future direction for this research. Socio-economic data, which are known to have an impact on healthy lifestyle behaviours, could also be monitored closely in a future study.

Furthermore, the researcher recommends that an observational study to be done to observe people’s actually healthy lifestyle behaviour towards the prevention of any disease regarding health

status. Although this self-reported study might have response bias, but it helps in access to people real life condition and scenario. The researcher can observe on what the public actually say and do, rather than only focus on what they say and what they do by conducting this study. This is because, people are not willing to write their true view on a questionnaire or tell a person they did not know about what
they really think. Therefore, with the actual condition or scenario, the healthcare personnel can take immediate action to control the healthy lifestyle behaviours from worsening. Hence, an observational study is highly recommended.

5.6 Conclusion

This study was carried out in the Faculty of Medicine. Researcher had achieved all the three objectives in this study. This study suggested a few recommendations that should be used in order to enhance the healthy lifestyle behaviours in the future. The overall Healthy Lifestyle Behaviour of students in medical faculty had moderate healthy lifestyle behaviours. Besides that, Nursing students had moderate healthy lifestyle behaviour.

REFERENCES

Agopyan A. (2015). Comparison of Body Composition, Cardiovascular Fitness, Eating and Exercise Habits among University Students. The Anthropologist, 19(1), 145-156. doi: 10.1080/09720073.2015.11891649

Al Maaitah, Rowaida, Haddad, Linda, Umlauf, & Mary. (1999). Health promotion behaviors of Jordanian women. Health care for women international. 20. 533-46. 10.1080/073993399245449.

Al- Rethaiaa, S., Fahmy, E., & AL- Shwaiyat, M. (2010). Obesity and eating habits among college students in Saudi Arabia; a cross sectional study. Nutritional Journal, 9(1), 19 1939

Ali, A. T., & Crowther, N. J. (2009). Factors predisposing to obesity: a review of the Literature. Journal of Epidemiology and Metabolic Diseases of South Africa., 14(2).

Al-Naggar RA. (2018). Lifestyle practice among Malaysian university students. - PubMed - NCBI. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/23679290

Antonovsky A. (1987). The Jossey-Bass social and behavioural science series and the Jossey-Bass health series. Unraveling the mystery of health: How people manage stress and stay well. San Francisco, CA, US: Jossey-Bass.

Ardell D. B. (1986). High level wellness: An alternative to doctors, drugs and disease. Berkley, CA: Ten Speed Press

Banerjee, Amitav & Chaudhury, Suprakash. (2010). Statistics without tears: Populations and samples. Industrial psychiatry journal. 19. 60-5. Doi:10.4103/0972-6748.77642.

Bergeron N. (2017). An Analysis of California Pharmacy and Medical Students' Dietary and Lifestyle Practices. 81(8). doi: 10.5688/ajpe5956. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5701325/

Bergeron, N., Al-Saiegh, S., & Ip, E. J. (2017). An Analysis of California Pharmacy and Medical Students' Dietary and Lifestyle Practices. American Journal of Pharmaceutical Education, 81(8), 5956. http://doi.org/10.5688/ajpe5956

Bergeron, N., Al-Saiegh, S., & Ip, E. J. (2017). An Analysis of California Pharmacy and Medical Students' Dietary and Lifestyle Practices. American Journal of Pharmaceutical Education, 81(8), 5956. http://doi.org/10.5688/ajpe5956

Bouchard, C., Shepard, R. J., Stephens, T., Sutton, J. R., & McPherson, B. D. (1990). Exercise, fitness, and health. Champaign, IL: Human Kinetics Books.

Burns, N., Grove, S. K. (2011). Understanding nursing research: Building an evidence based practice (5thed.) United States of America: Elsevier Saunders.

Chukwuonye, I. I., Chuku, A., John, C., Ohagwu, K. A., Imoh, M. E., Isa, S. E, Oviasu, E. (2013). Prevalence of overweight and obesity in adult Nigerians – a systematic review. Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy, 6, 43–47. http://doi.org/10.2147/DMSO.S38626

Clarke N. (2017). Definition of Healthy Lifestyle. Retrieved from https://www.livestrong.com/article/412212-definition-of-healthy-lifestyle/

Colin & Julie. (2005). Reliability and Validity. Retrieved from https://chfasoa.uni.edu/reliabilityandvalidity.htm

Corder K. Dr. (2010). Perception versus reality: Awareness of physical activity levels of British children, 38(1), 1-8. doi: 10.1016/j.amepre.2009.08.025.

Dea, J. (1999). Cross-cultural, body weight and gender differences in the body size perceptions and body ideas of university students. Journal of Nutrition and Diet 55; 144-150.

DiMaria-Ghalili, R.A., M. J., Tobin, B.W., Hark, L., Van Horn, L., Palmer, C.A. (2014). Challenges and opportunities for nutrition education and training in the health\ care professions: intraprofessional and interprofessional call to action. The American Journal of Clinical Nutrition. doi: 10.3945/ajcn.113.073536

Dishman R. K. (1988). Exercise adherence: Its impact on public health. Champaign, IL: Human Kinetics Books.

Dossey, B., Keegan, L., Kolkmeier, L., &Guzzetta, C. (1989). Holistic health promotion. Rockville, MD: Aspen.

El Ansari, W., Stock, C., John, J., Deany, P., Phillips, C., Snelgrove, S., Adetunji, H., Hu, X., Parke, S., Stoate, M., & Mabhala, A. (2011). Health Promoting behaviours and lifestyle characteristics of students at seven universities in the UK. Central European Journal of Public Health, 19(40), 197-204.

Farrugia, P., Petrisor, B. A., Farrokhyar, F., & Bhandari, M. (2010). Research questions, hypotheses and objectives. Canadian Journal of Surgery, 53(4), 278–281.

Gillis A. (1994). Determinants of health-promoting lifestyles in adolescent females. Canadian Journal of Nursing Research, 26(2), 13–28.

Gresse, A., Steenkamp, L., & Pietersen, J. (2015). Eating, drinking and physical activity in Faculty of Health Science students compared to other students at a South African university. South African Journal of Clinical Nutrition, 28(4), 154-159. doi: 10.1080/16070658.2015.11734555

Hacıhasanoğlu R. (2017). Healthy Lifestyle Behaviour in University Students and Influential factors in Eastern Turkey. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/21251153

Hacıhasanoğlu, R., Yıldırım, A., Karakurt, P., & Sağlam, R. (2011, January 20). Healthy lifestyle behaviour in university students and influential factors in eastern Turkey. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1440-172X.2010.01905.x/full

Hernon, P., & Schwartz, C. (2007). What is a problem statement? Library & Information Science Research, 29(3), 307–309

Hsiao, Y.C., Chen, M.Y., Gau, Y.M., Hung, L.L., Chang, S.H., Tsai, H.M. (2005). Short-term effects of a health promotion course for Taiwanese nursing students. Public Health Nursing 2005; 22: 74-81.

Huang, T. T. Y., Harris, K. J, Lee, R. E, Nazir, N, Born, W., & Kaur, H. (2003). Assessing overweight, obesity, diet and physical activity in college students. Journal of American College Health 52(2): 83-86.

Investopedia staff. (2007). What is 'sampling'. Retrieved from:https://www.investopedia.com/terms/s/sampling.asp

Kenny, Holahan & Taha. (2008). Perceived Discrimination is Associated with Americans in The Jackson Heart Study: Health Behaviours Among African Americans. Retrieved from

http://pubmedcentralcanada.ca/pmcc/articles/PMC5014355/
Krause N. Social support, stress, and well-being amongolderadults.JGerontol.1986;41(4):512– 519.
Kznhealthgovza. (2017). Healhy Living. Retrieved from http://www.kznhealth.gov.za/healthyliving.pdf
Lavrakas, P. J. (2008). Encyclopedia of survey research methods Thousand Oaks, CA: Sage Publications, Inc. doi: 10.4135/9781412963947
Lytie, L. A., & Black, M. A. (2003). Nutritional issues for adolescents: Best practice and research. Journal of Clinical endocrinology and Metabolism, 17(2), p. 177 189
Medilexiconcom. (2017). Dictionary student nurse. Retrieved from http://www.medilexicon.com/dictionary/61891
Nassar, O. S., & Shaheen, A. M. (2014). Health-Promoting Behaviours of University Nursing Students in Jordan. Health, Vol.06No.19, 8. doi: 10.4236/health.2014.619315
Nayak, B. K., & Hazra, A. (2011). How to choose the right statistical test? Indian Journal of Ophthalmology, 59(2), 85–86. http://doi.org/10.4103/0301 4738.77005
Neumark-Sztainer. D., Story, M., French, S., Cassuto, N., Jacobs, D.R., Resnick M.D.(1998). Patterns of health-compromising behaviours among Minnesota adolescents: sociodemographic variations. Am J Public Health. 1996 Nov;86(11):1599–1606
Oxford Dictionaries. (2017). Student | Definition of student in English by Oxford Dictionaries. Retrieved from https://en.oxforddictionaries.com/definition/student
Oxford Dictionaries. (2017). Student | Definition of student in English by Oxford Dictionaries. Retrieved from https://en.oxforddictionaries.com/definition/lifestyle_choice
Oxford Dictionaries. (2017). Student | Definition of student in English by Oxford Dictionaries. Retrieved from https://en.oxforddictionaries.com/definition/medical_science
Paudel, S., GC, K.B., Bhandari, D.B., Bhandari, L. and Arjyal, A. (2017) Health Related Lifestyle Behaviours among Undergraduate Medical Students in Patan Academy of Health Sciences in Nepal. Journal of Biosciences and Medicines, 5, 43-53. https://doi.org/10.4236/jbm.2017.59005
Polit, D. F., & Beck, C. T. (2004). Nursing Research Principles and Methods (7thed) Philadelphia: Lippincott & Wilkins.
Pomerleau, C., Saules, K., (2007). Body image, body satisfaction, and eating patterns in normal-weight and overweight/obese women current smokers and never-smoker. Journal of Addictive Behaviour, 32, 2329-2334.
Pullen, C., Walker, S. N., &Fiandt, K. (2001, July).Determinants of health promoting lifestyle behaviours in rural older women. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/11373166
Quadros, B. T. M., Petroski, E. L., Santos-Silva D. A., & Pinheiro-Gordia, A. (2009). The prevalence of physical inactivity amongst Brazilian university students: Its association with socio-demograhic variables. Review Salud Publica, 11(5), 724 733.
Rose, S., Spinks, N., Canhoto, A. I. (2015). Management Research. London: Routledge.
Sabbah, I., Sabbah, H., Khamis, R., Sabbah., S., & Droubl, N. (2013). Health related quality of life of university students in Lebanon: lifestyles behaviours and socio demographic predictors. Open Access Journal, 5(714), 1-12
Salami, S. O. (2010). Occupational stress and well-being: Emotional intelligence, self-efficacy, coping, negative affectivity and social support as moderators. Journal of International Social Research, 3(12).
Savci, S., Ozturk, M., Arikan, H., Ince, D., Tokgozoglu, L. (2006). Physical activity levels of university students. Turkish Cardiology Society Archieve; 34: 166-172.
Schmidt M. (2012). Predictors of self-rated health and lifestyle behaviours in Swedish university students. Global Journal of Health Science, 4(4)1-14.
Scully T. (2014). Obesity: Society at large. Nature: The International weekly Journal of Science, 508,

7476.

Student nurse definition and meaning | Collins English Dictionary. (2017). Retrieved from https://www.collinsdictionary.com/dictionary/english/student-nurse

Thabane L. (2010). A Tutorial on Pilot Studies: The What, Why and How. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/20053272

Thaleia D. (2015, June). The Health Status and Lifestyle Behaviours of University Students in Nigeria by Sex and Ethnicity. Retrieved from http://eprints.glos.ac.uk/3266/1/THESIS%20DR.%20AGWU%20MICHEA %20EZNNA.pdf.

Thaleia D. (2015, June). The Health Status and Lifestyle Behaviours of University Students in Nigeria by Sex and Ethnicity. Retrieved from http://eprints.glos.ac.uk/3266/1/THESIS%20DR.%20AGWU%20MICHEA %20EZNNA.pdf.

The sciences | Medical science. (2017). Retrieved from https://kids.britannica.com/students/article/the-sciences/276947/207776-toc

The State of Maryland-Code of Maryland, (1018). Biomedical Science Student. Retrieved from https://definedterm.com/pharmacy_student

Tiggeman M. (2006). The role of the media exposure in Adolescent girls body dissatisfaction and drive for thinness: Prospective result. Journal of Social Clinical Psychology, 25, 523-541.

Tonkin R. (2000). Technical paper prepared by the International Association for Adolescent Health for the Global Consultation on Adolescent Friendly Health Services. Analytic Case Study, Canada

Travis, J. & Ryan, R. (1988). Wellness workbook (2nd ed.). Berkley, CA: Ten Speed Press.

University of Twente. (2017). Retrieved from https://www.utwente.nl/en/hs/master/studyinfo/healthsciencesdefinition/

Urban Dictionary: health. (2017). Dictionary. Retrieved from https://www.urbandictionary.com/define.php?term=health

Vickers, K. S., Patten, C. A., Bronars, C., Lane, K., Stevens, S. R., Croghan I.T., Schroeder, D. R., & Clark, M. M. (2004). Bringe Drinking In Female College Students: The Association of Physical Activity, Weight Concern, and Depressive Symptoms. Journal of American College Health, 53(3).

Walker, S. N., Sechrist, K.R., & Pender, N. J. (1987). The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. Nursing Research, 36(2), 76-81.

Walker, S., Sechrist, K., & Pender, N. (1995). The Health-Promoting Lifestyle Profile II. Omaha: University of Nebraska Medi(Wang, Ou, Chen, & Duan, 2009)cal Center, College of Nursing.

Wang, D.1.,Wu, X.B. (2013). Healthy lifestyles of university students in China and influential factors. doi: 10.1155/2013/412950

Wang, D., Ou, C.-Q., Chen, M.-Y., & Duan, N. (2009). Health-promoting lifestyles of university students in Mainland China. BMC Public Health, 9(1), 379. doi: 10.1186/1471-2458-9-379

Wardle, J., Steptoe, A. (2003). Socioeconomic differences in attitudes and beliefs about healthy lifestyle. Journal of Epidemiological and Community Health, 57, 440-443.

WHO (2017).Adolescent health and development.(n.d.). Retrieved from http://www.searo.who.int/entity/child_adolescent/topics/adolescent_health/en/

WHO (2017).Adolescent health and development.(n.d.). Retrieved from http://www.searo.who.int/entity/child_adolescent/topics/adolescent_health/en/

WHO.int. (2017). Health for All in The 21st Century. Retrieved from http://www.euro.who.int/__data/assets/pdf_file/0004/109759/EHFA5-E.pdf

Wwwgovuk. (2011). Wwwgovuk. Retrieved, from https://www.gov.uk/government/publications/start-active-stay-active-areport-on physical-

activity-from-the-four-home-countries-chief-medicalofficers.

Yeh, L., Chen, C.H., Wang, C.J., Wen, M.J., Fetzer, S.J. (2005). A preliminary study of a healthy lifestyle-promoting program for nursing students in Taiwan. Journal of Nursing Education 2005; 44: 563-565.

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INFOGRAPHIC MEDIA OF URINE COLOR ON STUDENTS' BEHAVIOR WITH FLUID COMPLIANCE

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ABSTRACT

Fluid was one of basic human needs that often neglected and unfulfilled. The aim was to analyze the influence of infographic media of urine colour to improve students' behavior in fluid compliance. The design was a one-group pre-experimental with pre-posttest. The population was all of student in Nursing Faculty of Airlangga University. Total sample were 250 respondents obtained by clusster sampling. Inclusion criteria in this research were active students and willing to be respondents, while exclusion criteria was student that consumed some medicine include aminopirin, flutamid, niacin, fenitoin riboflavin. Independent variable in this study was infographic media of urine color. The dependent variable in this study were knowledge, attitudes and actions of students in fluid compliance. The data collected by questionnaire and observation sheet and then analyzed by using Wilcoxon signed rank test with significance level of α=0.05. The result shows that infographic media of urine color is effective to increase students' knowledge, attitude, and practice in fluid compliance (p=0.000). Infographic media of urine color is effective to increase students' behavior in fluid fulfillments. Therefore, a similar media expected to be developed to improve awareness in fluid fulfillment.

Keywords: infographic, urine colour, fluid compliance, media

1. Introduction

The balance of fluids in the body plays an important role in maintaining the stability of the body's physiological health. This is influenced by the input and output of fluids. A person's daily needs are between 1500ml - 2000ml of water to maintain the fluid balance that comes out every day through the urine, sweat, breathing and bodily secretions. These needs, if the body cannot fulfill them, will give a response of thirst. The body becomes weak, resulting in dehydration and over a long time, this can cause kidney failure [1]. The high activity of students causes frequent forgetting to drink. A person's fluid intake needs can be determined from the color of their urine and this can be compared to the color on the infographic[2]. However, this media has not been applied in the Faculty of Nursing even though it is a health agent environment.

The results of the Indonesian Regional Hydration Study Team (THIRST) study in 2010 in DKI Jakarta, West Java, East Java and South Sulawesi found that 46.1% of the population experienced mild dehydration. Adolescents had the highest rating for this (49.5%), followed by adults (42.5%). The main cause of this problem is their low knowledge about the function of water for the body, the need for drinking water, the benefits of drinking water for health and access to drinking water [3]. Other studies regarding water consumption conducted by students showed that 61% of students still lack an adequate level of consumption of drinking water [4]. The results of a preliminary study

conducted by the researchers on October 6th 2016 on 10 students showed that 9 people claimed to drink less than 6 glasses of water a day.

Habits mean that a student cannot be aware of the lack of water in the body and they may not have the habit of drinking the right amount of water every day. This can have a negative impact on their health, such as causing the body to weaken up to the point of dehydration. In the long run, this will cause kidney failure [1]. A lack of knowledge is not the only reason. The lack of awareness to immediately obtain drinking water and replace lost fluids is the reason for the disruption of fluid balance in individuals. In other words, water consumption behavior can affect the health status of individuals. A person's behavior influences their health status [5]. The urine color infographics provide information about the adequacy of fluids in the body [2]. The urine color when urinating, when compared with the color of urine in the infographic. will indicate if someone is dehydrated or not. If someone is dehydrated as indicated by the infographic, then they can change their behavior to become more aware. The aim of this study was to analyze the influence of the infographic media on urine color on the students' knowledge, attitudes and practices in terms of fluid compliance.

2. Material and methods

2.1. Research design

The design used was a pre-experiment with a pre-post-test one group design.

2.2. Population and sample

The population in this research consisted of all students in the Faculty of Nursing of Universitas Airlangga. This totaled as many as 715 respondents and the researcher obtained 250 respondents through cluster sampling. This research was conducted in the Faculty of Nursing of Universitas Airlangga between January 6th – 30th 2017. The inclusion criteria in this research were that they were active students and willing to be respondents, while the exclusion criteria were students that were taking medication such as aminopirin, flutamid, niacin and fenitoin riboflavin.

2.3. Variables

The independent variable in this study was an infographic media on urine color. The dependent variables in this study were the knowledge, attitudes and practice of the students in terms of fluid compliance.

- *2.4. Instruments*

The instruments used in the data collection were knowledge questionnaires, attitudes and observation sheets that the researchers developed themselves and tested for validity and reliability.

- *2.5. Research procedures*

The researcher took the respondents from all students at the time of the study. The data collection was done by the researchers by first looking for the respondents. The researchers wrote down numbers on a small scrap of paper that had been rolled up based on the number of students in the class. Then the researcher took the number of scrolls according to the number of respondents desired from each class. The names taken were made into a list submitted to the research assistant in each class. After the research assistant recorded the names of the students from each generation, the

researcher then made a time agreement to explain the purpose of the study and to get informed consent. After the respondents signed the informed consent form, the session was continued by giving a pre-test. After the respondent filled out all the questionnaires that had been distributed, the questionnaire was withdrawn. The infographics were posted in the campus toilets and given to each respondent to be used in their respective residences. One week after attaching and giving the infographics, the post-test is performed.

2.6. Analysis

The data was analyzed using IBM SPSS Statistic 24. The statistical analysis consisted of two stages, namely the descriptive and inferential analysis. The descriptive analysis included the mean and standard deviation. The inferential analysis used the Wilcoxon Signed Ranks Test to determine the difference between the independent and dependent variables. The confidence interval was 95% with alpha (α) = 0.05.

2.7. Ethical Clearance

This research passed the ethical review and obtained an Ethical Approval certificate No. 306-KEPK issued by the Health Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga.

3. Results

The characteristics of the respondents on Table 1 showed that the majority of respondents came from the age group of 18-21 years old, totaling as many as 132 respondents (52.8%). Based on the sex of the respondents, there were more females, totaling as many as 146 respondents (58.4%). According to the highest respondent generation, there were 45 respondents (18%) from the 2015 transfer type.

1. Characteristics of the respondents in the Faculty of Nursing, Universitas Airlangga in January 2017 (n = 250).

Characteristics of the Respondents	n	%)
18 – 21 years	32	2.8
22 – 25 years	79	1.6
> 25 years	39	5.6
	50	.00
Male	04	1.6
Female	46	8.4
	50	.00
Regular class on 2016	40	16
Regular class on 2015	40	16
Regular class on 2014	40	16
Regular class on 2013	42	6.8
Extension program 2016	43	7.2
Extension program 2015	45	8.0
	50	.00

2. Distribution of the knowledge, attitudes and practices of the respondents before and after the intervention in the Faculty of Nursing, Universitas Airlangga, on January 2017 (n = 250).

Category	Pre-test	Post-test	value

	PHP-764				
	n	%)	ı	%)	
Knowledge					
Well	50	60	90	76	
Enough	94	7.6	8	3.2	.000
Less	6	2.4	2	0.8	
	50	00	50	00	
Attitude					
Positive	28	1.2	54	1.6	.000
ve	22	8.8	6	8.4	
	50	00	50	00	
Action					
Fulfilled	34	3.6	8	7.2	.000
filled	16	6.4	32	2.8	
	50	00	50	00	

The pre-test knowledge of most of the respondents, namely 150 respondents (60.0%), had a good knowledge about meeting their fluid needs. In the post-test, the number of respondents who had a good level of knowledge increased to 190 respondents (76.0%), increasing by 16% from the previous test. The results of the statistical tests conducted using the Wilcoxon signed rank test obtained a value of p=0.000. This shows that there was a significant difference in the respondents' knowledge before and after the intervention. The attitudes of the respondents showed that 128 respondents (51.2%), or half of the total respondents, had a positive attitude toward fulfilling their fluid needs. In the post-test that was conducted after being given the intervention, the number of respondents who had a positive attitude in terms of meeting their fluid needs increased to 154 respondents (61.6%). The results of the statistical tests using the Wilcoxon signed rank test obtained a value of p=0,000. This shows that there were significant differences in the attitudes of the respondents before and after the intervention. A small portion of the total respondents, 34 respondents (13.6%), were those whose daily fluid needs were being met. In the post-test, there was an increase in the number of respondents up to 68 respondents (27.2%) whose daily fluid needs were being met. The results of the statistical tests using the Wilcoxon signed rank test obtained a value of p = 0,000. This shows that there are significant differences in the respondent's practices before and after the intervention (Table 2).

4. Discussion

The results of the study of the knowledge variables showed that before the intervention was given, 60% of the total respondents - 150 respondents - had good knowledge about meeting their fluid needs. After being given the intervention, the number of respondents who had a good level of knowledge increased to 190 respondents (76.0%). However, there were still 2 respondents who lacked knowledge. The results of the statistical tests of the knowledge variables prove the existence of a significant influence from the use of urine color infographic media on the knowledge of the respondents about meeting their fluid needs.

Knowledge is the result of the human sensing of an object. The factors that can affect knowledge includes experience, level of education and a source of information [5]. Someone will have a perception of what he lived which will lead to the perceptions related to the level of knowledge obtained from information. If the information received is less clear, then the learning outcomes obtained are also not optimal. Edgar Dale's cone illustrates that someone who sees photos or illustrations of information can remember the information by up to 30%. Knowledge arises when

someone uses his senses to recognize certain objects or events that have never been seen or felt before. The increase in the value of knowledge is due to the process of studying the messages in the media infographics by the respondents [6]. The research results conducted show the influence of visual media on knowledge [7].

During the pre-test, the number of respondents who had a good knowledge of the body's constituent components, the amount of fluid consumed in a day, the impact of a lack of fluids and how to overcome the lack of fluids was high. As for the questions about urine color in numbers 5 and 6 in the questionnaire, only 70 respondents answered correctly. The question about the amount of fluid that must be consumed a day (no. 2) was answered correctly by all of the respondents and only 8 people answered incorrectly. This can be caused by the respondents who are nursing students who had gotten lectures about fluid intake before. So when given a test, the respondents were able to answer the question correctly. The information obtained from formal and non-formal education can provide short-term effects resulting in changes or increased knowledge [8].

There was an increase in the number of respondents who were well informed after being given an intervention because the information listed in the media infographic is understood by the respondents. This is in line with the research which states that infographics affect the students' memory and reasoning power [9], meaning that the students are able to answer the questions as part of a test. The use of media infographics is something that has just began to be applied in the area of the Faculty of Nursing in Airlangga University, making the respondents interested in seeing, reading and studying the information listed on media infographics.

This is in accordance with the statement that the existence of new information about a matter can provide a new cognitive foundation for the formation of knowledge about something [8]. Infographics are also included in the form of one visual media, making it easier for the reader to understand the information. According to the statement above, the information that is captured visually will be processed faster by the brain, in contrast to the information conveyed via text where the information will be processed linearly (from the beginning of the sentence to the end of the sentence) [10]. In this study, it was found that 2 respondents still lacked knowledge after being given an intervention, such as when someone had a perception of something. In this case, the infographics will mean that the person finds it difficult to clearly understand the contents of the infographic so then the respondents still cannot meet the cognitive domain of knowledge in terms of their level of understanding (comprehension). However, the respondent still answered incorrectly on the post-test.

The results of the attitude variable showed that before being given an intervention, as many as 128 respondents (51.2%) had a positive attitude in reference to meeting their fluid needs. After being given the intervention, the respondents who had a positive attitude increased to 154 (61.6%), while 96 respondents were still negative. The results of the statistical tests showed that there was a significant effect of using the urine color infographic media on the attitudes of the respondents after being given the intervention.

Attitude is the closed reaction of humans from a stimulus [8]. Attitudes can be influenced by several factors, namely personal experience, the influence of important figures, cultural influences, mass media, educational and religious institutions, and emotional factors. Attitudes are not taken from birth. They are formed and studied throughout human development in relation to certain objects [11].

In this study, half of the total respondents (128 respondents) had a positive attitude towards meeting their daily fluid requirements during the pre-test. In statement number 4 about drinking during solid activities, the respondents preferred "Never". Only 73 respondents chose "Sometimes" and 24 respondents chose "Often". This is because the respondents already had a good level of knowledge about fulfilling their fluid needs. The status of the respondents as nursing students meant that they got lecture material on the ways to always keep up with their fluid needs. In this study, the urine color infographic media was a stimulus / object that caused the respondent to behave according to the message / content as stated in the media. The proof is the increasing number of respondents who are positive when doing the post-tests. Attitudes are views, opinions, responses or judgments and they are also a person's feelings for stimuli or objects accompanied by a tendency to act [5].

This is what supported the change in attitude from negative to positive in most of the respondents. The value of the respondent's attitude after being given information through media infographics increased because the respondents were able to capture all of the positive things that they got from the media infographic. After their knowledge is sufficient, their emotions react to the existing stimuli and there is a change in attitude to the positive. The number of respondents who were still negative is caused by their habits. If someone already has a habit, then it is very difficult to change the attitude of the person, be it a negative attitude or a positive attitude. This is in accordance with the theory put forward as stated by Greenaway [12], in that one component forming behavior in terms of attitude is the influence of culture.

The results showed that before the intervention, only 34 respondents (13.6%) had their daily fluid needs met. The respondents whose daily fluid needs were not being met had an average consumption of water amounting to 1200 ml (6 glasses) a day. There were even respondents who consumed only 800 ml (4 glasses) of water. Regarding the urine color of 216 respondents whose daily fluids were not fulfilled, on average they had urine colors of 3, 4 and 5. After being given the intervention, the number of respondents whose daily fluid needs were met increased to 27.2% (68 respondents), which meant that there were 182 respondents whose daily fluid needs were not being met. The results of the statistical tests indicate a significant influence on the use of urine color infographic media on the respondent's practice in meeting their fluid needs.

Action is an attitude manifested in a real reaction [5]. Practice occurs when humans get knowledge in the form of information or stimulus, and then they assess it for the next step to be carried out. Everything must be known and addressed properly. Based on theory, a person's behavior is influenced by three factors: 1) predisposing factors, namely attitudes, knowledge, beliefs, values and norms; 2) supporting factors, namely the availability of facilities and the availability of health facilities and 3) driving factors, namely family, peers, teachers and health workers [12].

This study shows that media infographics can improve the practices related to meeting the respondents' fluids needs. This can be caused by an increase in the knowledge and attitudes that first occur. An increase in action can occur when the respondent absorbs the information contained in the infographic media. The respondent then responds to the information relating to meeting their fluid needs. The respondent is interested in adapting the knowledge obtained by realizing their attitude through the act of fulfilling their fluid needs. As mentioned in [5],new behavior is formed starting from the cognitive domain (knowledge) where the subject knows in advance the stimulus in the form of media infographics. This knowledge raises an inner response in the form of the respondents' attitudes toward meeting their fluid needs. Finally there was a response that was even further along

in the form of their practice of fulfilling their fluid needs. In this study, it was also found that there were still many respondents whose daily fluid needs were not being met. When measuring knowledge and attitudes, a number of respondents were well-informed and had a more positive attitude. Behavior will be formed after going through several processes.

Someone who has good knowledge will tend to be positive. This is because attitude is the application of knowledge. However, many practices are also influenced by environmental factors. As stated, one of the behavioral factors are supporting such as the availability of facilities [12]. Students with heavy activities may not meet their fluid needs. As mentioned, there are five elements of health that can influence someone to do something, one of which is cues to action. This is the view or belief of an individual when making a decision to do or not do a certain form of action [13]. This study also revealed several factors that influence the intention to behave aligned with the Theory of Planned Behavior [14]. Another is the perception of behavioral constraints (Perceived Behavior Control) which are the perceived difficulties when doing a behavior and the things that reflect past experiences. The same is true for the respondents with their daily fluid requirements not being met. This is because at the beginning of the pre-test, the individual is accustomed to not fulfilling their daily fluid requirements so when the post-test was carried out, there was no change in the pattern of meeting their fluid needs.

5. Conclusion

The urine color infographic media influences the student's knowledge of fluid compliance through the information contained in the media infographic. The student attitudes regarding fluid compliance are due to providing stimuli that trigger the students' reaction and practices in meeting the recommended fluid compliance through the adaptation of their knowledge by manifesting attitudes through their practice in meeting their fluid needs. Future researchers are expected to conduct research using different types of respondents, such as the general public, students and others.

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References

[1]. Kuntarti. Keseimbangan Cairan, Elektrolit, Asam dan Basa. RSUPN Dr. Ciptomangunkusumo; 2016. 1-11 p.
[2]. Kurniasih N. InfografisKomunikasi, Informasi dan Perpustakaan di Era Global. 2016;
[3]. Hardinsyah, Sriardiningsih, Razaktaha, Dodik B, Effendi, M A, et al. Kebiasaan Minum dan Status Hidrasi pada Remaja dan Dewasa di Dua Wilayah Ekologi Berbeda. Tim THIRST. 2010;53–62, 70–88.
[4]. Rosmaida. Hubungan Faktor Internal dan Faktor Eksternal dengan Konsumsi Air Putih pada Remaja Penghuni Asrama UI. Universitas Indonesia; 2011.
[5]. Notoatmojo S. Promosi Kesehatan dan Ilmu Perilaku. Buku. Jakarta: Rineka Cipta; 2007. 139 p.
[6]. Azwar S. Sikap Manusia Teori Dan Pengukurannya. Yogyakarta: Pustaka Pelajar; 2007.

[7]. Siagian A, Jumirah J, Tampubolon F. Media Visual Poster dan Leaflet Makanan Sehat serta Perilaku Konsumsi Makanan Jajanan Siswa Sekolah Lanjutan Atas, di Kabupaten Mandailing Natal. Kesmas Natl Public Heal J. 2016;4(6):262.

[8]. Notoatmodjo S. KESEHATAN MASYARAKAT, ILMU & SENI. Rineka Cipta; 2011.

[9]. Hendri Rahman Sesetyo, Muh. Bahruddin TW. Efektivitas Infografis Sebagai Pendukung Mata Pelajaran Ips Pada Siswa Siswi Kelas 5 Sdn. 2015;4(1).

[10]. Krum R. Cool Infographics: Effective Communication with Data Visualization and Design. 1st Editio. Indiana: John Wiley & Sons, Inc; 2013.

[11]. Purwanto H. Pengantar Perilaku Manusia untuk Keperawatan. Jakarta: Buku Kedokteran ECG; 2008.

[12]. Greenaway KH, Louis WR, Parker SL, Kalokerinos EK, Smith JR, Terry DJ. Measures of Coping for Psychological Well-Being. In: Measures of Personality and Social Psychological Constructs. Elsevier Inc.; 2015. p. 322–51.

[13]. Rosenstock IM. The health belief model and personal health behavior. Health Educ Monogr. 1974;2(4):324–473.

[14]. Ajzen I. Attitudes, Personality and Behavior. 2nd ed. Manstead T, editor. New York: Open University Press; 2005. 1-178 p

PHP-765

QUALITY OF WORKING LIFE AMONG NURSES IN UMMC

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ABSTRACT

Background: Quality of work life has been found to influence the commitment of health professionals including nurses. Quality of work life is defined as "the degree to which registered nurse are able to satisfy important personal needs through their experiences in their work organization while achieving the organization's goals".

Objectives: The objective of this study is to assess the quality of working life among nurses in UMMC and to associate it with the selected socio demographic variables.

Methods: A descriptive and cross-sectional quantitative study performed using questionnaire on RN (N=320) working in UMMC. Data was analyzed by using SPSS. Descriptive, Pearson Chi-square and Fisher's exact analyses used in data analysis.

Results: In general, the results of the study showed that 62.2% of nurses reported had moderate level of quality of work life. A significant relationship was found between variables such as age, ethnicity, educational level, working experiences and monthly income with quality of work life.

Conclusion: Findings from this study showed that nurses in UMMC had moderate quality of work life. Quality of work life can be promoted by providing autonomy, sufficient staffing and with better working conditions. Administrator can also make transparent performance appraisal and conduct training programs for the nurses. For achieving a high level of care, it is essential to have a high quality of work life and the commitment of nurses in the job.

Keywords: "nurses", "quality", "work life", "nursing work life" and "quality of work life"

CHAPTER 1
INTRODUCTION

The general purpose of the study is to determine the quality of working life among nurses. The researcher experience different response by the nurses. Thus, this chapter is to present the background and formulate objectives related to this study as well as research questions.

1.1 Background of the study

The largest and diverse work forces in the health care system are the nurses. Nursing is one of the most valued, noble and honorable profession in the world. It is the profession in which a person does not think or care about the monetary gains and care solely for the benefit of the people who are sick and unwell. Nursing also is a very demanding career, this is because nurses do not only have tons of things to get done, but they also forced to make some decisions (Nizar, 2013). The role of nurses in the health care settings is expanding and changing. Their role is not just limited to institutional care, but they are also involved in the delivery of services at various levels of health care system. Many people believe that nurses are one of the strongest pillars of the health care delivery system in providing safe, affordable and good quality of services to the people (Jayaraman & Chandran, 2010). Nurses play a major role in maintaining health status and trying hard to achieve the health targets of the country.

Most of the nurses have a lot of things they are responsible for, and to make good decisions about patient care and well-being. Before nurses improve quality of care of patients, it is important for them to improve quality of working life of themselves. Quality of working life (QWL) affecting

different aspects of nurses such as their commitment, productivity, patient satisfaction, and quality of their own life (Rai, 2013).

Based on Van Laar, Edwards & Easton (2007), they defined quality of working life as "the part of overall quality of life that is controlled by work, which is the wider context in which an employee would evaluate the influence of work on their life". In nursing outlook, Brooks (2004) defined the QWL as "the degree to which registered nurses are able to satisfy important personal needs through their experiences in their work organization while achieving the organization's goals. QWL is mainly a multidimensional concept, and one of the ways of reasoning about people, work and the organization. It seems that the relationship between QWL and the nurse's involvement in their work, is an important factor in achieving higher levels of quality of care delivery especially to the patients. In health care organizations, such as hospitals, QWL has been described as referring to the strengths and weaknesses in the total work environment (Knox & Irving, 2007).

Based on Shalini & Sunil (2012) quality of life includes an opportunity to realize one's potential and utilize one's talents as well as to excel in challenging situations that require decision making and taking initiative and self-direction. However, quality of life are affected by QWL of that person. Working will provides people the opportunity to use their abilities, skills, and creativity throughout their productivity. In return, they would fulfill and feel satisfy in their life. Health professionals especially nurses are exposed to critical influence and pressures when socialized into a work environment. The QWL sometimes affects quality of life in four areas which are competency, health, time and wealth (Macstravic, 2006). The QWL is a concept that concerns workers' management and emphasizes the outcomes nurses and organizations. Professional nurses have the responsibility for patients' quality of life, so they should have a quality of working life more effectively before they can help patients.

The phrase QWL often used to assess the general well-being of individuals and societies. People should not be confused the term of QWL and the concept of standard of living which is the based primarily on income. Standard indicators of the QWL include not only wealth and employment, but also the built environment, mental health and physical, education, social belonging, recreation and leisure time. Sometimes, nurses own needs and own quality of working life been ignored even though they always trained to give patient's care and improve their quality of life (Mohammadi et al., 2011). QWL is a comprehensive, program designated to boost employee satisfaction, strengthening workplace learning and helping employees to handle change and transition (Sree Devi & Ganapathi, 2014). Based on Barnett, Namasivayam & Narudin (2010), the current shortage of nurses in Malaysia highlights the importance of nurses' to understand their work environment, giving emphasis to the variety features of QWL, so that relevant strategies and policies can be formulated to retain them in the workforce and offer good quality service and care to the patients.

Quality of nursing care are considered as a crucial criteria in evaluating the quality of health care. The quality of nurses and health care is directly interlinked to the levels of job satisfaction and quality of work life. The rapidly changing health care environment has had an impact on the nursing work environment, workload and quality of nursing work life. Job discomfort, burn out, emotional distress and job turnover usually be seen in the nurses who are not satisfy with their work. These elements would in turn affect the quality of care given by nurses (Daubermann & Pamplona, 2012). The organization's success in achieve its goal depends on the quality of human resources especially the nurses. Therefore, close attention should be given to the nurses' physical and emotional needs (Janaabadi & Nastiezaie, 2012).

1.2 Problem statement

Public hospitals are a stressful work environment and shift work places an additional strain on nurses (Lindokuhle et al., 2014). The RNs described that increasing number of patients, staff and skills were not always sufficient to manage the care of the seriously ill, can consequently

led to feelings of frustration (Halm, Peterson & Kandels, 2008). Other than that, the poor support system, advancement in technology, shortage of nurses, dealing with the patient, caring for death and dying are the factors that cause stress for the nurses (Nevidjon & Erickson, 2001).

Besides, hospital is internationally recognized as an appropriate setting for health promotion, deliver of care and disease prevention as it is a place where working individuals could spend up to 60% of their waking hour. Unfortunately, the risk of non-communicable disease (NCDs) and exposure to infectious disease remains a concern to nurses. Employees especially nurses are at higher risk of getting non-communicable diseases such as diabetes, hypertension and coronary heart diseases (Skaal & Pengpid, 2011). The main risks of NCDs are unhealthy eating, disturbance sleeping time, physical inactivity, smoking and alcohol abuse.

Patient care cannot be confined to usual working hours (0800 – 1700 hours), so nurses need to work in shifts. But, shift work also can give a negative impact on the nurses and could lead to job related stress, increased drug use, poor job performance, insomnia, and disrupted social and family life (Abdalkader & Hayajneh, 2008). Night working shift is considered as a kind of challenge among most nurses and can lead to several forms of physical and emotional disorders (Nasrabadi et al., 2009). The high prevalence of health related conditions and risk factors such as obesity, overweight, physical inactivity, and poor eating habits usually always be seen amongst shift and rotational night shift workers.

According to Ashy (2004), some of the nurses in Saudi unable to balance the work-family requirements as they had to work hard to balance the demands of their careers and their family needs. Due to spent a long time at work, many nurses stated that they had little energy that left after work. The usual working hours for primary health care (PHC) nurses, are between 47.5 hours per week until 49 hours that work two shifts per day, compared to 35 hours for other workers in other public sector professions. In UMMC, the working hour are divided into 3 period which are morning shift (0700-1400), evening shift (1400-2100) and night shift (2100-0700). As a result, some of the nurses become unable to balance their work with their family requirements.

Nowadays, even though there are abundant job opportunities available in Malaysia, nursing become no longer popular as it used to be. The nursing shortage is a worldwide phenomenon and Malaysia is no exception. Shortage in the nursing workforce also can affect quality of work life and this problem can places a high load on the nurses who remain in the settings. 'Push' factors that can affect nurses to leave their organization were issues of understaffing and demanding workloads (Hegney et al., 2006). In Malaysia, the shortage of nurses has been identified as a critical problem faced by public hospitals (Manaf, 2005). World Health Organization (WHO) recommended nurse-to-population ratio of 1:200, so, Malaysia would need 130,000 nurses in all specializations by 2020 (Ministry of Health, 2017). Due to work life condition, staffing problem and a high workload is making the nurses to leave the profession itself. Thus, this study intended to know the quality of work life of the nurses working currently with the institution.

1.3 Objectives

1.3.1 General objective

The general objective of this study is to determine the quality of working life among nurses in University Malaya Medical Center (UMMC).

1.3.2 Specific objectives

i. To assess the quality of working life among nurses in UMMC.
ii. To determine the association between socio-demographic and quality of work life among nurses in UMMC.

1.4 Research questions

- What is the quality of working life among nurses in UMMC?

- What is quality of work life or home life among nurses working in ward and clinic at UMMC?
- What is quality of work design among nurses working in ward and clinic at UMMC?
- What is quality of work context among nurses working in ward and clinic at UMMC?
- What is quality of work world among nurses working in ward and clinic at UMMC?
- What is the association between socio demographic and quality of working life among nurses in UMMC?

1.5 Significance of study

1.5.1 Nurses

The results of this investigation can be used to create theory-based and evidence informed strategies to enhance the quality of work life in nursing profession with the potential to support the delivery of quality patient care. The morale of workers especially nurses can be increase by efficient QWL program and at the same time it can enhance the organizational effectiveness.

Nurses with high quality of working life seems to achieve high life satisfaction. They are defined as those who perceived their life conditions as outstanding, leading almost an ideal way of life and are gratified with their life. When nurses are satisfied with their jobs, rates of absenteeism and turnover decrease, staff morale and productivity increase, and work performance as a whole can be improve. Moreover, nurses with high QWL also can appear to be delivering high service quality to patient. They are described as providing empathy services such as understanding patient's feelings, bringing emotional comforts and providing courage and confidences to the patients and families.

1.5.2 Patient

The focus of nurses is the provision of patient-centered care. This is because, nursing care are concentrated on patient self-management and encourage development of health and recovery. Nurses usually become the first points of contact for patients. Nurse is the one who often with the patients and gather information about them. Direct contact with the patient and good quality of care can building and maintaining a relationship of trust.

Benefits of good quality of work life of nurses on patients can be evidenced in higher levels of patient satisfaction and improved quality of care. Patients' perceived ability to manage their health condition after leaving the hospital and the can manage themselves from recurrent health problem.

1.5.3 Organization

This study paper can enhanced the effort of nurses to improve the treatments and care towards patient based on evidenced based practice specifically in the nursing profession. Moreover, with the high standard of quality of nurses work life and standard of care, the prestige of the hospital can be maintained and even can become the role model for the other hospitals around Malaysia.

The study can contribute to the growing body of knowledge regarding effective work environments in hospital settings particularly regarding the link to objective measures of nursing-sensitive patient outcomes. Besides, quality of work life will increase the quality care and patient safety as well as improving the shortage of nurses in hospital. As the result, it will increase the reputation of the organization.

1.6 Operational Definition

1.6.1 Nurses

Nurse is a person who completed a program of basic, generalized nursing education and is authorized by the appropriate regulatory authority to practice nursing. Besides, nurses also carry out health care teaching, participate fully as a member of the health care team, supervise and train nursing and health care auxiliaries and also involved in research (Braveman, 2011). Other than that, American Nurses Association, (2015) define nursing as the protection, promotion, and optimization of health

and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups and communities.

In this study, the researcher focused more on nurses working in the inpatient wards and clinics in UMMC. They are also the person who participate in giving care and treatments to patients.

1.6.2 Quality of working life

Quality of Working Life (QWL) is defined as a term that is used to describe the broader job-related experience an individual has. It also refers to the favorable or unfavorable of a job environment and condition for the people working in an organization. Daubermann & Pamplona (2012), said that quality of working life is a process by which the organizations' employees learn how to work better together to enhance both the staff's quality of life and the organizational effectiveness simultaneously.

Other than that, Sree Devi & Ganapathi (2014) interpret quality of work life (QWL) as an area of study that has attracted and also increase the interest not only in the areas of health, rehabilitation, disabilities and social services but also in medicine, education and others. The ultimate goal of QWL study is to ensure people to lead quality of their lives so that they can lives in both meaningful and enjoyable.

In addition, Brooks and Anderson (2005) describe quality of life as a complex things impact by and interacting with many aspects of work and personal life. In the nursing perspective, Brooks highlighted that the QWL of nursing emphasizes on the "degree to which RNs are able to fulfill important personal needs through their experiences in the work, while accomplishing the organization's goals and to make meaningful contributions to their organization".

Quality of nursing work life (QNWL) focus on identifying opportunities for nurses to improve their work and work environment while achieving the organization's goals. Moreover, some evidence suggests that improvements in work life are needed to improve efficiency and productivity to do work. Therefore, QNWL focus on identifying opportunities for nurses to improve their work and work environment while achieving the organization's goals.

In this study, the researcher focused on the quality of work life among nurses in UMMC. Quality of nursing work life is focused on the degree to which nurses able to satisfy personal needs through experiences in work, and at the same time achieving the organization's goal. There are four aspects that researcher explored in this study which are quality of work life/home life, work design, work context and work world.

1.7 Summary

Nurses are trained to focus on patient's quality of care and life but sometimes they neglect their own needs. Quality of working life is a system of evaluate how people experience to work, how the experience relates to job satisfaction, intent to leave, turnover rate, personality and work stress. It is now almost universally recognized that nursing is one of a stressful occupation. This is due to insufficient staffing so that nurses experience difficulties in meeting patient needs. To endure with any challenges in the health care delivery system and to ensure the quality of care rendered and patients satisfaction on the care received, it is important to know how nurses satisfied with their quality of work life and jobs and what characteristics influence their QWL.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

In research, literature review is a key step in research process. Before the researcher starting the study, literature review of previous studies and experiences related to the research is done. Review of literature of past studies can lead to new study ideas, knowledge and insight. Usually, quantitative researches can obtain more research articles compared to qualitative study.

According to Richard (2017), literature review is the process of reading, analyzing, evaluating, and summarizing scholarly materials about a specific topic. Scholarly materials refers to published and unpublished database literature and conceptual literature materials found in print and non-print from 'database resources'. The results of a literature review may be compiled in a report or may be serve as part of research article, thesis or proposal.

The purpose of this chapter was to report on the review of literatures related to the research topic. The chapter told also how the researcher uses several of search engines and databases to look for the previous study related to the topic. Besides, the overview of quality of nursing work life was discussed to help researcher gained information and knowledge about this topic. Previous studies related to the research topics were further reviewed to report the findings and help to support the researcher ideas.

2.2 Search strategies

As shown in Figure 2.1, researcher used various kind of databases in order to find any research articles related to the topic. The electronic search is performed on the following databases subscribed by the University of Malaya digital library which are Ovid, ScienceDirect, CINAHL and PubMed. The research keywords entered were *nurses, quality, work life*, *nursing work life and quality of work life*. CINAHL database showed 8505 results, ScienceDirect showed 231 results, Ovid showed 8876 results and PubMed showed 1693 results. Then, several limitations were used to narrow the result besides to look for the any relevant literature.

To search for the precise literatures, the researcher keyed the relevant keywords to filter out irrelevant articles. The researcher also establish the inclusion and exclusion criteria to guide in filtering the articles. The inclusion criteria are English article, quantitative research, full-text article, publication year was limited from 2008 to 2018 and the journal subset was limited to nursing only. The exclusion criteria are qualitative approaches articles and paid articles.

As the result, CINAHL database showed 158 results, ScienceDirect showed 13 results, Ovid showed 86 results and PubMed showed 7 results. Then, the results were screened by excluded articles that the inclusion criteria not met, duplication article and research instrument not suitable to find relevant articles related to the research topic by reviewing the titles and abstract of each articles. Finally, there were 13 total relevant articles found and retrieved for the purpose of literature review.

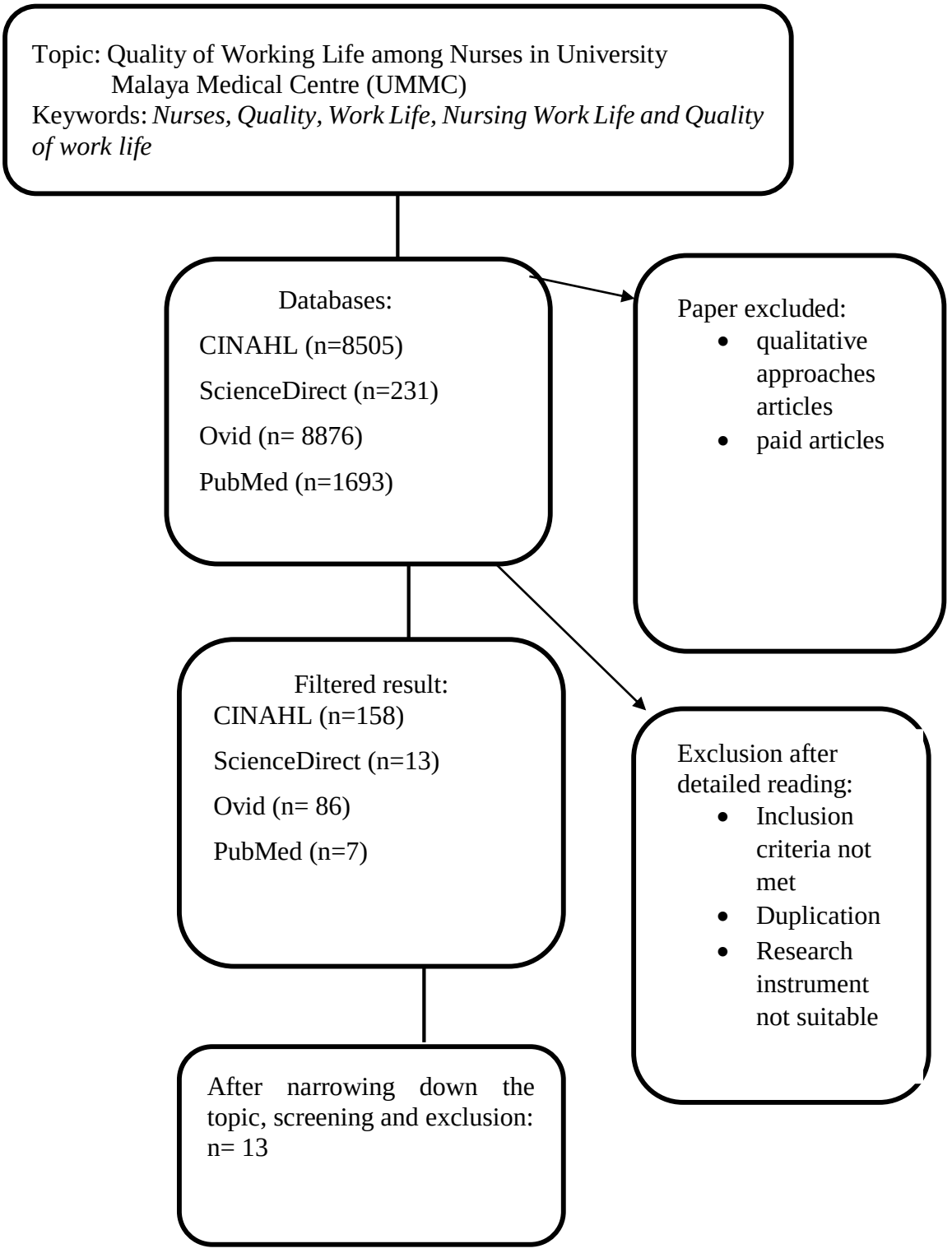

Figure 2.1 Flow Chart on Search Strategies

2.3 Quality of Work Life (QWL)

Quality of Work Life is a concept that was developed in the early 1930's showing its importance in the productivity of workers. This concept has gained interest and importance across the globe. There is also a drastic change in the idea of work life and work culture among the

employees. Employers are considering work life as a critical factor for personal as well as career development (Nanjundeswaraswamy & Swamy, 2012). A healthy work environment can be defined as a work setting in which nurses are able to both achieve the goals of the organization and derive personal satisfaction from their work (Disch, 2002)

The Hawthorne studies by Mayo in 1930 was considered to be the first study that develop the impact of workplace miniature on productivity which specified the importance of QWL on workers' productivity (Lokanadha & Mohan, 2010).

Quality of work life was the idea which gained more acceptance in nursing profession. Some studies have been done to measure the quality of work life among nurses. QWL also refers to strengths and weaknesses in the total work environment (Knox & Irving, 2007). Quality of work life had many of definitions and predictors that influence the nurses' quality of work life. Unfortunately, there was a lack of uniformity in findings related to quality of work life.

2.4 Perception of the quality of work life among nurses

Aspects such as salary, personality, job-related stress, occupational accidents, safety regulations and labor discipline, work setting health conditions, welfare facilities and work prospects are shown to influence the QWL of the nurses. Thus, changes or lack in any of these features may affect the QWL among nurses (Khaghanizadeh et al., 2008)

Besides, the consequences of the work patterns on an employee's ability to achieve work-family balance are clear and formerly demonstrated (Yildirim & Aycan, 2008). When the employees had a negative perception of the shift schedule, it can increase the possibility for the work-family conflict through the perception of the scheduled hours as too irregular, inflexible or excessive. These can increase pressures on the nurse's perception of ability to serve in the family role and fulfill expected demands (Millicent & Richard, 2010).

Based on study by Mona & Samah, (2014), another important issue that appear to give positive impact to the nurses' perception towards QWL is attending of training course and continuous lifelong learning. This is because with the training itself, it can enhance the requirement for self-development and improvement which are the important components of work satisfaction and consequently, it can improve the QWL. However, less than half of the nurses had the opportunity of attending training courses. In congruence with this, the opportunities for professional development were reported by the respondents, in Saudi Arabia as unsatisfactory (Almalki et al., 2012). Similarly, study by Alhusaini (2006) in Riyadh found that 30.3% of nurses were not offered any continuing education programs or training courses.

2.5 Dimensions Quality of Nursing Work Life (QNWL)

The dimensions of quality of work life which are reported in 'Quality of Work Life: A Stance from Nursing Professionals' consist of 10 dimensions. There are health and well-being, job security, job satisfaction, competence development, work life balance, control over work load, nursing leadership, control over nursing practice, innovation and creativity and support and recognition (Jayaraman & Chandran, 2010).

Most of the studies on nurse's quality of work life measured QWL using a variety of combination tools. The tools do have certain concepts in common but often it results in different interpretations by the researchers. This resulted in a lack of consistent conceptualization (Vagharseyyedin, Vanaki & Mohammadi, 2011) .The tools which are used for measuring QWL are qualitative approaches and standardized or developed questionnaires based on the various dimensions of quality of work life.

Dimensions which are captured through Brooks Quality of Nursing Work life (QNWL) are work life/home life, work design, work context, and work world (Brooks & Anderson, 2004):

Work life/home life - Define as interface between the lives experiences of nurses in their place of work and in the home. Routinely shift changes can be related to turnover intention, job frustration,

and work commitment. Allowing nurses to influence shift patterns and accommodating preferred shift pattern, were positively associated with commitment to nursing (Brooks & Swailes, 2002). Based on Hegney et al. (2006), change in working environments and rotating shift are found to be the crucial sources of work dissatisfaction among 130 nurses and midwives in four London hospitals. Shift patterns also have been shown to rise nurse turnover in the organization.

Work design - Known as the composition of nursing work and describes the actual work nurses perform. Hegney et al (2006), conclude based on their study that nurses found that their workload are abundant, and most of them unable to finish their tasks in the time. Major reason that lead the nurses to leave their workplace and occupation were workload and inequality of workforce. Most of the respondents in Hegney et al (2006) study, believed that the registered nurses in their units were not enough and this cause increasing workload to other nurses. Recent research has linked low staffing levels with poor patient welfare and longer patient stay (Needlemann et al., 2002).

Work context - The aspect that comprises the practice settings in which nurses' work and discovers the impact of the work environment to both nurse and patient requirements. Hegney et al. (2006) reported that there were 65% of nurses stated that the managers were not listen and respond to their concerns and opinions. The results propose that enhancement in the management attitudes and perspectives were needed as well as better valuing of nurses' rights. Based on Rout (2009), respondents specified that their work settings are not offer course advancement occasions, and skill upgrading often insufficient. His study also reported that nurses became dissatisfied in their work when they perceived a least of opportunity for job advancement and managers did not recognized their achievement. Lee et al. (2004) conclude that critical motivators in the pursuit for success especially in nursing practice and environment were potential for accomplishment, recognition, and development. To increase the nurse's work satisfaction, approaches in improving the nurse's professional status and individual achievement should be effective. Other than that, nurse's teamwork with other interdisciplinary health care team can also impact their QWL. Cooperation with other health care personnel as well as with colleagues, is vital for their professional growth and improve quality of care for the patients (Johns, 2003).

Work world - Describe as the effects of broad societal influences and change on the practice of nursing (Brooks & Anderson, 2005). Many respondents state that public does not have precise opinions regarding nurses' image and profession. Based on Nasrabadi et al., (2003), another important factor that has contributed to the nursing problem is the poor social position of registered nurses in Iran. People think registered nurses as assistants to the physicians, and many physicians also regard nurses as their helpers and do not consider them as specialists in the art of caring. A poor public image of nursing may affect not only nursing recruitment, but also the nurse's attitudes towards work (Takase, Maude & Manias, 2006).

2.6 Predictors Quality of Nursing Work Life (QNWL)

Some studies have identified various predictors which can influence the quality of work life especially among nurses. The main factors which have direct impact on quality of work life as reported by a systematic review was health and well-being, job security, job satisfaction, competence development work life balance, control over work load, nursing leadership, lack of autonomy, appropriate job performance feedback and opportunities for advancement.

A findings were reported by a study done in clinic in Taiwan among 56 nurses. The study suggested that nurses perceived good quality of work life as maintaining a good balance between work life and home life. However, the nurses reported difficulties in balancing the work as well as the family responsibilities due to longer time of working. In this study the salary for nurses differ in terms of the hospital, the type of their license and nursing grades. The nurses considered salary as a reason to quit the profession (Hsu & Kernohan, 2006)

The study by Xu Zeng et al. (2009) among 811 Singaporean nurses found five factors that affect the quality of work life which are job and career satisfaction, general well-being, homework

interface, stress at work and working conditions. The study also concluded that quality of work life and quality of life are not the same. Social functioning (SF-12) was used as a tool to measure the quality of life in which the general well-being is measured. This also suggested that quality of work influenced the quality of life and it is an aspect of quality of life.

QWL assessment provides an understanding about the often things the nurses have face in relation to the work environment (Flinkman et al., 2008). A systemic study that is done by Vagharseyyedin et al. (2011) examine two concept which are the predictors for quality of work life and defining quality of work life in nursing perspective. This study was done among 14 Iranian nurses and the result was found that shift work schedules negatively affected the personal life of nurses. The factors that contribute to poor quality of work life were workload, role conflicts, lack of autonomy, low salary, lack of opportunities for career advancement, lack of managerial support and insufficient welfare services. The negative attitude and behavior towards nursing also impacted the quality of work life (Vanaki & Vagharseyyedin, 2009).

Another findings from the study that is done in Thailand among 550 nurses shows that the quality of work life was not influenced by the personal factors. The nurses in the study also reported the moderate level of quality of work life (Boonrod, 2009).

Quality of nursing work life is considered to be a critical aspect in increasing the quality of care delivered to the patients. The findings of the study by Almaki et al (2012) among 508 primary health care nurses in Saudi Arabia showed that most of the nurses were dissatisfied with their work life. Amongst the four dimensions work context followed by work design gave the strong contribution to turnover intention. The main variables under work context are management and supervision, co-workers, professional opportunities and work environment. The main work design variables which had an impact of turnover intention are workload, job satisfaction level, lack of workforce, lack of autonomy, perform many non-nursing tasks, having interruptions in working and limited time to do jobs and care for patient (Almalki, FitzGerald & Clark, 2012).

A study done in Malaysia among nurses in public hospitals was also consistent with similar findings. The study suggested that nurses' shortage in Malaysia is strongly related to the work environment. The factors identified to solve nursing shortage in the present study were needs for communication, opportunities for career advancement and work and home life balance. They also suggested an effective work environment is essential to maintain the nursing workforce (Mohamed, 2012).

Study that was done by Brooks and Anderson among nurses in the University of Illinosis Chicago in 2004 reported that the interactions at the work place had affect the quality of nursing work life. The nurses felt that day care facilities for child care, on-site degree programs and rest room separately for nurses are essential (Brooks & Anderson, 2004).

Similar study that is done in Iran by Khani et al (2007) reported a moderate quality of nursing work life among 120 Iranian registered nurses at Isfahan Hospital, University of medical Sciences. The nurses reported that they were incapable of balancing between the work-home lives and were dissatisfied in their job. The findings from the study showed that shift duties, inadequate salaries, workload, autonomy problems and career advancement opportunities are the main factors for poor quality of nursing work life and also result in job dissatisfaction (Khani, Jaafarpour & Dyrekvandmogadam, 2008).

Hence, preliminary evidence suggests that improvement of QWL is a prerequisite to increasing productivity in hospitals. Thus, QWL is in need of scholarly investigation. Identifying the nurse's quality of work life can provide critical information for nursing managers in their efforts to design managerial programs that will enhance retention and work productivity

2.7 Summary

Quality of work life has strong theoretical roots and legitimacy and it has engendered significant interest in the organizational literature. Quality of work life of nurses, job satisfaction and

quality of care to the patients should be the major concern of any organization. The profession of nursing itself is often marginalized. It is important that even though nurses play a key role in saving lives, the quality of life among nurses must not put aside. Findings from many studies shows that nurses still have challenging working conditions, low salary, workplace restrictions, poor work environments, no social acceptance, shortage of nurses and abuse from employers, colleagues, and patients' families. Clearly, there appears to be a basic set of needs and work environment characteristics that are universally important for all nurses, but the importance of any particular need is not well understood.

CHAPTER 3
METHODOLOGY

3.1 Introduction

This chapter discussed about the ways on how the study was conduct to achieve its objectives and answer all the research questions. It includes the study design which explained the method that was use by the researcher to conduct the research besides defining study settings where the data was collect. This chapter also explained the population and sampling which contain target population, sample calculation, sampling method, inclusion and exclusion criteria of the research population. Moreover, the research instrument discuss in what type of instrument was use and its reliability and validity to be use for the purpose of research. Data collection method and its analysis was discuss in order to explain the research approval from the ethics body so that the research conduct in proper ways and manners based on the ethical consideration. In addition, pilot study and its research also was discuss and lastly a summary is include to summarize the whole chapter.

3.2 Study design

A research design is the set of methods and procedures use in collecting and analyzing measures of the variables specified in the research problem research (Ader, Mellenbergh & Hand, 2008). It is a framework that will be creating to find answers for the research questions. The research approach for this study was quantitative and cross-sectional. Quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world (Burns & Groove, 2005). Cross-sectional research design does not have time dimension and only measure difference between or from among a variety of people, subjects or phenomena rather than a process of change (Labaree, 2009), which more suitable to gather information for this study. The cross sectional study involve single examination like a snapshot of cross sectional of population at a given time. In this study, researcher use cross-sectional study to assess the quality of working life among nurses in UMMC.

3.3 Study setting

The setting of this study was a teaching hospital at Klang Valley area which was University of Malaya Medical Centre (UMMC) or formerly known as University Hospital. The hospital located in Pantai Dalam, south-west corner of Kuala Lumpur. The hospital was part of University of Malaya and one of the government-funded medical institution or teaching hospital under the Ministry of Higher Education available in Malaysia. UMMC consists of 4 main buildings which are Menara Utama, Menara Timur, Menara Selatan and Kompleks Wanita dan Kanak-kanak. There are altogether 62 departments with total of 1911 staff nurses. In this study, researcher selected inpatient units (medical-surgical unit and critical care unit) and outpatient units as the study setting.

3.4 Population and sampling

3.4.1 Target population

Population can be divided into 2 groups which are target population and accessible

population. Target population can be defined as any inferences from a sample refer only to the defined population from which the sample has been properly selected (Banerjee & Chaudhury, 2010) while accessible population refers to people from available group that the researcher take into the study. The target population in the study was registered nurses who work in hospital and the accessible population was registered nurses that work in University of Malaya Medical Centre (UMMC). From the records of Nursing Department of UMMC in 2017, there are about 1911 of registered nurses in UMMC. Participants were define as the registered nurses who are working at the outpatient units, medical-surgical units and critical care unit.

3.4.2 Sampling method

Sample is the subset of population selected to represent the population. Sampling is the process used in statistical analysis in which a predetermined number of observations are taken from larger population (Investopedia, 2016). The sampling method use in this research were stratified random sampling and convenience sampling. Researcher used stratified random sampling to in selecting the number of respondents required in every units. Researcher divided the nurses' whole population into sub-populations which were medical unit, surgical unit, critical care unit and outpatient services. Then, researcher applying random sampling to each stratum by using draw lots. This method enable researcher to gather the representative data from each subgroups. After that, the researcher used convenience sampling to distribute the questionnaires to the registered nurses who were available and willing to participate in the study during the period of collecting the data.

For example, for medical-surgical unit, the wards selected using draw lots were 13U, 8U, 6U, WP2, 8TD, 7TD, 6PA, and antenatal ward. For critical care services, 4S/CCU (Cardiology ward), ICU, emergency department and operation theatre had been selected. For outpatient unit, researcher selected RUKA, eye clinic, ENT clinic, pediatric clinic, dialysis daycare, medical clinic and oncology clinic.

3.4.3 Sample calculation

The sample was calculate by using sample size calculator which is Raosoft Sample Calculator. There were 1911 registered nurses working in UMMC. Based on the total population size was 1911, 5% acceptable margin of error, confident level of 95% and 50% of response distribution, the minimum recommended size of the study was 320 of registered nurses work in UMMC.
Example calculation for total sample in each service showed in Table 3.1:

Total nurses in selected unit after draw lots = medical + surgical + critical care (ICU, CCU + Operation theatre + Emergency department) + outpatient

= 116 + 126 + (159+134+127) + 159

= 821

$$\text{Number of respondents} = \frac{\text{Total nurses in each unit}}{\text{Total nurses in selected unit}} \times \text{sample size}$$

Table 3.1: Calculation of sample size

Unit/ service	Calculation	Number of respondents
Medical	**Error!**x 320	45
Surgical	**Error!**x 320	49
Critical care – ICU, 4S/CCU	**Error!**x 320	62
– Operation theatre	**Error!**x 320	52
– Emergency department	**Error!**x 320	50
Outpatient	**Error!**x 320	62
Total		320

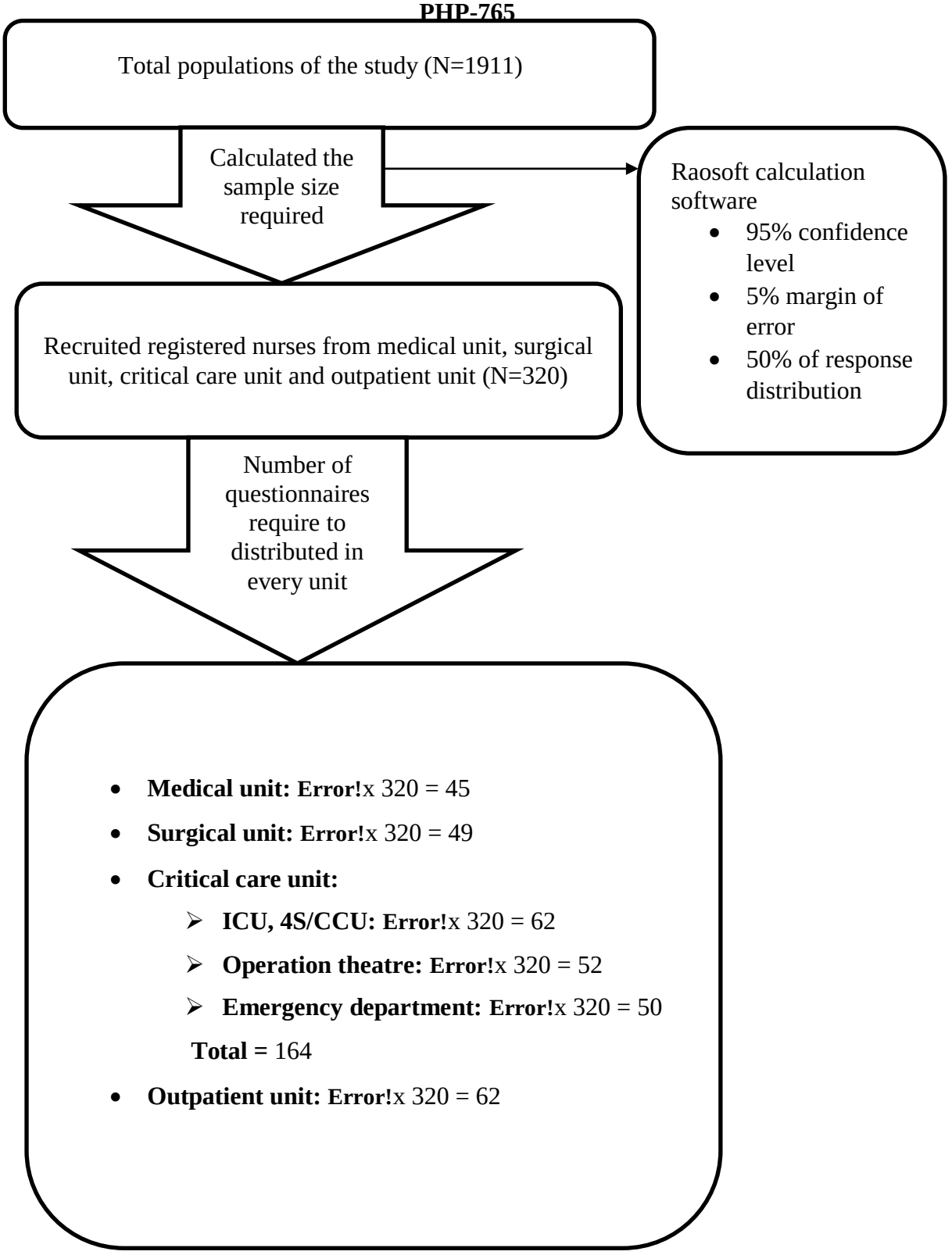

Figure 3.1: Sample calculation method

3.4.4 Inclusion and exclusion criteria

Inclusion criteria are characteristics that the prospective subjects must have if they are to be included in the study. Inclusion criteria, along with exclusion criteria, make up the selection or eligibility criteria used to rule in or out the target population for a research study (Hulley et al., 2007). The inclusion criteria was the nurses registered with minimum one year of working experience.

Exclusion criteria are a set of predefined definitions that is used to identify subjects who will not be included or who will have to withdraw from a research study after being included (Hulley et al., 2007). The exclusion criteria was the nurses who from other hospitals. For example, those who come to UMMC for their post-basic. For those for those who had taken part in the pilot study are excluded from the real survey and who those who away during the study period also been excluded from this study.

3.5 Research instrument

The instruments are device or tools that the researcher tends to use to carry out the study. The instruments can be in the form of survey, questionnaire, test, scale, rating or tools designed to measure the variable of interest. The quantitative data are obtained through closed-ended questionnaire. The researcher used the questionnaire which was one of the instruments categorized in subject-completed instruments and involving the self-checklist method.

3.5.1 Questionnaire

Questionnaires are doubtless one of the primary sources of obtaining data in any research endeavor. However, the critical point is that when designing a questionnaire, the researcher should ensure that it is valid, reliable and unambiguous (Richards & Schmidt, 2002). Questionnaire is a set of designated question given exactly in the same form to a group of people. The questionnaire use by the researcher is Brooks Quality of Nursing Work Life (QNWL) Survey. This questionnaire is adapted from Brooks and Anderson (2004) to measure the QWL among registered nurses. Some modification done in this questionnaire. In addition to the original English format, the questionnaire was converted into Malay using a translating and back-translating technique. This questionnaire also has been validated and suitable to be used.

3.5.1.1 Part A (Socio demographic characteristics)

The first part of the questionnaire was the background information or demographic data developed by the researcher which contain 9 items including age, gender, marital status, ethnicity, educational level, working experiences, type of discipline, working setting and monthly income. Participants needed to answer the questions by tick (/) or write the answer in the box provided.

3.5.1.2 Part B (Quality of Working Life)

The second part consist of 42 items and it has four subscale (Home life/Work life, Work Design, Work Context and Work World). There are 7 questions in quality of work life/home life, 10 questions in quality of work design, 20 questions in quality of work context and 5 questions in quality of work world as shown in Table 3.2. The work life/ home life dimension is defined as the interface between the work and home life of the nurses. The work design dimension is the composition of nursing work and describes the actual work that nurses performed. The work context dimension includes the practice settings in which nurse's work and explores the impact of the work environment on both nurses and patient systems. Finally, the work world dimension is defined as the effect of broad societal influences and changes on the practice among nursing (Brooks & Anderson, 2005). Each item in the original scale is scored in 6-point Likert scale ranging from strongly disagree-1, moderately disagree-2, disagree-3, agree-4, moderately agree-5 and strongly agree-6. By following

the plan used by Brooks and Anderson (2005), the 6-point scale was divided to two categories which are agree and disagree. The agree category contains positive responses (agree, moderately agree and strongly agree), while disagree category contains negative responses (strongly disagree, moderately disagree and disagree). The score of QNWL ranges from 42-252 which indicate low, moderate and high according to the scores. The minimum total score is 42 and the maximum is 252. Higher total scores indicate high quality of working life. The score for the QNWL and its interpretation is given as shown in Table 3.3.

Table 3.2 Quality or working life items

Quality of work life (4 subscale)	
Home life/ work life	7 items
Design	10 items
Context	20 items
World	5 items

Table 3.3: Interpretation of Scores for Brooks' Quality of Nursing Work life Survey

QNWL scale	Scores	QNWL
Total QNWL (range 42-252)	42-112	Low
	113-182	Moderate
	183-252	High
Home life/ Work life	7-18	Low
(Range 7-42)	19-29	Moderate
	30-42	High
Work design (Range 10-60)	10-26	Low
	27-44	Moderate
	45-60	High
Work context (Range 20-120)	20-38	Low
	39-77	Moderate
	78-120	High
Work world (Range 5-30)	5-12	Low
	13-20	Moderate
	21-30	High

3.5.2 Validity & reliability

Validity and reliability are very important criteria in order to approve and validate the study. According to Joppe (2000), validity determines whether the research truly measures that which intended to measure or how truthful the research results are. Remeyi et al (2005) describe validity as a good fit between theory and reality, in the same sense that when a description of a process is evaluated, best fit between theory and reality can be traced. On the other hand, reliability is a similar observations that should be made by researchers on different occasions and the concern is that how replicable the study is (Remeyi et al, 2005).

The research questionnaire checked by the expertise to ensure its validity that can be use among nurses to assess the quality of working life. The researcher forwarded the questionnaire to three expertise who are nursing lecturer at Department of Nursing Science, ward sister and nurse manager (management).

Besides validity, the questionnaire also being tested for its reliability to ensure that the

research instrument was reliable enough to be use as a tool to measure the variables. A pilot study conducted in 1 month to ensure the reliability of the questionnaire. In this pilot study, the researcher chose 32 respondents to be part of the trial and the result analyzed in Statistical Package for Social Sciences (SPSS) software. The reliability coefficient (alpha) is range from 0 to 1, with 0 representing an instrument with full of error and 1 representing total absence of error. If the alpha is >0.70, it is considered acceptable reliability (Esposito, 2002). The result of the Cronbach alpha had shown in Table 3.4.

Table 3.4: Reliability test using Cronbach's Alpha

Instrument Tool	*r*
Quality of work life/home life	0.780
Quality of work design	0.706
Quality of work context	0.761
Quality of work world	0.728
Total Quality of working life	0.797

3.6 Data collection method

The researcher carried out a quantitative study in order to achieve the research objectives. Data was collected using self-administered questionnaire to the respondents to ensure a good response rate. Data collection was after the approval from the Ethics Committee of University Malaya Medical Center (MRECID NO: 201813-16). In this study, researcher went to the selected wards and clinics to distribute the questionnaires. The researcher also obtained permission from respective ward or clinic sister before distribute the survey. After that, the researcher approached nurses, gave a brief explanation regarding the research and obtained voluntarily consents from the participants. Participants also being assured that all data collect would be kept confidential and would be used for the academic purposes only. Participants were suggested to take at least 10-20 minutes to answer all the question. The questionnaires then was kept in a covered box to ensure the confidentiality.

3.7 Data analysis

Data was analyzed by using SPSS version 23. This is an easy software to utilize, code, enter, transform and manipulated the huge amount of data. Data were analyzed by using descriptive statistics and inferential statistics. Descriptive analysis performed on socio-demographic data and quality of working life. Total scores and sub-scores for QNWL items and item summary statistics were computed and reported. Besides, inferential statistic was used to determine the association between demographic factor and quality of working life. For association between socio demographic data and quality of working life, researcher had used non-parametric test which was Chi-square. A p value <0.05 will consider as statistically significant.

3.8 Ethical consideration

Ethical approval obtained from the Ethics Committee of University Malaya Medical Center (MRECID NO: 201813-16) to legally conduct the study. There was no data collected until approval from the Ethics Committee and respective body obtained. .Informed consent given by the respondents as an agreement for their participation in the study. The subject have their freedom to refuse at the outset or even withdraw from the study at any time. The data collected was not be shared at any cost and are used for research purpose only. In addition, several things and rules inside the information sheet provided along with the questionnaire form for participants to understand. The answered questionnaires was kept properly in a covered box. This is to ensure that the feedback on

questionnaires are remain confidential and at the same time, protecting the participants.

3.9 Pilot study

A pilot study is a preliminary small-scale study that researchers conduct in order to help before conduct a large-scale research project (Polit et al., 2001). It is conducted when a new instrument is being develop or when a pre-existing instrument is being used with people who have different characteristics from those for which the instrument was originally developed. The pilot study conducted after the researcher gets the ethical approval from the Ethics Committee of University Malaya Medical Center and validation of experts done. The pilot study was carried out in 12U prior the main research by using 10% of the actual sample size. Thus, an initial pilot study that using the same framework of questionnaire was administered to 32 nurses. Researcher approached the registered nurses one by one and obtained the response from them. The feedback from the pilot study became a baseline for the researcher to test the questionnaire and made some modification before actual research carried out. The respondents from the pilot study was excluded from the actual sample for the research.

3.10 Summary

This chapter summarized about the research design that composed by the study design and setting, population and sampling, research instrument, data collection method, data analysis, ethical consideration and pilot study. All these are study to achieve the objectives of the research. Quantitative design are used for the data collection to answers research questions for the purpose of study.

CHAPTER 4

4.1 Introduction

This chapter described the analysis of data collected from participants followed by a discussion of research finding. The findings related to the specific research questions that guided the study which stated in Chapter 1. After coding and entering the data, the researcher analyzed the data using the Statistical Package Social Science (SPSS) version 23. Data were analyzed by using descriptive statistics and inferential statistics.

Descriptive statistic was used to analyze the distribution and frequency of demographic characteristics and quality of working life among nurses. Besides, inferential statistic was used to determine the association between demographic factor and quality of working life among nurses. Non-parametric test was used to determine association between variables. The researcher used the Pearson Chi-square test to test the association between two categorical variables. If more than 25% of expected cell frequencies <5, Fisher's Exact Test will be used. The result also displayed in the form of tables and graphs accompanied with narrative explanation.

4.2 Data screening and data management

In the initial stage of data analysis, all the data collected were entered into the SPSS. All questionnaire was labelled with a serial number to avoid duplicate or repeated entry of data. All data was being screened and no missing value detected.

Normality test had been done on the dependent variables which was quality of working life among nurses to determine whether the sample data had been drawn from a normally distributed population. The normality test helped the researcher in selecting the proper statistical tests either parametric or non-parametric test to analyze the data. The results of normality test for dependent variables were shown as below in Table 4.1.

Quality of working life is normally distributed as mean was 157.28 and median was 158.0 which almost the same. Standard deviation also smaller than mean. The skewness shows value of -.38 and kurtosis was -.70 which were between +2 and -2. The histogram showed normally distributed. However, both the significant values of Kolmogorov-Smirnov and Shapiro-Wilk were < 0.05. Although the significant values of Kolmogorov-Smirnov and Shapiro-Wilk were less than 0.05, the dependent variable of nurse's quality of working life was still consider normally distributed according to other results.

Table 4.1 Normality test

	Quality of working life among nurses
Mean	157.28 (SE= 1.78)
Median	158.0
SD	31.87
Skewness	-.38 (SE= .14)
Kurtosis	-.70 (SE= .27)

4.3 Response rate

As shown in figure 4.1, a total 320 questionnaires were distributed by researcher through face to face with the respondents. The researcher collected back the questionnaires on the same day to avoid missing somewhere. After collected, researcher received 320 questionnaires from the respondents. This represented a response rate of 100.0%.

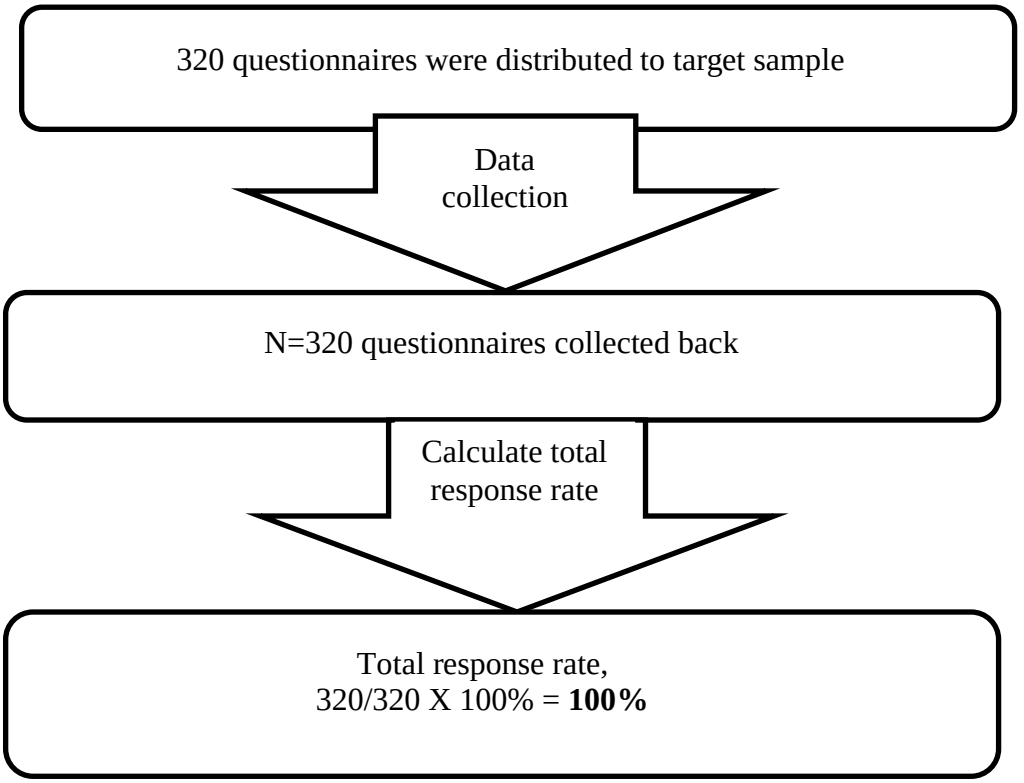

Figure 4.1: Illustrated the total response rate of this study

4.4 Demographic data of the respondents

From the Table 4.2, it showed that respondents with age group of 22 to 31 years occupied the highest percentage which was 45.9% (n=147), while the age of 52 years and above had the lowest percentage in this study which was 0.9% (n=3). The mean and SD for age of the respondents was 33.13 (7.16). Among 320 respondents, there were 78.4% (n=251) female respondents in this study. For marital status, respondents who married shows the highest percentage which were 54.7% (n=175), while divorced had the lowest percentage which were 6.9% (n=22).

Table 4.2: Demographic characteristics of respondents (N=320)

Characteristics	Frequency (n)	Percent (%)	Mean (SD)
Age			33.13 (7.16)
22-31	147	45.9	
32-41	126	39.4	
42 and above	47	14.7	
Gender			
Male	69	21.6	
Female	251	78.4	
Marital status			
Single	123	38.4	
Married	175	54.7	
Divorced	22	6.9	
Ethnicity			

	PHP-765		
Malay	242	75.6	
Chinese	49	15.3	
Indian	29	9.1	
Education level			
Diploma	270	84.4	
Bachelor	20	6.3	
Post basic	30	9.4	
Working experience			11.84 (7.11)
1-10	156	48.8	
11-20	115	35.9	
21 and above	49	15.3	
Working setting			
Ward	258	80.6	
Clinic	62	19.4	
Working discipline			
Medical	45	14.1	
Surgical	49	15.3	
Critical care unit	164	51.3	
Outpatient unit	62	19.4	
Income per month			
Less than RM 2999	167	52.2	
RM3000 and above	153	47.8	

For ethnicity, it shows that Malay respondents occupied highest percentages which were 75.6% (n=242), while Indian has the least percentages that were 9.1% (n=29). Besides, for educational level, 84.4% (n=270) of respondents graduated from diploma level while there were only 6.3% (n=20) respondents graduated from bachelor level. For working experience, most of the respondents 48.8% (n=156) had between 1 to 10 years of working experiences in nursing while respondent with more than 31 years had the lowest percentage which was 0.3% (n=1). The mean and SD for working experiences was 11.84 (7.11). Among 320 respondents, there were 80.6% (n=258) nurses working in ward. As for working discipline, it shows that critical care unit occupied the highest percentage which was 51.3% (n=164) while medical unit had the lowest percentage which was 14.1% (n=45). Other than that, for household income per month, the highest percentage of income of the respondents was less than RM2999 which were 52.2% (n=167), while the lowest income was above RM4000 which had .9% (n=3).

Objective 1: Assess the quality of working life among nurses

4.5.1 Quality of work life/ home life

Table 4.3 shows the details of the items (7 items) for quality of work life/ home life. Among 320 respondents, 53.2% (n= 170) agree that they able to balance work with family needs. 53.7% (n=172) also agree that it is important for a hospital to offer employees on-site childcare services. Besides, most of the respondents, 63.4% (n=203) disagree that they have energy left after work. 51.9% (n=166) of the respondents, agree that shift work schedule negatively affect my life. Other than that, 59.6% (n=191) agree that their organization's policy for family-leave time is adequate and 64% (n=205) also agree that it is important for a hospital to offer employees on-site day care for elderly parents. There are also 62.5% (n=200) of respondents agree that it is important for a hospital

to offer employees on-site ill child care services.

Based on Table 4.3.1, majority of nurse respondents had the moderate quality of work life/ home life with 60.6% (n=194) while there was only 14.1 (n=45) of the respondents that had low quality of work life/ home life.

Table 4.3: Quality of work life/ home life (N=320)

Item	Disagree n (%)	Agree n (%)	Mean (SD)
1. I am able to balance work with my family needs.	150 (46.8)	170 (53.2)	3.58 (1.27)
2. It is important for a hospital to offer employees on-site childcare services.	148 (46.3)	172 (53.7)	3.59 (1.25)
3. * I have energy left after work.	203 (63.4)	117 (36.6)	3.17 (1.26)
4. * Shift work schedules negatively affect my life.	154 (48.1)	166 (51.9)	3.51 (1.22)
5. My organization's policy for family-leave time is adequate.	129 (40.4)	191 (59.6)	3.71 (1.15)
6. It is important for a hospital to offer employees on-site day care for elderly parents.	115 (36.0)	205 (64.0)	3.83 (1.16)
7. It is important for a hospital to offer employees on-site ill child care services.	120 (37.5)	200 (62.5)	3.761.26)

* Reverse code

Table 4.3.1 Level of quality of work life/ home life (N=320)

Quality of work life/ home life level	Range of score	n (%)
Low	7-18	45 (14.1)
Moderate	19-29	194 (60.6)
High	30-42	81 (25.3)

4.5.2 Quality of work design

Table 4.4 shows the details of the items (10 items) for quality of work design. Among 320 respondents, 63.5% (n=203) agree that they receive a sufficient amount of assistance from healthcare providers (dietitian, patient care technicians, and nursing assistants). 61% (n=195) of the respondents agree that they satisfied with their job and 52/6 (n=168) also agree that their workload is too heavy. Besides, 62.2% (n=199) of the respondents agree that they have autonomy to make patient care decisions and 50.9 (n=163) agree that they perform many non-nursing tasks. In addition, 51.9% (n=166) of the respondents agree that they experience many interruption in daily work routine and 60% (n=192) agree that they have enough time to do job well. Other than that, more than half of the respondents, 63.7% (n=204) agree that there are enough RNs in their work setting. 62.1% (n=199) of the respondents agree that they able to provide good quality patient care. There was also 57.7% (n=185) respondents agree that they receive quality assistance from health care providers (dietitian, patient care technicians, and nursing assistants).

Based on Table 4.4.1, majority of the respondents had moderate of quality of work design with 67.2 (n=215) while there was least of the respondents had low quality of work design, 13.4% (n=43)

Table 4.4: Quality of work design (N=320)

Item	Disagree n (%)	Agree n (%)	Mean (SD)
1. I receive a sufficient amount of assistance from healthcare providers (dietitian, patient care technicians, and nursing assistants).	117 (36.5)	203 (63.5)	3.78 (1.11)
2. I am satisfied with my job.	125 (39.0)	195 (61.0)	3.76 (1.18)
3. * My workload is too heavy.	152 (47.4)	168 (52.6)	3.49 (1.19)
4. I have the autonomy to make patient care decisions.	121 (37.8)	199 (62.2)	3.68 (1.18)
5. I perform many non-nursing tasks.	157 (49.1)	163 (50.9)	3.48 (1.15)
6. * I experience many interruptions in my daily work routine.	154 (48.1)	166 (51.9)	3.51 (1.35)
7. I have enough time to do my job well.	128 (40.0)	192 (60.0)	3.73 (1.13)
8. There are enough RNs in my work setting.	116 (36.3)	204 (63.7)	3.89 (1.27)
9. I am able to provide good quality patient care.	121 (37.9)	199 (62.1)	3.90 (1.35)
10. I receive quality assistance from health care providers (dietitian, patient care technicians, and nursing assistants).	135 (42.3)	185 (57.7)	3.751.32)

***** Reverse code

Table 4.4.1: Level of quality of work design (N=320)

Quality of work design level	Range of score	n (%)
Low	10-26	43 (13.4)
Moderate	27-44	215 (67.2)
High	45-60	62 (19.4)

4.5.3 Quality of work context

Table 4.5 shows the details of the items (20 items) for quality of work context. Among 320 respondents, 64.3% (n=206) agree that they able to communicate well with their nurse manager/supervisor and 61.3% (n=196) agree that they have adequate patient care and equipment. 59.4% (n=190) of the respondents agree that the nurse manager/supervisor provides adequate supervision. Besides, 62.9% (n=201) of the respondents agree that friendship with co-workers are important and 59.4% (n=190) also agree that their work setting provides career advancement opportunities. More than half of the respondents, 61.5% (n=197) agree that there is teamwork in their work setting. In addition, 64.7% (n=204) of the respondents agree that they feel a sense of belonging in their workplace and 64.7% (n=207) also agree that they able to communicate with the other therapists (physiotherapist, occupational, etc.). There was 59.4% (n=190) respondents agree that they receive feedback on their performance from nurse manager/supervisor. 59.9% (n=192) of the

respondents agree that they able to participate in decisions made by their nurse manager/supervisor. Other than that, 58.8% (n=188) agree that they feel respected by physician in thee work setting and 61.2% (n=196) agree that it is important to have a designed, private break area for the nursing staff. 56.6% (n=181) of the respondents agree that it is important to have nursing degree programs available in the hospital. There was 59.4% (n=190) respondents agree that they receive support to attend in services and continuing education programs. Besides, more than half of the respondents, 64.6% (n=207) agree that they communicate well with the physician in the work setting and 58.4% (n=187) also agree that they recognized for their accomplishment by nurse manager/supervisor. There was 59.1% (n=189) agree that the nursing policies and procedures facilitate their work. In addition, 57.8% (n=185) of the respondents agree that the security department provides a secure environment and 64.4% (n=206) also agree that they feel safe from personal harm (physical, emotional, or verbal) at work. There was 60.5% (n=195) of the respondent agree that he upper-level management has respect for nursing.

Based on Table 4.5.1, the majority of the respondents had high quality of work context while there are none of the respondent that had low quality of work context.

Table 4.5: Quality of work context (N=320)

Item	Disagree n (%)	Agree n (%)	Mean (SD)
1. I am able to communicate well with my nurse manager/supervisor.	114 (35.7)	206 (64.3)	3.88 (1.21)
2. I have adequate patient care supplies and equipment	124 (38.7)	196 (61.3)	3.86 (1.22)
3. My nurse manager/supervisor provides adequate supervision.	130 (40.6)	190 (59.4)	3.79 (1.22)
4. Friendships with my co-workers are important to me.	119 (37.1)	201 (62.9)	3.97 (1.29)
5. My work setting provides career advancement opportunities.	130 (40.6)	190 (59.4)	3.77 (1.21)
6. There is teamwork in my work setting	123 (38.5)	197 (61.5)	3.97 (1.26)
7. I feel a sense of belonging in my workplace.	116 (36.2)	204 (63.8)	3.98 (1.27)
8. I am able to communicate with the other therapists (physiotherapist, occupational, etc.).	113 (35.3)	207 (64.7)	3.99 (1.26)
9. I receive feedback on my performance from my nurse manager/supervisor.	130 (40.6)	190 (59.4)	3.75 (1.24)
Continue Table 4.5			
10. I am able to participate in decisions made by my nurse manager/supervisor.	128 (40.1)	192 (59.9)	3.81 (1.22)
11. I feel respected by physicians in my work setting.	132 (41.2)	188 (58.8)	3.78 (1.17)

12. It is important to have a designated, private break area for the nursing staff.	124 (38.8)	196 (61.2)	3.90 (1.23)
13. It is important to have nursing degree programs available at my hospital.	139 (43.4)	181 (56.6)	3.81 (1.35)
14. I receive support to attend in services and continuing education programs.	130 (40.6)	190 (59.4)	3.78 (1.20)
15. I communicate well with the physicians in my work setting.	113 (35.4)	207 (64.6)	3.94 (1.14)
16. I am recognized for my accomplishments by nurse manager/supervisor	133 (41.6)	187 (58.4)	3.75 (1.18)
17. Nursing policies and procedures facilitate my work.	131 (40.9)	189 (59.1)	3.78 (1.26)
18. The security department provides a secure environment.	135 (42.2)	185 (57.8)	3.71 (1.19)
19. I feel safe from personal harm (physical, emotional, or verbal) at work.	114 (35.6)	206 (64.4)	3.86 (1.12)
20. Upper-level management has respect for nursing.	126 (39.5)	194 (60.5)	3.71 (1.21)

Table 4.5.1: Level of quality of work context (N=320)

Quality of work context level	Range of score	n (%)
Low	20-38	0 (0.0)
Moderate	39-77	151 (47.2)
High	78-120	169 (52.8)

4.5.4 Quality of work world

Table 4.6 shows the details of the items (5 items) for quality of work world. Among 320 respondents, there was 54.6% (n=175) agree that the society has an accurate image of nurses. Besides, 53.8% (n=172) of the respondents agree that their salary is adequate for the job, taking into account the market conditions. There was 52.5% (n=168) of the respondents disagree that they would be able to find the same job in another organization with about the same salary and benefits. Other than that, 57.8% (n=185) of the respondents agree that they believe their job is secure and 70.3% (n=225) also agree that their work impacts the lives of patients/families.

Based on Table 4.6.1, majority of the respondents had moderate quality of work world with 50.3% (n=161) while there was only 12.8% (n=41) respondents that had the low quality of work world.

Table 4.6: Quality of work world (N=320)

Item	Disagree n (%)	Agree n (%)	Mean (SD)
1. In general, society has an accurate image of nurses.	145 (45.4)	175 (54.6)	3.56 (1.25)
2. My salary is adequate for my job, taking into account the market conditions.	148 (46.2)	172 (53.8)	3.51 (1.20)
3. I would be able to find my same job in another organization with about the same salary and benefits	168 (52.5)	152 (47.5)	3.38 (1.15)
4. I believe my job is secure.	135 (42.2)	185 (57.8)	3.77 (1.16)
5. My work impacts the lives of patients/families.	95 (29.7)	225 (70.3)	4.18 (1.18)

Table 4.6.1: Level of quality of work world (N=320)

Quality of work world level	Range of score	n (%)
Low	5-12	41 (12.8)
Moderate	13-20	161 (50.3)
High	21-30	118 (36.9)

4.5.5 Total quality of working life

4.5.5.1 Mean and SD for quality of work life items

Table 4.7 below shows the mean and SD for quality of working life among nurses. The overall quality of working life is 157.28 (31.87).

Table 4.7: Total quality of working life (N=320)

	Min	Max	Mean	SD
Quality of work life/home life	11	40	25.14	5.74
Quality of work design	18	51	36.98	7.85
Quality of work context	42	109	76.77	16.97
Quality of work world	10	27	18.39	4.26
Total quality of working life	85	222	157.28	31.87

4.5.5.2 Quality of working life level

The maximum level of nurses' quality of working life is 222 whereas the minimum level is 85. The nurses' quality of working life divided into three levels. Respondents who scored 42 to 112 considered as low level, respondents who scored 113 to 182 considered as moderate level and respondents who scored 183 to 252 considered as high level. It was noticed that most of the respondents have moderate quality of working life with 62.2% (n=199) whereas least respondents have low quality of working life with 12.8% (n=41) as shown in Table 4.8 below.

Table 4.8: Nurses' quality of working life level

Quality of working life level	Range of score	Frequency (n)	Percentage (%)
Low	42-112	41	12.8
Moderate	113-182	199	62.2
High	183-252	80	25.0
Total		320	100.0

Objective 2: Association between socio-demographic data and quality of working life

4.6 Association between socio demographic and quality of working life among nurses

There were 320 respondents involved in this study. The Pearson Chi-Square used to determine the association between socio demographic and the quality of working life among nurses. There was no outliers in the data as assessed by boxplot. Based on Table 4.9, the Pearson Chi-Square was used to determine if there were association between age groups of the respondents and quality of working life. There was statistically significant association between age and quality of working life, $\chi 2$ (4, N=320) = 23.08, p = .001. Majority of the nurses were between age 22-31 years old had moderate QWL with 63.3% (n=93).

Pearson Chi-Square analyses also revealed significant relationship existed between ethnicity and quality of working life, $\chi 2$ (4, N=320) = 10.07, p = .04. Majority of the nurses were Malay had moderate QWL with 58.7% (n=142). Other than that, there was a significant relationship existed between educational level and quality of working life among respondents as shown by Pearson Chi-Square Test, $\chi 2$ (4, N=320) = 20.29, p = 0.01. Majority of the nurses were graduated from diploma level had moderate QWL with 65.2% (n=176).

Table 4.9: Association between socio demographic and quality of working life among nurses (N=320)

	Quality of working life among nurses					
Demographic variables	**Low QWL n (%)**	**Moderate QWL n (%)**	**High QWL n (%)**	**df**	**χ^2**	***p*-value**
Age (year groups)				4	23.08	**.001***
22-31	14 (9.5)	93 (63.3)	40 (27.2)			
32-41	14 (11.1)	89 (70.6)	23 (18.3)			
42 and above	13 (27.6)	17 (36.2)	17 (36.2)			
Gender				2	3.89	.14
Male	4 (5.8)	46 (66.7)	19 (27.5)			
Female	37 (14.7)	153 (61.0)	61 (24.3)			
Marital status				4	1.94	.75
Married	20 (11.4)	111 (63.4)	44 (25.1)			
Divorced	4 (18.2)	11 (50.0)	7 (31.8)			
Single	17 (13.8)	77 (62.6)	29 (23.6)			
Ethnicity				4	10.07	**.04***
Malay	30 (12.4)	142 (58.7)	70 (28.9)			
Chinese	8 (16.3)	33 (67.3)	8 (16.3)			
Indian	3 (10.3)	24 (82.8)	2 (6.9)			
Educational level	35 (13.0)	176 (65.2)	59 (21.9)	4	20.29	**.001***

Diploma	3 (15.0)	4 (20.0)	13 (65.0)			
Bachelor	3 (10.0)	19 (63.3)	8 (26.7)			
Post basic						
Working				4	21.16	**.002**
experience	14 (9.0)	100 (64.1)	42 (26.9)			*****
1-10	14 (12.2)	80 (69.6)	21 (18.3)			
11-20	13 (26.5)	19 (38.8)	17 (34.7)			
21 and above						
Working setting				2	1.36	.50
Ward	33 (12.7)	157 (60.9)	68 (26.4)			
Clinic	8 (12.9)	42 (67.7)	12 (19.4)			
Working				6	9.85	.13
discipline	3 (6.7)	24 (53.3)	18 (40.0)			
Medical	10 (20.4)	29 (59.2)	10 (20.4)			
Surgical	20 (12.2)	104 (63.4)	40 (24.4)			
Critical care unit	8 (12.9)	42 (67.7)	12 (19.4)			
Outpatient unit						
Monthly income				2	11.6#	**.04***
Less than	24 (14.4)	98 (58.7)	45 (26.9)			
RM2999	17 (11.1)	101 (66.0)	35 (22.9)			
RM3000 and above						

Remark: # p-value of Fisher's Exact Test & * indicate significant result.

Furthermore, Pearson Chi-Square analyses also revealed a significant relationship between working experiences (year groups) and quality of working life among nurses as $\chi 2$ (4, N=320) = 21.16, p = 0.02. Majority of the nurses had working experiences between 1-10 years had moderate QWL with 64.1% (n=100).

Pearson Chi-Square analyses also revealed a significant relationship existed between monthly income of respondents and quality of working life, $\chi 2$ (2, N=320) = 11.6, $p < .05$. Fisher's Exact analyses also revealed a significant relationship exist between the monthly income of respondents and quality of working life as $p < 0.05$ (p-value = .04). Majority of the nurses had monthly income RM3000 and above had moderate QWL with 66.0% (n=101).

Other than that, there were no significant relationship between gender, marital status, working setting and working discipline with QWL.

4.7 Summary

In conclusion, SPSS version 23 was used to analyze the result. Most of the respondents had moderate quality of working life. Besides, inferential statistic was analyzed by using Chi- Square test. For the association of the quality of working life with selected demographic characteristic, only age, ethnicity, educational level, working experiences and monthly income show the significant result.

CHAPTER 5

5.1 Introduction

This chapter would provide justification and discussion of the findings in each of the objectives of this research study and it would be supported by previous study and literature review. The objectives covered as followed:

- Factor influencing quality of working life among nurses
- Quality of working life among nurses
- Association between socio demographic data and quality of working life among nurses

Additionally, the implications of this study to nursing profession, nursing education and nursing research would be discussed further in this chapter. Some limitations of this study and suggestion to overcome them also had discussed in order to develop a more holistic and comprehensive studies on the research topic in future.

5.2 Discussion based on socio demographic data

In this study, there was more respondents with age group 22 to 31 years old and had working experiences less than 10 years. This may because of the hospital management that always recruit a large number of new nurses every year and the nurses with more years of experiences will either already end their contract or resigned from the position due to family factors or others. It is consistent with that finding of research done by Yaakup, Eng & Shah (2014) which majority of participants were younger nurses (below 40 years old) and more than 70% had worked less than 10 years.

The participants that took part in this study were made up of more female compare to male. It is only in recent years, where gender equity became the norm in the workplace however, the number of female nurses still overwhelmed in the workplace (Evans, 2002). Evans also wrote that nursing is an occupation established by women, it supports the stereotypical "feminine" image with traits of nurturing, caring, and gentleness in contrast to masculine characteristics of strength, aggression, and dominance. It may cause the males to be reluctant to join the nursing profession due to the perception of the society.

Besides, most of the respondents were married. The perceptions and attitudes of the person can also differ by the marital status of the persons because the marriage might make the persons little more responsible and matured in understanding and giving the responses to the questions asked (Panisoara & Serban, 2013).

Most of the respondents in this study were Malay with religion of Muslim as 50.4% of Malaysia population were Malay (CIA World Factbook, 2010) and all the Malaysian Malay are Muslim by law. According to Department of Statistic Malaysia, population projections in 2017 show that the Malays and Bumiputeras comprised a total of 68.8% of the total population, Chinese 23.2% and Indians 7.0%.

Most respondents in this study were having educational level of diploma and nurses with educational level of Bachelor and above were limited which also reported in the study conducted by Yaakup, Eng and Shah (2014). This is because many nursing schools in Malaysia offered diploma courses which only required three years of studies and they received large numbers of students as compared to the college or universities that offered nursing courses in Bachelor which required four years of studies.

In addition, most of the respondents were working in ward. As the researcher tried to obtain the same amount of each discipline, however, it appeared that there were more nurses who from critical care unit participate in this study as the quantity of nurses in ICU, CCU, operation theatre and emergency department were more. Critical care unit are also distinguished from normal hospital wards by a higher staff-to-patient ratio and access to advanced medical resources and equipment that is not routinely available elsewhere because they need to provide total care to the patients (Maria & Jose, 2014).

According to Jackie (2016), nursing salary in Malaysia is paid in malaysian money "Ringgit Malaysia (RM)". The salary standard for staff nurse with level Diploma and 3 years' experience around RM 2,000 - RM 2,500 per month. Bachelor Nurse (BSN) are getting more salary around RM 2,500 - RM 3,500 per month.

5.3 Discussion based on the specific objectives

5.3.1 The quality of working life among nurses

The study showed that the nurses had moderate quality of working life with the percentage 62.2%. This result was similar with the study by Khani et al (2007), reported a moderate quality of nursing work life among 120 Iranian registered nurses at Isfahan Hospitals University of medical Sciences in 2007. The nurses reported that they were incapable of balancing between the work-home lives and were dissatisfied in their job. The findings from the study showed that shift duties, inadequate salaries, workload, lack of autonomy and career advancement opportunities are the main factors for poor quality of nursing work life and also result in job dissatisfaction. Other than that, the study in Thailand also showed that the majority of nurse practitioners had a moderate level of QWL (Patcharee et al, 2017). This may because nurses may had little energy after work due to spend a long time at work and increasing in workload affect their QWL Contrary to the previous study of quality of work life among primary health care nurses in Jazan, Saudi Arabia where the respondent were not satisfied with their QWL (Almaki et al, 2012). Amongst the four dimensions work context followed by work design gave the strong contribution to turnover intention. These were because nurses felt that their relationship with supervisory personnel, co-workers and interdisciplinary health team were not good and there may also non-insufficiency in provision of resources.

In quality of work life/home life, majority of the respondent agree with the factors such as able to balance work with family needs, important to have on-site child care service, important to have support for taking care of elderly parents, policy for vacation is appropriate and important to have on-site ill child care services. The results from the current study are congruent with the findings from a study on acute care nurses in a Midwestern state by Brooks and Anderson (2004). The majority of nurses in this study reported disagree with had energy left after work. Nurses stated that they had little energy after work due to spent a long time at work. As a result, they were unable to balance their work with their family needs (Khani, Jaafarpour & Dyrekvandmogadam, 2008). Other than that, present study show that the shift work schedules negatively affect their life. Previous study also stated that factors lead to turnover intention, job frustration, and work commitment of the nurses was rotating shift patterns (Brooks & Swailes, 2002). According to Newman, Maylor & Chansarker (2002), the most important causes of work dissatisfaction among 130 nurses and midwives in four hospitals in London were routinely shift changes and working conditions.

Besides, for quality of work design, this study show that there were majority of nurses agree that their workload is too heavy and they have enough time to do job. However it is not similar with the study by Hegney et al (2006) that they also concluded nurses' workload was heavy and distribution of workforce was not equal, and these cause nurses cannot finish their work in the period available. Major cause for nurses considering leaving their workplace and their profession was cited as workload. This study also agree that there were enough RN in their setting. This findings was not similar with study by Needlemann et al (2002) where the nurses in their study concluded that there were not enough registered nurses in their workplace and units. Previous study by Aiken et al (2002) found that each additional patient per nurse ratio was associated with a 15% increase in the job turnover and 23% increase in the nurse burnout. Workload and related issues such as understaffing or inappropriate staffing can cause turnover, which then compounds the problem (Hegney et al, 2006). Other than that, Vagharseyyedin, Vanaki & Mohammadi (2010) reported that nurses in their study were given additional non-nursing tasks. This mal-utilization of the nursing workforce may increase the shortage of nurses and affect their nursing skills and experiences.

In addition, for quality of work context, majority nurses in this study concluded that the upper

management respect their role and they were able to participate in the decision making and ideas. However, Hegney et al (2006) concluded that 65% of nurses believed that the administration did not listen or acknowledge to their concerns and opinion. The results suggest that there needs to be some improvements in the management attitudes, with greater valuing of nurses. The present study also show that most of the nurses agree with the management and supervision. Shermont and Krepcio (2006) found that to increase the level of QWL among nurses, they need to focus more on building trust among themselves, develop open communication between managers, staffs and other healthcare providers and encourage involvement in decision making. This study also reported that their setting provides career advancement opportunities. Bodek (2003) claimed that workers want to feel respected in their workplace for who are they and what they do. Above all, they need to be valued for their skills, knowledge, performance and participation in the development process. However, Rout (2000) in his study found that the nurses reported low QWL due to perceive a lack of opportunity for career advancement and training. In order to increase the nurses' QWL, development of strategies to enhance the nurse's professional status and individual achievement should be effective (Lee, Hwang & Kim, 2004). Besides, the nurse's collaboration with other health care personnel can influence their QWL. Johns (2003) stated that to improve the professional development, collaboration with other professionals as well as with colleagues is important and this can increase the quality of care for the patients and form as an important concern for the clinical nurse leadership. The working environment and condition was also one of the concern among nurses. More than half of the nurses stated that the security unit deliver a protected working environment. Some of the previous study highlighted that major factor in nurses' dissatisfaction in workplace was the security of the working environment. (Alhusaini, 2006).

Lastly, for quality of work world, many of the respondents felt that society have a definite image of nurses. The findings of this study are incongruent with studies in Japan that carried out concerning the socio-cultural status of nurses. Poor social position of registered nurses in Iran had become an important factor that contributed to the nursing problem. People think of RNs as assistants to the physicians, and some of physicians also regard nurses as their helpers and do not consider them as specialists in the art of caring for the patients (Nikbakht et al, 2003). If public had poor image toward nursing profession, it can affect the nurses' attitudes towards work and organization may had problem in recruitment of new nurses (Takase, Maude & Manias, 2006). Besides, majority of respondents were disagree that the salary is adequate. This was supported with focus group discussions showed that the nurse's salaries were differ in term of the hospital salary system, and income was a buffer for them to stay in nursing (Hsu & Kernohan, 2006). In another study by Abu Alrub (2007) in Jordan, concluded that major reason for nurses dissatisfaction in work was underpayment and this cause decrease in QWL of the nurses. The majority of the respondents in this study reported that their jobs are secure and they do not expect to lose the job unexpectedly. This result appear similar with the research conducted in Queensland (Day, 2005).

5.3.2 The association between socio-demographic and quality of working life among nurses

In this part of research, the results had obtained the respondents' age, gender, marital status, ethnicity, educational level, working experiences, working setting, working discipline and monthly income. For all socio-demographic data obtained was analyzed with nurses' quality of working life by using Chi-square analysis test and Fisher Exact Test based on the criterion. It show there was significant association between age and QWL. This can because of majority of nurses participated in this study were within age between 22 to 31 years old. Not just that, younger nurse can able to make a better adjustment and can easily adapt to the working condition when compared to the older nurses (Shah et al, 2004). Besides, nurses with working experiences less than 10 years had the higher QWL. This may because of the quantity of the younger nurses were more than older nurses. This findings was incongruence with the study by Shah et al (2004) where in the Arab nation, older and more experienced nurses are more satisfied with their QWL as they accorded greater recognition by

managers.

Result of this study showed a significant association between QWL of nurses and their education level. Study by Sharhraky et al. (2011) concluded that there was no significant association between the nurses QWL and their education level. In this study the researcher found that the QWL of nurses with diploma education level was better than nurses with higher education. Nurses with higher education level seems to had more expectations of their working life and because of this they can easily experience emotional exhaustion when working at place that does not meet their expectation (Dargahi, Gharib & Goodarzi, 2007). Besides, this can also occur due to huge number of diploma educational level of the nurses in UMMC as the majority of nurses were younger nurses.
Besides, there was also significant association between ethnicity and QWL. This also may because of 75% of the nurses participated in this study were Malay and most of them had moderate QWL.

In addition, monthly salary and QWL showed that there were significant differences. According to Almaki et al (2012), the results were consistent with their findings where life satisfaction score was a positive correlation with nurse's income and also found to be a key factor in the dissatisfaction of nurses with their QWL. According to a salary survey conducted however, Malaysian nurses' salary average is RM2000 – RM 2500 per month (Jackie, 2016).
On the other hand, the other socio-demographic data collected such as gender, marital status, working setting and working discipline were not significant association existed with the nurses' QWL.

5.4 Limitation of the study

There were a number of limitations which had been identified by the researcher throughout the study period. One of the limitations being identified was this study conducted at one institution only and it was not able to covering most healthcare institutes in the country.

In addition, the questionnaires would only be distributed to whoever available during the study period and not all of the nurses have the equal chances to participate in this study. Sampling bias may played a part in affecting the findings.

Moreover, the used of structured questionnaire with close ended questions also brought limited outcome and it not always represent the actual occurring in generalized form. There was another possibility that the respondents did not answer the question sincerely as the questionnaires were given as self-administered tool. The use of self-reporting instruments may have decreased the reliability of responses due to misinterpretation of some of the items.

5.5 Implication of the finding

5.5.1 Nursing profession

The study showed that most of the nurses had moderate quality of working life. Hence, nursing institution should develop activities and provide way to enhance the quality of working life among nurses. In collaboration with their colleagues in human resources, nurse manager can develop and implement employee benefit programs that would improve the work life of nurses. Programs that enable nurses to balance work with their family needs, decrease rotating shifts, bonus programs for off-shifts, onsite child care, on-site ill child care, on-site day care for elderly parents, and on-site degree completion programs are important (Brooks, 2001). In the area of practice environment that nurses able to fulfill their expectations and had a good communication between nurse and physician, hence, the quality of work life was high (Campbell, Fowler & Weber, 2004). Other clues gleaned from this concept analysis provide information that could be used to improve the work environment. The focus on healthy work setting began in clinical environments with the goals of improving patient safety, promoting excellence in clinical practice and enhancing the recruitment and retention of nurses. More importantly healthy and supportive work relationships have been shown to be related to increase nurse intention to remain employed. Furthermore, nurse manager may re-examine the utility of job satisfaction surveys in light of the benefits of assessing the quality of nursing work life.

5.5.2 Nursing research

The research on quality of working life among nurses should be enhanced as there were least number of literature review found regarding this study in Malaysia setting. The results can be used as to improve the nurses' quality of work life. The study was conducted using a quantitative research method and data was collected using questionnaires. Therefore, the results of this study were limited to providing numerical descriptions rather than a detailed narrative and generally provide less elaborate accounts of human perception. The development of structured standard questions could lead to false representation, where the data actually reflects the view of the researcher instead of the participating subjects.

5.6 Recommendation

As the quality of work life of nurses working in UMMC was moderate, nursing management in hospitals should take some action to ensure that nurses can increase their QWL. To increase quality of work life/ home life among nurses, nurse managers must to consider the family aspect of their registered nurses. Childcare facilities, convenient working hour, support for nurses who have elderly parents and adequate vacations should be made offered for nurses. These advantages can help nurses to balance work with their family necessities. Besides, in order to increase quality of work design, management should recruit more qualified nurses in the hospital, as well as ensure adequate nursing services for patients, families and community. Other than that, equitable distribution of the work are important to reduce workload so that nurses can focus on their own work and can finish work on time. For work context dimension, management should encourage nurses to involve in decision making, respecting their opinions and viewpoints, develop strategies or policies for promotion of nurses' quality of work life through improvement of environment and develop a friendly, supportive and pleasant working condition for all the staffs. In addition, management can also design a payment system based on the nurses' real function and provide more effective humanistic communication with their staffs. Besides, it is suggested that hospital management should make transparent performance appraisal, conduct training programs that would enhance skills and capabilities of the nurses. The nurses who perform challenging job must be motivated to perform better. Other than that, to increase quality of work world, management can increase the salary of nurses commensurate with the tasks performed. Management also should collaborate with the media to reveal the vital role of nurses in the care of patient, in the provision of health care services and in the development of the health of the population.

5.7 Conclusion

The study was done to determine the quality of nursing work life among nurses working in UMMC. The study findings revealed that there was a moderate QWL reported among nurses. The result of the study can provide a picture whether nurses satisfied with their work or not. The findings also been compared with other studies related to the topic among nurses across worldwide based on the previous study. Finding from this study suggest that nurses did not have energy left after work and they did not able to find same job in another organization. Limitation of the study had been stated clearly in this chapter which would help the next researcher who interest in this issue to improve the future study. Several recommendations also discussed based on the result. This research provides a beginning step in understanding the working life of nurses in UMMC. Besides, there is a need for outcome-driven research examining the effectiveness and efficacy of specific strategies aimed at improving the QWL of the nurses and organizational productivity.

References

Abdalkader, R. & Hayajneh, F. (2008). Effect of Night Shift on Nurses Working in Intensive Care Units at Jordan University Hospital. *Eur J Sci Res*, 23:70-86.

Abualrub, R.F. (2007). Nursing shortage in Jordan what is the solution? *Journal of*

professional Nursing, 23(2) : 117-20.

Adèr, H. J., Mellenbergh, G. J., & Hand, D. J. (2008). Advising on research methods: a consultant's companion. Huizen: Johannes van Kessel Publishing.

Alhusaini, H. A. (2006). Obstacles to the efficiency and performance of Saudi nurses at the Ministry of Health, study field Analytical: Region Riyadh. Riyadh: Ministry of Health.

Almalki, M.J., FitzGerald, G. & Clark, M. (2012). The relationship between quality of work life and turnover intention of primary health care nurses in Saudi Arabia. *BMC Health Serv Res*, 12:314. doi:10.1186/1472-6963-12-314

American Nurses Association. What is nursing? Retrieved from https://www.nursingworld.org/practice-policy/workforce/what-is-nursing/

Ashy, M.A. (2004). Saudi Arabia. International perspectives on family violence and abuse: A cognitive ecological approach. New Jersey: Lawrence Erlbaum Associates. Inc, 167-186.

Banerjee, A., & Chaudhury, S. (2010). Statistics without tears: Populations and samples. *Industrial psychiatry journal*, *19*(1), 60.

Barnett, T., Namasivayam, P., & Narudin, D.A.A. (2010). A critical review of the nursing shortage in Malaysia. *International Nursing Review*, 57 32-39.

Bodek, N. (2003). The quality of work life. *Industrial Engineer*, 35(3): 25.

Boonrod, W. (2009). Quality of working life: perceptions of professional nurses at Phramongkutklao Hospital. *J Med Assoc Thai*, 92(1):7–15.

Brooks, B.A. & Anderson, M.A. (2004). Nursing work life in acute care. *J Nurs Care Qual*, 19(3):269–75.

Brooks, B.A. & Anderson, M.A. (2005). Defining quality of nursing work life. *Nurs Econ*, 23(6):319–26.

Brooks, I. & Swailes, S. (2002). Analysis of the relationship between nurse influences over flexible working and commitment to nursing. *Journal of Advanced Nursing*, 38(2):117-26.

Campbell, S. L., Fowles, E. R. & Weber, B. J. (2004). Organizational structure and job satisfaction in public health nursing. *Public Health Nursing*, 21(6):564–571.

Chiu, M. C., Wang, C. W., Lu, S.M., Kumashiro, M. & Ilmarinen, J. (2007). Evaluating work ability and quality of life for clinical nurses in Taiwan. *Nursing Outlook*, 55(6):318–326.

CIA. (2010). The World Factbook: MALAYSIA. Retrieved October 29, 2017, from https://www.cia.gov/library/publications/the-world-factbook/geos/my.html

Dargahi, H., Gharib, M. & Goodarzi, M. (2007). Quality of work life in nursing employees of Tehran University of Medical Sciences hospitals. *The Journal Tehran Nursing and Midwifery*, 13(2):78–87.

Daubermann, D. & Pamplona, T. V. (2012). Quality of work life of nurses in primary health care. *Acta paul enferm*, 25(2):277–83.

Day, G. (2005). Nurse morale plummets in Queensland. University of New England. PhD Thesis

Delgoshyii, B., Riahi, D. & Motaghi, M. (2010). Relationship of the quality of working life in Kashan teaching and nonteaching hospitals with knowledge management according to the top and middle manager's point of view. *Journal of Hospital*, 9:67– 74.

Disch, J. (2002). Creating healthy work environments. *Creat Nurse*, 8(2): 3-4.

Evans, J. A. (2002). Cautious caregivers: Gender stereotypes and the sexualization of men nurses' touch. *Journal of Advanced Nursing*, 40 (4), 442-448.

Flinkman, M., Laine, M., Leino-Kilpi, H., Hasselhorn, H.M., & Salantera, S. (2008). Explaining young registered Finnish nurses' intention to leave the profession: A questionnaire survey. *International Journal of Nursing Studies*, 45, 727–739. doi:10.1016/j.ijnurstu.2006.12.006

Grove, S. K., & Burns, N. (2005). The practice of nursing research: Conduct, critique, & utilization (5th Ed.). St. Louis, Elsevier Saunders.

Halm, M., Peterson, M. & Kandels, M. (2008). Hospital nurse staffing and patient mortality, emotional exhaustion, and job dissatisfaction. *Clin Nurse Spec*, 19(5):241–51.

Hegney, D., Eley, R., Plank, A., Buikstra, E. & Parker, V. (2006) Workplace violence in Queensland, Australia: The results of a comparative study. *International Journal of Nursing Practice*, 12(4), 220-231.

Hsu, M. Y & Kernohan, G. (2006). Dimensions of hospital's nurses's quality of working life. *J Adv Nurs*, 51(1): 31-120

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D., Hearst, N. & Newman, T. B. (2007). Designing clinical research: An epidemiologic approach (3rd ed.)

Jackie, B. (2016). Around the world in nursing salaries. MIMS Today. Retrieved from https://today.mims.com/around-the-world-in-nursing-salaries

Janaabadi, H. & Nastiezaie, N. (2012). Two effective factors in the staffs performance quality of life and quality of working life. *Zahedan J Res Med Sci*, 13(1):9–10.

Jayaraman, S. & Chandran, C. (2010). Quality of Work Life: A Stance from Nursing Professionals. *International Journal of Nursing Education*, 2(1): 15-21.

Johns, C. (2003). Clinical nursing supervision as a model for clinical leadership. *Journal of Nursing Management*, 11 (1): 25-34.

Joppe, M. (2000). The Research Process. *The Quantitative Report Journal*, 8(4):597-607.

Khaghanizadeh, M., Ebadi, A., Cirati, M. & Rahmani, M. (2008). The study of relationship between job stress and quality of work life of nurses in military hospital. *J Mil Med*, 10(3): 84-175

Khani, A., Jaafarpour, M. & Dyrekvandmogadam, A. (2008). Quality of Nursing Work Life. *Journal of Clinical and Diagnostic Research*, 1169-1174.

Knox, S. & Irving, J.A. (2007). An interactive quality of work life model applied to organizational transition. *J Nurs Adm*, 27: 39-4.

Labaree, R. V. (2009). Research Guides: Organizing Your Social Sciences Research Paper: Types of Research Designs.

Lee, H., Hwang, S., Kim, J. & Daly, B. (2004). Predictors of life satisfaction of Korean nurses. *Journal of Advanced Nursing*, 48 (6):632-41.

Lindokuhle, P. P., Catherine, E. D., Estelle, V. L. & Tracy, L. K. (2014). Nurses's lifestyle behaviours, health priorities and barriers to living a healthy lifestyle. *BMC Nursing*, 13:38.

Lokanadha, R. M. & Mohan, R. P. (2010). Quality of work life of employees: emerging dimensions. *Asian Journal of Management Research*, 1(2):827-839.

Macstravic, S. (2006). Treating the whole employee. Retrieved 25 July 2008, from http://www.aha.org

Manaf, N. H. A. (2005). Quality management in Malaysian public health care. *lnternational Journal of Health care Quality Assurance*, 18(3):204-216.

Maria, S. A. & Jose, L. M. (2014). Practical knowledge of experienced nurses in critical care: a qualitative study of their narratives. *BMC Medical Education*, 14:173

Milicent, N. F. & Richard, T. J. (2010). Work scheduling satisfaction and work life balance for nurses: the perception of organizational justice. *Academy of Health Care Management Journal*, 1.

Mohamed (2012). Measuring the Quality of Nursing Work Life in Public Hospitals 2nd International Conference on Management (2nd ICM 2012). Proceeding.1018-1028. http://www.internationalconference.com.my/proceeding/icm2012_proceeding/076_187_2 ndICM2012_Proceeding_PG1018_1028.pdf. Accessed on 29.10.2013

Mohammadi, A., Sarhanggi, F., Ebadi, A., Daneshmandi, M., Reiisifar, A. & Amiri, F. (2011).

Relationship between psychological problems and quality of work life of Intensive Care Units Nurses. *Iran J Crit Care Nur*, 4(3):135–40.

Mosadeghrad, A. M., Ferlie, E. & Rosenberg, D. (2011). Study of relationship between job stress, quality of working life and turnover intention among hospital employees. *Health Services Management Research*, 24(4): 170–181.

Nanjundeswaraswamy, T. S. & Swamy, D.R. (2012). A literature review on Quality of work life and Leadership styles. *International Journal of Engineering Research and Applications*, 2(3):1053-1059.

Nasrabadi, A. N., Emami, A. & Parsa, Z. (2003). Nursing experience in Iran. *International Journal of Nursing Practice*, 9: 78-85.

Nasrabadi, A. N., Seif, H., Latifi, M. N., Rasoolzadeh, N., & Emami, A., (2009). Night Shift Work Experiences among Iranian Nurses: A Qualitative Study. *International Nursing Review*, 56(4): 498-50

Needlemann, J., Buerhaus, P., Mattke, S., Steward, M. & Zelevinsky, K. (2002) .Nurse- staffing levels and the quality of care in hospitals. *New England Journal of Medicine*, 346(17):15-22.

Nevidjon, B. & Erickson, J. I. (2001). The nursing shortage: Solutions for the short and long term. *Online J Issue Nurs*, 6(1):4.

Newman, K., Maylor, U. & Chansarkar, B. (2002). The nurse satisfaction, service quality and nurse retention chain: Implication for management of recruitment and retention. *Journal of Management in Medicine*, 16(4) : 271-91.

Nikbakht, N., Emami, A. & Parsa, Y. Z. (2003). Nursing experience in Iran. *International Journal of Nursing practice*, 9 : 78-85.

Nizar Belal, S. (2013). Time Management in Nursing Work. International Journal of Caring Sciences, 7(3): 746-748.

Panisoara, G. & Serban, M. (2013). Marital Status and Work-life Balance. *Journal of Social and Behavioral Sciences*, 78: 21-25.

Patcharee, K., Balthip, K. & Jittanoon, P. (2017). Quality of Work Life among Nurse Practitioners Working at Primary Care Setting in Thailand. *Songklanagarind Journal of Nursing*, 37: 98-105

Polit, D.F., Beck, C.T. & Hungler, B.P. (2001), Essentials of Nursing Research: Methods, Appraisal and Utilization. 5th Ed., Philadelphia: Lippincott Williams & Wilkins.

Rai, G.S. (2013). Improving Quality of Working Life among Nursing Home Staff: Is it Really Needed? *International Journal of Caring Sciences*, 6(3), 380-391.

Ramesh, N., Nisha, C., Josephine, A.M., Thomas, S. & Joseph, B. (2013). A Study on Quality of Work Life among Nurses in a Medical College Hospital in Bangalore. *Natl J Community Med*, 4(3): 471-47.

Remeyi, D.W., Money, A. & Swartz, E. (2005). Doing Research in Business and Management: An Introduction to Process and Method, London: Sage Publications

Richard, N. (2017). Literature Review (Research). Glossary of Grammatical and Rhetorical Terms. Retrieved from https://www.thoughtco.com/literature-review-research- 1691252

Richards, J. C. & Schmidt, R. (2002). Longman dictionary of language teaching and applied linguistics. Third ed. London: Longman.

Rout, U.R. (2009). Stress amongst district nurses: a preliminary investigation. *Journal of Clinical Nursing*, 9 (3): 303-09.

Shah, M A., Al-Enezi, N., Chowdhury, R., Otabi, M. (2004). Determinants of Job Satisfaction among Nurses in Kuwait. *Aust J Adv Nurs*, 21(4): 10-16

Shalini, S. & Sunil, P. (2012). Quality of work life, employee performance and career growth opportunities: A literature review. *International Journal of multidisciplinary research*, 2(2):291-300.

Sharhraky, V.A., Mardani Hamuleh, Asadi, B., Heidari, M. & Hamedi, S. (2011). Assessment of

the Items of SCL90 Test with Quality of Work Life among Amiralmomenin Hospital Personnel of Zabol City. *Sci J Hamdan Univ Med Sci*, 18(2):50-55.10.

Shermont, H. & Krepcio, D. (2006). The impact of culture change on Nurse Retention. *Journal of Nursing Administration*, 36(9) : 407-15.

Skaal, L. & Pengpid, S. (2011). Obesity and health problems among South African healthcare workers: do healthcare workers take care of themselves? *S Afr Fam Pract*, 53(6):563- 7.

Sree Devi, R. & Ganapathi, R. (2014). Impact of Work Related Factors on Quality of Work Life of Employees in Small Scale Industries in Kanyakumari District. *IOSR Journal of Business and Management*, 16(12): 51-55.

Takase, M., Maude, P. & Manias, E. (2006). Impact of the perceived public image of nursing on nurses work behavior. *Journal of Advanced Nursing*, 53(3): 333-43.

Vagharseyyedin, S.A., Vanaki, Z. & Mohammadi, E. (2011). The nature nursing quality of work life: an integrative review of literature. *West J Nurs Res*, 33(6):786–804

Van Laar, D.L., Edwards, J.A. & Easton, S. (2007).The Work-Related Quality of Life (QoWL) scale for Healthcare Workers. *Journal of Advanced Nursing*, 60(3), 325- 333.

Vanaki, Z. & Vagharseyyedin, S.A. (2009). Organizational commitmen, work environment conditions, and life satisfaction among Iranian nurses. *Nurs Health Sci*, 11(4):404-409.

World Health Organization. World health Statistics 2012: Global Health Indicators.http://www.who.int/gho/publications/world_health_statistics/2012/en/. Accessed on 20.8.2013.

Xu Zeng, Naesinee, C., Piyanee, B. K., Jiraporn, C., David, K. B., Peter, W. H. & Siu, Y. L. (2011). Work-related Quality of Life Scale among Singaporean Nurses. *Asian Biomedicine*, 5(4):467-474.

Yaakup, H., Eng, T. C., & Shah, S. A. (2014). Does clinical experience help oncology nursing staff to deal with patient pain better than nurses from other displines? Knowledge and attitudes survey amongst nurses in a tertiary care in Malaysia. *Asian Pacific Journal of Cancer Prevention*, 15(12), 4885-4891. doi: 10.7314/APJCP.2014.15.12.4885

Yildirim, D. (2008). Nurses' work demands and work-family conflict: a questionnaire survey. *International Journal of Nursing Studies*, 45(9): 1366-1378.

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KNOWLEDGE, ATTITUDE AND PREVENTION PRACTICES TOWARDS LEPTOSPIROSIS AMONG SECONDARY SCHOOL CHILDREN

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CHAPTER 1: INTRODUCTION

1.1 Background

Leptospirosis is a widespread zoonotic disease that is recognized as an emerging global public health problem due to its increased incidence in both developed and developing countries (Bharti et al, 2003). There is evidence that Leptospirosis exists as an endemic disease in temperate countries such as China, Korea, Vietnam, Cambodia, Laos, India, Indonesia, Bangladesh, Nepal and Thailand (Mcbride et al, 2005). In recent years there is also high in incident rate in Malaysia.

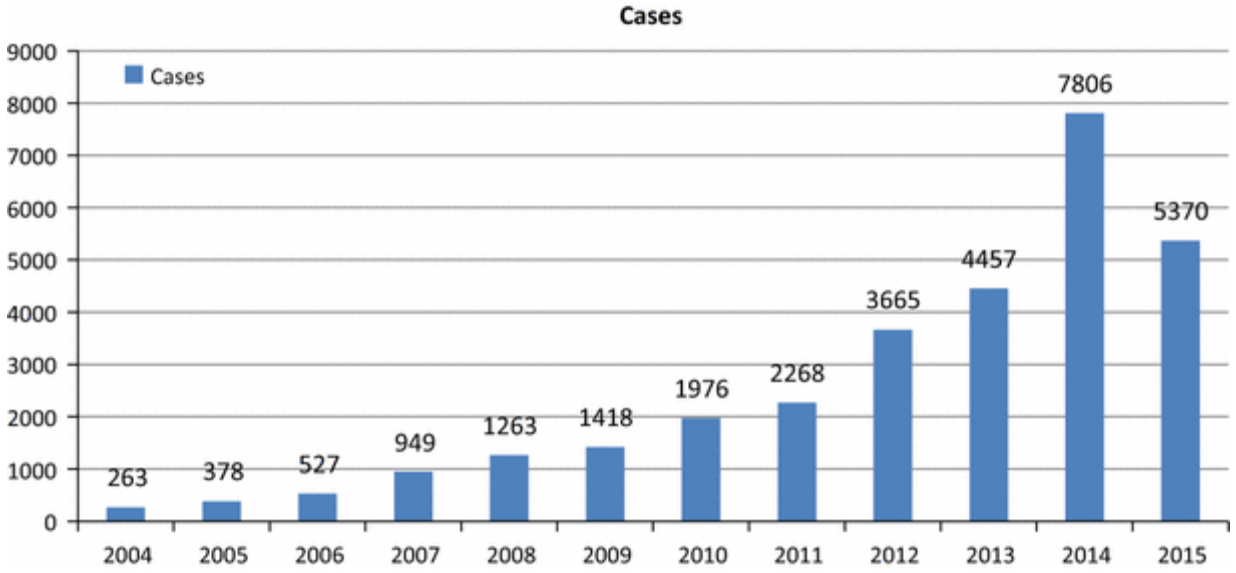

Figure 1: Cases of leptospirosis in Malaysia

Leptospirosis is notified disease and therefore probable and confirmed cases must be notified to relevant health district office since 2010. There were probable and laboratory confirmed Leptospirosis which 3665 in 2013 and 4457 in 2014. In these two years, most common age of patients was 19 years old and less than 19 years old, with male: female ratio of 2.6:1. Students consisted about 16.9% of patients, followed by agriculture-based or plantation workers (14.7%). Overall age-standardized incidence rate of Leptospirosis in Malaysia for 2012 and 2013 was 29.02 per 100,000. Overall case fatality rate was 1.47% for 2 year period and overall age-standardized mortality rate was 0.45 per 100,000. Increase in incident rate year by year may give Malaysia significant health impact and can be burden to the nation if not well controlled. (Tan, 2016)

In February 2018, two children infected with Leptospirosis at Gunung Lumut recreational area in Kluang, Johor Bahru, Malaysia and after that the recreational area was ordered to close. Johor Health, Environment, Education and Information Committee chairman Datuk Ayub Rahmat said Kulai health officers immediately conducted an investigation and found that nine others who have same trip, experience the same sign and symptoms. Some people may experience mild symptoms and some people the sign and symptoms may appear two days , one week or two later. (Loh, 2018). This the reason, the researcher wanted to conducted this study to children as, most of them like to take part in activity related to recreational are and the children usually experience severe complication if infected by Leptospirosis.

In Malaysia there are studies had done to find out the knowledge, attitude and practices of Leptospirosis but it were among Malaysian wet worker seller (Ismail et al, 2015) and also study among Malaysia town service (Rahim et al, 2012). Besides, in Malaysia there is also study to find out the seroprevalence of leptospiral antibodies and knowledge, attitude and practices of Leptospirosis to non-high risk group in Selangor (Sakinah et al, 2015). But there is no study on knowledge, attitude and practices among secondary school students.

Besides, it is important to conduct this study to children as in children, if they get infected, the disease can simulate the infectious diseases, such as viral meningoencephalitis, pharyngitis, urinary tract infection, mononucleosis, and other (Suarez et al, 2016). This is very important especially in the case of hepatitis, for the presence of severe leptospirosis cases with a fatal ending have been documented, and which were initially treated as viral hepatitis (Garcia et al, 2013).

In the study of Leptospirosis prevalence and associated factors in school children in the Mexico, (Espinosa et al, 2017) it stated that contact, the children in Mexico are in addition exposed to frequent and large floods and stagnant waters which are the risk for infection.

1.2 Problem statement

There are studies on knowledge, attitude and practices of Leptospirosis are done in outside country which are Brazil, Philippines and Sri Lanka. Mostly, the study focuses on public and workers. Samarakon and Gunawardena (2013) had done study of Leptospirosis toward secondary school children in Sri Lanka. In other hand, Malaysia also had done this study recently but it is more focus on public. Therefore, the researcher decided to do this study of knowledge, attitude and practices on Leptospirosis among secondary school children.

Although studies have been performed in the general population, and being considered an occupational-type disease (Gamage et al, 2012), children are almost always excluded; in the same way, most of these studies have been performed in diseased persons in acute state, and the infection prevalence in children in unknown and little is known regarding the presence in carriers and/or chronic Leptospira infection in them. Besides, there is little information about the clinical manifestations and complications that happen or the factors associated to the infection in the children group (Espinosa et al, 2017).

Furthermore, human infections primarily results after exposure to the urine of infected animals either directly or indirectly through contact with contaminated water or soil (Ko et al, 2009). In Malaysia, there are a lot of waterfall, river and even swimming pool that most likely be visited by children and also adults. Therefore, the risk for them to get Leptospirosis is high. Besides, there are also high in incidence rate of students infected with Leptospirosis in Malaysia. This is the reason the researcher chooses to make secondary school children because the most common age of patients was 19 years old and less than 19 years old in 2013 and 2014 cases of Leptospirosis.

The fatality rate for this cases was 1.47% for 2 year period and overall age-standardized mortality rate was 0.45 per 100,000. Increase in incident rate year by year may give Malaysia significant health impact and can be burden to the nation if not well controlled (Tan et al, 2016). The study also evaluates the understanding of individual knowledge of the disease and health behaviors plays important role in disease prevention, health and safety (Arbiol et al, 2016).

The main purpose of selecting secondary school children for this study is to promote awareness to health related disease which is Leptospirosis. During secondary school age, they are very active and like involve in activities that have high risk towards Leptospirosis such as swimming in stagnant water, did not take care of their cleanliness and surrounding. This study done for form 1 and 2 because for the exposure regarding Leptospirosis as they involve more on outdoor activities that high risk to be infected such as camping, swimming and hiking. This study is run to assess the knowledge, attitude and prevention practices towards Leptospirosis for future studies and improvement of quality of life. In addition, in February 2018, Hutan Lipur Gunung Belumut, Johor was close after two children being infected by Leptospirosis after went to the waterfall there. They admitted to the nearest hospital after showed the symptom of diarrhea and vomit (Mohamed Amin, 2018). Therefore, this

study is suitable for the research to find out current knowledge, attitude and prevention practices towards Leptospirosis of secondary school children in Malaysia as most severe cases of Leptospirosis in Malaysia involved school age children.

1.3Significant of study

1.3.1 Organization

This study will be benefit to any health organization that want evaluate the secondary school knowledge, attitude and prevention practices towards Leptospirosis. It is significant want to make sure that the public including the students to have knowledge related to Leptospirosis in order to prevent it. By doing this study, evaluation on the secondary school students' level of knowledge, attitude and level of practices of Leptospirosis can be done. Therefore, intervention can be done in order to improve the children and also the public level of knowledge, attitude and level of prevention practices towards Leptospirosis. This is because it is very important as if they have the knowledge on how important to prevent it, their attitude and level of prevention practices also will also improve, therefore the prevalent cases and incident rate will be decreases. The findings of this study also may able to help any organizations to reinforce the knowledge, attitude and prevention practices towards Leptospirosis through articles, journal and advertisement in television.

1.3.2 Secondary school children

This study finding is significant for secondary school students because they able to self-evaluation on their level of knowledge, attitude and prevention practices towards Leptospirosis. The results of study reflect on the students' knowledge, attitude and practices of leptospirosis. Therefore, they should have knowledge on preventing themselves, changing their attitude and practices of their frequent activity and avoid from being infected so that they can prevent it. This study also significant to secondary school students as according to National Center for Biotechnology Information (2016), the most common age of patients infected with Leptospirosis was 19 years old and less than 19 years old in 2013 and 2014 respectively. Leptospirosis is very common in 19 years old and less than 19 years old which these also included secondary school students which the range of age is 13 until 17 years old.

1.3.3 Nursing profession

The findings of this study are able to help nurses in understand and evaluate the current level of knowledge, attitude and prevention practices towards Leptospirosis. Besides, from the findings of this study, the nurses able to create interventions to increase the knowledge, attitude and prevention practices towards Leptospirosis in by making sure they aware the effects of Leptospirosis which if not treated as it can lead to fatal. Therefore, the intervention that nurses should include the awareness of preventive practices towards Leptospirosis.

1.4 Objectives

1.4.1 General Objective

To assess the knowledge, attitude and prevention practices towards Leptospirosis among secondary school children.

1.4.2 Specific Objective

a. To assess the level of knowledge regarding Leptospirosis among secondary school children
b. To assess the attitudes towards Leptospirosis among secondary school children
c. To assess level of prevention practices towards prevention of Leptospirosis among secondary school children
d. To assess association between socio-demographic characteristics and knowledge, attitude and practice towards Leptospirosis among secondary school children.
e. The relationship between knowledge, attitude and practices of Leptospirosis among secondary school children.

1.4.3 Research question

- What is the level of knowledge towards Leptospirosis among secondary school children?
- What is the attitude towards Leptospirosis among secondary school children?
- What is the association between level of prevention practices towards Leptospirosis among secondary school children?
- What is the association between socio-demographic characteristics and knowledge, attitude and practice towards Leptospirosis among secondary school children?
- What is the relationship between knowledge, attitude and prevention practice towards Leptospirosis among secondary school children

1.5 Operational definition

1.5.1 Leptospirosis

Leptospirosis is a zoonotic disease caused by bacteria of the genus Leptospira. It is most commonly spread through water contaminated with urine from infected animals, but contaminated food or soil can be transmission of the disease. The main animal reservoirs are rodents, livestock and dogs (WHO,2017). In this study, Leptospirosis is a disease that transmitted by infected animal which commonly spread through water contaminated with urine from infected animals specifically rat.

1.5.2 Knowledge of leptospirosis

Facts, information and awareness about leptospirosis acquired through experience or education or from the mass media (Meriam-Webster,2017). Facts, information and awareness of the secondary school students about Leptospirosis acquired through experience or education or from the mass media. This study assesses the secondary school children knowledge on the transmission of disease, risk factor, the sign and symptoms and complication of Leptospirosis.

1.5.3 Attitude of leptospirosis

Feeling or thinking that affected a person behavior leptospirosis (Merriam-Webster, 2017). Secondary school students feeling or thinking that affected a person behavior Leptospirosis. In this study the researcher assess the secondary school attitude on what they believe the Leptospirosis is, what they can do to prevent from infected and what other related information that they believe regarding Leptospirosis.

1.5.4 Prevention practices of prevention Leptospirosis

Prevention practices are to do or perform often or habitually and to perform or work at repeatedly so as to become proficient (Merriam-Webster, 2017). This study assess the secondary school students' habitual or expected procedure or way of doing things related to risk to be infected with Leptospirosis and the safety measure taken to avoid Leptospirosis

1.5.5 Secondary school children

A school intermediate between elementary school and college and usually offering general, technical, vocational, or college-preparatory courses (Meriam Webster, 2017). In this study, secondary school refers as form 1 and form 2 from Sekolah Menengah Kebangsaan Bukit Bandaraya, Kuala Lumpur, Malaysia.

1.6 Summary

In this chapter researcher had explained about the background the problem statement, the significant of the study involve organization, secondary school children and the significant in nursing profession. Furthermore, the researcher also explain about the objective of this study include general and specific objective, research question and operational definition of knowledge, attitude, practice, leptospirosis and secondary school children.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Leptospirosis is an infectious disease of humans and animals that is caused by pathogenic spirochetes of the genus Leptospira. It is associated with rodents in settings of poor sanitation, agricultural occupations, and increasingly "adventure" sports or races involving fresh water, mud, or soil

exposure. It is transmitted via the urine of infected rodents. (Gompf, 2018). The risk factors include recreational activities, occupational exposure natural disaster and others but the most common factor in Malaysia is recreational activities (Benacer et al, 2016).

Leptospirosis ranges in severity from a mild illness to a viral infection to a various sign and symptoms includes fever (38-40°C), rigors**,** headache, retro-orbital pain, photophobia, muscle pain localized to the calf and lumbar areas, conjunctiva suffusion, dry cough**,** diarrhea, nausea and vomiting. If the disease is progressive, it can lead to complication of icterus or frank jaundice, renal failure with oliguria, hemorrhagic features and systemic inflammatory syndrome or shock (Gompf, 2018).

For the method of prevention of infection is control the reservoir. Rat is the natural reservoir for this infection. Rodent control by continuing rat trapping, good sanitation and proper garbage disposal is very important to reduce the rat population. In addition, public health awareness is also important in order to prevent the infection. Public should be advice on drinking only purified and boiled water, proper water and food storage, avoiding prolonged immersion in and consumption of river water (Benacer et al, 2016).

There are studies on knowledge, attitude and practices of leptospirosis are done in outside country which are Brazil, Philippines, Sri Lanka and India (Federico et al, 2012; Arbiol et al, 2016; Charmaine et al, 2014; Samarakoon and Gunawardena, 2013; Andres & Dave 2011; Prabhu et al, 2014).

In Malaysia there are studies had done to find out the knowledge, attitude and practices of leptospirosis but it were among Malaysian wet worker seller (Ismail et al, 2015) and also study among Malaysia town service (Rahim et al, 2012). Besides, in Malaysia there is also study to find out the seroprevalence of leptospiral antibodies and knowledge, attitude and practices of leptospirosis to non-high risk group in Selangor (Sakinah et al, 2015). But there is no review of literature in the area of knowledge, attitude and practices of leptospirosis among secondary school students done in Malaysia.

Besides, the researcher also has done this study because although there was increasing incidence rate, leptospirosis remains as a neglected disease that suffers from lack of awareness. In addition, the researcher wants to conduct this study because the understanding of individual knowledge of the disease and health behavior play important role in disease prevention, and in improving health and safety (Arbiol et al, 2016).

The researcher has use the electronic search by using databases in University of Malaya digital library which are Science direct, Pubmed, MEDLINE@EBSCO. In order to get accurate result of literature, relevant keywords are used to sort out related article. There are inclusive and exclusive criteria used.

The inclusive criteria are:

- Year of the article published which are 2007-2017
- Full text given

The exclusive criteria are:

- Other language than English
- Qualitative related article

Keywords: knowledge, attitude, practices, Leptospirosis, secondary school children.

From figure 2, after using the search strategies by insert the keyword, the researcher found out 294 articles. After that the researcher the filter results of that only includes year of the article published which are 2007-2017, full text article, and exclude other language than English and qualitative related article, the researcher found out 123 of article. Then, the researcher screens the article, and includes the article that related knowledge, attitude and practices of Leptospirosis, the researcher found out total of 9 articles.

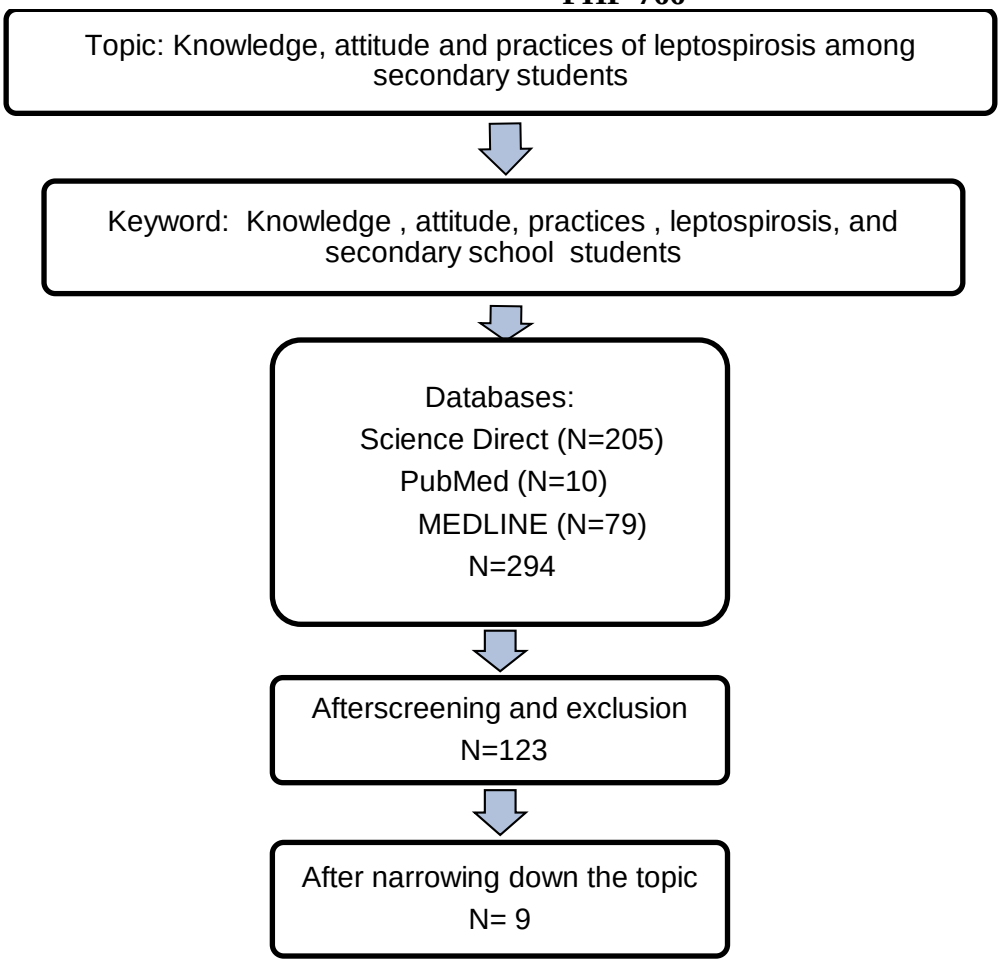

Figure 2: Flow chat of literature review search strategies

2.2 Knowledge of leptospirosis

Based on the study by Samarakoon and Gunawardena (2013) in Sri Lanka, involved 460 respondents, most of them who have good level of knowledge and majority have their parents involved in paddy cultivation which is one of high risk job related to Leptospirosis. The study was only done in endemic rural area in Sri Lanka. Thus, future study should in other area such as urban and suburban.

Furthermore, in the study of Rahim et al. (2012) in Malaysia, of 296 respondents, a large majority never heard of Leptospirosis which is 87.5% respondents. Based on the result from overall respondents, majority of 87.2% of them have poor level of knowledge. The study only done for wet seller worker. Thus, future study should include adults from different job scope.

Based on the study from Sakinah et al. (2015) in Selangor, 98% of the respondents have poor knowledge regarding Leptospirosis. However, this study only done to adult in Selangor. Future study should include other age categories such as the secondary school children and should include respondents from other states.

2.3 Attitude on leptospirosis

Besides, in the study of Rahim et al. (2012) of wet seller market in Malaysia, from 296 respondents, generally the attitude towards Leptospirosis was good. More than half which is 64.9% of the respondents have good attitude. The study was done only at Kelantan. Hence, the result cannot generalize the entire population of wet seller market in Malaysia.

Furthermore, based on the study of Mohamad Azfar et al. (2018) in northeastern Malaysia, more than half which were 52.0% of the respondents have good attitude. Thus, for overall results, the respondents have good attitude towards Leptospirosis. However, this study used simple random and limited data collection from town service worker at northeastern Malaysia. Therefore, it did not represent all town service workers in Malaysia population.

From study of Arbiol et al, (2016), for the overall result, majority of the respondents have good attitude regarding Leptospirosis. However, this study only done to adult. Future study should include children as children also have high risk to be infected by Leptospirosis.

2.4 Prevention practices of leptospirosis

Based on the study of Mohamad Azfar et al. (2018) in northeastern Malaysia, 39.9% of the respondents have good prevention practices regarding Leptospirosis. Thus, for overall result, they have good level of practices as there are more respondents have good prevention practices.

The study of Rahim et al. (2012) in Malaysia, from 296 respondents, 64.5% of the respondents showed them showed unsatisfactory score. Therefore, in this study, it was concluded, for overall result, they have poor level of practices. The study was done only for wet seller market. The other respondents from other job characteristic did not assess in this study, therefore future study should include from different job characteristic.

Besides, the study by Samarakoon and Gunawardena (2013) in Sri Lanka, involved 460 respondents and the finding revealed that the respondents have poor level of prevention practices. In this study, the prevention practices were done obtained through self-report. Ideally, practices need to be evaluated through observation.

2.5 Relationship between level of knowledge, attitude and prevention practices

The study of Ismail et al. (2015) in Malaysia, which related to knowledge, attitude and practices of Leptospirosis among Malaysian wet seller and in the study, the overall result for the respondents are moderate knowledge, unsatisfactory attitude score and satisfactory practice score. Based on this study, there was significant positive low correlation was observed between attitude and practice of Leptospirosis.

Furthermore, the study of Arbiol et al, (2016), from Philippines, there was significant positive low correlation between knowledge and preventive practice. This study states that, knowledge improves individual ability to translate preventive measure into action.

2.6 Association between and demographic characteristics, level of knowledge, attitude and prevention practices.

From the study of Ismail et al. (2015) in Malaysia, there is significant association between level of knowledge and educational level. Most of the respondents that have high score, have the highest completed level of education.

Besides, in the study of Rahim et al. (2012) in Malaysia, the data was collected from 296 respondents, they find out there were no different between knowledge, attitude and practice with educational level, age and duration of employment. However, there was a significant difference between attitude and practice level with job category.

From the previous study from Arbiol et al. (2016) in Philipines, based on result, the higher Leptospirosis prevention practice score have significantly associated with female respondents and obtained health information from the broadcast media. This study did not cover the range of reasons for engaging or not engaging in specific prevention practices. Future study may use open-ended questionnaire to explore the reason for respondents choices.

Based on study from Prabhu et al, (2014) there were no significant difference between knowledge, attitude and practice with education level, age, duration of employment and job category. However, the significant difference between knowledge, attitude and practice level with job category.

2.7 Summary

This chapter discuss about the search strategies which include the selection criteria, exclusion criteria and results of key studies. The purpose of literature review is to make the researcher understand more about this study.

CHAPTER 3: METHODOLOGY

3.1 Introduction

In this chapter, the researcher explain and describe the study design, study setting, population sample (sampling calculation, inclusive and exclusive), the research instrument (questionnaire, validity, and reliability), data collection method, data analysis, ethical consideration and pilot study.

3.2 Study design

In this study, quantitative design and cross-sectional descriptive study is use. Cross-sectional study is use to collect information from a group at one time. Quantitative methods is use to emphasize objective measurements and the statically, mathematical, or numerical analysis of data collected through questionnaires, and surveys, or by manipulating pre-existing statistical data using computational technique. In quantitative research designs, it is focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon. (Babbie and Muijs, 2010).

Quantitative research designs are either descriptive (subjects usually measured once) or experimental (subjects measured before and after a treatment). A descriptive study establishes only associations between variables, an experimental study establishes causality. (Babbie, 2010). In this study, researcher use quantitative descriptive design.

3.3 Study setting

The study setting is at Sekolah Menengah Kebangsaan Bukit Bandaraya in Bangsar which in the area of Klang Valley. Besides, the researcher only had given permission by the Ministry of Education to do the survey on form that excluded from taking important examination. After taking permission from the headmaster of SMK Bukit Bandaraya, I had done the survey to form 1 and form 2.

3.4 Population & Sampling

There are total of 980 students there. The sampling method use is simple random sampling. Both female and male from the form 1and 2 secondary school children in Sekolah Menengah Kebangsaan Bukit Bandaraya had been targeted to complete the survey. From name list of the form 1 and form 2, 350 students are randomly chosen, and only 324 of the students answered the questionnaire completely.

3.4.1 Sampling calculation

The researcher used a sample size calculator to calculate sample size for the study is calculated by using *Rausoft Inc.*software. From the Raosoft Calculator, with confidence level of 95% and margin of error, the recommended size is at least 277. After completed the survey, total of 350 of data managed to be collected from the survey but only 324 can be used.

3.4.2 Inclusion & exclusion of criteria

Study subject who agree to participate in this study by answering the questionnaire had met the selection criteria for the project.

3.4.2.1 Inclusion criteria

- The secondary school students who are willing to participate and present during the period of data collection in the study.
- The secondary school students of form 1and 2 as given permission by the headmaster.

3.4.2.2 Exclusion criteria

- Students who taken important examination (Ministry of Education condition during ethic application)

3.5 Research instrument

Research instrument is the device used to collect the data.

3.5.1 Questionnaire

The questionnaire adapted and modified from Arbiol, et al (2016). This questionnaire had been sent to be translated to an English Lecturer at Faculty of Language and Linguistic.

3.5.1.1 Section A: Social demographic characteristic

In section A, it consists of 9 items. This included the student's age, gender, age, parent's occupation and educational level.

3.5.1.2 Section B: Knowledge

In section B, the secondary school children answered the questionnaire which consists of 16 questions. The researcher provided question to the secondary school children regarding the knowledge of Leptospirosis, including the knowledge of the causative organism and transmission, the sign and symptoms, complications of the disease and prevention. This items consists of True/False/Unknown responses. Score 1 was given for each correct answer, while incorrect answers and "I don't know" responses were scored 0. There are 11 positive statement items and 5 negative statement items. The negative statement items are reversed scoring and tailed with positive statement items. The total knowledge score for each respondent was a sum ranging from 0 to 16.

3.5.1.3 Section C: Attitude

In section C, consist of 8 items. The questionnaire provided includes their attitude on the importance of health prevention regarding Leptospirosis. It consisted of a five-level Likert scale format (1= strongly disagree, 2= disagree, 3= not sure, 4 = agree, 5 = strongly disagree), the total score of each respondents could range from 8 to 40, with the higher scores indicating a more positive attitude towards Leptospirosis which having more optimistic disposition or beliefs about Leptospirosis prevention.

3.5.1.4 Section D: Prevention Practices

Section D, consists of 8 items. The researcher provided questions regarding prevention practices towards leptospirosis which are the prevention and control strategies practiced which include maintaining cleanliness on the surrounding and keeping good hygiene. These include general practice of hygiene and also specific practice on Leptospirosis prevention. It consisted of a five Likert scale question format (1= never, 2= rarely, 3= sometimes, 4=often, 5= always. There are 5 positive statement items and 3 negative statement items. The negative statement items are reversed scoring and tailed with positive statement items. The total score of each respondent could range from 8 to 40, which higher score indicating higher adherence to prevention practices.

3.6 Validity and Reliability

For this study, face validity done by expert panel which are nursing lecturer from department of Nursing , nursing officer and also doctor from infectious disease department in University Malaya Medical Centre (UMMC). The questionnaire was evaluated and had some modification to meet the objective of the study. Furthermore, a pilot study was conducted before the data collection to test the reliability and quality of the questionnaire to be used in the study. A pilot study was conducted among 30 of the secondary school children which 10% out from the Sekolah Menengah Kebangsaan Bukit Bandaraya. Once pilot study is done, Chonbach's alpha was tested for reliability of the questionnaire The questionnaire adapted and modified from Arbiol, et al (2016). The Cronbach's alpha > 0.70 were reported. The reliability test was done by using Cronbach's alpha in SPSS 23.0 for Section B: knowledge of the respondents, Section C: attitude of the respondents and Section D: practice of prevention measures of respondents respectively. The result of reliability tests were greater than 0.7 as shown in Table 3.1. Hence, all the sections were considered highly reliable to use for this study.

Table 3.1 Reliability test on knowledge, attitude and prevention practices toward Leptospirosis among secondary school children (n=30)

Categories	Cronbach's Alpha	Cronbach's Alpha Based Standardized Items	N of Items
Knowledge	.790	.830	16
Attitude	.825	.825	8
Practices	.703	.705	8

3.7 Data collection method

The data collection had done after the researcher obtain ethical approval from the Ministry of Education Malaysia, Kuala Lumpur Federal Territory Education Department and headmaster of SMK Bukit Bandaraya. After pilot study was done to 30 of the students includes form 1 and 2, the data collection had proceed. The researcher went to the school and told the teacher to take sometimes from the students to do the survey. Simple random sampling was used in order to select students to answer the questionnaire. The selected students from of form 1 and 2 were gathered in a hall and the questionnaires were distributed to the students. The data collection was done within September 2018. A total of 350 questionnaires distributed to the students. The researcher obtained the 350 questionnaire after they answered it. However, only 324 can be used as other students does not completed the questionnaire.

3.8 Data analysis

The data collected and analysed using Statistical Product and Service Solutions (SPSS) version 23.0. The researcher use descriptive and inferential statistic to present the data. The descriptive statistics were used to analyse demographic charactheristic. While Chi-square test were used for the association between knowledge, attitude and prevention practices with demographic characateristic and Spearmans' Rho test was used to analyse the relationship between the knowledge, attitude and prevention practices.

3.9 Ethical consideration

Before starting the survey, the researcher had obtained ethical approval from Ministry of Education Malaysia and Kuala Lumpur Federal Territory Department, since this study is conduct in Klang Valley and also obtained ethical approval from headmaster of Sekolah Menengah Kebangsaan Bukit Bandaraya.

For study purpose, informed consent form was obtained from the respondents who agreed to take part in the study. The respondents were freely decided withdraw from this study without giving explanation. The researcher makes sure the confidentiality of the respondents' information. Respondent answers were treated as confidentially and anonymously. Every complete questionnaire had been seal and kept in seal box as to prevent leak of respondents' identity and answer.

3.10 Pilot study

In this pilot study, 10% from the total sample size before conducting the real test. These respondents are excluded in the main study. It is to help the researcher to test whether the instruments use comprehensive, understandable and relevant to test the reliability of the instrument. Besides, pilot study was tested to get the duration of the respondents to complete the research questionnaire.

Pilot study was carried out after researcher get the ethical permission from the Ministry Of Education, District Office, the headmaster of SMK Bukit Bandaraya and also after validation is done by experts. Pilot study was conduct at March 2018. 30 students were chosen and identified to be participant in pilot study. This is to avoid repetition of sample answering the same questionnaire when the researcher done the actual survey.

3.11 Summary

In this chapter, the researcher explained the details of study design, study setting, sampling methods, data collection and data analysis. Furthermore, ethical consideration is important to make sure this study was followed the ethical procedure.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

In this chapter the researcher describes the analysis of the data collected. The finding is according to the objective from this study. Data collected were analysed to assess the level of knowledge, attitude and practice towards leptospirosis among secondary school children and also to assess association between the level of knowledge, attitude and practices towards leptospirosis among secondary school children and selected socio-demographic towards leptospirosis among secondary school children in SMK Bukit Bandaraya.

4.2 Data screening and data management

Data collected was entered in SSPS according to the respondents' identification number tagged to avoid double entry. Data was screened and missing values detected. From 350 questionnaires, 26 questionnaires were omitted due to the missing values. Normality test was done to the dependent variables (knowledge, attitude and practice towards leptospirosis) and found normally distributed as shown in Table 4.1.

Table 4.1 Normality test

	Mean (SD)	Median	Mode	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
Knowledge	9.48(2.378)	11.00	22	-.284	.135	.037	.270
Attitude	30.62(4.473)	31.00	31	-1.018	.135	1.601	.270
Practice	30.62(3.827)	32.00	32	-.507	.135	.119	.270

4.3 Response rate

350 questionnaires were distributed by the researcher through face to face with the respondents and were collected. Out of 350, 23 respondents did not complete the questionnaire one or more subsection (especially section A, C and D) of the questionnaire were omitted. This presented a response rate of 92.57%. Therefore, only 324 questionnaires were usable and meet inclusive criteria for this study as discussed in previous chapter.

4.4 Demographic characteristics of respondents

Table 4.2 shows display the details of demographic characteristics of the respondents. This study collected a total of 324 respondents. From the table, it shows that female respondents contributed a total of 170 out of 324 respondents in this study which is 52.5%, while the male respondents contributed 154 out of 324 or 47.5% of the total respondents. In the term of age 13 years old occupied slightly less, contribute percentage of 47.2% (n=153) than age group of 14 which is 52.8% (n=171). The ethnicity consists of four ethnics were Malay, Chinese, Indian and others. From the table, Malay respondents occupied the highest percentage of 83.6% (n=271), while Chinese respondents occupied the lowest percentage which is only 1.5% (n=5). The highest educational level of their parents consists of 2 categories which are educational level that includes secondary school and below and also college diploma and above. Most of their parents are in college diploma and above categories. There are 65.7% (n=213) of the respondents' father have college diploma and above education while there are 63.3% (n=205) of the respondents' mother have college diploma and above education. There are 34.3% (n=111) of the respondents' father education level of secondary school and below and also there are 36.7% (n=119) of respondents' mother education level of secondary school and below. Furthermore, there are 47.5% (n=154) of the respondents' father working in government which contribute as the highest percentage while there are 5.6% (n=18) of the respondents' father are not working which contribute as the lowest percentage for working classification of respondents' father. There are 38.9% (n=126) of respondents' mother working in government which contribute as the highest percentage while there are 23.1% (n=75) of the respondents' mother are working in non-government which contribute as the lowest percentage for working classification of respondents' mother in this study.

Table 4.2 Demographic characteristics of respondents (N=324)

Characteristics	Frequency (n)	Percent (%)	Mean	SD
Age			13.528	0.50
Gender				
Male	154	47.5		
Female	170	52.5		
Ethnicity				
Malay	271	83.6		
Chinese	5	1.5		
Indian	42	13.0		
Others	6	1.9		
Educational level of father				
Secondary school and below	111	34.3		
College diploma and above	213	65.7		
Educational level of mother				
Secondary school and below	119	36.7		
College diploma and above	205	63.3		
Working classification of father				
Government	154	47.5		
Non-government	152	46.9		
Not working	18	5.6		
Working classification of mother				
Government	126	38.9		
Non-government	75	23.1		
Not working	123	38.0		

Table 4.3 Information regarding Leptospirosis (N=324)

Characteristic	Frequency	Percentage (%)
Have heard about leptospirosis?		
Yes	293	90.4

No	31	9.6
Total	324	100.0
Information on health care		
Health care provider	110	34.0
Media mass	119	36.7
Family/Relative	55	17.0
Newspaper/Brochure	32	9.9
Others	8	2.5

Table 4.3 shows display the details on how the respondents get information regarding Leptospirosis. A total of 293 (90.4%) respondents have heard about leptospirosis before and 31(9.6%) never heard about leptospirosis. 110 (34.0%) and 119 (36.7%) respondents get information on health care from health care provider and media mass respectively. 8(2.5%) respondents answer others in the question state they get the information from the internet.

4.5 To assess level of knowledge regarding Leptospirosis among secondary school children

The overall knowledge score of the respondents regarding Leptospirosis is 9.48 (2.378). The knowledge was divided into three categories, poor knowledge with the range of score 0 to 5, moderate knowledge with range score 6 to 11 and good knowledge with the range 12 to 16. As shown in Table 4.4, about 73.8% (n=239) of respondents had moderate knowledge and 5.9 (n=19) had poor knowledge regarding Leptospirosis.

Table 4.4 Knowledge level of secondary school children (n= 324)

Knowledge level	**Range of score**	**Frequency (n)**	**Percent (%)**
Poor knowledge	0-5	19	5.9
Moderate knowledge	6-11	239	73.8
Good knowledge	12-16	66	20.4
Total		324	100.0

Table 4.5 shows the details of item analysis of knowledge regarding Leptospirosis. 53.7% (n=174) of the respondents score correct response for item “Leptospirosis is caused by a bacteria”. 88.6% (n=287) of the respondents score correct response for item “Rat can transmit Leptospirosis”. 46.9% (n=152) of the respondents score correct response for item “Leptospirosis can enter our body through cuts”. 76.5% (n=248) of the respondents score correct response for item “Leptospirosis can enter our body through contaminated food”. 73.8% (n=239) of the respondents score correct response for item “Leptospirosis can be transmitted through mosquito bites”. 49.7% (n=161) of the respondents score correct response for item “Human can infected by shaking hands with infected person”. 84.3% (n=273) of the respondents score correct response for item “Floodwater, river and waterfall can transmitted Leptospirosis”. 22.5% (n=73) of the respondents score correct response for item “Person infected by Leptospirosis may have difficulty in urinating”. 17.3% (n=56) of the respondents score correct response for item “Person infected by Leptospirosis may have jaundice”. 54.0% (n=175) of the respondents score correct response for item “Person infected by Leptospirosis may free from any symptom”. 84.9% (n=275) of the respondents score correct response for item “Leptospirosis can cause death”. 31.8% (n=103) of the respondents score correct response for item “Leptospirosis can cause lung cancer, kidney failure, liver damage and diabetes”. 77.2% (n=250) of the respondents score correct response for item “Avoiding walking, playing and bathing in the flood, river and waterfall can prevent Leptospirosis”. 89.5% (n=290) of the respondents score correct response for item “Maintaining clean surrounding can prevent Leptospirosis”. 62.3% (n=202) of the respondents score correct response for item “Avoiding contact with rats can prevent Leptospirosis”. 346%

(n=112) of the respondents score correct response for item "Wearing boots during flood can prevent Leptospirosis".

Table 4.5 Knowledge of the secondary school children (N=324)

Items	True %(n)	False %(n)	I do not know %(n)	Mean	SD
Leptospirosis is caused by a Bacteria	53.7(174)	17.3(56)	29.0(94)	.537	.499
Rat can transmit Leptospirosis	88.6(287)	5.9(19)	5.6(18)	.886	.318
Leptospirosis can enter our body through cuts	46.9(152)	21.9(71)	31.2(101)	.469	.499
Leptospirosis can enter our body through contaminated food	76.5(248)	10.5(34)	13.0(42)	.765	. 424
#Leptospirosis can be transmitted through mosquito bites	6.8(22)	73.8(239)	19.4(63)	.068	. 251
#Human can infected by shaking hands with infected person	13.3(43)	49.7(161)	37.0(120)	.133	.339
Floodwater, river and waterfall can transmitted Leptospirosis	84.3(273)	3.4(11)	12.3(40)	.842	.364
#Person infected by Leptospirosis may have difficulty in urinating	19.8 (64)	22.5(73)	57.7(187)	.198	.399
Person infected by Leptospirosis may have jaundice	17.3(56)	21.0(68)	61.7(200)	.173	.379
#Person infected by Leptospirosis may free from any symptom	9.9(32)	54.0(175)	36.1(117)	.099	. 299
Leptospirosis can cause death	84.9(275)	4.3(14)	10.8(35)	.849	.359
#Leptospirosis can cause lung cancer, kidney failure, liver damage and diabetes	21.9(71)	31.8(103)	46.3(150)	. 219	.414
Avoiding walking, playing and bathing in the flood, river and waterfall can prevent Leptospirosis	77.2(250)	9.6(31)	13.3 (43)	.771	.420
Maintaining clean surrounding can prevent Leptospirosis	89.5(290)	5.9(19)	4.6(15)	.896	.307
Avoiding contact with rats can prevent Leptospirosis	62.3(202)	15.4(50)	22.2(72)	.624	.485
Wearing boots during flood can prevent Leptospirosis	34.6(112)	22.8(74)	42.6(138)	.346	.476

Negative statement items are reversed scoring and tailed with positive statement items

4.6 To assess attitude regarding Leptospirosis among secondary school children

The overall knowledge score of the respondents regarding Leptospirosis is 30.61 (4.473). The attitude was divided into three categories, poor attitude with the range of score 8 to 18, moderate attitude with range score 19 to 29 and good attitude with the range 30 to 40. As shown in Table 4.6, about 66.0% (n=214) of respondents had good attitude and 1.5% (n=5) had poor attitude towards Leptospirosis.

Table 4.6 Attitude level of secondary school children (n= 324)

Attitude level	Range of score	Frequency (n)	Percent (%)
Poor attitude	8-18	5	1.5
Moderate attitude	19-29	105	32.4
Good attitude	30-40	214	66.0
Total		324	100.0

Table 4.7 shows the details of item analysis of attitude towards Leptospirosis. 51.5% (n=167) of the respondents score correct response for item "I believe that Leptospirosis is a serious illness". 6.2% (n=20) of the respondents score correct response for item "I believe that medicine can threat Leptospirosis". 38.0% (n=123) of the respondents score correct response for item "I believe I can do something to prevent myself from being infected with Leptospirosis". 22.5% (n=73) of the respondents score correct response for item "It is important to control rat population". 45.7% (n=148) of the respondents score correct response for item "It is important to follow health advisory during rainy season". 31.8% (n=103) of the respondents score correct response for item "I would worried to walk through flood". 24.1% (n=78) of the respondents score correct response for item "Disposing the dead animal is important". 42.5% (n=170) of the respondents score correct response for item "I would make my environment free from rat".

Table 4.7 Attitude of secondary school children (N=324)

Items	Strongly disagree %()	Disagree %()	Neutral %()	Agree %()	Strongly Agree %()	Mean	SD
I believe that Leptospirosis is a serious illness	2.2(7)	2.5(8)	6.8(22)	37.0(120)	51.5(167)	4.33	.876
I believe that medicine can threat Leptospirosis	4.0(13)	10.5(34)	49.7(161)	29.6(96)	6.2(20)	3.23	.869
I believe I can do something to prevent myself from being infected with Leptospirosis	4.6(15)	5.6(18)	17.9(58)	38.0(123)	34.0(110)	3.91	1.074
It is important to control rat population	7.7(25)	11.4(37)	31.2(101)	27.2(88)	22.5(73)	3.45	1.181
It is important to follow health advisory	4.3(14)	5.6(18)	11.4(37)	33.0(107)	45.7(148)	4.10	1.084

during rainy season							
I would worried to walk through flood	3.7(12)	10.2(33)	19.1(62)	35.2(114)	31.8(103)	3.81	1.104
Disposing the dead animal is important	8.3(27)	9.6(31)	29.0(94)	29.0(94)	24.1(78)	3.51	1.195
I would make my environment free from rat	2.8(9)	2.8(9)	12.3(40)	29.6(96)	52.5(170)	4.26	.971

4.7 To assess level of prevention practices towards Leptospirosis among secondary school children

Table 4.8 shows the overall practice score of the respondents regarding Leptospirosis is 30.62 (3.827). The prevention practices was divided into three categories, poor practice with the range of score 8 to 18, moderate practice with range score 19 to 29 and good practice with the range 30 to 40. As shown in Table 4.8, about 61.1% (n=198) of respondents had good practice and 0.3% (n=1) had poor practice towards Leptospirosis.

Table 4.8 Prevention practices level of secondary school children (n= 324)

Attitude level	**Range of score**	**Frequency (n)**	**Percent (%)**
Poor practice	8-18	1	0.3
Moderate practice	19-29	125	38.6
Good practice	30-40	198	61.1
Total		324	100.0

Table 4.9 shows the details of item analysis of attitude towards Leptospirosis. 13.3% (n=43) of the respondents score correct response for item “I wear waterproof boots when wading on flood water”. 54.0% (n=175) of the respondents score correct response for item “I walk through the flood water”. 30.9% (n=100) of the respondents score correct response for item “I walk barefooted on the soil”. 53.1% (n=172) of the respondents score correct response for item “I store food in sealed or rat proof containers”. 64.2% (n=208) of the respondents score correct response for item “I will make sure my house is free from rat”. 74.4% (n=241) of the respondents score correct response for item “I wash my hand before eating”. 50.0% (n=162) of the respondents score correct response for item “I drink boiled cooled water”. 6.8% (n=22) of the respondents score correct response for item “I bathe in public swimming pool and/or waterfall

Table 4.9 Prevention practices of secondary school children (N=324)

Items	**Never Practiced %()**	**Rarely Practiced %()**	**Sometimes Practiced %()**	**Often Practiced %()**	**Always Practiced %()**	**Mean**	**SD**
I will wear waterproof boots when wading on	42.0(136)	20.1(65)	12.3(40)	12.3(40)	13.3(43)	2.35	1.455

flood water							
#I walk through the flood water	54.0(175)	29.0(94)	9.6(31)	5.2(17)	2.2(7)	4.27	.984
#I walk barefooted on the soil	30.9(100)	26.9(87)	28.1(91)	7.7(25)	6.5(21)	3.68	1.176
I store food in sealed or rat proof containers.	3.1(10)	5.2(17)	9.3(30)	29.3(95)	53.1(172)	4.24	1.028
I will make sure my house is free from rat	4.0(13)	4.6(15)	8.0(26)	19.1(62)	64.2(208)	4.35	1.073
I wash my hand before eating	1.2(4)	2.2(7)	7.1(23)	15.1(49)	74.4(241)	4.59	.814
I drink boiled cooled water.	9.8(9)	7.1(23)	14.2(46)	25.9(84)	50.0(162)	4.13	1.078
#I bathe in public swimming pool and/or waterfall	6.8(22)	24.7(80)	41.0(133)	16.7(54)	10.8(35)	3.00	1.059

Negative statement items are reversed scoring and tailed with positive statement items

4.8 Association between knowledge and selected demographic characteristics of secondary school children towards Leptospirosis

Based on Table 4.10, the Pearson Chi-square analysed revealed a non-significant association existed between age of the secondary school children and knowledge level regarding Leptospirosis, $X^2(2, N=324) = 5.556$, $p > 0.05$.

Furthermore, the Pearson Chi-square analysed revealed a non-significant association existed between gender of the secondary school children and knowledge level regarding Leptospirosis, $X^2(2, N=324) = 2.452$, $p > 0.05$.

The Pearson Chi-square analysed revealed a significant association existed between ethnicity of the secondary school children and knowledge level regarding Leptospirosis, $X^2(6, N=324) = 16.116$, $p > 0.05$. Fisher's Exact test also revealed ethnicity of the secondary school children and knowledge level regarding Leptospirosis as $p < 0.05$ (p-value = 0.007).

Among 324 respondents 208 (76.8%) of the Malay respondents, 2 (40%) of Chinese respondents , 27 (64.3%) of Indian respondents and 2 (33.3%) of others which include Chindian, Sikh, India Muslim, Kadazandusun, and Russian respondents have moderate knowledge regarding Leptospirosis.

The Pearson Chi-square analysed revealed a non-significant association existed between father's

educational level of the secondary school children and knowledge level regarding Leptospirosis, X^2(2. N=324) = 1.114, p> 0.05.

The Pearson Chi-Square analysed revealed a non-significant association exist between knowledge level regarding Leptospirosis and mother's educational level of the secondary schoolchildren, X^2(2. N=324) = 1.493, p> 0.05.

Besides, the Pearson Chi-square analysed revealed a non-significant association existed between occupation of the secondary school children fathers and knowledge level regarding Leptospirosis, X^2(4, N=324) =7,033, p> 0.05. Fisher's Exact test also revealed occupation level of the secondary school children fathers and knowledge level regarding Leptospirosis as p> 0.05 (p-value = 0. 116)

The Pearson Chi-square analysed revealed a non-significant association existed between occupation of the secondary school children mothers and knowledge level regarding Leptospirosis, X^2(4, N=324) = 7.103, p> 0.05.

Table 4.10 Association between demographic characteristics and knowledge of secondary school children towards Leptospirosis (N=324)

	Level of Respondents' Knowledge					
	Poor Knowledge n (%)	**Moderate Knowledge n (%)**	**Good Knowledge n (%)**	**df**	***X*²**	***p*-value**
Age						
13	11 (7.2)	119 (77.8)	23 (15.0)	2	5.556	*.062*
14	8 (4.7)	120 (70.2)	43 (25.1)			
Gender						
Female	10(5.9)	131 (77.1)	29 (17.1)	2	*2.452*	*.294*
Male	3 (1.9)	68 (44.2)	83 (53.9)			
Ethnicity						
Malay	12 (4.4)	208 (76.8)	51 (18.8)			
Chinese	0 (0.0)	2 (40.0)	3 (60.0)			
Indian	6 (14.3)	27(64.3)	9 (21.4)	6	17.246	.007#*
Others	1 (16.7)	2 (33.3)	3 (50.0)			
Fathers, education						
Secondary school and below	7 (6.3)	85 (76.6)	19 (17.1)			
College diploma and above	12 (5.6)	154 (7.3)	47 (22.1)	2	1.114	.573
Mothers' education						
Secondary school and below	7 (5.9)	92 (77.3)	20(16.8)			
College diploma and above	12 (5.9)	147(71.7)	46 (22.4)	2	1.493	.474
Fathers' occupation	4 (2.6)	119 (77.3)	31 (20.1)			
Government servant	14 (9. 2)	108 (71.1)	30 (19.7)	4	6.759	.124#
	1 (5.6)	12 (66.7)	5 (27.8)			

Non-government servant						
Not working						
Mothers' occupation	3 (2.4)	99 (78.6)	24 (19.0)			
Government servant	4 (5.3)	53 (70.7)	18 (24.0)	4	7.103	.131
Non-government servant	12 (9.8)	87 (70.7)	24 (19.5)			
Not working						
Total	19 (5.9)	239 (73.8)	66 (20.4)			

Significant at 0.05*
Fisher's Exact Test#

4.9 Association between attitude and demographic characteristics of secondary school children towards Leptospirosis

Based on Table 4.11, the Pearson Chi-square analysed revealed a non-significant association existed between age of the secondary school children and attitude regarding Leptospirosis, $X^2(2, N=324) = 0.186$, $p > 0.05$. Fisher's Exact test also revealed age of the secondary school children and attitude regarding Leptospirosis as $p > 0.05$ (p-value = 1.000)

Besides, the Pearson Chi-Square analysed revealed a significant association exist between attitude regarding Leptospirosis and gender of the secondary schoolchildren, $X^2(2, N=324) = 7.253$, $p < 0.05$. Fisher's Exact test also revealed gender of the secondary school children and attitude regarding Leptospirosis as $p < 0.05$ (p-value =0.019). Among 324 respondents age 13, 123 (72.4%) and 91 (59.1%) age 14 have good attitude towards Leptospirosis.

In addition, the Pearson Chi-square analysed revealed a non-significant association existed between ethnicity of the secondary school children and attitude regarding Leptospirosis, $X^2(6, N=324) = 10.839$, $p > 0.05$. Fisher's Exact test also revealed ethnicity of the secondary school children and attitude regarding Leptospirosis as $p > 0.05$ (p-value = .086).

The Pearson Chi-square analysed revealed a non-significant association existed between fathers' educational level of the secondary school children and attitude regarding Leptospirosis, $X^2(2, N=324) = .343$, $p > 0.05$. Fisher's Exact test also revealed fathers' educational level of the secondary school children and attitude regarding Leptospirosis as $p > 0.05$ (p-value = .901)

Table 4.11 Association between demographic characteristics and attitude of secondary school children towards Leptospirosis (N=324)

	Respondents' Attitude Level			**df**	X^2	***p*-value**
	Poor Attitude n (%)	**Moderate Attitude n (%)**	**Good Attitude n (%)**			
Age						
13	2 (1.3)	50 (32.7)	101 (66.0)	2	.186	1.00#
14	3 (1.8)	55 (32.2)	113 (66.1)			
Gender						
Female	1 (0.6)	46 (27.1)	123 (72.4)	2	7.253	.019*

Male	4 (2.6)	59 (38.3)	91 (59.1)			
Ethnicity						
Malay	5 (1.8)	82 (30.3)	184(67.9)			
Chinese	0 (0.0)	3 (60.0)	2 (40.0)			
Indian	0 (0.0)	20 (47.6)	22 (52.4)	6	10.839	.086#
Others	0 (0.0)	0 (0.0)	6 (100.0)			
Fathers, education						
Secondary school and below	1 (0.9)	36 (32.4)	74 (66.7)			
College diploma and above	4 (1.9)	69 (32.4)	214 (66.0)	2	.343	.901#
Mothers' education						
Secondary school and below	2 (1.7)	44 (37.0)	73 (61.3)			
College diploma and above	3 (1.5)	61 (29.8)	141 (68.8)	2	2.005	.364#
Fathers' occupation						
Government servant	3 (1.9)	44 (28.6)	107 (69.5)			
Non-government servant	1 (0.7)	56 (36.8)	95 (62.5)	4	5.462	.220#
Not working	1 (5.6)	5 (27.8)	12 (66.7)			
Mothers' occupation	2 (1.6)	35 (27.8)	89 (70.6)			
Government servant	2 (2.7)	27 (36.0)	45(61.3)	4	3.373	.499#
Non-government servant	1 (0.8)	43 (35.0)	79 (64.2)			
Not working						
Total	5 (1.5)	105 (32.4)	214 (66.0)			

Significant at 0.05*
Fisher's Exact Test#

Pearson Chi-square analysed revealed a non-significant association existed between mothers' educational level of the secondary school children and attitude regarding Leptospirosis, $X^2(2, N=324) = 2.005$, $p > 0.05$. Fisher's Exact test also revealed mothers'
educational level of the secondary school children and attitude regarding Leptospirosis as $p > 0.05$ (p-value = .364).
Next, the Pearson Chi-square analysed revealed a non-significant association existed between occupation of the secondary school children fathers and attitude regarding Leptospirosis, $X^2(4, N=324) = 5.462$, $p > 0.05$. Fisher's Exact test also occupation of the secondary school children fathers and attitude regarding Leptospirosis as $p > 0.05$ (p-value = .220).
The Pearson Chi-square analysed revealed a non-significant association existed between occupation of the secondary school children mothers and attitude regarding Leptospirosis, $X^2(4, N=324) = 3.373$, $p > 0.05$. Fisher's Exact test also occupation of the secondary school children mothers and attitude regarding Leptospirosis as $p > 0.05$ (p-value = .499).
The Pearson Chi-square analysed revealed a non-significant association existed between ethnicity of

the secondary school children and attitude regarding Leptospirosis, $X^2(6, N=324) = 10.839$, $p > 0.05$. Fisher's Exact test also revealed ethnicity of the secondary school children and attitude regarding Leptospirosis as $p > 0.05$ (p-value = .086).

4.10 Association between prevention practice and demographic characteristics of secondary school children towards Leptospirosis

Based on Table 4.12, the Pearson Chi-square analysed revealed a non-significant association existed between age of the secondary school children and practice level regarding Leptospirosis, $X^2(2, N=324) = 1.224$, $p > 0.05$. Fisher's Exact test also revealed age of the secondary school children and practice level regarding Leptospirosis as $p > 0.05$ (p-value = 0.606)

Table 4.12 Association between demographic characteristics and prevention practice of secondary school children towards Leptospirosis (N=324)

	Level of prevention practice of respondents					
	Poor Practice n (%)	**Moderate Practice n (%)**	**Good Practice n (%)**	**df**	***X*²**	***p*-value**
Age						
13	0 (0.0)	62 (40.5)	91 (59.5)	2	1.244	.606#
14	1 (0.6)	63 (36.8)	107 (62.6)			
Gender						
Female	0 (0.0)	52 (30.6)	118 (69.4)	2	10.974	.002#*
Male	1 (0.6)	73 (47.4)	80 (51.9)			
Ethnicity						
Malay	1 (0.4)	108 (39.9)	162 (59.8)			
Chinese	0 (0.0)	2 (40.0)	3 (60.0)			
Indian	0 (0.0)	14 (33.3)	28 (66.7)	6	7.054	.685#
Others	0 (0.0)	1 (16.7)	5 (83.3)			
Fathers, education						
Secondary school and below	1 (0.9)	49 (44.1)	61(55.0)			
College diploma and above	0 (0.0	76 (35.7)	137 (64.3)	2	4.195	.087#
Mothers' education						
Secondary school and below	1 (0.8)	46 (38.7)	72 (60.5)			
College diploma and above	0 (0.0)	79 (38.5)	126 (61.5)	2	1.638	.549#
Fathers' occupation						
Government servant	0 (0.0)	56 (36.4)	98 (63.6)			
Non-government servant	1 (0.7)	58 (38.2)	93 (61.2)	4	6.289	.179#
Not working	0 (0.0)	11 (61.1)	7 (38.9)			
Mothers' occupation	1 (0.8)	52 (41.3)	73 (57.9)			

Government servant	0 (0.0)	32 (42.7)	43(57.3)	4	4.054	. 344#
Non-government servant	0 (0.0)	41 (33.3)	82 (66.7)			
Not working						
Total	1 (0.3)	125 (32.4)	198 (61.1)			

Significant at 0.05*
Fisher's Exact Test#

In addition, the Pearson Chi-Square analysed revealed a significant association exist between practice level regarding Leptospirosis and gender of the secondary schoolchildren, $X^2(2, N=324) = 10.974$ $p< 0.05$. Fisher's Exact test also revealed gender of the secondary school children and practice level regarding Leptospirosis as $p< 0.05$ (p-value = 0.002). Among 324 respondents female respondents, 118 (69.4%) and male respondents, 80 (51.9%) have good practice level towards Leptospirosis.

The Pearson Chi-square analysed revealed a non-significant association existed between ethnicity of the secondary school children and practice level regarding Leptospirosis, $X^2(6, N=324) = 7.054$, $p> 0.05$. Fisher's Exact test also revealed ethnicity of the secondary school children and practice level regarding Leptospirosis as $p> 0.05$ (p-value = 0.685).

The Pearson Chi-Square analysed revealed a non-significant association exist between practice level regarding Leptospirosis and fathers educational level of the secondary schoolchildren, $X^2(2, N=324) = 4.195$, $p> 0.05$. Fisher's Exact test also revealed fathers educational level of the secondary school children and practice level regarding Leptospirosis as $p> 0.05$ (p-value = 0.087).

The Pearson Chi-square analysed revealed a non-significant association existed between mothers educational level of the secondary school children and practice level regarding Leptospirosis, $X^2(2, N=324) = 1.638$, $p> 0.05$. Fisher's Exact test also revealed mothers educational level of the secondary school children and practice level regarding Leptospirosis as $p> 0.05$ (p-value = 0.549).

The Pearson Chi-square analysed revealed a non-significant association existed between occupation of the secondary school children fathers and practice level regarding Leptospirosis, $X^2(4, N=324) = 6.289$, $p> 0.05$. Fisher's Exact test also revealed occupation of the secondary school children fathers and practice level regarding Leptospirosis as $p> 0.05$ (p-value = 0.179).

The Pearson Chi-square analysed revealed a non-significant association existed between occupation of the secondary school children mothers and practice level regarding Leptospirosis, $X^2(4, N=324) = 4.054$, $p> 0.05$. Fisher's Exact test also revealed occupation of the secondary school children mothers and practice level regarding Leptospirosis as $p> 0.05$ (p-value = 0.344).

4.11 Relationship between knowledge, attitude and prevention practice of secondary school children towards Leptospirosis

Based on table 4.13, a Spearman's rank order correlation was run to determine the relationship between knowledge and attitude level of the respondents. The r-value is 0.276. The p value is 0.0001 ($p<0.05$). Thus there is a significant weak positive relationship between knowledge and attitude level. The higher the knowledge level of the respondents towards Leptospirosis, the better the attitude level of the respondents towards Leptospirosis.

A Spearman's rank order correlation was run to determine the relationship between knowledge and practice level of the respondents. The r-value is 0.184. The p value is 0.001 ($p<0.05$). Thus there is a significant weak positive relationship between knowledge and practice level. The higher the knowledge level of the respondents towards Leptospirosis, the better the preventive practice level of the respondents towards Leptospirosis.

A Spearman's rank order correlation was run to determine the relationship between attitude and practice level of the respondents. The r-value is 0.286. The p value is 0.0001 ($p<0.05$). Thus there is a significant weak positive relationship between knowledge and attitude level. The better the knowledge level of the respondents towards Leptospirosis, the better the attitude level towards Leptospirosis.

Table 4.13 Relationship between knowledge, attitude and prevention practice of secondary school

children towards Leptospirosis (n=324)

			Knowledge level	Attitude level	Practice level
Spearman's Rho	**Knowledge level**	**Correlation**	1.000	. 276**	.184*
		Sig. (2-tailed)		.0001	.001
	Attitude level	**Correlation**	. 276**	1.000	.286**
		Sig. (2-tailed)	.0001		.000
	Practice level	**Correlation**	.184*	.286**	1
		Sig. (2-tailed)	.001	.0001	
		N	324	324	324

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.11 Summary

SPSS version 23.0 was used to analyze the result. The results were tabulated in the table above. The descriptive statistic, Chi-square test and Spearman Rho's test were used. Overall, the respondents moderate knowledge level, good attitude level and good prevention practice level. There was a significant association between knowledge level the respondents' ethnicity. Furthermore, there was a significant association between attitude level and gender. Besides, there is significant ssociation between practice level and gender. In addition, knowledge level of the respondents shows significant weak positive relationship with attitude level and prevention practices level. There is also weak positive relationship between attitude level with prevention practices level.

CHAPTER 5: DISCUSSION

5.1 Introduction

This chapter provided discussion and justification of the findings in each of the objectives of the research study and will be supported by previous study and current literature review. The objectives covered as followed:

a. To assess the level of knowledge regarding Leptospirosis among secondary school children
b. To assess the attitude level towards Leptospirosis among secondary school children
c. To assess level of perceive practices towards prevention of Leptospirosis among secondary school children
d. To assess association between demographic characteristics and knowledge, attitude and prevention practices towards Leptospirosis among secondary school children.
e. To assess the relationship between knowledge, attitude and prevention practices of Leptospirosis among secondary school children

Besides, implications of the study to nursing were also discussed based on the findings that the level of knowledge, attitude and prevention practices of Leptospirosis among secondary school children.

The researcher obtained through study period. Several limitations were further explored, that causes the findings to be affected and impairs its generalization. Furthermore, recommendations from the study will be discussed in order to enhance the future research.

5.2 Discussion

5.2.1 Knowledge level regarding Leptospirosis

Based on the research findings of this study, it showed that most of the secondary school children had moderate level of knowledge regarding Leptospirosis. This is because the respondents know about Leptospirosis but not explore in depth about the Leptospirosis. They only have basic knowledge on Leptospirosis. This is proved by most of them, mostly had good result in how the Leptospirosis transmission and also knowledge of preventive measure of Leptospirosis and the complication of Leptospirosis which can cause death but most of them did not know and had poor knowledge on sign of symptoms of Leptospirosis. These might be due to Malaysia curriculum for school children which not emphasize on disease.

This correspond with study from Selangor, Malaysia (Ismail et. al 2015) for wet market seller, shows majority of the respondents (51.4%) have moderate level of knowledge regarding Leptospirosis. Since they deal with raw substances, they need to know at least basic and common knowledge regarding Leptospirosis as they sell them to the public. If they did not know about it they will not do any prevention to avoid the food from contaminated with Leptospirosis. But majority they only have moderate because lack of emphasize in health education by the Ministry of Health to wet market seller.

In other hand, it is different from study done in Sri Lanka (Samarakoon et. al, 2012) that 52.0% show good level of knowledge regarding Leptospirosis. This may be due to high risk area which most of them including their family member are involve in paddy field cultivation. People who stay in high risk area such as in Sri Lanka which an endemic area tend to more aware on information and knowledge regarding Leptospirosis compare to less endemic area. In addition, their parent involved in job that high risk to be infected with Leptospirosis. Therefore, the secondary school children tend to want to know about it. Therefore, they had good knowledge regarding Leptospirosis. Majority of respondents in this study know the Leptospirosis is transmitted by rat and the respondents know the common sign and symptoms of the Leptospirosis.

5.2.2 Attitude level regarding Leptospirosis

Overall the majority of the respondents in this study had good attitude towards Leptospirosis. Since the secondary schoolchildren have a good score in Leptospirosis transmission and also knowledge of preventive measure of Leptospirosis, they applied in their attitude as they know the important it. Besides, majority of them get health information from the media mass and health care provider. By frequent reminder on the media mass and by the healthcare provider especially during epidemic, they will remain alert on the important of the health preventive measure. Therefore, they have a good attitude regarding Leptospirosis. This is corresponds with study done in Philippines (Arbiol et. al 2015), the respondents get overall mean score of 80.89% which mean, most of them have good attitude towards Leptospirosis. These because of there are campaign done there, for the awareness on how to avoid Leptospirosis especially on the media mass which are the television and radio. Media mass shows the most contribute factor for respondents on the attitude regarding Leptospirosis. Therefore, they become aware on the attitude that can prevent the transmission of Leptospirosis.

In contrast, there are study done in Selangor, Malaysia (Sakinah et. al 2015), which only 6% of the respondents had good attitude. This might because of the study done to non-high risk area as people who stay in less risk area tend to less aware on information and knowledge regarding Leptospirosis compare to people in endemic area. Maybe they know about it but did not want to explore it as or them the disease does not related to them as they are far from epidemic area. Therefore, they are less aware on the important of health prevention and have poor attitude regarding Leptospirosis.

5.2.3 Practice of preventive level towards Leptospirosis

Based on this study, the preventive measure practice level, most of them have good practice level. These because of most of them have the understanding about the knowledge and attitude towards the preventive measure of Leptospirosis. For overall practice of prevention and control strategies practiced which include to maintain cleanliness on the surrounding and keep good hygiene, majority of them gets good score but only in question of 'I will wear waterproof boots when wading on flood water' and 'I bathe in public swimming pool and/or waterfall', majority of them get poor result.

This is consistent to study done in Catbalogan City, Samar, Philippines (Charmaine et. al 2014) that hygienic practices determine factors such practical knowledge of health and concern for taking steps by promoting health and preventing disease which overall result is determine and majority of them have good practice. Basically, they get good result in overall practice of general health prevention practice and also safe work practice to maintain cleanliness on the surrounding and to keep good hygiene. The health workers and barangay officials highly practiced them and the residents always practiced them.

This study is opposite to study from Selangor, Malaysia (Sakinah et. al 2015) which had only 21% respondents had a good preventive practice level. For general practice part which include the items such as walking through flood, cover the food and washing hand before eating, majority of them get goods result. In other hand for safe work practice, which include items such as eat while working, drink while working and smoke while working, majority of them get poor result. This is why this study result is contrast to the researcher study as the researcher's study does not cover the safe work practice prevention towards Leptospirosis as it is done to secondary school children which if this study (Sakinah et. al 2015) done only for general practice, the majority of respondents will get good practices results.

5.2.4 Knowledge, attitude and practice level towards Leptospirosis association with socio-demographic characteristics.

There was a significant association between knowledge level with the ethnicity in this study. Majority of Malay have moderate knowledge towards Leptospirosis. There no any evidence to support this finding.

In study done in Sri Lanka (Samarakoon et. al 2012) which level of knowledge Leptospirosis was significantly associated with parent's involvement in paddy cultivation. This may indicate the

education program had reach families involved in cultivation. Since the researcher study done in a city, therefore, it is difficult to relate the job category that common with Leptospirosis.

Furthermore, there was a significant association between attitude level and practice level with gender. According to a study of Gender Differences in Health Information Behavior done in Finland (Stefan, 2013), female are more concern about health threat. Therefore, this is why when receive information related to health behaviour, more female will remind themselves the important of the health prevention practice and implement it compare to boy although they might receive the same health information. Therefore, girl have good attitude and practices towards Leptospirosis compare to boy.

Overall, these are contrast to the study done in India (Prabu et. al 2014). There were no difference between knowledge, attitude and practice with education level, age, duration of employment but there is significant difference between knowledge, attitude and practice level with job category.

5.2.5 Knowledge, attitude and practices level of leptospirosis among secondary school children.

From the study, knowledge level of the respondents was found to have significant positive weak relationship with attitude level of the respondents towards Leptospirosis ($p=0.001$). The level of knowledge influences the attitude of the respondents towards Leptospirosis. Therefore, secondary school children with better knowledge develop positive attitude within themselves. Since most of them have good results in knowledge of prevention of measures and transmission, which indicate they already know the important of the Leptospirosis prevention measures and then, they develops positive attitude toward Leptospirosis. Study from Mohamad Azfar et al, (2017), improved in knowledge lead to improvement of attitude.

Furhermore, the knowledge level of was also found have significant positive weak relationship with practice level of the respondents towards Leptospirosis ($p=0.020$). The level of knowledge does influence the preventive practice towards Leptospirosis. Since most of the secondary school students in this study have the knowledge on the preventive practice regarding Leptospirosis, therefore, they know the ways to apply and they implement the preventive measure in their daily life. According to Arbiol et al, (2016), knowledge improves individual ability to translate preventive measure into action.

Lastly, attitude of the respondents was found have significant positive weak relationship with practice level of the respondents towards Leptospirosis ($p=0.0001$). Since, they have develops positive attitude towards Leptospirosis, they know and always keep in mind on the important of Leptospirosis prevention. Therefore, when they realize the important of Leptospirosis prevention, they tried to find the ways to prevent themselves from infected and they implement the preventive measure their daily life. According to Arbiol et al, (2016), positive attitude complement with relevant knowledge will improve the individual preventive measures into action.

5.3 Limitation of the study

The study did not examine individual perceptions of Leptospirosis risk and reason for respondents' choices. Future studies may attempt to address limitation by using open-ended qualitative questionnaire to explore more on the individual perceptions of Leptospirosis risk and reason for respondents' choices

Besides, this study done to secondary school children as the infection is more common and severe for them. But it is also known to affect adults. Future research may examine the knowledge, attitude and practices among adult.

Furthermore, the health prevention practices were obtained through self-report. Ideally, practices need to be evaluated through observation, which would have increased the internal validity of the study. Nevertheless, the data were validated and steps were taken to minimize biases.

In this study, the informed consent should be obtained from the parent as the secondary school children age less than 18 years old. In the future, if the researcher need to collect data from secondary

school, the researcher will obtained it from parent.

5.4 Implication of the study

Nursing

Nursing plays an important role in order to educate the public including the school children on the awareness of health prevention regarding Leptospirosis. In this, nurses play the part of educators that offer information to communities that encourage positive health behaviors. From providing knowledge to reinforcing the health prevention practice, health educations are designed to avoid suffering and illness in patients, as well as avoid any type of cost supplementary to disease treatment.

Secondary school children

During secondary school age which at 13 until 18 years old, they are very active and like involve in activities that have high risk towards leptospirosis such as swimming in stagnant water, did not take care of their cleanliness and surrounding. Therefore, they should aware on the Leptospirosis. When they have detects sign and symptom of the infection such as headache, vomiting and jaundice, from themselves and also their family member should seek for medical help. Early prevention can avoid for further complication which also can save life.

Healthcare Organization

The study provides healthcare organization and academic institutions valuable details about how certain secondary school children ' demographics variables such as gender and ethnicity might influence secondary school children' knowledge, attitude and practice towards Leptospirosis. As findings from the study concluded, secondary school children have moderate knowledge, good attitude and practices. In order to improve the knowledge, the healthcare organization should in-charged the healthcare professional to do public talk and give talk at school for the secondary school children and spread the information for health prevention through the media mass such as radio and television especially during the outbreak of the disease.

5.5 Recommendation

Based on the findings presented, the following recommendations are suggested:

i. The researcher recommended that the health education regarding Leptospirosis should be introduce and reinforce to health care provider includes the nurses and doctor. Nurses should always update the latest information regarding Leptospirosis. With that information, nurses able to apply the current nursing care in the hospital. Furthermore, nurses also should be design to give health education to school and also public to reinforce on knowledge regarding the medium of transmission, sign and symptom, complication and also the important of preventive measure taken to prevent Leptospirosis. This can increases the school children' and public's knowledge regarding Leptospirosis and prevent increase in number of Leptospirosis cases.

ii. The researcher recommends that the health awareness regarding Leptospirosis should reinforce to school children by giving talk in the schools. It can also be promoted via other media such as the exhibition and campaign which include the secondary school children. The media mass also the important media in education the public regarding Leptospirosis. The content of the talk should be the focus more on the sign and symptoms as most of them lack on that expects.

iii. The researcher also recommended inserting the content regarding Leptospirosis into the curriculum of the school syllabus. This method can be done to introduce, reinforce and increase the public awareness towards Leptospirosis. The contents should include basic knowledge on the transmission, sign and symptom, complication and preventive measure regarding Leptospirosis. This will increase the awareness towards school children and indirectly will also help to increase the awareness regarding Leptospirosis among the public.

5.6 Conclusion

This study shows the current of knowledge level of the secondary school children in Malaysia is in moderate knowledge while they showed positive attitude and good practice in preventive measure of Leptospirosis. Education is very important to be addressed to the secondary school children. Therefore, they can learn and implement knowledge and preventive measure towards Leptospirosis. Besides, further research are needed to advances more knowledge and benefits the public.

REFERENCES

Araújo, W. N., Hagan, J. E., Ribeiro, G. S., Reis, R. B., Reis, M. G., Felzemburgh, R. D., Finkmoore, B. (2013). Knowledge, Attitudes, and Practices Related to Leptospirosis among Urban Slum Residents in Brazil. The American Journal of Tropical Medicine and Hygiene, 88(2), 359-363. doi:10.4269/ajtmh.2012.12-0245

Arbiol, J., Orencio, P., Romena, N., Nomura, H., Takahashi, Y., & Yabe, M. (2016). Knowledge,Attitude and Practices towards Leptospirosis among Lakeshore Communities of Calamba and Los Baños, Laguna, Philippines. Agriculture. 6(2),18.doi:10.3390/agriculture6020018

Benacer, D., Thong, K. L., Verasahib, K., L.Galloway, R., A.Hartskeeri, R., W.Lewis, J., & Mohd Zain, S. (2016). Human Leptospirosis in Malaysia: Reviewing the Challenges after 8 decades. *Asia Pacific Journal of Public Health*. 1-13 doi:10.1177/10.1177/1010539516640350

Bharti A.R, Nally J.E, Ricaldi J.N, Matthias M.A, Diaz M.M, Lovett M.A. (2003). Leptospirosis: a zoonotic disease of global importance. *Lancet Infectious Disease* , 3(12)757-771.

Espinosa, J. N. (2015). Leptospirosis Prevalence and Associated Factors in School Children from Valle de Chalco-Solidaridad, State of Mexico. International Journal of Pediatric Research, 1(2). doi:10.23937/2469-5769/1510008

Gamage C.D, Amarasekera J, Palihawadana P, Samaraweera S, Mendis D. (2012). Analysis of Hospital-Based Sentinel Surveillance Data on Leptospirosis in Sri Lanka, 2005 2008. Jpn J Infect Dis 65: 157-161.

García L.I.S., Cruz C.M., Lugo I.Z., Sánchez B.R., Castrejón O.V., et al. (2013) Fatal Leptospirosis Case in Pediatric Patient: Clinical Case. Open Journal of Medical Microbiology. 3:12-17.

Gompf, S.G., Velez, A.P., Mckenzie J.G. (2018). Leptospirosis. Retrieved from: https://emedicine.medscape.com/article/220563-overview

Ismail, N. E., Ahmad, S., R, M. M., Sarket, H, A. W., Lim, Ishak, N. A., Husin, N., & Johari, A.N. (2017).Share and discover research. Retrieved from:https://www.researchgate.net/

Ko Al, Goarant C, Picardeau M. (2009). Leptospira: *the dawn of the molecular genetics era for an emerging zoonotic pathogen, Nat Rev Microbiol*. 7: 736-747.

Leptospirosis Burden Epidemiology Reference Group (LERG). (2010). Retrieved from : http://www.who.int/zoonoses/diseases/lerg/en/

Loh, F.F. (2018, March 21). 'Look out for leptospirosis signs'. Retrieved from: https://www.thestar.com.my/news/nation/

Mcbride A, Athanzio D, Reis M, Ko A. (2005). Leptospirosis: *Current Opinion inInfectious Disease Infectious Disease*, 18 (5): 376-386.

Mohan, A. R., & Chadee, D. D. (2011). Knowledge, attitudes and practices of Trinidadian households regarding leptospirosis and related matters. Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/24038186

Mohamad Azfar, Z., Shafei, M. N., Abdullah, M. R., Omar, M., Mohammad, M. Z.,

Yaacob, A., Daud, A. (2018). Knowledge, attitude and practice about leptospirosis prevention among town service workers in northeastern Malaysia: A cross sectional study. Retrieved from:http://www.jpmh.org/index.php/jpmh/article/view/776

Mohamed Amin, Noh. (2018, March). 9 have Leptospirosis symptoms, Hutan Lipur Gunung Belumut temporarily closed. *Harian Metro.*

Mohd Rahim, S., Aziah B.D., Mohd, Nazri. S., Azwany Y.N., Habsah H, Zahiruddin W.M., Zaliha I,Mohamed Rusli A.(2012). Brunei Darussalam Journal of Health: Town service workers' knowledge, attitude and practices toward leptospirosis, (5)1-12. Retrieved from: http://www.medic.usm.my/images/files/pub_march/MacNonCited/08.pdf

Prabhu, N., Meera, J., Bharanidharan, G., Natarajaseenivasan, K., Ismail, M., Uma, A. (2014). Knowledge, Attitude and Practice towards Leptospirosis among municipal workers in Tiruchirapalli, India: Retrived from: www.pharmahealthsciences.net

Quina, C. R., Joseph U. Almazan, Juniel B. Tagarino (2014). Knowledge, Attitudes, and Practices of Leptospirosis in Catbalogan City, Samar, Philippines. Retrieved from http://pubs.sciepub.com/ajphr/2/3/5/index.html

Sakinah, S.N.S., Suhailah, S., Jamaluddin, T.Z.M.T.,Norbaya S.M., Malina, O., Seroprevalence of leptospiral antibodies and knowledge, attitude and practices of leptospirosis to non-high risk group in Selangor. (2015). International Journal of Public Health and Clinical Sciences. Retrieved from: http://publichealthmy.org/ejournal/ojs2/index.php/ijphcs/article/view/142/129

Samarakoon, Y. M., & Gunawardena, N. (2013). Knowledge and self-reported practices regarding leptospirosis among adolescent school children in a highly endemic rural area in Sri Lanka. Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/24144327

Stefan, E., (2013). Gender differences in health information behaviour: A Finnish population-based survey. Retrieved from https://academic.oup.com/heapro/article/30/3/736/620016

Suárez, H.M., Rodríguez, M.G., Torres M.O., Marrero A.J.L., Alonso S.J.M., (2006) Leptospirosis in children of a Cuban province. Journal Mexican Pediatric 73: 14-17.

Tan, W. L., Soelar, S. A., Mohd, M. A., Hussin, N., Cheah, W. K., Verasahib, K., & Goh, P. P.(2016). Leptospirosis incidence and mortality in Malaysia. Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/27405126

Tingen, M. S., Burnett, A. H., Murchison, R. B., & Zhu, H. (2009). The Importance of Nursing Research. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3677814/

PHP-767

THE EFFECTIVENESS OF CLINICAL PATHWAYS TO IMPROVE THE QUALITY CEREBROVASCULAR ACCIDENT (CVA) INFARCT CARE IN HOSPITAL: A SYSTEMATIC REVIEW

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ABSTRACT

CVA Infarct becomes a major health problem and cause of disability. Clinical pathways as an effort to monitor patient progress in a certain period of time; towards achieving positive results and quality. Clinical pathways purpose to integrate patient care based on the best guidelines and evidence. The objective of review was to strengthen the literature regarding the effectiveness of the implementation of clinical pathways of CVA Infarct patients to improve the quality of care in hospitals. To complete the literature used the database were Proquest, Scopus, Science direct and Medline which has been published at the time limits of 2012-2018. Keywords were used clinical pathway, quality care, CVA Infarct. From 14 of 543 articles were used in this systematic review. The article reviewed mentions how the implementation of the clinical pathway on service quality. Most articles show that increasing the quality of care by the implementation of clinical pathways of CVA Infarct patients effectively. Improve the quality of services by implementing clinical pathways effectively. Service quality includes: decrease in length of stay (LOS) and cost, decreased readmission, reduced incidence of pneumonia, decreased mortality and increased collaboration between health professionals in CVA Infarct patients.

Keywords: clinical pathway, quality care, CVA infarct

1. Introduction

Clinical pathways or integrated care pathways are critical multidisciplinary care plans used by health caregivers to describe the essential measures in the intervention of patients with complex clinical problems [1]. Efforts should be performed to monitor the progress of the outcomes over a longer period to implement a care plan that is needed and evaluated continuously. The implementation of clinical pathways is multidisciplinary in terms of the doctors or dentists, physiotherapists, nurses, pharmacists, nutritionists and others involved. Nurses are included in the intervention, its implementation, continuous evaluation and development in all aspects [2].

CVA infarct becomes a major health problem and a cause of disability. It is the second most common cause of death in Asian countries. Hospital care for CVA patients can reduce the risk of death and disability. There are impressive results in the implementation of clinical pathways (CP) for CVA management on a regular basis [3].

The intervention study can provide a detailed insight into the effectiveness of the implementation of clinical pathways for CVA infarct patients to improve the quality of care in hospitals. The clinical pathway system can significantly reduce errors and the length of stay so then

the quality of health can be more made effective [4]. The length of stay in hospital and the cost of hospitalization was significantly lower for the patients who received the clinical nursing pathway compared to the control group [5]. The clinical pathway can reduce the average length of stay, increasing cost efficiency and thus improving the quality of the health services. The multivariate analysis showed that after adjusting the conventional risk factors, CP application also played an important role in shortening LOS, reducing costs, improving the clinical outcomes, reducing the incidence of nosocomial infections and improving patient safety [6]. The most influential factors for readmission within 31 days were age, the type of stroke, medical insurance status, the type of discharge, the use of clinical pathways, the length of the hospital stay and comorbidities [7].

Clinical pathways in stroke reduce the incidence of aspiration pneumonia, mechanical ventilation requirements and the risk of death when followed up at 90 days [3]. There was a better rate of 30-day survival in patients with severe stroke in the intervention group compared to the control [8].

The aim of this systematic review was to strengthen the literature regarding the effectiveness of the implementation of clinical pathways for CVA infarct patients to improve the quality of care in hospitals.

2. Methods

2.1 Protocol

The systematic review was performed in line with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) statement and checklist [9,10]

2.2 Eligibility criteria

The journal articles were published in the English language from 2012 to 2018. The search strategy used the PICOS framework to identify the keywords.

2.3 Information sources

Four databases were systematically searched (Proquest, Scopus, Science Direct, and Medline) from 2012 until 2018 for the intervention studies describing the effectiveness of the implementation of clinical pathways for CVA infarct patients.

2.4 Search

The search terms used were ‘clinical pathway’ OR ‘integrated care pathway’ AND ‘cerebrovascular infarct’ OR ‘stroke infarct’ AND ‘quality of care’.

2.5 Study selection

The protocol standard for selecting the research studies was as suggested in the PRISMA method for systematic review. This was followed by screening and removing the duplicates. Three reviewers then selected the titles, abstracts and keywords. Irrelevant quotes were deleted according to the selection criteria. The reviewers noted the reasons for choosing the research studies including the selection of the inclusion data. The selection of the research studies by the two reviewers were then

compared to one another to be adjusted for feasibility according to the criteria set. Secondly, to minimize the risk of incorrect study entry in the selection, there are several research studies that were applicable or that could be applied in a review to be included in the next review stage. The full text of the articles were obtained if the title and abstract met the inclusion criteria or if the feasibility study was clearly resolved by a joint discussion between the reviewers.

2.6 Data collection process

The following data was extracted: author, year, journal, study design, participant, intervention study, key findings or if there were relevant secondary outcomes.

2.7 Data items

The information extracted from each included study was on (1) the identity of the study (including author name and year of publication); (2) the setting of the study or the characteristics of the participants; (3) methodology (including the data collection method and analysis) and (4) the major findings relevant for review.

2.8 Risk of bias in individual studies

As both of the randomized controlled trial (RCTs) studies involved an eligible risk of bias, an assessment was undertaken using a tailored tool based on the respective Cochrane Collaboration guidelines [11]. The risk of bias was evaluated for the following domains: (1) selection bias (e.g., randomization and stratification), (2) performance bias (e.g., blinding of participants and personnel), (3) detection bias (e.g., missing data and appropriate confounders) and (4) reporting bias (e.g., selective reporting). The reviewer independently assessed each study for bias, which was coded as high, moderate, low or unclear/unknown. Where appropriate, the direction of bias was noted as favoring the intervention/control or unclear. The overall risk of the bias ratings was determined qualitatively and some of the domains were weighted more heavily than others as recommended [10]. For example, trial performance and detection and analysis were given more weight as studies with a high risk of bias in these domains may be more likely to favor the intervention group. Each reviewer was blind to the assessment of the other reviewer. The reviewers crosschecked their final assessments and resolved any disagreements through discussion.

2.9 Quality assessment

The data was extracted from each study if it met the requirements. The extracted data included the characteristics of the research, the characteristics of the results and the summary of the results. The studies were grouped according to the effects that arise from the implementation of clinical pathways on the quality of nursing care.

2.10 Data analysis

The studies were grouped according to the intervention used and the study population. Where possible, the studies were thereafter grouped according to the time of the follow-up and the type of control group. All of the studies were individually rated for evidence level using the National Health

and Medical Research Council (NHMRC) Hierarchy of evidence guidelines (IV-I, with I being the strongest level of evidence).

2.11 Meta-analysis

Meta-analysis was not possible as the studies were too heterogeneous in terms of the outcome measures used and the time of the follow-up.

3. Result

2.1 Study selection

The results of the journal selection based on the keywords produced 2551 articles. Scopus had 1725 articles, Science Direct had 310 articles, Proquest had 211 articles and Medline had 205 articles. All of the journals that were obtained were then screened based after the duplicate removal of 543 articles. Re-screening was done to get the 6 articles that were in accordance with the criteria, both inclusion and exclusion. All of the journals were interventional study types with a focus on the effectiveness of the clinical pathways in improving service quality (see Figure 1).

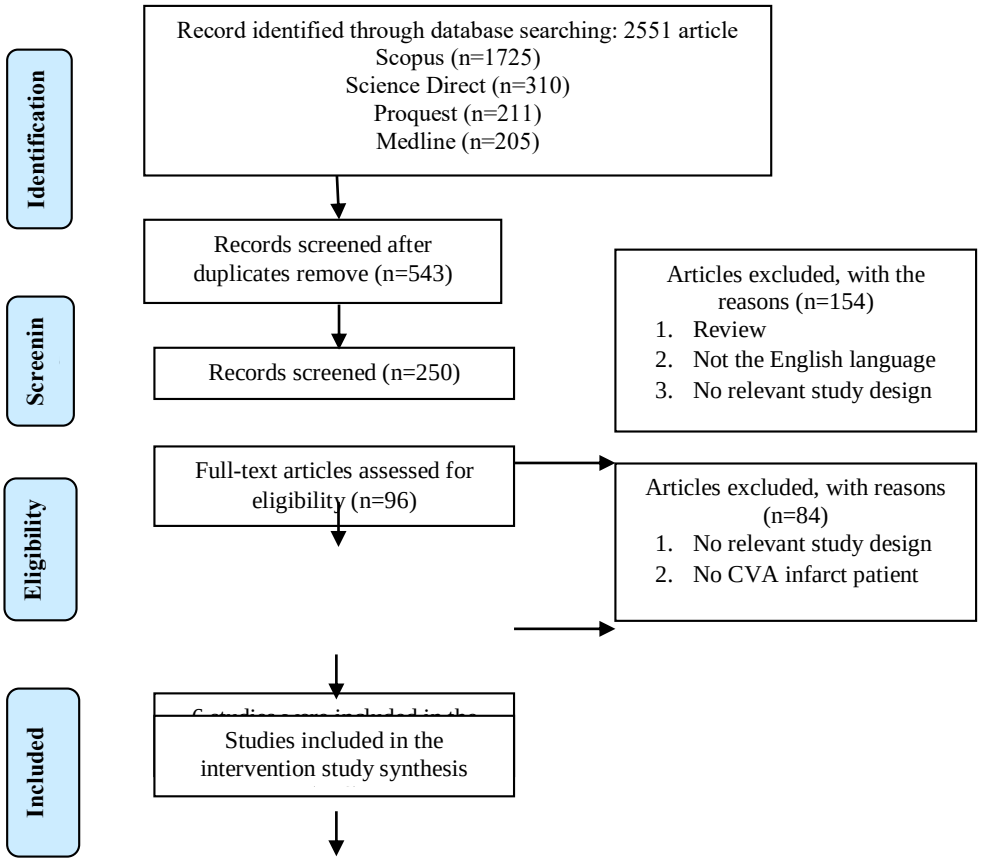

Figure 1. Flow Diagram

2.2 Study characteristic

3.2.1. Type of studies. Four studies used a randomized trial, 1 study used a pragmatic randomized trial and 1 study using a nonrandomized trial (see Table 1).

3.2.2. Type of participant. The included studies involved 52,591 respondents. The patients studied were diagnosed with CVA infarction (see Table 1).

3.2.3. Type of interventions. There was 1 intervention design clinical pathway. This was implemented in the hospital.

3.2.4. Type of outcomes. Each study examined the quality of care outcomes. The outcomes were the patient outcome and professional outcome.

Table 1. Summary of the Findings

Author / Year	Study Design	Respondent	Intervention Group	Control Group	Result
Rai et al., 2016	Cluster randomized study	162	The stroke care pathway (CP) arm (n = 77)	The conventional care (CC) arm (n = 85)	Clinical pathways in stroke reduce the incidence of aspiration pneumonia, mechanical ventilation requirements and the risk of death when followed up at 90 days.
Panella et al., 2012	Cluster randomized trial	476	Clinical pathway arm (CP arm)	Usual care arm (UC arm)	Clinical pathways can significantly improve the outcomes of patients with ischemic strokes, indicating the better application of evidence-based key interventions and of the diagnostic and therapeutic procedures. The patients in the clinical pathway arm had a significantly lower risk of mortality at 7 days and lower rates of adverse functional outcomes.
Field, 2018	Pragmatic randomized controlled trial	488	Clinical pathway (CRT/ Cough Reflex Testing)	Standard care	High patient and clinician satisfaction with CRT was found, with the clinicians reporting additional knowledge and confidence in decision making for dysphagia management. In conclusion, the clinical pathway resulted in minimal increases in the use of clinician resources. While

Author / Year	Study Design	Respondent	Intervention Group	Control Group	Result
					clinicians perceived CRT as beneficial in clinical decision making, the efficacy of CRT for reducing pneumonia rates in acute stroke remains to be established.
Deng et al., 2015	Randomized controlled trial	426	Clinical pathway group (CP group; n=213)	Conventional group (control; n=213)	To date, clinical pathways have been implemented for a great variety of diseases to improve treatment effectiveness and to reduce costs.
Nakibuuka et al., 2016	Nonrandomized controlled trial	127	Integrated care pathway	Usual Care	Mortality within 7 days was higher in the intervention group compared to the controls. There was a better 30-day survival rate for severe stroke patients in the intervention group compared to the controls.
Wen et al., 2018	Randomized controlled trial	50.912	*Care pathway*	*Standard care*	Age, type of stroke, medical insurance status, type of discharge, use of clinical pathways and the length of the hospital stay. The most influential factor for readmission within 31 days was comorbidities.

2.3 Risk of bias assessment

The risk of bias judgments for each paper have been summarised in Table 2. Five articles (83%) were considered to have a low risk of bias and one (13%) had a moderate risk of bias. Poor selection methods, a lack of adjustment for confounding factors and inadequate analyses were the main sources of bias, as in Figure 2. While the inadequate blinding of personnel was a key source of bias, we acknowledge that it is rarely possible to fully blind participants and clinicians when implementing a clinical pathway.

Table 2. Risk of bias based on the title of the paper

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No	Study (year)	Selection of bias		Report bias	Other bias	Performance of bias	Detection of bias	Attrition of bias
		Random	Allocation	Selective	Another source	Blinding		Incomplete outcome data
						Participants and personnel	Outcome assesment	
1	Rai et al., (2016)	−	−	−	−	−	−	−
2	Panella et al., (2016)	−	−	−	−	−	−	−
3	Field., (2018)	−	−	−	+	−	−	−
4	Deng et al., (2015)	−	−	−	−	−	−	−
5	Nakibuuka et al., (2016)	+	+	−	?	−	?	−
6	Wen et al., (2018)	−	−	−	?	+	−	−

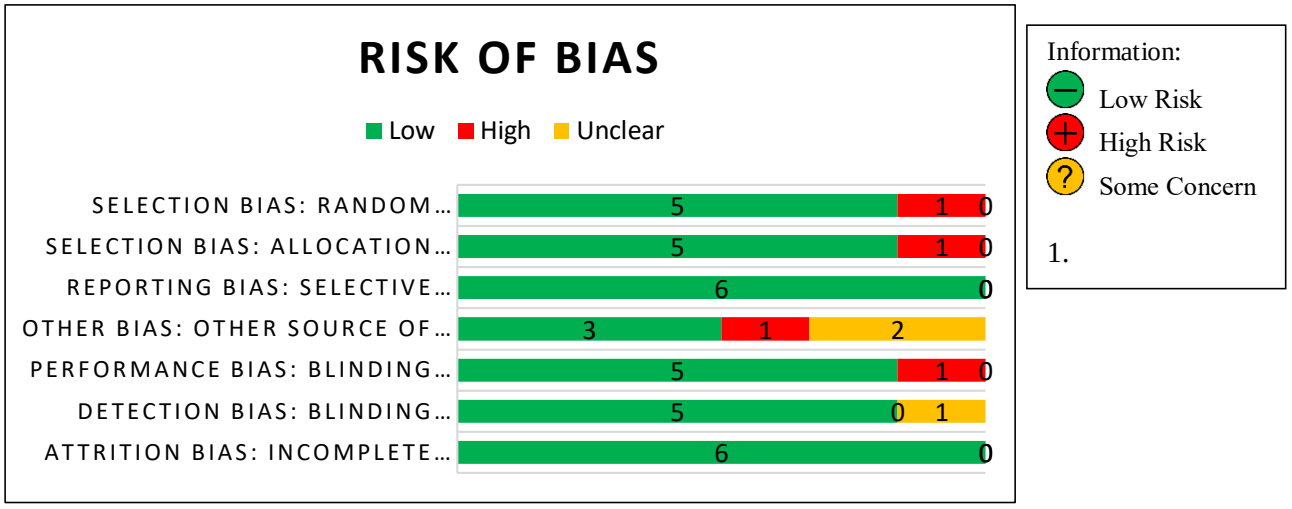

Figure 2. Risk of bias based on the judgments for all papers

2.4 Results of the individual studies

3.4.1. Patient outcome. Clinical pathways can significantly improve the outcomes of ischemic stroke patients, indicating the better application of evidence-based key interventions and of diagnostic and therapeutic procedures. The patients in the CP arm had a significantly lower risk of mortality at 7 days and lower rates of adverse functional outcomes. Clinical pathways in stroke reduce the incidence of aspiration pneumonia, mechanical ventilation requirements and the risk of death when followed up at 90 days [3,12]

Clinical pathways have been implemented for a great variety of diseases to improve treatment effectiveness and to reduce costs [5].

Mortality within 7 days was higher in the intervention group compared to the control groups. There was a better rate for 30-day survival in patients with severe stroke in the intervention group compared to controls [8].

Age, the type of stroke, medical insurance status, the type of discharge, the use of clinical pathways, the length of the hospital stay and comorbidities were the most influential factors for readmission within 31 days [7].

3.4.2. Professional outcome. Clinician satisfaction with CRT was found, with the clinicians reporting additional knowledge and confidence in decision making [13].

4. Discussion

Most articles show that increasing the quality of care through the implementation of clinical pathways for CVA infarct patients was effective at improving the service quality. Service quality includes a decrease in length of stay (LOS) and cost, decreased readmission, reduced incidence of pneumonia, decreased mortality and increased clinician satisfaction.

The clinical pathway arm had a lower incidence of aspiration pneumonia (AP) in comparison with the conventional care arm. The clinical pathway group had a decreased risk of the requirement of mechanical ventilation [3]. The primary outcomes included confirmed pneumonia within 3 months post-stroke and a decreased length of acute inpatient stay. The secondary outcomes were related to the feasibility of implementing a CRT pathway and clinician and patient satisfaction [13]. The CP groups confirmed that each clinical pathway achieved its goal of significantly decreasing the length of hospital stay and thus the overall healthcare costs [5].

In the clinical pathway group, there was an effect from the clinical pathway on reducing mortality in some patients with severe stroke. Patients with severe stroke in the intervention group were significantly more likely to be alive 30 days post-stroke compared to the patients in the control group. It is possible that the more aggressively implemented care (as represented by the stroke care bundle) is the most helpful for individuals with a great amount of impairment and the highest risk of complications. Additional research is needed to more conclusively determine if there may be optimal patient populations on which to focus the clinical pathways. The hospital stay was significantly shorter in the intervention group [8].

Clinical pathways can significantly improve the outcomes of ischemic patients post-stroke, indicating the better application of evidence-based key interventions and of the diagnostic and therapeutic procedures. Age, the type of stroke, their medical insurance status, the type of discharge, the use of clinical pathways, the length of the hospital stay are the most influential factors for readmission within 31 days as comorbidities [7,12].

The systematic review had some limitations. We initially identified 84 relevant studies. However, only 6 studies could be considered as clinical pathways involving intervention studies and they also had to meet our inclusion criteria. The scarcity of publications on the clinical pathway probably results from the fact that clinical pathways have only recently become a popular tool and the associated benefits for CVA infarct interventions is still not clear. Therefore, not many studies could be included to evaluate the effect of clinical pathways on the in-hospital treatment of CVA infarcts.

5. Conclusion

There are several important findings regarding the effectiveness of the implementation of the clinical pathway which will now be discussed in detail, including patient outcome and professional outcome. The patient outcome included improving the treatment effectiveness, reducing the costs and reducing mortality. The professional outcome was the clinicians reporting additional knowledge, being confident in their decision making and satisfaction. The explanation above can be used to conclude that the implementation of clinical pathways can improve the quality of care significantly. Clinical pathways can help to provide better, more comprehensive and more specialized care to a patient affected by a CVA infarct.

References

[1] Fujino Y, Kubo T, Muramatsu K, Murata A, Hayashida K, Tomioka S, et al. Impact of regional clinical pathways on the length of stay in hospital among stroke patients in Japan. Med Care. 2014;52(7):634–40.

[2] Hyam R. Tantawi, Inas Lotfy AA and BNS. Clinical Pathway versus Traditional Care Plan Method for Caring of Postoperative Children Undergoing Cardio Thoracic Surgery. Life Sci J. 2015;12(7):41–62.

[3] Rai N, Prasad K, Bhatia R, Vibha D, Singh MB, Rai VK. Development and implementation of acute stroke care pathway in a tertiary care hospital in India : A cluster - randomized study. 2016;39–45.

[4] Zhao M, Yan Y, Yang N, Wang X, Tan F, Li J, et al. Evaluation of Clinical Pathway in Acute Ischemic Stroke: a comparative study. Elsevier GmbH [Internet]. Elsevier GmbH.; 2015; Available from: http://dx.doi.org/10.1016/j.eujim.2015.08.001

[5] Deng Y, Jiao Y, Hu R, Wang Y. Reduction of Length of Stay and Costs Through the Implementation of Clinical Pathways for Stroke Management in China. 2015;81–4.

[6] Zhao M, Yan Y, Yang N, Wang X, Tan F, Li J, et al. Evaluation of clinical pathway in acute ischemic stroke: A comparative study. Eur J Integr Med. Elsevier GmbH.; 2016;8(3):169–75.

[7] Wen T, Liu B, Wan X, Zhang X, Zhang J, Zhou X, et al. Risk factors associated with 31-day unplanned readmission in 50 , 912 discharged patients after stroke in China. BMC Neurology; 2018;1–11.

[8] Nakibuuka J, Sajatovic M, Nankabirwa J, Ssendikadiwa C, Kalema N, Kwizera A, et al. Effect of a 72 Hour Stroke Care Bundle on Early Outcomes after Acute Stroke : A Non Randomised Controlled Study. 2016;1–17. Available from: http://dx.doi.org/10.1371/journal.pone.0154333

[9] Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration. 2009;6(7).

[10] Moher D, Liberati A, Tetzlaff J, Altman DG, Group P. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. 2009;339(august).

[11] Higgins JPT, Altman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD. The Cochrane Collaboration ' s tool for assessing risk of bias in randomised trials. 2011;1–9.

[12] Panella M, Marchisio S, Brambilla R, Vanhaecht K, Stanislao F Di. A cluster randomized trial

to assess the effect of clinical pathways for patients with stroke : results of the clinical pathways for effective and appropriate care study. 2012;

[13] Field M. Implementing Cough Reflex Testing in a Clinical Pathway for Acute Stroke : A Pragmatic Randomised Controlled Trial implications such as aspiration pneumonia and. Dysphagia. Springer US; 2018;5.

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ROLE OF FAMILY IN CARING PATIENT WITH POST STROKE AT HOME: A SYSTEMATIC REVIEW

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ABSTRACT

Stroke is a disease that can cause cognitive impairment or disability. Role and support of family as the closest person is necessary for the post-stroke recovery process. This systematic review aims to identify the effectiveness of the family's role in caring patient with post-stroke at home. There are four steps to define the topic (1) to identify appropriate keywords (post- stroke, community, family, and home), (2) to identify relevant literature based on topic, (3) to identify appropriate inclusion criteria, (4) to analyze the account of various intervention on literature. Search strategy resulted in 849 articles from Scopus, Proquest, Science Direct and SpringerLink with a limit of 2014-2018 and English-language, only 15 journals were eligible for analysis. There are types of family roles to support patient's post-stroke at home: ADL assistance and psychosocial support. The role and support of family put effect into the caring patient with stroke at home, including an increase of ADL, life quality, cognitive function, and self-efficacy.

Keywords: family, home, and post-stroke

1. Introduction

Stroke is blamed for 9% of deaths globally and it is the second cause of mortality after heart disease. It is the first cause of disability in adults. The prevalence of stroke is around 50–100 per 100,000 people[1]. Stroke will cause symptoms after the stroke event itself. Stroke has become the second most common cause of cognitive impairment, disability and death. This disease occurs when the brain cells do not receive oxygen. They stop working and this can cause cell death [2].

If the stroke is treated faster, then the recovery rate will be better. Thus, this is known by the term "the golden period", which refers to the best time to give the stroke patients help. Medical treatment must be done within 3 hours after the stroke first attacked to prevent disability. If it exceeds this time, then permanent disability will occur or even death [3].

The impact of stroke on each patient can be different. It depends on the injury severity, the affected part of the brain related to the injury and their health status [4]. Functional damage via a stroke can cause disability, so the patients become unproductive. Stroke sufferers will experience limited activities related to daily living (ADL) and they will require continuous nursing assistance so then they can gradually carry out independent self-care.

In addition to physical disability, patients with stroke tend to experience emotional disorders, one of which is depression. Post-stroke depression is closely related to low functional values when carrying out their daily activities. Post-stroke motor restriction will cause dependence on ADL. In

addition, changes in their psychological condition will make the patient become slothful. A lack of response toward rehabilitation tends to be emotional and they may show behavior changes [5]. These impacts and restrictions affect the patients; they need support from their family. Family assistance and support is necessary to reduce functional damage and to help the patients to become more independent when doing ADL and other activities even though their motor function is not completely normal.

This is evidenced by the study whose results indicated that the ADL ability in patients post-stroke increases. The complications that occur in patients with a stroke can also be reduced after the patient's family is given knowledge of post-stroke care compared to those who are not given knowledge [6]. Another study conducted by [7] explained that the psycho-socio-emotional and relational approach of the families, especially couples, is very important when it comes to improving quality of life after stroke. Based on various studies, this article aims to identify the effectiveness of the family's role in caring for a patient post-stroke at home.

2. Method

2.1 Literature Search Strategy

The literature search was carried out from August 29th to September 23rd 2018 using several scientific publication databases such as SCOPUS, Springer link, ProQuest and ScienceDirect. It was limited to publications between 2014 and 2018. The scope was post-stroke, community, family and home. In addition, the search was also limited to the area of English nursing.

2.2. Selection Criteria and Process

The chosen literature had to relate to the family role – that of the parents, spouse and siblings - in caring for a patient post-stroke at home. The specified inclusion criteria were male and female patients with stroke, patients aged ≥18 years when the stroke first attacked and having a family. In addition, the chosen study was focused on empirical research (not reviews or articles). The chosen research designs were Randomized Controlled Trial (RCTs), qualitative and protocol. The literature also had to be published in an accredited journal.

After getting items of literature that matched the keywords, the reviewer filtered the titles to see if there were any duplications. After the duplications were deleted, the reviewer was able to sort the literature according to the inclusion criteria and the expected results as stated in the abstract. The following action was done by selecting the journal after reading its full text to ascertain whether the journal met the systematic review requirements (Figure 1).

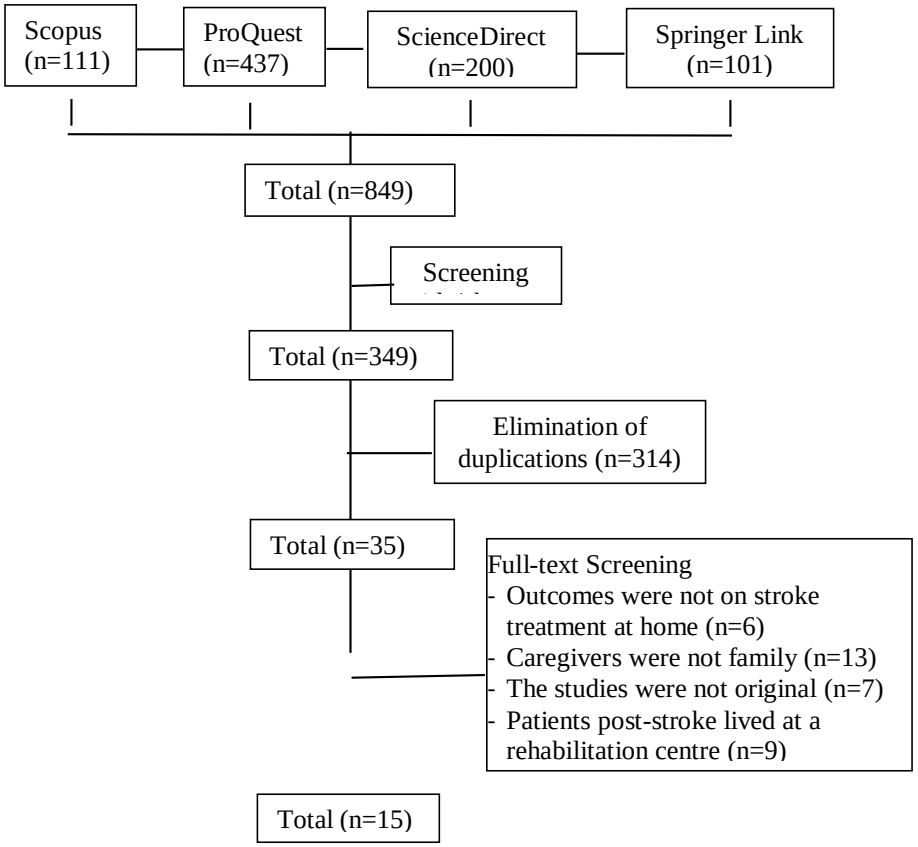

Figure 1. The Process of Journal Selection for the Systematic Review.

3. Result

The search strategy resulted in 849 articles. After filtering editorial titles, 500 articles were eliminated. Following this, 314 duplicate articles were eliminated, leaving 35 articles. The 35 articles were read in terms of their full text and they were adjusted to the inclusion criteria to get 15 articles. The total respondents from this systematic review were 1,418.

Tabel 1. Type of Study in the Setting up *Systematic Review*

Author	Type of Study	Participants	Intervention	Outcome
(8)	Single-blinded RCT; stratified	70 families / caregivers	2 sessions of structured psycho-education on stroke and care skills and 6 sessions of training on how to overcome the	1. Better conditional change in the patients post-stroke

Author	Type of Study	Participants	Intervention	Outcome
			coping problem	
(9)	RCT	70 females; families / caregivers	Giving information and social support	1. Decrease in the stress and distress of the family.
(10)	RCT	144 participants	Through the application *F@ce*™	1. Good self-efficacy
(1)	RCT	410 patients	Therapeutic follow-up, a training program and a telephone interview	1. Controlling the risk factors and complications in patients post-stroke
(11)	RCT	48 families / caregivers	Systematic follow up done by the nurse through home visits	1. It is necessary to provide education in order to decrease the caregiver burden 2. It is necessary to increase the patients' quality of life and to avoid mistakes 3. Inadequate utilization of the health services by stroke sufferers
(12)	RCT	144 participants	*Montreal Cognitive Assessment (MOCA)*	1. Cognitive function increased in the patients with stroke 2. Depression decreased
(13)	Quasi-experimental	40 patients and their families	CEP-BAM and RAM	1. Functional capacity and quality of life increased
(6)	Quasi-experimental	62 patients post-stroke	Giving information,	1. The knowledge and treatment skills of the

Author	Type of Study	Participants	Intervention	Outcome
		and their families	motivation and behavioral skills focused on the caregiver and the family related to post-stroke treatment	patient post-stroke increased 2. ADL ability increased 3. Complication decreased
(14)	Observational behavioral mapping study	47 patients	Teaching physical therapy	1. Activeness of patients with post-stroke increased
(15)	Prospective cohort study	183 participants	Measured with the Caregiver Strain Index and the Hospital Anxiety and Depression Scale.	The caregivers experienced: 1. High boredom 2. Anxiety 3. Depression.
(7)	Phenomenological-qualitative study	18 people	In-depth interviews	1. The quality of life of the patients with stroke increased
(16)	Qualitative content analysis approach	17 families / caregivers	In-depth interviews	1. Encouraging functional recovery 2. Mental well-being improved 3. Reinforced the community role
(17)	Qualitative study. Grounded-theory.	10 families / caregivers	In-depth interviews	1. Physical management increased 2. Mental health of the patients with stroke increased

Author	Type of Study	Participants	Intervention	Outcome
(18)	Qualitative study. Grounded theory.	40 stroke families / caregivers	In-depth interview	1. Identifying and prioritizing disparity between the patients and the caregiver's capacity 2. Creating a plan to increase the caregivers' readiness
(19)	Qualitative study. Grounded theory.	10 family / caregivers	Semi-structured in-depth interviews	1. The nurse should give better support to the family in terms of caring incontinence

3.1.Domain

3.1.1 Quality of Life. There was one qualitative study that explained that family support could improve the quality of life of patients post-stroke.

3.1.2 Self-Efficacy. There was one study that explained that family support via the telephone had an effect on improving the self-efficacy of patients post-stroke.

3.1.3 Cognitive Function. There was one study that stated that families given education about post-stroke care could affect an improvement in the cognitive function of the patients post-stroke.

3.2.Type of Family Support

3.2.1 ADL Assistance. There were three studies about the effect of family support related to the fulfillment of ADL needs and all of them showed significant results.

3.2.2 Psychosocial Support. One study examined the effect of family support on reducing the depression in patients post-stroke and the results were significant.

4. Discussion

The results of this systematic review showed that there was a positive influence from the role of the family on the care of patients post-stroke at home. There were 3 types of research in this review i.e. quantitative research with a randomized controlled trial, protocol and a qualitative design. The research method and the form of intervention given to the patients post-stroke varied in the physical and psychological aspects. The number of samples used in each journal was different; the smallest sample was 18 and the largest was 410 respondents.

The study conducted in Thailand found that there was an increase in family knowledge and the ability to treat patients with a stroke. The intervention group which consisted of patients post-stroke had an increased ability related to ADL compared to those in the control group. Other studies also

showed that family support could reduce tension and improve the coping skills of the patients post-stroke.

The research conducted by [8] stated that the family's ability to care for the patients with a stroke at home could encourage a more positive direction of change. The family-centered care research conducted by [9] showed that the families play a role in improving the management of physical functioning and the mental health of the patients post-stroke.

The research with a qualitative design was reviewed using the phenomenology approach, content analysis and grounded theory. The phenomenological study conducted by [7] emphasized a comprehensive approach consisting of the psycho-social, emotional and relational factors as related to married couples to ensure the quality of life of the family members who had suffered from a stroke. The content analysis conducted by [10] produced a general theme about the promotion of total recovery with 3 main themes: functional recovery, improving psychological health, and strengthening social roles.

Grounded theory research was carried out by [19] and [18]. Tseng observed the family's experience in treating patients post-stroke who suffered from urinary inconsistencies and they got the main theme of creating a new meaning of life. Lutz identified the condition of unpreparedness in the families caring for stroke patients after returning from rehabilitation. There were 3 things that were found to be necessary to be prepared for i.e. the examination of the family condition, the identification of patient needs and preparedness and plans.

The role of the nurse was very important when it came to giving the intervention to the family either before the patient returned home or when the patient was at home. [11] explained that the education given by the nurses would reduce the family burden, allow them to avoid mistakes and reduce the use of inadequate health services by the stroke patients. [1] said that the nurses had to involve the closest communities to them, especially their family, in order to treat and reduce post-stroke complications. [15] explained that the family felt boredom, anxiety and depression. Thus the nurses had to provide encouragement and they also had to emphasize the importance of the role of the family in caring so then they would not feel burdened and tired of caring for their family members who had had a stroke.

The systematic review carried out had several limitations. First, the search strategy only included studies in English; other languages were ignored even though the topic was related. Second, the heterogeneity of the research method and the type of family support made this systematic review difficult to draw on as a whole.

5. Conclusion

The role of the family had a significant effect on the care of the patients post-stroke. The form of care that could be given by the family to them was varied and affected by various aspects, both physically and concerning their quality of life. The nurses played a role in providing family knowledge and facilitating the ability to treat the patients post-stroke.

Implication for Practice; Family support was an important aspect of caring and recovery in the patients post-stroke at home. The family must have good knowledge and abilities when it comes to caring for them. Therefore, nurses must provide support to the family starting from health education and through to ongoing assistance. Before the patients were sent bac to their home, the nurses had to provide systematic discharge planning and they involved the family in the process of caring for the

patients in the hospital. This was so then when they returned home, the family was ready to treat them. The nurses also had to do a periodic follow-up to ensure the development of the patient's condition.

References

[1] Mendyk A, Duhamel A, Bejot Y, Leys D, Derex L, Dereeper O, et al. Controlled Education of patients after Stroke (CEOPS) - nurse-led multimodal and long-term interventional program involving a patient ' s caregiver to optimize secondary prevention of stroke : study protocol for a randomized controlled trial. 2018;1–8.

[2] Association AH. Stroke , TIA and Warning Signs. Am Hear Assoc. 2018;

[3] Galea J, Brough D. The role of inflammation and interleukin-1 in acute cerebrovascular disease. J Inflamm Res [Internet]. 2013 Aug 20;6:121–8. Available from: http://www.dovepress.com/the-role-of-inflammation-and-interleukin-1-in-acute-cerebrovascular-di-peer-reviewed-article-JIR

[4] Teasell R, Hussein N. Brain reorganization, recovery and organized care. Clin Handb [Internet]. 2016;0:1–34. Available from: www.ebrsr.com

[5] Robinson RG, Jorge RE. Post-Stroke Depression: A Review. Am J Psychiatry [Internet]. 2016 Mar;173(3):221–31. Available from: http://ajp.psychiatryonline.org/doi/10.1176/appi.ajp.2015.15030363

[6] Pitthayapong S, Thiangtam W, Powwattana A, Leelacharas S, Waters CM. A Community Based Program for Family Caregivers for Post Stroke Survivors in Thailand. Asian Nurs Res (Korean Soc Nurs Sci) [Internet]. 2017;11(2):150–7. Available from: http://dx.doi.org/10.1016/j.anr.2017.05.009

[7] Gonza T, Amarilla-donoso J, Cordovilla- S, Portilla-cuenca JC, Casado-naranjo I. Critical points in the experience of spouse caregivers of patients who have suffered a stroke . A phenomenological interpretive study. 2018;1–17.

[8] Cheng HY, Ying S, Pak J, Chau C. E ff ectiveness of a strength-oriented psychoeducation on caregiving competence , problem-solving abilities , psychosocial outcomes and physical health among family caregiver of stroke survivors : A randomised controlled trial. Int J Nurs Stud [Internet]. 2018;87(March):84–93. Available from: https://doi.org/10.1016/j.ijnurstu.2018.07.005

[9] İ FH, Temel AB. The effect of the support program on the resilience of female family caregivers of stroke patients : Randomized controlled trial ☆ , ☆☆. 2016;32:233–40.

[10] Kamwesiga JT, Eriksson GM, Tham K, Fors U, Ndiwalana A, Koch L Von, et al. A feasibility study of a mobile phone supported family-centred ADL intervention , F @ ce ™ , after stroke in Uganda. 2018;1–13.

[11] Day CB, Cristiane C, Kottwitz B, Oliveira N, Mocellin D, Predebon ML, et al. Nursing home care educational intervention for family caregivers of older adults post stroke (SHARE): study protocol for a randomised trial. 2018;1–9.

[12] Yu F, Hongyu M, Bn L, Tai C, Ting BN, Mn G, et al. Effect of family education program on cognitive impairment , anxiety , and depression in persons who have had a stroke : A randomized , controlled study. 2018;(May):1–10.

[13] Dharma KK, Damhudi D, Yardes N, Haeriyanto S. Increase in the functional capacity and quality of life among stroke patients by family caregiver empowerment program based on

adaptation model. Int J Nurs Sci [Internet]. 2018 Oct;5(4):357–64. Available from: https://doi.org/10.1016/j.ijnss.2018.09.002

[14] Prakash V, Shah MA, Hariohm K. Family ' s presence associated with increased physical activity in patients with acute stroke : an observational study. 2016;20(4):306–11.

[15] Kruithof WJ, Post MWM, Mierlo ML Van, Bos GAM Van Den, Ginkel JMDM, Visser-meily JMA. Patient Education and Counseling Caregiver burden and emotional problems in partners of stroke patients at two months and one year post-stroke : Determinants and prediction. Patient Educ Couns [Internet]. 2016;99(10):1632–40. Available from: http://dx.doi.org/10.1016/j.pec.2016.04.007

[16] Hesamzadeh A, Dalvandi A, Maddah SB, Khoshknab MF, Ahmadi F. Family Caregivers ' Experiences of Stroke Recovery Among Older Adults Living in Iran : A Qualitative Study. 2016;(12).

[17] Dehghan Nayeri N, Mohammadi S, Pedram Razi S, Kazemnejad A. Investigating the effects of a family-centered care program on stroke patients' adherence to their therapeutic regimens. Contemp Nurse [Internet]. 2014 Apr 30;47(1–2):88–96. Available from: http://www.tandfonline.com/doi/abs/10.1080/10376178.2014.11081910

[18] Lutz BJ, Young ME, Creasy KR, Martz C, Eisenbrandt L, Brunny JN, et al. Improving Stroke Caregiver Readiness for Transition from Inpatient Rehabilitation to Home. Gerontologist. 2017;57(5):880–9.

[19] Tseng C, Huang G, Yu P, Lou M. A Qualitative Study of Family Caregiver Experiences of Managing Incontinence in Stroke Survivors. 2015;1–13. Available from: http://dx.doi.org/10.1371/journal.pone.0129540

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SCREENING HEPATITIS B IN PREGNANCY : A SYSTEMATIC REVIEW

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ABSTRACT

Hepatitis B is a preventable and treatable disease, one way to prevent it is by giving immunization. Hepatitis B control starts from the treatment of pregnant women who have hepatitis and immunization in babies born, this will break the first chain of transmission of hepatitis. This control program needs to be implemented seriously considering the number of hepatitis patients continues to increase from year to year. This study aims to determine the description of Hepatitis B screening in pregnant women. Articles searching done through some electronic databases included Scopus, and Pro Quest. This search is limited to journals starting in 1995-2018. English keywords used were screening, Hepatitis B, pregnancy, and prevalence. Of the entire journals, 7 journals on topic has selected and then observed and performed systematic review using PRISMA. The most susceptible hepatitis B problems in pregnant women, children become susceptible subjects to contract, therefore prevention of vertical transmission is one of the most important aspects in breaking the chain of transmission of hepatitis B.

Keywords: screening, hepatitis B, pregnancy, systematic review

Background

Hepatitis is a disease related to public health in the world, including in Indonesia. Hepatitis B consists of hepatitis A, B, C, D and hepatitis E. Hepatitis B is a serious infectious disease and generally infects the liver caused by the hepatitis B virus (HBV) which can cause acute and chronic diseases (Health Protection Surveillance Center, 2012) The most susceptible hepatitis B problems in pregnant women, children become susceptible subjects to contract, therefore prevention of vertical transmission is one of the most important aspects in breaking the chain of transmission of hepatitis B (Kemenkes RI, 2013).

Hepatitis B is one of the most common infectious diseases in the whole world. According to the World Health Organization (WHO) in 2012, around 2 billion people were infected with HBV, more than 240 million suffered from chronic liver. Perinatal transmission is one of the most common routes of transmission. HBV screening from pregnant women has been commonly recommended for transmission. The risk of developing HBV between children born to HBsAg + (B hepatitis antigen) and HBeAg + (initial hepatitis B virus antigen) mothers is 70-90% or more, and more than 85% of them become chronic carriers. Preventing transmission of HBV from mother to child is only possible if the disease is diagnosed during pregnancy or before delivery. Therefore, key elements for controlling infection and establishing gram pro prevention for this disease include epidemiological

patterns, prevalence, and risk factors. Previous studies have assessed the prevalence and risk factors of HBV in pregnant Iranian women. (Badfar, Shohani and Parizad, 2018). Hepatitis viruses are a major cause of morbidity and mortality, and are ranked as the cause of the seven major deaths in the world. The hepatitis B virus (HBV) causes 70% of the viruses associated with death hepatitis (Mbangiwa *et al.*, 2018).

A comprehensive review of HBV prevalence rates in pregnant women taking into account different geographical areas and socioeconomic status is still lacking. This will be very important for HBV prevention and control programs. Thus, this systematic review and meta-analysis was conducted with a focus on HBV prevalence rates in pregnant women from various parts of the world (Behzadifar *et al.*, 2018). Preventing vaccination of adults at risk of infection with HBV. Preventing perinatal transmission depends on testing all pregnant women for HBsAg and timely prophylactic administration (Hep B vaccine and hepatitis B immune globulin [HBIG]) for babies born to infected mothers. universal vaccination that HepB of all infants starting at birth provides critical protection and prevents infection in infants born to HBsAg positive mothers not identified before birth. Routine HBV screening is recommended during pregnancy the purpose of hepatitis B (HBV) remains a significant public health burden, despite effective therapy. Routine HBV screening is recommended for low risk of vertical transmission, but the rates of follow-up care for peri-partum patients are low (Kwong *et al.*, 2018).

We searched the following electronic databases included "Scopus, and Pro Quest". This search is limited to journals starting in 1995-2018. English keywords used were Skrining, Hepatitis B, *Pregnancy,* dan *Prevalence* . Of the entire journal selected 7 journals on topic. 7 journal articles are then observed and performed Systematic Review

Study Design/ Selection criteria

We included Randomized controlled trial design (RCT) and quasi-experimental evaluating the effects in critically ill patients receiving mechanical ventilation for at least 48 hours.

Population

all pregnant women were tested for hepatitis B surface antigen (HBsAg), and HBsAg-positive samples were tested for hepatitis B

Primary outcomes

Perinatal transmission is one of the most common routes of transmission

Study selection

The compilation of the review system follows the guidelines of the literature (Liberati *et al.*, 2009) obtained from PRISMA

Result

Search of journals, from figure 1 there are 241 who first discovered and 7 articles that meet the criteria set out in the systematic review (see Figure 1). Most journal articles that include the use of chlorhexidine study group and control group using plasebo. From 10 articles can be concluded that

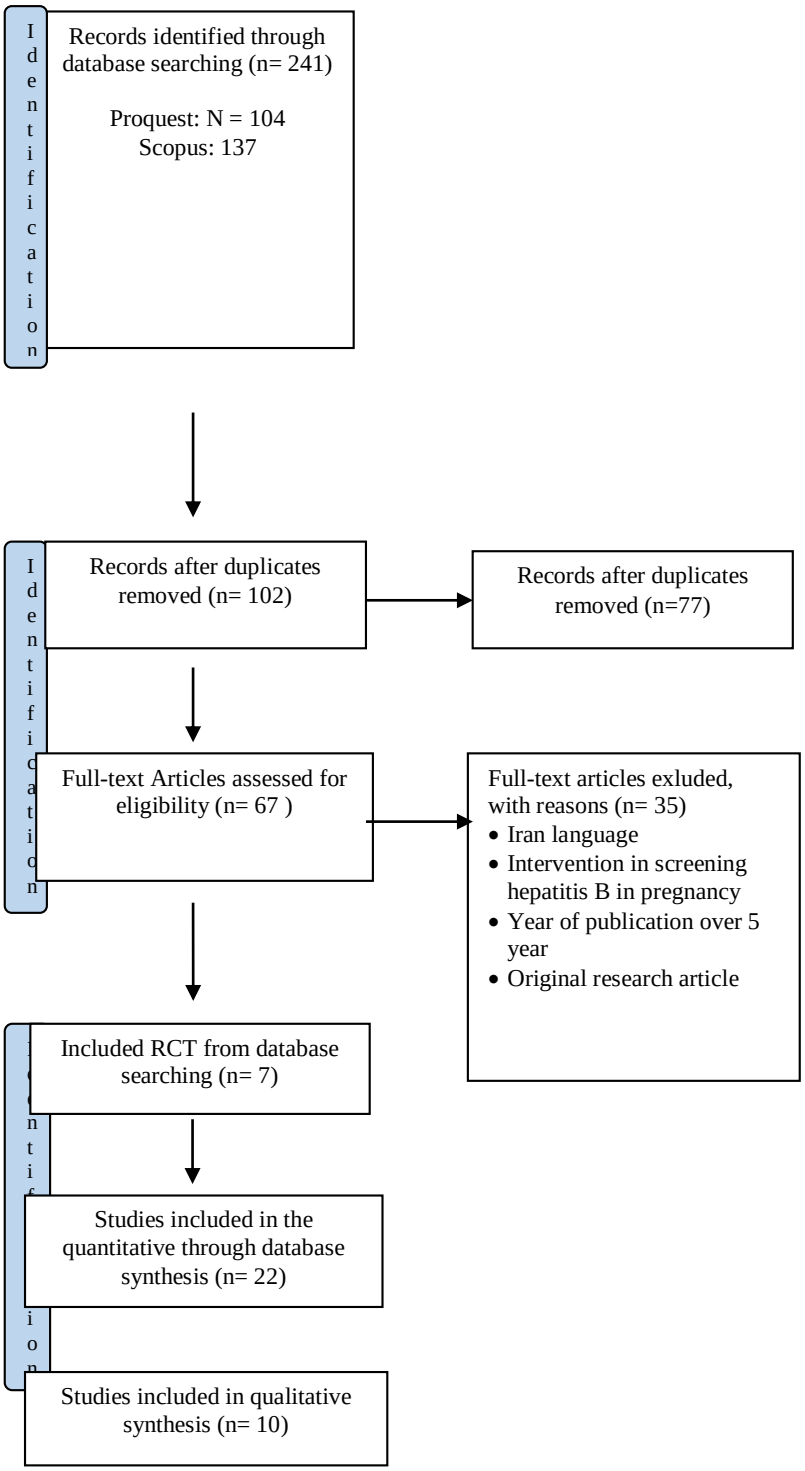
the use of screening hepatitis B in pregnancy. There are 5 journal still undetermined differences were statistically significant differences between the groups

Discussion

The most susceptible hepatitis B problems in pregnant women, children become susceptible subjects to contract, therefore prevention of vertical transmission is one of the most important aspects in breaking the chain of transmission of hepatitis B.

Conclusion

Hepatitis B control starts from the treatment of pregnant women who have hepatitis and immunization in babies born, this will break the first chain of transmission of hepatitis. Age did not seem to be a risk factor for HBV infection as there was no difference in ages of the women with HBV versus those without HBV. New and ambitious elimination targets provide an ideal opportunity to focus resources on optimizing the prevention of vertical HBV transmission.


Identification
Records identified through database searching (n= 241)
Proquest: N = 104
Scopus: 137
Identification
Records after duplicates removed (n= 102)
Records after duplicates removed (n=77)
Full-text Articles assessed for eligibility (n= 67)
Full-text articles exluded, with reasons (n= 35)
Iran language
Intervention in screening hepatitis B in pregnancy
Year of publication over 5 year
Original research article
Included RCT from database searching (n= 7)
Studies included in the quantitative through database synthesis (n= 22)
Studies included in qualitative synthesis (n= 10)

References

(Article, 2018)Article, O. (2018) "Assessment of the prevalence of vertical hepatitis B transmission in two consecutive generations," 64(2), pp. 154–158.

Badfar, G., Shohani, M. and Parizad, M. (2018) "Epidemiology of hepatitis B in pregnant Iranian women : a systematic review and meta - analysis," *Archives of Virology*. Springer Vienna, 163(2), pp. 319–330. doi: 10.1007/s00705-017-3551-6.

Behzadifar, M. *et al.* (2018) "Prevalence Rate of Hepatitis B Virus in Pregnancy : Implications From a Systematic Review and Meta-Analysis of Studies Published From 2000 to 2016," 18(1), pp. 1–8. doi: 10.5812/hepatmon.14574.Review.

Bergin, H. *et al.* (2018) "Perinatal management of hepatitis B virus : Clinical implementation of updated Australasian management guidelines," 11(1), pp. 23–27. doi: 10.1177/1753495X17731990.

Chamroonkul, N. and Piratvisuth, T. (2017) "Hepatitis B During Pregnancy in Endemic Areas : Screening , Treatment , and Prevention of Mother-to-Child Transmission," *Pediatric Drugs*. Springer International Publishing, 19(3), pp. 173–181. doi: 10.1007/s40272-017-0229-1.

Cheng, Q. *et al.* (2018) "Epigenome-wide study for the o ff spring exposed to maternal HBV infection during pregnancy , a pilot study," *Gene*. Elsevier, 658(Maret 2017), pp. 76–85. doi: 10.1016/j.gene.2018.03.025.

Grosheide, P. M. and Spaendonck, M. A. E. C. (1995) "Programme for preventing perinatal hepatitis B infection through screening of pregnant women and immunisation of infants ofinfected mothers in the Netherlands , 1989-92," 311, pp. 1200–1202.

Group, D. S. and Hepatitis, N. (no date) "Proposal for routine antenatal screening at 14 weeks for hepatitis B surface antigen," pp. 1197–1199.

Kwong, A. J. *et al.* (2018) "Peripartum Care for Mothers Diagnosed with Hepatitis B During Pregnancy : A Survey of Provider Practices,"

Kemenkes RI. 2013. Riset Kesehatan Dasar; RISKESDAS. Jakarta: Balitbang Kemenkes RiMaternal and Child Health Journal. Springer US, 22(9), pp. 1345–1351. doi: 10.1007/s10995-018-2515-0.

Lee, D., Shin, H. Y. and Park, S. M. (2018) "Cost - effectiveness of antiviral prophylaxis during pregnancy for the prevention of perinatal hepatitis B infection in South Korea," *Cost Effectiveness and Resource Allocation*. BioMed Central, pp. 1–11. doi: 10.1186/s12962-018-0088-9.

Mbangiwa, T. *et al.* (2018) "Chronic and Occult Hepatitis B Virus Infection in Pregnant Women in Botswana," pp. 1–13. doi: 10.3390/genes 9050259.

Moro, P. L. *et al.* (2018) "Assessing the safety of hepatitis B vaccination during pregnancy in the Vaccine Adverse Event Reporting System (VAERS), 1990 – 2016," *Vaccine*, 36(1), pp. 50–

54. doi: 10.1016/j.vaccine.2017.11.039.

Noah, J. (2018) "Heterogeneity of Hepatitis B Infection Among Pregnant Asian American and Pacific Islander Women." Elsevier Inc., 55(2). doi: 10.1016/j.amepre.2018.03.021.

Report, M. W. (2018) "Prevention of Hepatitis B Virus Infection in the United States : Recommendations of the Advisory Committee on Immunization Practices," 67(1).

Shan, S., Cui, F. and Jia, J. (2018) "How to control highly endemic hepatitis B in Asia," 38(Maret, 2018), pp. 122–125. doi: 10.1111/liv.13625.

Sheng, Q. *et al.* (2018) "Efficacy and safety of nucleos (t) ide analogues to prevent hepatitis B virus mother-to-child transmission in pregnant women with high viremia : real life practice from China," 15, pp. 1–6. doi: 10.7150/ijms.25047.

Tosun, S. (2016) "Gebelik ve Hepatit B Virüs Enfeksiyonu Pregnancy and Hepatitis B Virus Infection," (July). doi: 10.4274/mjima.2016.4.

Trinh-shevrin, C. *et al.* (2011) "The Asian American Hepatitis B Program: Building a Coalition to Address Hepatitis B Health Disparities."

Vedio, A. and Salway, E. Z. H. L. A. C. K. L. S. (2017) "Improving access to health care for chronic hepatitis B among migrant Chinese populations : A systematic mixed methods review of barriers and enablers, pp. 526–540. doi: 10.1111/jvh.12673.

Wei, K. *et al.* (2018) "The efficacy of two different dosages of hepatitis B immunoglobulin combined with hepatitis B vaccine in preventing mother-to-child transmission of hepatitis B virus : A prospective cohort study," *Vaccine*. Elsevier Ltd, 36(2), pp. 256–263. doi: 10.1016/j.vaccine.2017.11.037.

Wilkinson, R. G. (1995) "Antenatal screening for carriers of hepatitis B virus Britain needs a standardised nationwide universal screeningprogramme Can give peace of mind but should be used wisely," 311(November).

Wilson, P. *et al.* (2018) "Call to Action : Prevention of Mother-to-Child Transmission of Hepatitis B in Africa," 217(August), pp. 1180–1183. doi: 10.1093/infdis/jiy028.

Wong, G. L. *et al.* (2018) "Review article : long-term safety of oral anti-viral treatment for chronic hepatitis B," (November 2017), pp. 730–737. doi: 10.1111/apt.14497.

Zhao, X. *et al.* (2018) "Maternal folic acid supplementation and antibody persistence 5 years after hepatitis B vaccination among infants." Taylor & Francis, 5515. doi: 10.1080/21645515.2018.1482168.

FAMILY ROLE OF SEDENTARY LIFESTYLE IN ADOLESCENCE BASED ON THEORY OF PLANNED BEHAVIOR

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ABSTRACT

Sedentary lifestyle in adolescents can cause hypertension, obesity and myopia. Families as the closest parties to adolescents have a role to prevent sedentary lifestyle in adolescents. The purpose of this study to analyze the factors of the role of families for adolescents with sedentary lifestyle based on the theory of planned behavior. Design used was descriptive with cross sectional approach. Population was families (mothers) of student in Muhammadiyah 10 Senior High School Sugio who have adolescents 15-17 years old. A total of 122 respondents were chosen by startified cluster sampling method. Varibles in this study were attitudes, subjective norms, perceived behavior control (PBC), and intention of family. Data were collected by using a questionnaire and described by using frequency and precentage distribution. The results had showed the family's attitudes mostly were suficient (68,9%). The family's subjective norms mostly were sufficient (61,5%). The family's PBC's mostly were sufficient (74,6%), and the family's intentions a half were sufficient too (59%), to change the role of preventing the sedentary lifestyle of adolescents. Future research was suggest health workers increase family confidence in improving attitudes, subjective norms, PCBs, and intention to change family roles for adolescent with sedentary lifestyle

Keywords: family, role, sedentary, lifestyle, adolescent

1. Introduction

A sedentary lifestyle is a habit of life that is characterized by a low level of physical activity[1]. Sedentary lifestyle habits include sitting or lying in everyday life both at school (working in front of a computer, reading, etc.), at home (watching TV, playing games, playing mobile phones etc.) and on trips / transportation (buses, trains, motorbikes) but not including bedtime [2]. An adolescent sedentary lifestyle that is uncontrolled mainly occurs at home because there are no written rules that regulate the time spent using HP or watching TV [3].

In the sedentary lifestyle of teenagers in America, 28% watch TV over the recommended time, which is more than 3 hours a day and 24% use computers for more than 1 hour [5]. In addition to this, 33.5% of people >10 years in Indonesia also spend >6 hours a day being sedentary. Adolescents in East Java total as many as 30.1% of the population aged >10 years old who spend >6 hours of their time being sedentary [2].

The impact of the sedentary lifestyle can be seen from the obesity rate in the Health Profile of East Java Province in 2016, which is 15.48% and the obesity rate in Lamongan Regency is higher at 23.56%. One of the schools in Lamongan, Muhammadiyah10 Senior High School Sugio, reported that the results of the screening conducted in September 2018 showed a prevalence of overweight by 9.6% and obesity by 5.3%. In addition, 29.4% of students experienced myopia. The results of a preliminary study on October 20th, 2018 conducted on 10 adolescents in the school, showed that 7 students were in the high category for sedentary lifestyle namely >5 hours, 2 were in the moderate category and 1 was a mild category student. The impact that has been seen is that 10% were obese, 40% were overweight, 50% had blood pressure above normal and 40% had myopia.

Each family carries out their respective family roles which can influence the selection of education methods for the children. The role of the family can be a key factor that determines choosing for the children to live in places that have written regulations or living in a place without regulations [6]. The choice of residence is related to the level of sedentary lifestyle of the adolescents [7]. The role of parents is very important because it can play a role in reducing the sedentary lifestyle of adolescents, including in terms of choosing for there to be a sedentary environment [4].

The results of the interviews with the families of teenagers on the date selected showed that 6 out of 10 families represented by the mothers showed negative behavior. According to Bounova's (2018) study, behavior in relation to carrying out negative family roles can be seen from the family-reported support for poor physical activity, as evidenced by the statement that mothers never exercise or invite the adolescents to exercise. Negative behavior can also be seen from the family's screen-based behavior as evidenced by the statement of the mothers who also admitted to often having a sedentary lifestyle. The mother's family concern was also lacking because she stated that she reprimanded the adolescent if they had a sedentary lifestyle but she was left alone because it was considered adult and she felt that there were no health impacts, even though some adolescents were examined and found to be overweight. The mother's role in family modeling was also lacking because they stated that they had taught the children a healthy lifestyle but when they entered adolescence, it is rarely done.

The results of the interviews show that there are problems with the family roles, especially the role of the family represented by the mother when caring for a teenager with a sedentary lifestyle. The role of the family is a set of interpersonal behaviors, traits and activities related to the person in the family environment with the intention of achieving certain goals based on their respective functions [8]. Previous research used a behavioral theory approach, namely the theory of planned behavior, to describe the behavior within a sedentary lifestyle[9]. The theory of planned behavior emphasizes the nurse’s role in terms of giving the intervention based on the client’s behavior. Bridging the gap between the client’s belief behavior and professional belief behavior is important in the context of maintaining health. Based on this theory, there are 4 factors that influence individual families, groups and the community’s health behavior, including attitude, subjective norms, perceived behavioral control and intention [10]. There was an overwhelming amount of research that examined the factors affecting the family role and

how it related to the adolescents with a sedentary lifestyle, but it was rare that the researchers used the theory of planned behavior as the conceptual framework.

Various efforts have been made by the government to prevent sedentary lifestyle in adolescents with a family approach[11]. However, the problem of a sedentary lifestyle in adolescents still hasn't been solved yet. Therefore in this paper, we analyze the factors of the role of families for adolescents with sedentary lifestyle based on the theory of planned behavior on Families of student in Muhammadiyah 10 Senior High School Sugio, Lamongan. The nurses need to develop interventions or health promotion strategies that are culturally sensitive in order to promote a healthy lifestyle and to prevent a sedentary lifestyle in adolescents within a family approach.

2. Methods

The design used was descriptive with a cross-sectional approach. The population was families with adolescents (15-17 years old) at Senior High School Muhammadiyah 10 Sugio. A total of 122 respondents were chosen using the stratified sampling method from 3 different places where the student stayed after school. The variables in this study were the attitude toward to the behavior, the subjective norms, perceived behavioral control and intention. The data was collected using a modified questionnaire from the previous research about the parental role. The analysis was done using frequency and percentage distribution. This study got ethical clearance from the ethical commission of the Faculty of Nursing, Universitas Airlangga.

3. Result

Table 1 - Frequency and percentage distribution of the respondents based on the variables (n=122)

Variables	Category	n	%
Attitude towards the behavior	Good	22	18,0%
	Sufficient	84	68,9%
	Deficient	16	13,1%
Subjective norm	Good	28	23%
	Sufficient	75	61,5%
	Deficient	19	15,6%
Perceived behavior control	Good	19	15,6%
	Sufficient	91	74,6%
	Deficient	12	9,8%
Intention	Good	32	26,2%
	Moderate	72	59%
	Deficient	18	14,7%

Table 1 presents that most of the families (mothers) who had been caring for the adolescent had attitude, subjective norm, perceived behavior control and the intention to change the role of the adolescents related to having a sedentary lifestyle in the sufficient category (68,9%).

4. Discussion

Table 1 presents that most of the families (mothers) who had been caring for their adolescent had attitude to change the role of the adolescents with a sedentary lifestyle in the sufficient category (68,9%). The family felt that the family role that was carried out had a positive impact such as agree on limiting the time that the adolescent spends sitting for a long time using a computer. This is because it will harm the adolescents. They feel that reducing the time that the adolescents spend playing electronic games is important and that it can prevent a sedentary lifestyle in adolescents. However, the respondents felt that the family's role had a negative effect because they could not reduce the time spent playing on their phone, as an example.

Attitude is the amount of positive or negative feelings towards an object (favorable) or negative (unfavorable) person, an institution or activity [12]. The attitude of the parents when carrying out the roles relates to the sedentary lifestyle of adolescents [13]. The factor that most determines family attitude is belief. Family beliefs about adolescent health determines the role of the family in relation to a sedentary lifestyle in adolescence [14].

The results are consistent with the previous research indicating that a large family feels that their role that is both positive and negative, and that they determine the attitude that the families face when it comes to the sedentary lifestyle of adolescents. Most of the attitudes of the families are still in the sufficient category, so there needs to be action to build belief in a positive direction so then the family can optimize their role to prevent a sedentary lifestyle in the period of adolescence.

Most of the families (mothers) who had been caring for their adolescent had their subjective norm in the sufficient category (61,5%). The families feel that the approval of another family enhances their role if family have adolescent with sedentary lifestyle is sufficient. All parties that are considered to be important by the family agree to increase the role of the family with adolescents with a sedentary lifestyle. Everyone believes that families need to increase their role if they have adolescents with sedentary lifestyle.

A subjective norm is a person's perception of the agreement of others towards an action. In the theory of planned behavior, subjective social norms are seen to influence behavioral intention, which can lead to behavior change [10]. Other people's agreements relate to sedentary lifestyle in adolescents because the subjective norms can be defined as a social group's expectations of behavior. They indicate what is considered to be appropriate or inappropriate in certain circumstances [15]. Other people's agreements relate to family support for adolescent health, including the prevention of a sedentary lifestyle because the way that the families carry out their roles is influenced by the approval of others [14].

The results of this study are in line with the previous research and the theory that the agreement of other people such as other families (neighbors), religious leaders and community leaders to improve the family's role in relation to the adolescent lifestyle determines the intention to change roles which are then manifested in behavior. Most subjective norms are still in the fairly good category because there is a regulation from the regent to get the families to guide adolescents to learn from 6.00 pm until 8.00 pm. This regulation will indirectly reduce

the time that the teenagers spend playing games, being on their cellphones and watching television. However, the monitoring of the implementation has not been done, so some families still have the subjective norms aspect in the lesser category. Other causes of subjective norms that are in the good category are still deficient because of the way that the families carry out their roles based on their social groups. Other families also have similar perceptions, namely reducing the attention paid to adolescents because they are considered to be adults.

Most families (mothers) who have been caring for their adolescents have perceived behavioral control in the efficient category (74.6%) based on the factors that hinder and support the role of the family. Most of the factors that support the family's role are intact family forms. The average family role model of the parents has not prevented the sedentary lifestyle of adolescents. Families at the developmental stage of having teenagers do not have experience in caring for teenagers previous. Most of the factors that hinder the family relate to there being no facilities for joint sports and there are no regulations that apply in the family when using HP, laptops and TV. Another inhibiting factor that is not controlled by the family is that there is only one TV and it is not in the teenager's room.

Perceived behavioral control is related to conducting their lifestyle such as walking to school, which in previous studies relates to family structures (whole or divorced families or single parents) [16]. The factors associated with affective response related to preventive sedentary lifestyle activities show that the affective appraisal of physical activity is considered to be related to the fundamental aspects of exercise experience [17]. Families who have cared for adolescents before or who have a family role models such as their parents who have previously had experience in joint exercise training will be different in terms of the family roles carried out compared to those who do not have experience. The families with proximal environmental contexts (e.g., access to home exercise equipment) and policy level factors can promote positive behaviors in adolescents and prevent the amount of sedentary time [18]. Previous research on the association is that the home environment with screen use is mainly focused on the number of TVs and DVDs at home or in the child's bedroom[7].

The results of this study are in line with the previous studies that indicating that the family support factors that shape the perceived behavioral control of carrying out the family roles are the family format. Adolescents from intact families have sufficient attention from both parents. The respondents of this study were large in terms of family size with the family developmental stage being with adolescents. Perceived behavioral control in the associated category was sufficient because they did not have the experience of raising adolescents. Most families also did not have a role model in the form of previous parents that would help to prevent the sedentary lifestyle of teenagers because there was no cellphones, televisions, computers or video game, so there are thus no examples of how to prevent excessive use. Most of the family income was in the category of being under the regional standards, so they did not have enough money to buy fitness equipment and more than one television. Subsequent interventions are expected to provide solutions to improve joint sports activities without using fitness equipment. Simple solutions that are easy to implement are expected to be able to improve the perceived

behavioral control which can change the intention to increase roles which then allow the family to run optimally.

Half of the families (mothers) who had been caring for their adolescent had intention in the sufficient category (59%). The intention of the families to change their role was, for more than half, in the sufficient category and most of the rest were in the good category. The average family approved a statement indicating the intention to increase the role of the family in terms of limiting the time spent playing on their mobile phones, watching TV and using a computer or laptop. The family also intends to watch TV with teenagers. However, most families still do not agree to exercise with teenagers every day of the holidays and make regulations for the time spent by teenagers playing mobile phones and watching TV.

The intention of parents to care about adolescent health behavior is the strongest predictor that determines adolescent behavior [13]. A previous research is in line with the Theory of Planned Behavior in that social support and the influence from one's friends and family has a large influence on the adolescents' behavior and their intention to engage in sedentary behavior, including screen time[19].

Most of the family's intention to increase the family's role in relation to the sedentary lifestyle of adolescents was in the sufficient category because the family still considers the sedentary lifestyle not to cause illness, so their concern is still lacking. Family care will determine the intention to improve their role. The family influences the adolescent's intention to prevent a sedentary lifestyle so a further intervention is also expected to focus on aspects of the family role if they want to prevent a sedentary lifestyle in their adolescent.

5. Conclusions

Based on theory of planned behavior, the factors that influence the role of the family when caring for an adolescent with a sedentary lifestyle were sufficient family attitude, sufficient family subjective norms, sufficient family perceived behavioral control and the family intention to change the role of the family. Otherwise, the family intention to change their role can relate to the strength of the family.

A family with a sedentary lifestyle in relation to their adolescent should be more active in accessing information about strategies to increase their role in order to prevent said sedentary lifestyle. Community health nurses are expected to develop health promotion strategies based on the research findings to prevent a sedentary lifestyle in adolescents with a family approach.

References

[1] NANDA 2018 *Nursing Diagnoses: Definition and Classification 2018-2020* ed T H Herdman and S Kamitsuru (New York: Thieme)

[2] Kemenkes 2013 *Riset Kesehatan Dasar tahun 2013* (Jakarta)

[3] McMinn A M, Griffin S J, Jones A P and Van Sluijs E M F 2013 Family and home influences on children's after-school and weekend physical activity *Eur. J. Public Health***23** 805–10

[4] Bounova A, Michalopoulou M, Agelousis N, Kourtessis T and Gourgoulis V 2018 The parental role in adolescent screen related sedentary behavior *Int. J. Adolesc. Med. Health***30**

[5] Zhu W and Owen N 2017 *Sedentary Behavior and Health: concepts, assessments, and interventions* (United States of America: Human Kinetics)

[6] Haines J, Rifas-shiman S L, Horton N J, Kleinman K, Bauer K W, Davison K K, Walton K, Austin S B, Field A E and Gillman M W 2016 Family functioning and quality of parent-adolescent relationship : cross-sectional associations with adolescent weight-related behaviors and weight status *Int. J. Behav. Nutr. Phys. Act.***13** 1–12

[7] Bounova A, Michalopoulou, Agelousis N, Kourtessis T and Gourgoulis Vassilis Ph.D. 2016 Home and Neighborhood Environment Predictors of Adolescents' Screen Viewing *Int. J. Sport Nutr. Exerc. Metab.***26** 1–44

[8] Friedman M M, Bowden V R and Jones E G 2010 *Buku Ajar Keperawatan Keluarga: Riset, Praktik, dan Teori* (Jakarta: EGC)

[9] Prapavessis H, Gaston A and Dejesus S 2015 The Theory of Planned Behavior as a model for understanding sedentary behavior *Psychol. Sport Exerc.***19** 23–32

[10] Ajzen I 1991 *The Theory of Planned Behavior. Organizational Behavior and Human Decision Processes* (Boston: Academic Press University of Massachusetts)

[11] Kemenkes 2016 *Pedoman Umum Program Indonesia Sehat Pendekatan Keluarga* (Jakarta: Kementrian Kesehatan RI)

[12] Ajzen I 2005 *Attitude, Personality, and Behaviour* (Buckingham: Open University Press)

[13] Lenne R L, Joyal-Desmarais K, Jones R E, Huelsnitz C O, Panos M E, Auster-Gussman L A, Johnson W F, Rothman A J and Simpson J A 2018 Parenting styles moderate how parent and adolescent beliefs shape each other's eating and physical activity: Dyadic evidence from a cross-sectional, U.S. National Survey *J. Exp. Soc. Psychol.***30**

[14] Wang X, Liu Q-M, Ren Y-J, Lv J and Li L-M 2015 Family influences on physical activity and sedentary behaviours in Chinese junior high school students: a cross-sectional study *BMC Public Health***15** 287

[15] Draper C E, Grobler L, Micklesfield L K and Norris S A 2015 Impact of social norms and social support on diet, physical activity and sedentary behaviour of adolescents: A scoping review *Child. Care. Health Dev.***41** 654–67

[16] Pang B, Rundle-Thiele S and Kubacki K 2017 Can the theory of planned behaviour explain walking to and from school among Australian children ? A social marketing formative research study *Int. J. Nonprofit Volunt Sect Mark.* 1–15

[17] Bryan A D, Jakicic J M, Hunter C M, Evans M E, Yanovski S Z and Epstein L H 2017 Behavioral and Psychological Phenotyping of Physical Activity and Sedentary Behavior :

Implications for Weight Management **25** 1653–9

[18] Gallo L C, Roesch S P, Mccurley J L, Isasi C R, Sotres-alvarez D, Delamater A M, Horn L Van, Arredondo E M, Perreira K M, Buelna C, Qi Q, Vidot D C and Carnethon M R 2016 Youth and Caregiver Physical Activity and Sedentary Time: HCHS/SOL Youth *Am. J. Heal***41** 67–75

[19] Garcia J M, Agaronov A, Sirard J R, Whaley D, Rice D J and Weltman A 2016 Psychosocial and Friend Influences on Objective Sedentary Behavior and Screen Time: A Mixed Methods Analysis *J. Phys. Act. Health*

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EFFECTIVENESS OF COMPLEMENTARY SPIRITUAL THERAPY INTERVENTION IN PALLIATIVE CARE FOR IMPROVING THE QUALITY OF LIFE IN CANCER PATIENTS : A SYSTEMATIC REVIEW

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ABSTRAK

Cancer diagnosis caused psychological stress that can threaten the quality of life for cancer patients. The death rate from cancer in 2015 was 112.8 people per 100,000 population. Psycho-oncological treatments especially spiritual care was very important for cancer patients. Spiritual therapy helped cancer patients to increase the peace although they were in the final phase of life. Spiritual therapy can reduce psychological stress, increase the meaning and the purpose of life in cancer patients so that they can improve their quality of life. The systematic review was to assess the effectiveness of spiritual therapy on improving the quality of life for cancer patients. The method used was to search a journal with pre- determined keywords quality of life, cancer, palliative care, spiritual well-being, spiritual therapy, supportive group therapy through a database of "Scopus, Pro Quest, Science Direct and Ebsco". The search was limited to journals starting in 2010-2017. Study results showed that the complementary spiritual therapy intervention in palliative care was effective to improve the quality of life in cancer patients. That Spirutual therapy can be a reference for health workers in their comprehensive care programs to improve the quality of life in cancer patients.

Keywords : Quality of life, cancer, palliative care, spiritual well-being, spiritual therapy, supportive group therapy

1. Introduction

Cancer is universally recognized as the main health problem of the century with there having been an increase for the last few decades. It has a detrimental impact on all aspects of physical, emotional, spiritual, social, and economic human life that has made experts more concerned with cancer than ever before[15]. According to the data from the World Cancer Report in 2014, cancer is one of the most serious critical health problems where, while there were much progress in therapy, cancer deaths cannot be avoided. A total of 14 million new cases and 8.2 million cancer-related deaths were reported worldwide in 2012[6]. Around the world, cancer has challenged patients, families, nurses and the community. The data from the World Health Organization in 2015 showed that cancer was the main cause of death and that the number of new cases was expected to increase by around 70% over the following two decades[1].

Psychologically, patients diagnosed with cancer will feel scared for future events and experience fear and depression. After the patients received their diagnosis, patients diagnosed with cancer will immediately experience a sense of life that ends and disappears. In addition, people diagnosed with cancer reported feelings about a loss of control, helplessness, consideration of the future, anger, confusion, guilt, anxiety and depression[14]. Therefore, psycho-oncological care that includes spiritual care is very important for cancer patients[12].

Several approaches had been used to improve the quality of life of cancer patients. The interventions include exercise, peer support groups, awareness-based stress reduction programs and cognitive behavioral therapy (CBT) and they have all shown that they can have a positive effect on the quality of life in cancer patients[7]. When facing a cancer diagnosis and its challenges, many cancer patients sought comfort in spiritual beliefs, which in some cases was associated with positive psychological results. Psycho-oncological treatments, especially spiritual care, are very important for cancer patients. Spiritual therapy helps the cancer patients to increase their sense of peace, even when they are in the final phase of life. Spiritual therapy can reduce psychological stress and increase the meaning and purpose of life in cancer patients so then they can improve their quality of life[2].

Spiritual therapy methods in several journals had different effects when compared to one another. However, all of the spiritual therapies focused on the patients can allow them to obtain positive energy from within themselves related to cancer. The patients will be focused on the three types of relationship that can be disrupted because of cancer, namely the relationship with themselves, others and God. The participants were encouraged to talk to God based on their religious and spiritual beliefs and to ask for God's help so then God could help them in their healing process. To achieve complete health according to the definition of the World Health Organization, it was important for individuals to have a sense of spiritual well-being[4]. Effective spiritual therapy is expected to provide an improved quality of life and better management in the life of cancer patients[8].

The purpose of this systematic review was to find out the effectiveness of complementary spiritual therapy interventions in palliative care for improving the quality of life of cancer patients.

2. Methods

2.1 Research Design

This study used a systematic review to find out the effectiveness of complementary spiritual therapy interventions in palliative care related to improving the quality of life of cancer patients.

2.2 Search Strategy

The search for the articles used the keywords determined through several English-language journal databases namely Scopus, Pro Quest, Science Direct and Ebsco within the years 2010 to 2017. The keywords used in the journal search were quality of life, cancer, palliative care, spiritual well-being and spiritual therapy.

2.3 Inclusion and Exclusion Criteria

The studies were selected in the systematic review based on the inclusion criteria: 1) the study design used randomized controlled trials and non-randomized controlled trials; 2) the participants of the studies were adult cancer patients; 3) the cancer patients in the studies were advanced cancer patients (stage III-IV); 4) the studies were conducted from 2010 to 2017; 5) the intervention provided was a spiritual therapy intervention; 6) the factors that one had to measure in the studies were quality of life, spiritual well-being, the meaning of life, emotional suffering and spiritual needs as outcome variables. The studies were rejected based on the following exclusion criteria: 1) the studies were not published in English and 2) the samples were composed of pediatric cancer patients.

2.4 Selection of Articles

This systematic review was not only limited to the research using randomized controlled trials but it also allowed for a non-randomized controlled trial design. There were no restrictions in terms of the method of the spiritual therapy or if it focused on individuals or groups in the systematic review. The data was abstracted from all of the selected articles using an extraction table that was designed specifically for this review. The categories used in the abstraction tool included the demographics and populations studied, the spiritual therapy intervention given (method; duration and the implementer), the study design and the effects of the spiritual therapy interventions on quality of life, spiritual well-being, the meaning of life and emotional suffering (Table 1).

3. Results

1. Literature search and study selection

From the search results using the predetermined keywords, 188 nursing journals were found which were screened by looking at the title and reading the abstract first, which was narrowed down to 25 journals. From the 25 journals, 16 journals were selected that included the inclusion and exclusion criteria. Some journals were not selected because they did not include their inclusion and exclusion criteria. The detailed process of the mechanism for selecting the research articles can be seen in Figure 1. In the 16 journals chosen, there were 6 studies that used a randomized controlled trial design, 3 studies that used a quasi-experimental design, 3 studies that were cross-sectional, 1 study using a prospective non-randomized single cohort design, 2 pilot studies and 1 study that was qualitative.

2. Participants

Most of the participants in the studies were female. Among the cancer diagnoses, breast cancer was the most common followed by other cancers. There were 4 studies that recruited only breast cancer patients. The mean age of the participants in each study ranged from 35 years to 55 years.

3. Intervention

The spiritual therapy given consisted of several stages. These stages were different between one study and another. However, when they gave the spiritual therapy, all of the studies focused on the relationship between the patients and themselves, others and how they treated themselves with affection. The patients discussed how they felt regarding God such as guilt, anger or neglect. The patients were encouraged to talk with God on their religious and spiritual beliefs. The patients asked God to help and to be with them when they faced their cancer. The methods used for giving the spiritual therapy were done by given interventions individually, in groups or in a combination of individuals and groups. There were 6 studies using individual methods and 10 studies using group methods. The process of spiritual therapy can be done in the area of palliative care in hospitals, forests (natural) and green environments.

There were 16 studies examined in this systematic review. They all had different durations. There were 2 studies that did the spiritual therapy interventions for 4 months, 3 studies for 3 months, 2

studies for 6 months, 3 studies for 2 months, 1 study for 7 weeks, 1 study for 3 consecutive days, 1 study for 1 month, 2 study for 1 year and 1 study for 9 months.

The spiritual therapy was done by spiritual therapists (clerics, pastors), professional health workers in palliative care (doctors and nurses who had been trained by spiritual therapists) and health workers who had undergone spiritual therapy training. From the 15 studies, there were 4 studies where the spiritual therapy was given by spiritual therapists (clerics, pastors), 8 studies conducted by professional health workers in palliative care (doctors, nurses who had been trained before by spiritual therapists) and 3 studies conducted by health workers who had undergone spiritual therapy training.

The finding of the systematic review were 1) quality of life: In the 16 studies that assessed quality of life, a lot of them showed a significant improvement at the time of evaluation; 2) Spiritual well-being: In the 16 studies, the 7 studies that assessed spiritual well-being showed a significant increase during evaluation but there were also studies that showed that spiritual therapy did not significantly improve spiritual well-being; 3) Emotional suffering: In 16 studies, there were 3 studies that showed that the emotional suffering decreased during the evaluation; 4) The meaning of life: In 16 studies, 3 studies showed that the meaning of life increased in cancer patients at the time of evaluation.

4. Discussion

Spiritual therapy interventions have been proven to be effective for cancer patients. This was consistent with the research conducted by Sankhe, Dalal, Agarwal and Sarve in 2017, indicating that spiritual therapy had a significant effect on the patients report on their spiritual needs and the meaning of life even in their sleep[6]. The patients were actively involved in getting themselves positive energy to fight the cancer. The patients were focused on improving the 3 relationships that can be disrupted when they face cancer, namely the relationship with themselves, their relationship with others and their relationship with God. The patients were encouraged to speak to God based on their religious beliefs and to ask God so then He can help them in the healing process of their illness. This made it possible to improve the quality of life of cancer patients[7].

Several studies showed that the spiritual aspects of the cancer patients must be paid more attention to by the professional health workers when they give palliative care. Some aspects such as quality of life, spiritual well-being and meaning of life experienced significant improvements after the cancer patients attended spiritual therapy. The decline of emotional suffering showed that this intervention can have a positive effect on the lives of cancer patients[1]. There were, however, studies that showed that spiritual therapy did not significantly improve spiritual well-being[10].

In practice, spiritual therapy for cancer patients is able to be done individually or in groups. The implementation of spiritual therapy is able to be carried out in a calm and comfortable environment for the patients such as in a forest (nature), in a green environment or in a palliative care setting in hospitals. Spiritual therapy in this study had to be adapted to the patient's beliefs and spirituality so then it was easily accepted and implemented by the patient[12].

Not everyone was able to give the spiritual therapy in their particular form of implementation. In the interventions, there had to be someone qualified at providing spiritual therapy (cleric, bikhsu, pastor etc)[9]. Besides an ustad, bikhsu or pastor, spiritual therapy can also be provided by health professionals who had undergone spiritual therapy training.

The limitations and weaknesses of this systematic review were that some of the studies did not use a control group and non-random sampling techniques, so there could be an increased risk of bias in the outcome of the various studies.

5. Conclusion

Spiritual therapy is one of the interventions that has been found to have an effect in terms of improving the quality of life of cancer patients. This systematic review can support the implementation of spiritual therapy programs in cancer patients that have proven to be effective at improving their quality of life and spiritual well-being, to fulfill their spiritual needs, to give them a better meaning of life and to reduce their emotional suffering. Spiritual therapy can be used as an intervention in palliative care for cancer patients which involves various professional health workers such as doctors, nurses, pharmacists and psychologists. Further studies with larger sample sizes are needed to allow for more definite conclusions to be drawn.

Nurses as caregivers have to do their role well when they provide nursing care to the cancer patients in order to improve their quality of life and spiritual well-being. In the future, professional health workers, such as doctors and nurses, have to pay more attention to the spiritual aspects of cancer patients.

6. Figures

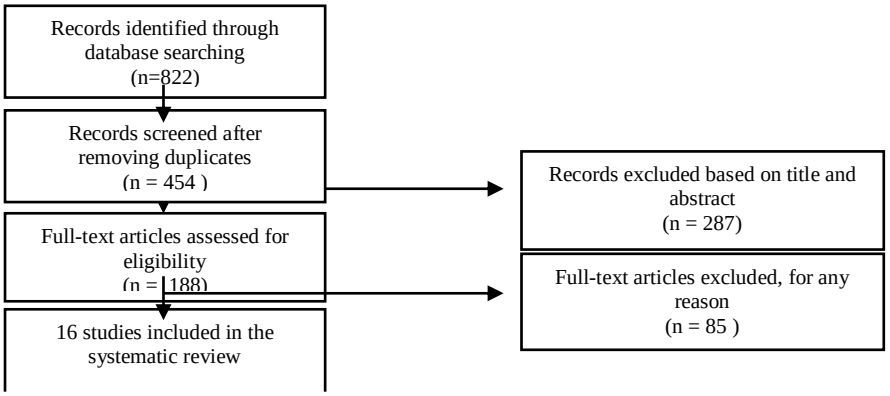

Figure 1. Diagram summarising the search of the literature

Table 1. Summary of the Studies Reviewed

Author	Sample	Intervention / Implementer	Therapy Method	Duration	Result
Chimluang J, Thanasilp S, Akkayagorn L, 2017[1]	48 adult patients with various cancer diagnoses	Spiritual therapy intervention based on basic Buddhist principles / spiritual therapists	The participants were divided into 6 groups	The intervention was comprised of 3 sessions over 3 consecutive days (2-3 hours/day)	Improvement in spiritual well-being and quality of life
Ã WB, Rosenfeld B, Gibson C, Pessin H, Poppito S, Nelson C, et al, 2010[5]	120 adult patients with various cancer diagnoses (stage III-IV)	Individual Meaning-Centered Psychotherapy (IMCP) / spiritual therapists	The participants were divided into 8-10 groups	The intervention was comprised of 8 sessions/day for 7 weeks	Improvement in spiritual well-being and the meaning of life
Breitbart W, Poppito S, Rosenfeld B, Vickers AJ, Li Y, Abbey J, et al, 2012[13]	90 adult patients with various cancer diagnoses (stage III-IV)	Individual Meaning-Centered Psychotherapy (IMCP) / spiritual therapists	The participants were divided into 8 groups	The intervention comprised of 7sessions/day for 2 months	Improvement in spiritual well-being and quality of life; decrease in emotional suffering
Emami H, Loghmani A, Bahrami F, Jafari N, Zamani A, Jafari N, et al, 2013[2]	65 female patients with breast cancer	The spiritual therapy intervention over 6 sessions focused on the relationship between the participants and God / spiritual therapists	The participants were divided into groups	The intervention was comprised of 6 sessions/day for 6 weeks	Improvements in their spiritual well-being and quality of life
	65 female patients	Spiritual therapy intervention over 6		The intervention	Improvement in their

Jafari N, Zamani A, Farajzadegan Z, 2013[7]	with breast cancer	sessions focused on the relationship between the participants, other people and God / spiritual therapists	The participants were divided into groups	was comprised of 6 session (2-3 hours/day) for 4 months	overall quality of life
Pearce MJ, Coan AD, Herndon JE, Koenig HG, Abernethy AP, 2012[11]	150 adult patients with various cancer diagnoses (stage III-IV)	Spiritual therapy experience analysed using an interview with the participants / professional health workers	The interviews were conducted individually	The study was done for 12 months	Participants improve their spiritual well-being, quality of life and the meaning of life
Study NS, Dalal ASK, Sarve VAP, 2017[6]	107 adult patients with various cancer diagnoses	The spiritual therapy intervention was given on the basis of the MATCH guideline / health workers who had undergone spiritual therapy training / spiritual therapists	The participants were divided into groups	The study was done for 9 months	Improvements in spiritual well-being and quality of life
Patel, JaivikaGovindbhai Bhise, Anjali R 2017[16]	150 adult patients with various cancer diagnoses	The participants filled in their data in order to answer the spiritual needs survey and the European Organization for Research and Treatment of Cancer QoL Questionnaire-C30. These were collected by the professional health workers	The interviews (questionnaires) were conducted individually	The study was done for 3 months	There was found to be a relationship between spiritual needs and QoL in cancer patients. This should improve quality of life and fulfill their spiritual needs
Qandil AMA 2017[14]	150 female patients with breast cancer	The participants completed the Arabic version of the Functional Assessment of Chronic Illness Therapy-Spiritual Well-being / professional health workers	The interviews (questionnaires) were conducted individually	The study was done for 3 months	Spiritual intervention contribute to an increase in spiritual well-being; an enhancement in total health and QoLand and a decrease in emotional suffering
Zamaniyan S 2016[15]	24 female patients with breast cancer	The spiritual therapy intervention over 12 sessions was	The participants were divided into 2 groups	The intervention was comprised of 12 sessions	Improvements were seen in spiritual well-

		focused on the relationship between the participants and the God / spiritual therapists		(120 minutes/7 days) for 3 months	being and quality of life
Piderman KM, Johnson ME, Frost MH, Atherton PJ, Satele D V, Clark MM, et al. 2014[4]	130 adult patients with various cancer diagnoses	The spiritual therapy intervention via 6 sessions was based on the physical, emotional, social and spiritual domains of QOL / spiritual therapists	The participants were divided into groups	The intervention was comprised 6 sessions (90 minutes/1 day) for 6 months	Improvements were seen in quality of life and the meaning of life; there was a decrease in emotional suffering
Vallurupalli M, Lauderdale K, Balboni MJ, Phelps AC, Block SD, Ng AK, et al. 2012[3]	69 adult patients with various cancer diagnoses (stage III-IV) who got radiation therapy	A spiritual therapy interview was given about the characteristics of the patients spirituality, religiousness, religious coping and the relationship of these variables to quality of life (QOL) from the participants / professional health workers	The interviews (questionnaires) were conducted individually	The study was done for 2 months	Spirituality and religious coping were The contributors to better QOL. Spiritual therapy in advanced cancer care is very important.
Geer J Van De, Groot M, Andela R, Leget C, Prins J, Vissers K, et al. 2016[8]	85 participants	The hospital staff were trained on the spiritual therapy intervention in the context of palliative care / health workers who had undergone spiritual therapy training	The participants got the intervention individually	The study was done for 1 month	Improvements seen in terms of the positive effect on the quality of care and quality of life of cancer patients
VanderWeele TJ, Kachnic LA, Lauderdale K, Phelps AC, Peteet JR, Block SD, et al. 2011[9]	69 patients with various cancer diagnoses (advanced stage) who got radiation therapy (RT)	The participants filled in the SCs questionnaires, including 11 items assessing spiritual struggles and 5 items assessing spiritual seeking. Their answers were examined professional health workers	The interviews (questionnaires) were conducted individually	The study was done for 4 months	The role of spiritual care in palliative cancer management is very important. Spiritual care is able to make the quality of life of cancer patients better

Yang GM, Tan YY, Cheung YINBUN, Lye WKIT, Hui S, Lim AMY, et al., 2016[10]	144 participants	Doctors and nurses did the spiritual care training program. Then they applied it to the cancer patients in palliative care. There were also health workers who had undergone spiritual therapy training	The participants got the intervention in groups	The study was done for 2 months	Improvement in quality of life
Nakau M, Imanishi J, Imanishi J, Watanabe S, Imanishi A, Baba T, et al. 2013[12]	22 adult patients with various cancer diagnoses	The intervention consisted of forest therapy, horticultural therapy, yoga meditation and support group therapy / spiritual therapists	The participants were divided into groups	The intervention comprised of one session/weekly for 12 weeks	Improvements were seen in quality of life, the meaning of life and spiritual well-being and there was a decrease in emotional suffering

References

[1] Akkayagorn L, Tantitrakul W, Chimluang J, Pudtong N, Upasen R, Thanasilp S 2017 Effect of an intervention based on basic Buddhist principles on the spiritual well-being of patients with terminal cancer **31** 46–51

[2] Emami H, Loghmani A, Bahrami F, Jafari N, Zamani A, Jafari N, et al. 2013 Spiritual Therapy to Improve the Spiritual Well-Being of Iranian Women with Breast Cancer: A Randomized Controlled Trial **2013** 1–9

[3] Vallurupalli M, Lauderdale K, Balboni MJ, Phelps AC, Block SD, Ng AK, et al. 2012 The Role of Spirituality and Religious Coping in the Quality of Life of Patients With Advanced Cancer Receiving Palliative Radiation Therapy **10** 81–7

[4] Atherton PJ, Clark MM, Sloan JA, Rummans TA, Frost MH, Johnson ME, et al. 2013 Spiritual quality of life in advanced cancer patients receiving radiation therapy **23** 216–21

[5] Breitbart W, Rosenfeld B, Gibson C, Pessin H, Poppito S, Nelson C, et al. 2010 Meaning-centered group psychotherapy for patients with advanced cancer: A pilot randomized controlled trial **19** 21–8

[6] Sankhe A, Dalal K, Agarwal V, Sarve P 2017 Spiritual Care Therapy on Quality of Life in Cancer Patients and Their Caregivers: A Prospective Non-randomized Single-Cohort Study **56** 725–31

[7] Jafari N, Zamani A, Farajzadegan Z 2013 The effect of spiritual therapy for improving the quality of life of women with breast cancer : A randomized controlled trial **18** 56–69

[8] van de Geer J, Groot M, Andela R, Leget C, Prins J, Vissers K, et al. 2017 Training hospital staff on spiritual care in palliative care influences patient-reported outcomes: Results of a quasi-experimental study **31** 743–53

[9] VanderWeele TJ, Kachnic LA, Lauderdale K, Phelps AC, Peteet JR, Block SD, et al. 2011

The Relationship of Spiritual Concerns to the Quality of Life of Advanced Cancer Patients: Preliminary Findings **14** 1022–8

[10] Yang GM, Tan YY, Cheung YB, Lye WK, Lim SHA, Ng WR, et al. 2017 Effect of a spiritual care training program for staff on patient outcomes **15** 434–43

[11] Pearce MJ, Coan AD, Herndon JE, Koenig HG, Abernethy AP 2012 Unmet spiritual care needs impact emotional and spiritual well-being in advanced cancer patients **20** 2269–76

[12] Nakau M, Imanishi J, Imanishi J, Watanabe S, Imanishi A, Baba T, et al. 2013 Spiritual care of cancer patients by integrated medicine in urban green space: A pilot study **9** 87–90

[13] Breitbart W, Poppito S, Rosenfeld B, Vickers AJ, Li Y, Abbey J, et al. 2012 Pilot Randomized Controlled Trial of Individual Meaning- Centered Psychotherapy for Patients With Advanced Cancer **30** 21–8

[14] Qandil AMA 2017 The Relationship Between Spirituality and Quality of Life of Jordanian Women Diagnosed with Breast Cancer **56** 2096–108

[15] Zamaniyan S, Bolhari J, Naziri G, Akrami M, Hosseini S 2016 Effectiveness of spiritual group therapy on quality of life and spiritual well-being among patients with breast cancer **41** 140–4

[16] Patel JG, Bhise AR 2017 Effect of Aerobic Exercise on Cancaer-related Fatigue **23** 355–61

PHP-792

THE ROLE OF PRIMARY CAREGIVER IN THE FAMILY TO PREVENT PULMONARY TUBERCULOSIS TRANSMISSION: A SYSTEMATIC REVIEW

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ABSTRACT

Pulmonary tuberculosis is a contagious disease caused by tuberculosis germs. Tuberculosis has been around for thousands years and still becomes a major health problem. Tuberculosis can cause morbidity in ten million people every year and is one of ten the main caused of mortality in the world. This study aimed to determine the effectivity of the role of primary caregiver in the family in preventing tuberculosis transmission. The article search through the databases of ProQuest, Scopus, Ebscohost, and Science Direct with the range of year limitation was five years (2014-2018) and using the keywords "tuberculosis, family role, prevention". The analysis from the article search found 15 suitable articles with the term required. The result showed that the role of primary caregiver in the family (searching for informations about basics of tuberculosis, household awareness, active case finding, sputum collection and transportation) were strategies to prevent pulmonary tuberculosis transmission. The role of primary caregiver in the family was effective to prevent pulmonary tuberculosis transmission.

Keywords: tuberculosis, family role, prevention

1. Introduction

Tuberculosis remains a major public health issue in many developing nations and is the leading cause of death worldwide in people living with HIV/AIDS. The current global estimate is that over 8.8 million tuberculosis cases emerge each year and that nearly 1.5 million people die from TB yearly: 98% of these cases and deaths occur in developing countries [1,10]. Tuberculosis is considered to be a social disease, with many socio-cultural factors contributing to the disease burden [2].

Pulmonary tuberculosis is an infectious disease caused by Mycobacterium tuberculosis and it most often manifests in the lungs. The mycobacterium is transmitted through droplets in the air so a patient with pulmonary tuberculosis is the cause of pulmonary tuberculosis transmission in the population in the vicinity. The clinical symptoms may include coughing continuously and phlegm for 3 weeks or more, sputum mixed with blood (hemoptysis), shortness of breath and pain in the chest, weakness, a loss of appetite and weight loss, discomfort (malaise), night sweats without activity and fever chills for more than one month [3].

The transmission of pulmonary tuberculosis and the development of the majority of diseases are driven by social factors such as adverse environmental conditions including occupant density and ventilation in homes that does not meet the minimum health requirements

Early diagnosis and appropriate treatment for the vast majority of people who develop pulmonary tuberculosis is the epidemiological basis of global tuberculosis control efforts [5]. According to the International Standards for tuberculosis care, all persons with an otherwise unexplained productive cough lasting 2 - 3 weeks or more should be evaluated for tuberculosis.

The global target for reducing the Tuberculosis (TB) incidence, prevalence and mortality for 2015

has been outline by the Stop TB Partnership. These targets are set within the overall context of the Millennium Development Goals (MDGs) and they indicate that the global tuberculosis incidence rate should

be falling by 2015. Additionally, tuberculosis prevalence and death rates should be halved by 2015 compared with their level in 1990 [7, 8]. In the South-East Asia Region, the WHO data shows that pulmonary tuberculosis kills about 2000 people

each day and that about 40% of cases of pulmonary tuberculosis in the world located in Southeast Asia. Two of the three countries with the largest number of patients with pulmonary tuberculosis in the world, namely India and Indonesia, are in this region. Indonesia is under India, followed by China. Compared with other infectious diseases, pulmonary tuberculosis has become the number one killer in the region, where it amounts to 2 - 3 times the number of deaths caused by HIV/AIDS, which is ranked second [9].

The knowledge of the family is very important when it comes to providing insights into the attitudes and actions of a person. Knowledge is the result of knowing and this happens after a person performs the sensing of a particular object. According to the occurrence of knowledge, there are 2 types, namely: a priori knowledge that occurs without experience that is obtained through analytic thinking (general-specific) and aposteriori knowledge that occurs because of experience, where the way of thinking is synthetic (specifically-general). Knowledge is a very important factor for the formation of a person's actions (over behavior). Family knowledge about the prevention of pulmonary tuberculosis is a very important factor for the formation of actions to prevent and cope with pulmonary tuberculosis because if someone does not know about an object, then the object would not interest them [14].

The primary caregiver of the family has an important role in relation to the prevention of disease among their family members, particularly with respect to their education and knowledge of disease. Family knowledge and attitudes about the dangers of pulmonary tuberculosis has a role in preventing disease. Sufficient knowledge and attitudes will enable a person to make steps aligned with the prevention and protection of a disease. This study aimed to determine the effectiveness of the role of the primary caregiver in a family in preventing tuberculosis transmission.

2. Methods

This study employed the systematic review design. The data of this study was taken from the databases of ProQuest, Scopus, Ebscohost and Science Direct in 2014 - 2018. The articles were searched for with the following keywords: tuberculosis, family role and prevention. Every article that was included in this systematic review had obtained ethical clearance approval.

The literature selection was determined using the following inclusion criteria: (1) the study sample was a family with tuberculosis, (2) the articles were published between 2014 – 2018, (3) the articles were published in English and (4) the articles focused on the family role. The exclusion criteria were patients with Multidrug-Resistant Tuberculosis.

3. Results

From the article and journal searching, 520 papers were found from within the 4 databases, including 135 articles in ProQuest, 125 articles in Scopus, 120 articles in Ebscohost and 140 articles in Science Direct. The detailed identification and selection processes of the papers was according to the inclusion criteria and the articles were given a sequence number to facilitate the review process (Table 1).

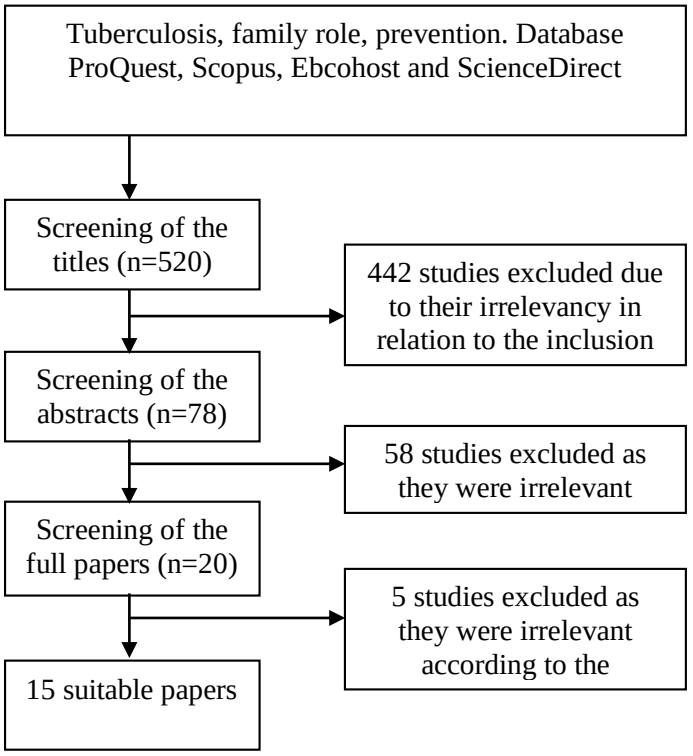

Figure 1: The Paper Selection Processes

Table 1: The selected papers list

Title and Authors	Purpose	Design	Outcome
Knowledge and Attitudes with Family Role in Prevention of Pulmonary Tuberculosis in Maros, Indonesia (Yermi, et al., 2018)	Determine the relationship between knowledge and attitude with the role of the family in relation to Pulmonary TB in Turikale District, Maros Regency	Cross-sectional	This study shows there to be a significant relationship between knowledge and attitude with the role of the family in the prevention of pulmonary tuberculosis
Increased adolescent knowledge and behavior following a one-time educational intervention about tuberculosis (Hatzenbuehler et al., 2017)	Evaluating the influence of an Educational Intervention (EI) on Tuberculosis (TB) focused on the internal changes tied into the knowledge and participation of adolescent students in TB prevention programs.	Prospective	Focus groups show that EI stimulates the students to learn about TB and that the groups increase their willingness to participate
Assessment of Patients' Knowledge,	Assess the patients' knowledge, attitudes and	Cross-sectional	The majority of respondents have some misunderstandings about TB. TB control programs are needed to

Title and Authors	Purpose	Design	Outcome
Attitude, and Practice Regarding Pulmonary Tuberculosis in Eastern Amhara Regional State, Ethiopia: Cross-Sectional Study (Esmael et al., 2013)	practices related to TB in the Eastern Amhara region of Ethiopia		consider advocacy, communication, and social mobilization to address gaps in the research location
Impact of a Structured Tuberculosis Awareness Strategy on the Knowledge and Behavior of the Families in a Slum Area in Chhattisgarh, India (Samal and Dehury, 2017)	Assessing impact Tuberculosis (TB) awareness strategies that are structured towards the knowledge and behavior of the residents of slums, Durg, Chhattisgarh, India.	Prospective interventional .	For the knowledge component, the increase occurred above 90% among the study participants in all components except for two; TB transmission mode and the availability of free care facilities. For the behavioral segment, after the implementation of strategy awareness, 53% and 92% of respondents reported visiting government health facilities to seek help from their generals and their respective TB related problems respectively. Likewise, the response to not approaching government health facilities for TB care changed after the implementation of strategy awareness and 36% of respondents said that they preferred visiting government health facilities for TB treatment.
Assessing the Impact of a Structured Tuberculosis Training Activity on the Knowledge and Attitude of Community Volunteers (Samal and Dehury, 2017)	Assessing the impact of structured TB training activities on knowledge and attitudes, including a post-training assessment of activities among the Community Volunteers	Descriptive	Very significant (p = 0.0042) impact observed in the knowledge segment but the same thing did not happen with the attitude segment (p = 0.0676). The average value of knowledge and attitudes is 9.20 (SD = 2.97) and 12.70 (SD = 1.42) for the pre-test and the average score of knowledge and attitude is 3.00 (SD = 0.94) and 2.10 (SD = 0.74) each for the post-test. Of the 10 CVs trained, eight CVs were placed in jobs related to various types of community level activities
Knowledge and perception on tuberculosis transmission in Tanzania: Multinomial logistic regression analysis of secondary data (Ismail and Josephat, 2014)	Analyze the knowledge and perceptions of TB transmission in Tanzania	Cross-sectional	The findings indicate that socio-demographic factors such as age, education, place shelter and having a telephone or radio vary systematically according to the knowledge of tuberculosis transmission.
Predictors of treatment seeking intention among people with cough	Assess the intention of people to seek treatment with a coughs for more	Cross-sectional	TPB significantly predicted the intention to seek treatment among the study participants. The attitude and silent beliefs held by the

Title and Authors	Purpose	Design	Outcome
in East Wollega, Ethiopia based on the Theory of Panned Behavior: a community based cross-sectional Study (Yohannes et al., 2014)	than two weeks, and to identify predictors.		respondents plays an important role and it must be given emphasis in terms of the prevention and control of tuberculosis
Randomized controlled trial of family-based education for patients with heart failure and their carers (Srisuk et al., 2017)	Develop and evaluate family-based education programs for HF patients and their caregivers in rural Thailand.	Randomized controlled trial	The linear mixed effects model revealed that the patients and caregivers who received educational programs had higher knowledge scores at 3 and 6 months than those who received regular care. Among those who received the education program, when compared to those who received regular care, the patients had better care and self-care self-confidence. They were also associated with better health quality of life scores at 3 and 6 months and better self-care management scores at 6 months, while the caregivers had a control score that was higher at 3 months.
Reducing disability via a family centered intervention for acutely ill persons with Alzheimer's disease and related dementias: protocol of a cluster-randomized controlled trial (Fam-FFC study) (Boltz et al., 2018)	Testing the effectiveness of interventions at improving the physical and cognitive recovery in people admitted to hospitals living with Alzheimer's Disease and Related Dementias (ADRD), increasing the Family Caregiver's readiness and experience.	Experimental design: longitudinal design	The family-centered intervention had a positive impact on the patients with cognitive impairment that was very mild to moderate
Effect of organizational citizenship behavior on family-centered care: Mediating role of multiple commitment (Mahooti, Vasli and Asadi, 2018)	Know the effects of citizenship organizational behavior on family centered care	Cross sectional	Organizational behavior and commitment can improve health quality
The effect of an education program based on the family-centered empowerment model on addiction severity among	Knowing the effect of family -centered empowerment-based training interventions on the severity of damage caused by addiction among the users of	Randomized trial	Training interventions based on the family-centered empowerment model can improve the health status of users of methamphetamine

Title and Authors	Purpose	Design	Outcome
methamphetamine users (Ghasemi et al., 2015)	methamphetamine (MA).		
Effects of Family Centered Empowerment Model Based Education Program on Quality of Life in Methamphetamine Users and Their Families (Ghasemi et al., 2014)	Knowing the influence of family-centered empowerment models on social support and the quality of life of the users of methamphetamine and their families	Randomized clinical trial	Family-centered empowerment models can be easily applied to the users and families of methamphetamine to improve their social support and quality of life.
Effects of Family-Center Empowerment Model on the Lifestyle of Heart Failure Patients: A Randomized Controlled Clinical Trial (Rakhshan, Kordshooli and Ghadakpoor, 2015)	Knowing the influence of family-centered empowerment models on the lifestyle of heart failure patients	Randomized controlled clinical trial	Family-centered empowerment models can be used to improve or enhance the lifestyle of patients and their families.
Effects of family-centered empowerment intervention on stress, anxiety, and depression among family caregivers of patients with (Etemadifar et al., 2018)	Knowing the effects of family-centered empowerment intervention on stress, anxiety and depression among the family caregivers of patients with epilepsy	Cross-sectional	The results show that family-centered intervention programs reduce caregiver stress, anxiety and depression because of the appropriateness, simplicity and intervention utility. The program is focused on the psychological caregiver problems, and the emphasis on empowering them, and how it helps them in managing their problems in care situations and when achieving greater psychological potential in the care process.
The Impact of Training on Women's Capabilities in Modifying Their Obesity-Related Dietary Behaviors: Applying Family-Centered Empowerment Model (Amirrood et al., 2014)	Knowing the effect of training on the women's ability to modify the behavior of their diet related to obesity in Urmia, West Azerbaijan Province, Iran: implementing a family-centered empowerment model	Quasi-experimental	Family centered empowerment models are effective at changing dietary habits in women

4. Discussion

2.1 Searching for Information about the Basics of Tuberculosis

The findings showed that the respondents aged between 15 and 19 years old were less likely to accept that TB spreads from person to person through the air when coughing compared to those who were aged 45 - 49 years old. Those aged between 20 - 24 years old were less likely to accept that TB spreads through air when coughing compared to those with an age between 45 - 49 years old. The respondents with an age between 25 - 29 years old were less likely to accept that TB spreads from person to person through air when coughing compared to those with an age between 45 - 49 years old. Those with an age between 30 - 34 years old were less likely to accept that TB spreads from person to person through the air when coughing compared to those with an age between 45-49 years old. Those with an age between 35 - 39 years old were less likely to accept that TB spreads from person to person through air when coughing compared to those aged between 45 - 49 years old. Those with an age between 40 - 44 years old were less likely to accept that TB spreads from person to person through the air when coughing compared to those with an age between 45 - 49 years old. The respondents aged between 15 and 44 years old were less likely than those aged 45 years and above to accept that TB spreads from person to person through the air when coughing. The respondents who had no education and those with primary or secondary education were less likely to accept that TB spreads from person to person through the air when coughing compared to those with the highest level of education.

2.2 Household Awareness

Family attitudes such as a positive attitude towards preventive measures including Bacillus Calmette Guerine (BCG) immunization for babies, a health check if there are family members who have had a cough with phlegm for more than three weeks, cleaning the environment around the house and so on. A negative action towards an individual based on his/her health or social status is considered to be a discriminating attitude[9].

2.3 Active Case Finding

Active Case Finding strategy involves a one-time cross-sectional house-to-house visit among high risk community groups to identify TB symptomatic individuals and to link them to the appropriate services. This strategy is designed to create awareness of TB. The primary objective of this strategy is to visit the houses of marginalized and vulnerable communities and to inform them about TB, its symptoms, diagnosis and treatment.

2.4 Sputum Collection and Transportation

The sputum collection and transportation was to the nearest Designated Microscopic Centre from the community and to qualified private practitioners as well. After diagnosis, if it was found to be positive, the patients were put on DOTS.

5. Conclusion

In conclusion, the study showed that those of a younger age, a lower level of education and people in rural areas were all less knowledgeable about TB transmission. It is therefore important that more effort is made in strengthening the public health education that is directed at people.

References

[1] Zumla A, Bin A, Alotaibi B, Yezli S, Dar O, Bieh K, et al. International Journal of Infectious Diseases Tuberculosis and mass gatherings — opportunities for defining burden , transmission risk , and the optimal surveillance , prevention , and control measures at the annual Hajj pilgrimage §. 2016;47(May 2014):86–91.

[2] Negin J, Abimbola S, Marais BJ. International Journal of Infectious Diseases Tuberculosis among older adults – time to take notice. 2015;32:135–7.

[3] Siyabonga B, Lee-hsieh J, Liu C, Cheng S. International Journal of Africa Nursing Sciences The relationship between patients ' perception of nurse caring behaviors and tuberculosis stigma among

patients with drug-resistant tuberculosis in Swaziland. 2019;10(November 2018):14–8.

[4] Liautaud A, Adu PA, Yassi A, Zungu M, Spiegel JM, Rawat A, et al. Strengthening Human Immunode fi ciency Virus and Tuberculosis Prevention Capacity among South African Healthcare Workers : A Mixed Methods Study of a Collaborative Occupational Health Program. 2018;9:172–9.

[5] Chen B, Gu H, Wang X, Wang F, Peng Y, Ge E, et al. International Journal of Infectious Diseases Prevalence and determinants of latent tuberculosis infection among frontline tuberculosis healthcare workers in southeastern China : A multilevel analysis by individuals and health facilities. 2019;79:26–33.

[6] Dodd PJ, Yuen CM, Becerra MC, Revill P, Jenkins HE, Seddon JA. Articles Potential effect of household contact management on childhood tuberculosis : a mathematical modelling study. 2018;1329–38.

[7] Gomes J, Oliosi N, Reis-santos B, Locatelli RL, Maia C, Sales M, et al. Articles Effect of the Bolsa Familia Programme on the outcome of tuberculosis treatment : a prospective cohort study. :219–26.

[8] Pan D, Lan R, Graviss EA, Lin D, Liang D, Mcneil E, et al. International Journal of Infectious Diseases Adolescent tuberculosis associated with tuberculosis exposure in classrooms and dorm rooms in Guangxi , China. 2019;78:8–14.

[9] Yermi, Ardi M, Lahming, Tahmir S, Pertiwi N. Knowledge and Attitudes with Family Role in Prevention of Pulmonary Tuberculosis in Maros, Indonesia. J Phys Conf Ser. 2018;1028(1).

[10] Amirrood MM, Taghdisi MH, Shidfar F, Gohari MR. The Impact of Training on Women â€™ s Capabilities in Modifying Their Obesity- which is published quarterly by the School of Public Health , Hamadan University of Medical Sciences . The attached copy is furnished to the authors for non - commercial research. J Res Health Sci. 2014;14(1):75–80.

[11] Srisuk N, Cameron J, Ski CF, Thompson DR. Randomized controlled trial of family-based education for patients with heart failure and their carers. J Adv Nurs. 2017;73(4):857–70.

[12] Boltz M, Kuzmik A, Resnick B, Trotta R, Mogle J, Belue R, et al. Reducing disability via a family centered intervention for acutely ill persons with Alzheimer ' s disease and related dementias : protocol of a cluster-randomized controlled trial (Fam-FFC study). 2018;1–15.

[13] Hatzenbuehler LA, Starke JR, Smith EOB, Turner TL, Balmer DF, Arif Z, et al. Patient Education and Counseling Increased adolescent knowledge and behavior following a one-time educational intervention about tuberculosis. Patient Educ Couns [Internet]. 2017;100(5):950–6. Available from: http://dx.doi.org/10.1016/j.pec.2016.11.020

[14] Esmael A, Ali I, Agonafir M, Desale A, Yaregal Z, Desta K. Assessment of Patients ' Knowledge , Attitude , and Practice Regarding Pulmonary Tuberculosis in Eastern Amhara Regional State , Ethiopia : Cross-Sectional Study. 2013;88(4):785–8.

[15] Ismail A, Josephat P. Knowledge and perception on tuberculosis transmission in Tanzania: Multinomial logistic regression analysis of secondary data. 2014;16(1).

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PHP-794

LONELINESS INCREASED THE RISK OF DEVELOPING DEMENTIA AMONG OLDER ADULTS : A SYSTEMATIC REVIEW

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ABSTRACT

Loneliness is an unpleasant subjective experience for the older adults because several important criteria of social relations are hampered or not fulfilled. These deficiencies can be quantitative the relations does not acquire ideal friends and qualitative where social relations cultivated is modest or unsatisfactory. The aim of study to analyze the relationship between loneliness and dementia. Systematic review was carried out by searching four databases including Proquest, PubMed, Google Scholar and Scopus articles from 2014 until 2018. The collected articles is the carried out with a critical appraisal in accordance with the objective to be achieved. Fifteen articles which include criteria for analysis. The result of this systematic review can present that a more accurate loneliness increased the risk of developing dementia in older adult may be explained in several ways. In addition, the effect of loneliness on the risk of dementia varies by sex. Spesifically, men who feel lonely are more likely to suffer from dementia than women. The result of this review should be considered when developing interventions aimed at reducing and support the development policy at preventing the onset of dementia.

Keywords: loneliness, dementia, elderly, older adults

6. Introduction

Loneliness is defined as a related feeling of dissatisfaction with the differences between the actual and desired social relations of an individual[1]. Previous research shows that in intensity, loneliness varies between men and women and loneliness is more strongly related to an adverse mental health condition in men than in women [2]. It is impossible and perhaps even undesirable that loneliness is removed from the list of common human experiences. Loneliness occurs when there is a mismatch between a person's actual social relationships and a person's needs or desires for social contact. Sometimes loneliness results from changes in a person's social needs and not from changes in their actual level of social contact [3]. Loneliness is relatively common among the elderly with weakened social networks [4]. Social networks are measured by the size, frequency and nature of their interactions with friends and family, the number of social and recreational activities involved in the presence of a partner and the number of close relationships. Research on the relationship between social networks and loneliness on the onset of dementia has attracted attention recently [5].

Dementia is a syndrome that is basically brain failure that affects the higher brain functions[6]. Dementia is caused when the brain is damaged by diseases such as Alzheimer's disease or by a series of strokes. Alzheimer's disease is the most common cause of dementia but it is not the only one. The

specific symptoms experienced by a person with dementia will depend on the damaged part of the brain and the disease that causes dementia[7]. Dementia is also a multi-causal medical condition with high prevalence that is increasing in both developed and developing countries. Alzheimer's disease and vascular dementia constitute 90% of cases[8]. Prevalence and incidence studies show that the number of people with dementia will continue to increase. It is estimated that there are 46.8 million people with dementia worldwide, with projected numbers almost doubling every 20 years. There will be around 9.9 million new cases of dementia in 2015, equivalent to every 3.2 seconds[9].

The stronger progression of dementia is contributed to by social isolation [10]. Environmental factors such as social isolation are defined as not or no longer being married, living alone, having small social networks, having little participation in activities with others or having a lack of social involvement (social connections). These have been shown to be associated with cognitive decline and Alzheimer's disease. Fewer studies have focused on emotional predictors such as sensitivity to psychological distress, emotional isolation, dissatisfaction with social interactions and feelings of loneliness in relation to the onset of dementia [8]. The variables related to loneliness include the presence of mental disorders including anxiety disorders, self-life, marital status, frequent economic problems, quality of life, satisfaction with life and satisfaction with social relations [11].

Previously, the current study investigated the relationship between perceived loneliness, depression and the general cognitive status of the elderly. The result of the study findings are that perceived loneliness is associated with a worsened general cognitive status only among those who reported higher levels of depressive symptoms. This indicates there to be a slightly significant positive relationship between loneliness and general cognitive status [12]. Therefore, the purpose of this review is to analyze the relationship between loneliness and dementia in the elderly.

7. Method

2.1. Eligibility criteria

In this systematic review, we intended to investigate the relationship between loneliness and dementia in the elderly. Regarding the research design of the 15 selected articles, most of them used a cross-sectional, cohort, prospective observational or longitudinal study design.

2.2. Participants

The study included participants who were older adults aged ≥ 55 years.

2.3. Setting and time frame

This systematic review encompassed community-living older persons.

2.4. Report characteristics

We included articles that had an English abstract, that were original quantitative or qualitative research, that were a full report written in English, that were a study on human participants with a mean age ≥ 55 years and that were published from 2012 through to 2019 within the areas of nursing, medicine and psychology.

2.5. Exclusion criteria

The exclusion criteria in this study were if an article did not report original data, if it did not explain the association of loneliness and dementia in the aging population and if the published articles were before 2012. Reviews and opinion articles were excluded.

2.6. Information sources

The information resources comprised of the following electronic databases: Scopus, PubMed, Google Scholar and Proquest. The search strategy was primarily developed and completed in Scopus. The same strategy was then pursued in other databases. The reference section produced reviews and articles that passed the initial critical appraisal. They were then checked manually to ensure that all relevant articles had been included.

2.7. Search strategy

The search keyword in this systematic review included "loneliness" AND "dementia" AND "elderly" AND "older adults". The next step was to identify the title of each article that was considered to be close to the research focus desired.

2.8. Selection process

The articles were collected in the first step. Each were first selected according to the title and abstract, followed by grouping the articles chosen into related articles, not related and not yet decided. Articles that were considered "inappropriate" were removed from further analysis. The author then updated the articles list for those that must be included in the review.

2.9. Data items

The following information was collected from each article: author and year of publication, article title, purpose and design, characteristics of the sample and setting (participants, age etc).

2.10. Risk of bias in individual studies

The risk of bias analysis will discuss the limitations and suitability, the research methods and the research itself. In particular, the studies will discussed critically regarding their design, collecting the data, the analysis method, selection bias, integration, confounding, friction and reporting. Longitudinal cohort studies with a larger sample size or a longer duration of follow-up are needed to clarify the cause of the relationship between loneliness and dementia events, which is transient when measuring if there is adequate bias [4].

2.11. Data synthesis

In the final report, the results of the individual studies have been summarized according to their narratives as in [Table 1]. Finally, this systematic review recorded the associations between loneliness and dementia in the aging population. The selection included a quantitative study.

2.12. Strengths and limitation

This systematic review can present more accurately that loneliness increases the risk of developing dementia in the elderly which can be explained in several ways. This systematic review carried out

the primary screening of articles, the data extracted and the quality critical appraisal in order to minimize the probability of personal biases. However, the review did not include databases in languages other than English. This limitation may cause language bias.

8. Result

The result of this systematic review can present that loneliness increases the risk of developing dementia in the elderly. There were 15 articles in total that were reviewed. Out of the 15 articles, 6 were cross-sectional [13][14][11][15][5][16], 4 were a longitudinal study[17][18][15][19], 3 were a cohort study [4][20][8], 1 article was a prospective observational cohort study [10] and 1 article was across-sectional longitudinal study [12]. There were no qualitative studies that met the criteria for inclusion in this review.

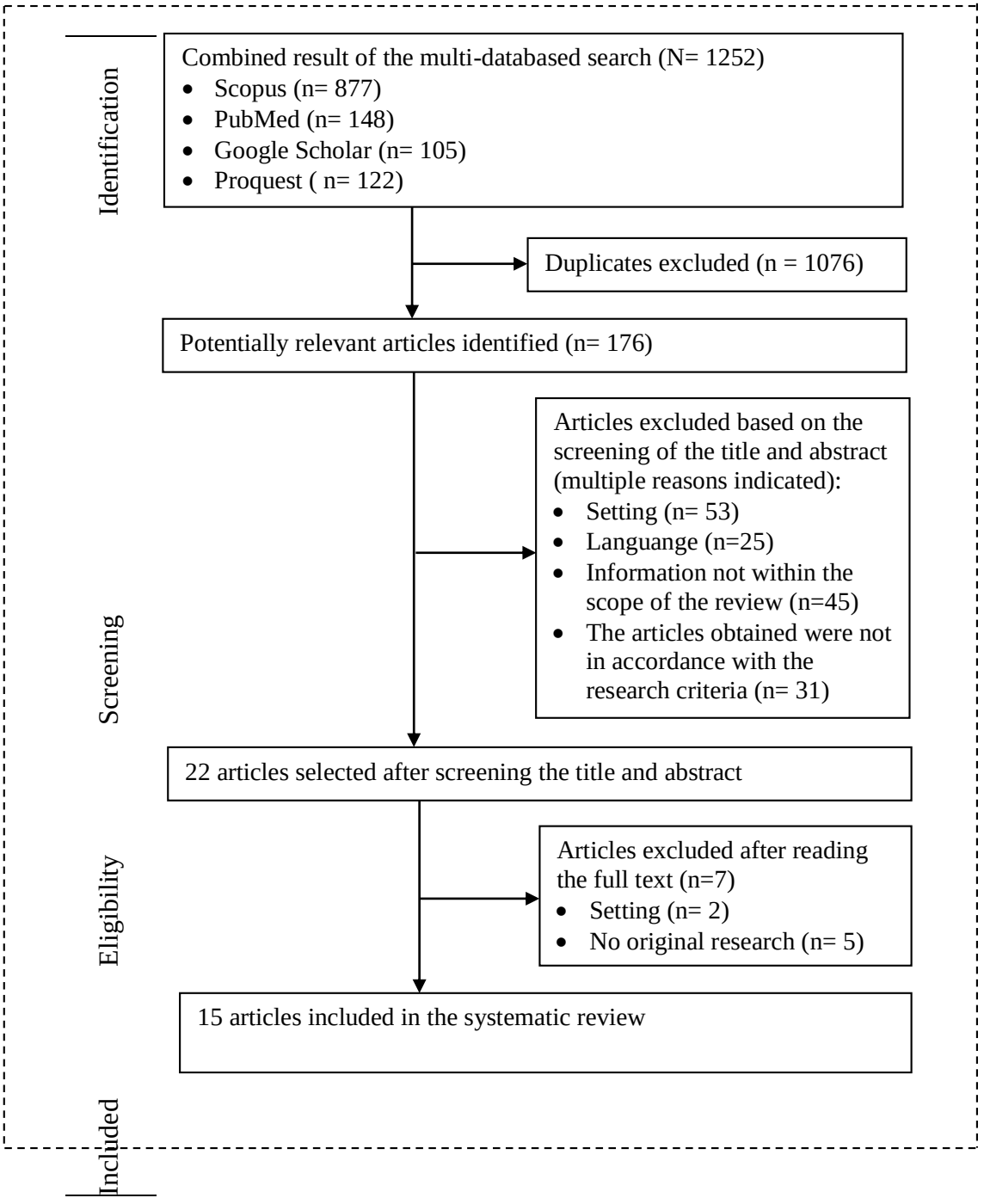

Figure 1. Study selection flow diagram

The result of the analysis of the relationship between loneliness and dementia was associated with an adjustment in their lifestyle, baseline health status and socio-demographic characteristics. A relationship between loneliness and gender was also found. The participants were selected from 22 out of 31 provinces in China and they were all aged ≥ 65 years[4]. In general, the similarities found showed that 28% of older Chinese adults reported feeling lonely and loneliness, which both affects and was affected by their social activities, solitary leisure activities, physical exercise, emotional health, self-rated health and functional limitations over a 3-year period[13]. The research conducted by [11] also showed that the loneliness-associated variables included living alone, marital status, the frequency of their economic problems, quality of life, satisfaction with life, satisfaction with their social relationships, the presence of a mental disorder and having an anxiety disorder [Table 1].

Another research conducted by [21] showed that the association of loneliness with cortical amyloid burden in cognitively normal older adults suggests that loneliness is a neuropsychiatric symptom relevant to pre-clinical Alzheimer's Disease. The result of the investigation is that there is an effect of living alone on the development of dementia in people with mild cognitive impairment (MCI) as found by [18]. This shows that living alone increases by 50% the risk of developing dementia among older adults. The research conducted by [14] also found that for all of the psychological and health variables, there were strong associations, with the strongest being between the WHO-5 and self-rated ($p< 0.001$). The value was $p< 0.001$, which means that the hypothesis is accepted. The result of this review should be considered when developing interventions aimed at supporting the development policy related to preventing the onset of dementia [Table 1].

9. Discussion

The aim of this systematic review was to analyze the association between loneliness and dementia in the aging population. Overall, the findings from the 15 articles largely indicate that loneliness is positively associated with dementia. Multiple logistic regression was used to examine whether baseline loneliness is associated with dementia at a 3-year follow-up, calculated with 95% confidence intervals for this relationship. The main findings were a significant and positive relationship between loneliness and dementia in the elderly that can be explained in several ways, such as the feeling of loneliness contributing to developing a risk of dementia[4]. The study by [5] showed that social loneliness is more common in the elderly with dementia than in the elderly without dementia, but there was no difference for emotional loneliness.

This finding is consistent with the existing studies examining the relationship between social isolation (alone, unmarried, without social support), feelings of loneliness and incident dementia in a cohort study among 2173 elderly people who did not have dementia. Feeling lonely rather than alone is associated with an increased risk of future clinical dementia and it can be considered a major risk factor which, apart from vascular disease and other confounding factors, deserves clinical attention. Feelings of loneliness may indicate an early stage of prodromal dementia. A better understanding of the background of the feelings of loneliness can help us to identify vulnerable people and to develop interventions to improve the outcomes in elderly people at risk of dementia[8].

The finding overall is that loneliness could contribute to developing dementia among older adults, with perceived loneliness being common in older people and with the variables often being associated with living alone. In this study, it was found that greater loneliness was independently associated with a decline in multiple cognitive domains and a doubling of the risk of Alzheimer's

disease and dementia[11]. This is consistent with the present study's findings that sought to examine and analyze the relationship between depression, loneliness and cognitive functioning among the elderly. This study found there to be a significant moderating effect of depressive symptoms on the relationship between perceived loneliness and general cognitive status. This finding highlights the importance of taking depressive symptoms into account when examining the relationship between cognitive function and loneliness [12].

The study of [16] also found there to be a significant relationship between loneliness and a non-confiding network in relation to cognitive function, after controlling for mental distress, physical burden, the psychological factors, their socio-demographic characteristics and depression in older adults. More specifically, the findings show there to be a significant interaction effect between loneliness and the number of family members in a network that is not confident in relation to cognitive function. Loneliness also predicts accelerated cognitive decline over 12 years regardless of their basic socio-demographic factors, social network, health condition and depression[15]. Loneliness affects and is influenced by social activities, leisure activities, physical exercise, emotional health, self-valued health and functional limitations over a period of 3 years[13].

In addition, loneliness may predict subsequent cognitive decline and vice versa. This loneliness–cognition relationship is partially explained by the impact that is has on physical health[19]. In addition, loneliness can predict subsequent cognitive decline and vice versa. This loneliness-cognition relationship is partly explained by its impact on physical health[19]. Another study also suggests that impoverished conditions such as nursing homes or the social isolation of solitary people contributes to a stronger progression in and of dementia[10].

Other studies investigated the effect of living alone on the development of dementia in people with mild cognitive impairment. The findings show that living alone increases by 50% the risk of developing dementia[18]. The research conducted by [5] found that there was a lack of research on social networks in people with Alzheimer's disease. Their research shows that the factors related to quality of life, well-being and life satisfaction in people with dementia are the factors associated with relationships and social involvement associated with a better quality life. Thus, supporting friendships for people with dementia may be done to improve their quality of life[20]. The causal relationship between loneliness and developing dementia should be further investigated and being critical would be a better determinant of the mechanisms underlying the association.

This systematic review has both strengths and limitations. The strengths were that the data was collected from a highly representative sample in a community-dwelling for the elderly and this finding highlights the important where the subjective feelings of loneliness do not depend on the objective social environment.

The limitations in the study were that the incidence of dementia led to some bias. The limitations may cause language bias, as the review did include databases in languages other than English.

The results of the review of various studies showed that nurses can be involved and considered to develop intervention strategies to reduce the incidence of dementia. Nurses can play an important role in advising and supporting the recipient caregivers of people with dementia. A better understanding of this perspective can provide them with important information to support self-management. Proactive approaches including information and support offered at the start of the trajectory of conditions/care may have the potential to delay progression to the more dependent

stages. Health care professionals also need to implement activities that are meaningful to institutionalized people and for people who are lonely to eliminate the negative effects of such an environment.

10. Conclusion

The result presented in this systematic review highlights some of the predictors of loneliness in older adults. The goal is to intervene before the feelings of loneliness set in. These results discuss loneliness as a clinical marker of social and emotional stress associated with depression and cognitive decline in older adults. Further longitudinal analysis shows that biological markers are needed to determine the temporal and causal relationship between loneliness, depression and dementia in later life. Feelings of loneliness have been shown to be repeatedly associated with cognitive decline in older adults. This finding is in line with other studies that show that individuals who live alone and have limited social ties are more prone to dementia later on in their lives.

Feelings of loneliness are associated with the development of dementia even when the objective indicators of social isolation and other covariates are controlled. Both social isolation and depression cannot explain this relationship, suggesting that other mechanisms might be involved. Further research is needed to investigate whether cognitive decline and dementia are a consequence of feelings of loneliness or whether feelings of loneliness are behavioral reactions to decreased cognition. To develop a better understanding of these feelings, we need to know whether they are signals from the prodromal dementia stage, as a direct result of neurodegenerative pathology that affects social skills or whether feelings of loneliness are indicators of a vulnerable personality, personality changes or other weakness factors. As a result, policies about loneliness in parents should be directed at developing different intervention strategies so then the emotional and social loneliness is reduced.

References

[1] A. Steptoe, A. Shankar, P. Demakakos, and J. Wardle, "Social isolation, loneliness, and all-cause mortality in older men and women," *Proc. Natl. Acad. Sci.*, vol. 110, no. 15, pp. 5797–5801, 2013.

[2] R. T. Emeny *et al.*, "How much does it hurt to be lonely? Mental and physical differences between older men and women in the KORA-Age Study," *Int. J. Geriatr. Psychiatry*, vol. 29, no. 3, pp. 245–252, 2013.

[3] D. Perlman and L. Peplau, "Loneliness Research: a Survey of Empirical Findings," *Prev. harmful consequences Sev. persistant loneliness.*, pp. 13–46, 1984.

[4] Z. Zhou, P. Wang, and Y. Fang, "Loneliness and the risk of dementia among older Chinese adults: gender differences," *Aging Ment. Heal.*, vol. 22, no. 4, pp. 519–525, 2018.

[5] S. Balouch, E. Rifaat, H. L. Chen, and N. Tabet, "Social networks and loneliness in people with Alzheimer's dementia," *Int. J. Geriatr. Psychiatry*, 2019.

[6] A. Burns *et al.*, "Dementia diagnosis and management A brief pragmatic resource for general practitioners," p. 24, 2015.

[7] Alzheimer's Society, "What is dementia? Factsheet 400LP," no. January, 2017.

[8] A. T. F. Beekman *et al.*, "Feelings of loneliness, but not social isolation, predict dementia onset: results from the Amsterdam Study of the Elderly (AMSTEL)," *J. Neurol. Neurosurg. Psychiatry*, vol. 85, no. 2, pp. 135–142, 2012.

[9] P. M. Prince, G. Ali, and G. Ali, "World Alzheimer Report 2015 The Global Impact of Dementia," 2015.

[10] M. Harsányiová and P. Prokop, "Living condition, weight loss and cognitive decline among people with dementia," *Nurs. Open*, vol. 5, no. 3, pp. 275–284, 2018.

[11] B. Ausín, M. Muñoz, and M. A. Castellanos, "Loneliness, Sociodemographic and Mental Health Variables in Spanish Adults over 65 Years Old," *Span. J. Psychol.*, pp. 1–7, 2017.

[12] C. L. M. Lam, J. Yu, and T. M. C. Lee, "Perceived loneliness and general cognitive status in community-dwelling older adults: the moderating influence of depression," *Aging, Neuropsychol. Cogn.*, vol. 24, no. 5, pp. 471–480, 2017.

[13] Y. Luo and L. J. Waite, "Loneliness and mortality among older adults in China," *Journals Gerontol. - Ser. B Psychol. Sci. Soc. Sci.*, vol. 69, no. 4, pp. 633–645, 2014.

[14] L. Dahlberg and K. J. Mckee, "Correlates of social and emotional loneliness in older people: Evidence from an English community study," *Aging Ment. Heal.*, vol. 18, no. 4, pp. 504–514, 2014.

[15] N. J. Donovan, Q. Wu, D. M. Rentz, R. A. Sperling, G. A. Marshall, and M. M. Glymour, "Loneliness, depression and cognitive function in older U.S. adults," *Int. J. Geriatr. Psychiatry*, vol. 32, no. 5, pp. 564–573, 2017.

[16] A. W. T. Fung, A. T. C. Lee, S. T. Cheng, and L. C. W. Lam, "Loneliness interacts with family relationship in relation to cognitive function in Chinese older adults," *Int. Psychogeriatrics*, pp. 1–9, 2018.

[17] L. Dahlberg, L. Andersson, K. J. McKee, and C. Lennartsson, "Predictors of loneliness among older women and men in Sweden: A national longitudinal study," *Aging Ment. Heal.*, vol. 19, no. 5, pp. 409–417, 2015.

[18] C. Mariani *et al.*, "Living Alone and Dementia Incidence: A Clinical-Based Study in People With Mild Cognitive Impairment," *J. Geriatr. Psychiatry Neurol.*, vol. 31, no. 3, pp. 107–113, 2018.

[19] B. L. Zhong, S. L. Chen, X. Tu, and Y. Conwell, "Loneliness and cognitive function in older adults: Findings from the chinese longitudinal healthy longevity survey," *Journals Gerontol. - Ser. B Psychol. Sci. Soc. Sci.*, vol. 72, no. 1, pp. 120–128, 2017.

[20] J. Yu, C. L. M. Lam, and T. M. C. Lee, "Perceived loneliness among older adults with mild cognitive impairment," *Int. Psychogeriatrics*, vol. 28, no. 10, pp. 1681–1685, 2016.

[21] N. J. Donovan *et al.*, "Association of higher cortical amyloid burden with loneliness in cognitively normal older adults," *JAMA Psychiatry*, vol. 73, no. 12, pp. 1230–1237, 2016.

PHP-800

A SYSTEMATIC REVIEW: THE INFLUENCE OF NURSES CAREER DEVELOPMENT ON JOB SATISFACTION

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ABSTRACT

Nurse as health care providers have an important role in providing nursing care continuously. The professionalism in nursing is managing human resources and giving awards to nurses. Nurse career development is the implementation of a planned career that places nurses in accordance with their expertise and becomes an opportunity for their potential and abilities. The purpose of this study is to conduct a systematic review of nursing career development and job satisfaction of nurses. The main databases was used include CINAHL Plus, Web of Science, MEDLINE, Google Scholar, and PUBMED. The keywords used were career development, nurse, and job satisfaction. Limitation research determine 2012-2018. There were 36 articles found. Filtering out duplicate articles and focus on criteria inclusion. Twelve articles was reviewed and most studies showed that nursing career development and job satisfaction were positive and significant impact. There is evidence of a contribution between job satisfaction and nurse career development. Professional career development is a system to improve performance and professionalism in accordance with the field of work through increasing competence.

Keywords: career development, nurse, job satisfaction

1. Introduction

The development of a nurse's career is focused on the implementation of a career plan that can be used for the placement of nurses at a level according to their expertise, allowing for the provision of better opportunities according to the nurses' abilities and potential[1]. To maintain the quality of service professionally, the nurse’s career path must be documented and organized in the orientation system, placement and reward systems, therefore the career path is seen of as structured. Management and the entire nursing profession must know about the career path of their profession in relation to their professional development both formally and informally.

Job satisfaction is individual. Each individual will have different levels of satisfaction in accordance with the applicable values. Employees will feel satisfied at work if aspects of the work and aspects of themselves are supported and if any aspects are not supported, then the employees will feel dissatisfied[2]. Career development is a strategy used to improve the quality of patient care by advancing the appreciation and recognition of experience and competencies achieved by the nurses in clinical practice systematically[3]. Career success is defined as a collection of individual real achievements as an effort resulting from their work experience[4].

The purpose of this study was to conduct a systematic review of nursing career development and the job satisfaction of nurses.

2. Research Methods

The main databases used included CINAHL Plus, Proquest, Web of Science, Science Direct, Medline, Google Scholar, Elsevier and PUBMED. The keywords used were career development, nurse and job satisfaction. The research had to have been published between 2012 - 2018.The search languages were English and Indonesian. The papers were critically reviewed and the relevant data was extracted and synthesized using an approach based on the Preferred Reporting Items for Systematic Reviews and Meta Analysis (PRISMA).There were 36 articles found. The researcher then filtered out duplicate articles and focused on the criteria for inclusion. Twelve articles were finally reviewed.

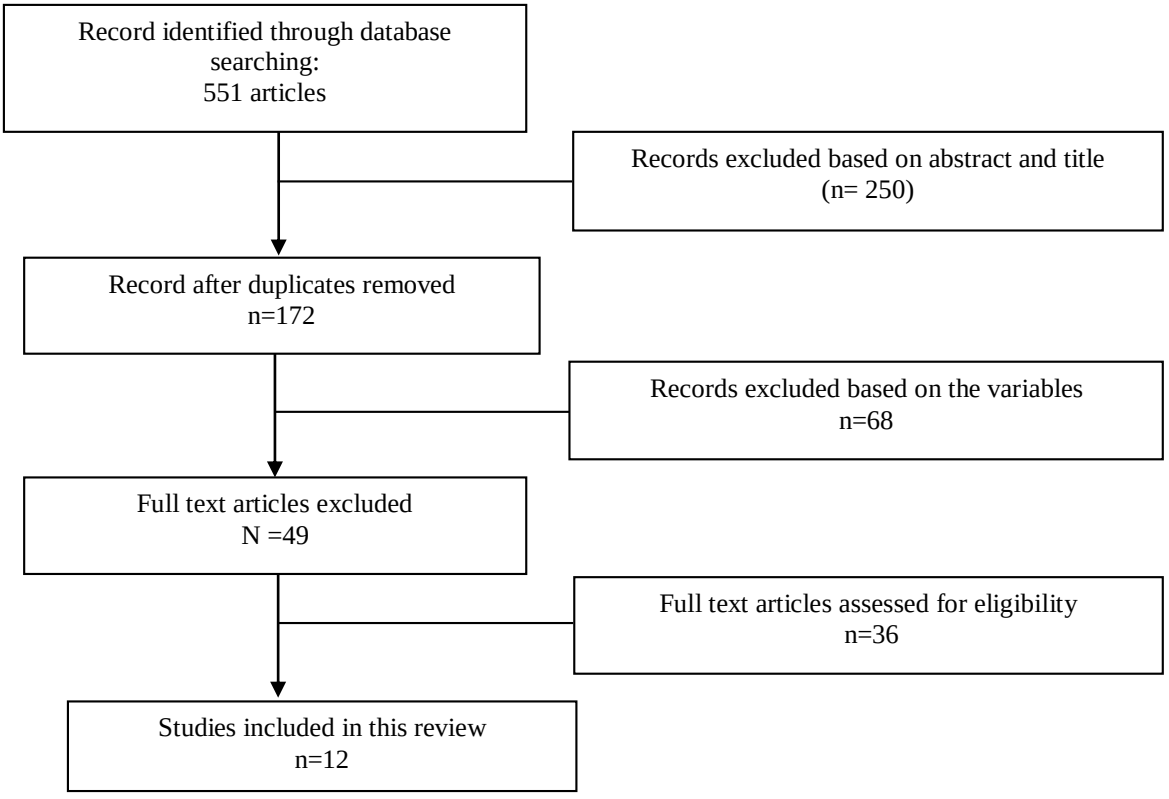

Figure 1. PRISMA flow diagram

3. Results

Most of the results of the study showed that there is a strong relationship between professional values and career development and that job satisfaction and career development are positively correlated. Nurses with high levels of job satisfaction are highly motivated to remain in their jobs. Their expertise is needed to maintain the profession and to develop a career in the future. Job satisfaction and career development have an influence on retention and additional findings indicate that their intention to keep working is higher[5].

The results show that the relationship between job satisfaction that is consistent with career adaptability and the expected pattern can have implications for future research in the form of ideas about how to maintain and improve the older workers' career adaptations and job satisfaction. We

have also found that the ability to develop a self-career is positively related to job satisfaction and the motivation to continue working, suggesting that career adaptability can be a step towards retaining older workers[6].

The results of this study indicate that career attention skills significantly explain the level of satisfaction of the participants about career and development opportunities in relation to the characteristics of the work offered. The research findings show that goals, future careers and plans are important to maintain[7]. Individuals who are very concerned about their careers and their future also tend to care more about the nature of their work. Job characteristics have been regarded as intrinsic motivators and aspects of individual subjective career success and job satisfaction [8][9][10].

4. Discussion

Increasing the nurses' careers from one level to another higher level is based on the required competence, experience and meeting the formal education requirements, in addition to continuing education. Career path improvement for nurses is always followed by awards in the form of education that is sustainable or related increased revenue. The mechanism of the improvement in income must be based on the achievement of success related to their competence.

5. Conclusion

Maintaining experienced nurses can be done by providing facilities and opportunities to develop their careers and this contributes to quality patient care and guidance from novice professionals. Middle career nurses are likely to be senior nurses later on. Senior career nurses have a lot of experience and stability in terms of providing quality health services, while new career nurses have new ideas and improved facilities with technology.

References

A reference

This reference has two entries but the second one is not numbered (it uses the ‘Reference (no number)’ style.

Another reference

More references

Appendix

Table 1. Selected papers

Title /Author / Year	Study Design / Participants	Result
Development and validation of a nursing professionalism evaluation model in a career ladder system (Kim et.al, 2017)[11]	RCT N = 200	Clinical competence was determined by the 5 dimensions of nursing practice: scientific, technical, ethical, aesthetic and existential. The structural model explained 66% of the variance. Clinical competence scales, peer reviews and face-to-face interviews directly determined nursing professionalism levels.
The relation of career adaptability to satisfaction and turnover intentions (Chan&Mai, 2015)[12]	RCT N = 368	This study has demonstrated that the current CAAS form has robust possibility for use in vocational intervention and career expansion research for working adults, referring to low-ranking employees in particular.
The influence of satisfaction and promotability on the relation between career adaptability and turnover intentions (Chan, 2016)[13]	RCT N= 431	Career adaptability was significantly and positively related to both promotability and CS after controlling for the influences of the demographic variables including age, gender, education and tenure.
Competencies of older workers and its influence on career success and job satisfaction (Hennekam, 2016)[14]	RCT N = 1112	It was found that motivation, integrity and social skills all had a positive relationship with job satisfaction: the higher the older workers scored for those competencies, the more satisfied that they were with their job. Motivation and social skills were also positively related to extrinsic career success, while integrity was unrelated.
The importance of continuing professional development on career satisfaction and patient care: meeting the needs of novice to mid- to late-career nurses throughout their career span(Price & Reichert, 2017)[15]	RCT N = 185	Healthy work environments were identified by the nurses as those that are invested in continuing professional development opportunities to ensure continuous growth in their practice, allowing them to provide optimal quality patient care.
Older workers' age as a moderator of the relationship between career adaptability and job satisfaction (Zacher&Griffin, 2015)[5]	RCT N = 577	The results showed that the older workers' age but not their motivation to continue working moderated the relationship between career adaptability and job satisfaction consistent with the expected pattern. Implications for future research on age and career adaptability as well as ideas on how to maintain and improve older workers' career adaptability and job satisfaction have been discussed.

Professional values, job satisfaction,career development, and intent to stay (Yarbrough et.al, 2016)[4]	RCT N = 67	The findings indicate a strong correlation between professional values and career development and both job satisfaction and career development correlated positively with retention.
Career adaptability and academic satisfaction: Examining work volition and self efficacy as mediators (Duffy, Douglass, Autin, 2015)[16]	RCT N = 412	In an effort to explain these relations, work volition and career decision self-efficacy (CDSE) were examined as potential mediator variables. Using structural equation modeling, work volition significantly mediated the control to satisfaction relation and CDSE significantly mediated the concern, control and confidence within satisfaction relations. After including all of the variables in the model, none of the career adaptability components were significantly related with academic satisfaction.
The longitudinal relationship between protean career orientation and job satisfaction, organizational commitment and intention-to-quit (Supeli & Creed, 2016)[10]	RCT N = 168	We tested 3 cross-lagged models (standard causal, reverse causal, and reciprocal causal) and found support for the standard causal model. Higher levels of protean career orientation at T1 were associated with lower levels of organizational commitment and job satisfaction and higher levels of intention-to-quit at T2 after the effects of T1 were controlled for. The results indicate poorer individual and organizational outcomes after 6 months for employees with higher levels of protean orientation.
Meeting career expectation: can it enhance job satisfaction of Generation Y? (Kong, 2015)[3]	RCT N = 30	Finally, the findings of this study highlight the importance of providing creative management activities to Generation Y employees. Generational differences are critical in determining management practices in the workplace.
Exploring the path through which career adaptability increases job satisfaction and lowers job stress: The role of affect (Fiori, Bollmann, Rossier, 2015)[2]	RCT N = 1671	Overall, the results support the conception of career adaptability as a self-regulatory resource that may promote a virtuous cycle in which the individuals' evaluation of their resources to cope with the environment (i.e., career adaptability) shapes their affective states, which in turn influences the evaluation of their job.
Employees' satisfaction with retention factors: Exploring the role of career adaptability (Coetzee&Stoltz, 2015)[6]	RCT N = 321	The results showed that career adaptability, especially career concern, significantly explained the participants' level of satisfaction with their experience of career opportunities, work–life balance, training and development opportunities and the characteristics of the jobs offered by the company.

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THE EFFECT OF SPIRITUAL COGNITIVE THERAPY ON DECLINE DEPRESSION IN THE ELDERLY : A SYSTEMATIC REVIEW

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ABSTRACT

Today depression is one of the problems that is often experienced by the elderly, one of the interventions that can overcome this problem, namely cognitive therapy. Aim to conduct a literature review systematically on the study of the effectiveness of spiritual cognitive therapy to reduce the level of depression in the elderly. Review is carried out by following the PRISMA alloy. This literature is reviewed from the Scopus, PubMed and Cochrane electronic databases Database of Systematic Reviews for studies published between 2013-2018 with relevant keywords. A total of 15 articles identified through systematic searches and six inclusion criteria from 148 articles found to show decline in depression in the elderly. The results stated that there was a significant decrease in depression over time from before arriving after treatment using spiritual power. Spiritual cognitive therapy can be used as a non-pharmacological intervention to overcome health problems related to depression.

Keywords: cognitive therapy; spiritual; depression; elderly

1. Introduction

Becoming elderly is the final stage of the human life cycle and it is a part of the life process that cannot be avoided. It will be experienced by every individual. In the Republic of Indonesia Law No. 13 of 1998 concerning elderly welfare, it is expressly stated that the so-called elderly are men or women aged 60 years old or more.

Globally, the population with an increasing age of 60 years old and above worldwide is expected to increase by 22% by 2050 [1]. Advanced aged ≥ 60 individuals suffer from a mental or neurological disorder (not including headaches) by as much as 20%. The most common mental and neurological disorders in the elderly are depression (7%) and dementia (5%)[2]. Mental health problems, namely depression, are less identified by the health care workers and the elderly themselves, as there is a stigma that this condition makes the elderly unwilling to seek treatment.

Depression in the elderly aged ≥65 can cause functional disorders in their daily life. Elderly people with depressive symptoms have worse functioning levels compared to the elderly with chronic pain conditions [2]. Depression can affect their quality of life and social interactions, and it can cause suicide in the elderly [3]. The prevalence of depression in the elderly with an age range ≥ 65 years that occurs in people living in Indonesia ranges from 7.2% - 33.8% [4]. While depression or depressive symptoms are higher in the elderly who live in nursing homes compared to those living in communities in Western countries such as the United States, the prevalence of depression is found to be 21.6% [5]. In Canada it is 19.0% [6] and in Singapore[7].

Depression factors that occur in the elderly are caused by stress such as negligence due to mental health or chronic disease, impaired mobility, long-term care, pensions and other disabilities causing a loss of independence, feeling lonely or isolated and having difficulties when carrying out their daily activities, which is also considered to be a problem related to depression in the elderly.

Depressed elderly have a worse condition than the elderly who suffer from chronic diseases. These special conditions have an impact on increasing the perceptions of poor health, th utilization of health services and health care costs[1]. Elderly people who live in nursing homes with a depressed condition have a higher desire to commit suicide, which can be further backed by those who live in nursing homes who are 60-74 years of age, living alone and experiencing spiritual distress have a desire to end themselves [8]. Seniors with depression tend to have negative judgments and views of themselves, the environment and the future. These negative thoughts (views) affect the elderly to behave negatively. Depressive symptoms often result in emotional and physical suffering, a decreased quality of life and an increased risk of death.

Seniors who are cognitively good can be aware of activities in the institution and they have clear perceptions about the environment of their residence, the care received and they realize the state of separation from their family and friends in the environment in which they lived. A research study conducted by [9] reported that more than half of the elderly population without a cognitive impairment experienced symptoms of depression while living in a nursing home [9]. Some elderly people face and suffer from various life pressures that can have a negative impact on their quality of life. Spirituality has been found to be positively related to health which is considered to be very important for the elderly. The development of individual spirituality involves a person's cognitive, behavioral and skill abilities and these can be shaped and expressed through social learning and practice [10]

The management of medications to treat depression problems can be done pharmacologically by administering antidepressant drugs that can improve both the depressive symptoms and work function. However, the continuous use of antidepressant drugs can cause various side effects such as anxiety, nausea and insomnia[11]. To minimize the use of chemical treatment, several non-pharmacological treatment therapy programs have been carried out, including the results of a study by [11], which states that significantly higher spirituality predicted better treatment responses in the depressed patients.

2. Methods

This systematic review used a guide based on the Preferred Reporting Item for Systematic Review and Meta-Analysis (PRISMA).

2.1. Strategy for Literature Search

The literature used in this Systematic Review involved 6 (six) electronic databases, namely Scopus, ScienceDirect, Pubmed and Springerlink published within the limits of January 2013 through to November2018.The keywords used were "cognitive therapy" AND "spiritual" OR "depression" OR "elderly".

2.2. Eligibility Criteria

2.2.1 Types of study research. 1) non-randomized pre-test / post-test design, (2) cross-sectional randomized controlled trial study (3) and (4) experimental study design study that we used

2.2.2 Types of participants. The main inclusion criteria for the participants was that they were elderly (60 years or older) with a state of depression.

2.2.3 Types of intervention. Spiritual cognitive therapy meets the requirements, so no studies were issued based on the comparator / control group used.

2.2.4 Types of outcome measure. The main outcome expected is that it can reduce depression in the elderly.

2.3. Selection of the Studies

The guideline standard for the study used in this systematic review was based on the PRISMA method followed by filtering by removing duplicates. Then the reviewer selected the titles, abstracts and keywords, and then removed any irrelevant quotes. The selection of the articles that had been obtained were then re-compared with each other to adjust their suitability according to the criteria set.

3. Results and Discussion

3.1. Search for the literature and the selection of the studies

A total of 15 studies were identified to be used in the systematic review. The search was done using the Scopus database and the PubMed Cochrane Database of Systematic Reviews which has provided quotes of 28,140 citations. After screening by removing the duplicates until 9,796 citations were found, from that number as many as 140 studies were discarded after reviewing the abstract and any that did not meet the criteria. The full text of the remaining 60 citations was then reviewed in detail until 38 studies were found that did not meet the inclusion criteria. The study total that was finally obtained to be included in the review of 15 quotes; see the flow diagram in Figure 1.

3.2 Characteristics of the Study

3.2.1 Methods. The 15 studies chosen for review used (1) a non-randomized pre-test / post-test design, (2) a cross-sectional randomized controlled trial study (3) and (4) the experimental study design study that we used.

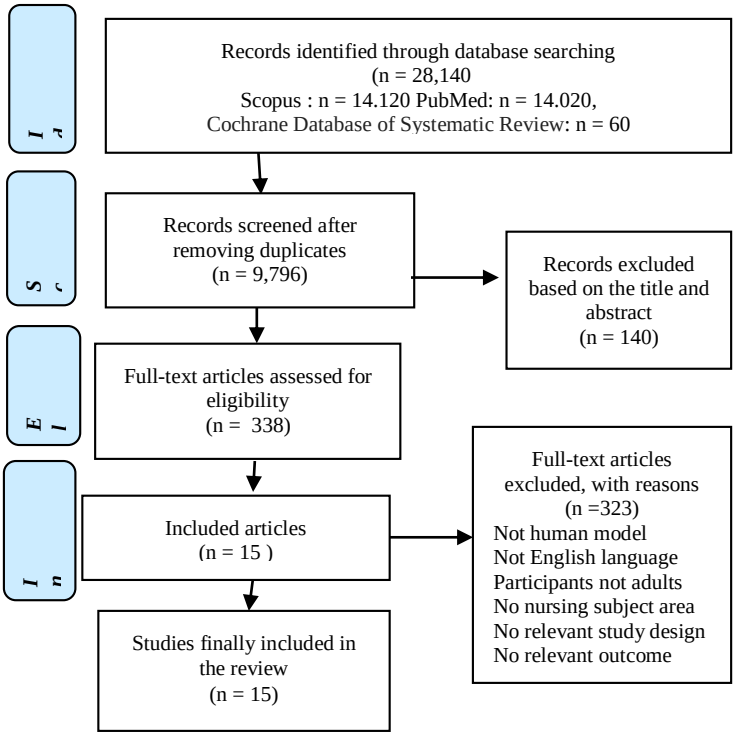

Fig. 1. Flow Diagram

3.2.2 Population. The study in this systematic review involved 1991 participants within the terms of the inclusion criteria, namely individuals who were elderly (60 years or more) with depression.

3.2.3 Interventions

Table 1 shows the characteristics and interventions of the 15 studies. Five studies evaluated cognitive functioning that was spirituality related. Three studies evaluate spirituality itself.

3.2.4 Results

In all of the studies obtained, the results assessed were on reducing depression in the elderly which could come in various forms.

3.3. Results from the individual studies

3.3.1 Spiritual cognitive therapy. Cognitive therapy, which is an extensive therapist training program carried out on Health Administration veterans, showed a 30% reduction in PTSD symptoms upon completing the analysis. There was shown to be a large increase and it is an affordable program for 9/11 victims suffering from PTSD. There is no significant difference between those who were assigned to the BSS and PCGT groups based on age, sex, education, income or the proportion of ethnic minority participants. There were no significant differences between groups at baseline on symptom scores or spiritual distress variables[12]. Overall, these results indicate that the participants did not report various levels of PTSD symptoms over time and that the two groups did not differ in the average level of PTSD symptoms reported or in terms of changes in the PCL-C scores over time. The model was limited to pre- and post-treatment time points only, and the effect was significant

over time (F [1,103.51] = 9.42, p = 0.003) but not in the groups (F [1,139.74] = 0.98, p = 0,325) or between time with group interactions (F [1,103.51] = 1.38, p = 0.244) and PCL-C. The effect size for time across the groups was d = 0.24, and the effect size for the group was d = 0.15.

The results of the study [4] showed that the level of depression was lower in the elderly who were spiritually good. In the multivariate analysis, without controlling for all of the other variables (complete models), spirituality had a strong relationship with the level of depression (OR = 1.767; 95% CI; 1,331 to 1,345). Similarly, when using the model that controlled for all of the variables (adjusted models), there appears to be a stronger relationship between spirituality and depression levels (OR = 1,869; 95% CI; 1,422 to 2,458). These results indicate that older people who identify as an atheist because they are less spiritual are twice as likely to experience depression than those who identify as being very spiritual. This finding is consistent with the results published by Smith et al. who found that there was a negative correlation between religiosity and depressive symptoms, indicating that that greater religiosity was associated with a lower level of depression symptoms. Similarly, Koenig found that out of 444 participants, 272 (61%) reported there to be a negative relationship between spirituality and depression. Furthermore, the results from 70 prospective cohort studies showed that 39 cohorts (56%) reported that a greater sense of spirituality resulted in lower levels of depression or a faster remission from depressive symptoms. In addition, from 30 reviewed clinical studies, 19 (63%) found that the spiritual interventions produced better results than standard care interventions or control groups.

4. Discussion

This systematic review was to find out about the effectiveness of spiritual cognitive therapy in patients with depression. The study used a heterogeneous research design. There are several findings related to the various interventions regarding excellence. In accordance with the results of a review of the research studies conducted, it was explained that the pre- and post-therapy scores of spiritual and depression did not have a significant difference. This might be related to the small number of samples.

Another important aspect of spiritism is spiritual medicine for mental and physical health disorders. There have been 10-23 large presentations of residents utilizing spirits centered on spiritual medicine to cure or relieve the symptoms of the various health problems that are experienced through spiritual therapy. In a recent study evaluating the characteristics of complementary religious medicine carried out by spiritual centers in the city of Sao Paulo (Brazil), there was an average of 261 people per week attending spiritual sessions [13]. Some researchers have suggested that religion might reduce the vulnerability to depressive symptoms through various substantive psychosocial mechanisms. Such findings indicate that religion can protect people against the symptoms of depression by helping them to avoid the negative psychological sequelae that often occur related to stressful life events. The magnitude and increasing number of studies indicates that religious or religious beliefs and practices can be used to overcome them or to adapt to stressful living conditions.

There are several potential limitations associated with this systematic review: (1) the heterogeneity of the research design and (2) What we consider to be the main results is not always the same as in the initial study.

5. Conclusion

Spirituality has a significant relationship with level of depression. Mental health problems are quite common in the elderly. It is clear that there is a great need for a strategy that enhances the role of

spirituality in the effort to reduce the risk of depression in the elderly

References

[1] WHO 2018 who depression - Penelusuran Google

[2] WHO 2017 Mental health of older adults

[3] Li I, Kuo H, Lin K and Wu Y 2014 The Effects of Depressive Symptoms on Quality of Life Among Institutionalized Older Adults in Taiwan **50** 58–64

[4] Mahwati Y 2017 The Relationship between Spirituality and Depression Among the Elderly in Indonesia **21** 13–9

[5] Hoover D R, Siegel M, Lucas J, Kalay E, Gaboda D, Devanand D P and Crystal S 2010 Depression in the first year of stay for elderly long-term nursing home residents in the U . S . A . 1161–71

[6] Mccusker J, Cole M G, Voyer P, Monette J, Champoux N, Ciampi A, Vu M, Dyachenko A and Belzile E 2014 Observer-rated depression in long-term care : Frequency and risk factors *Arch. Gerontol. Geriatr.***58** 332–8

[7] Tiong W W, Yap P, Choon G, Koh H, Fong N P and Luo N Aging & Mental Health Prevalence and risk factors of depression in the elderly nursing home residents in Singapore 37–41

[8] Zhang D, Candidate P D, Yang Y and Candidate P D 2017 Characteristics of the Chinese rural elderly living in nursing homes who have suicidal ideation : A multiple regression model Characteristics of the Chinese rural elderly living in nursing homes who have suicidal ideation : A multiple regression model *Geriatr. Nurs. (Minneap).*

[9] Drageset J, Eide G E and Ranhoff A H 2011 Depression is associated with poor functioning in activities of daily living among nursing home residents without cognitive impairment 3111–8

[10] Lee Y and Salman A 2017 AC US CR *Arch. Psychiatr. Nurs.*

[11] Kim N Y, Huh H J and Chae J H 2015 Effects of religiosity and spirituality on the treatment response in patients with depressive disorders *Compr. Psychiatry***60** 26–34

[12] Harris J I, Usset T, Voecks C, Thuras P, Currier J and Erbes C 2018 Spiritually integrated care for PTSD : A randomized controlled trial of " Building Spiritual Strength " *Psychiatry Res.***267** 420–8

[13] Lucchetti A L G, Peres M F P, Vallada H P and Lucchetti G 2015 Spiritual treatment for depression in Brazil: An experience from spiritism *Explor. J. Sci. Heal.***11** 377–86

AGE-FRIENDLY HEALTH SYSTEMS FOR ELDERLY: A SYSTEMATIC REVIEW

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ABSTRACT

Elderly people sustain various decrease in anatomical, physiological, social and economic aspects. Elderly has resulted increasing demand in aged friendly health systems for management of chronic diseases. It caused elderly people need aged friendly health systems. The objective of this research was to identify age friendly health systems for elderly. In this article, the authors conducted a relevant systematic review in various data using the keywords "age friendly,health system, elderly". Data based based on SCOPUS, Science Direct, Proquest, Pubmed and Google Scholar. The criteria consisted of full text published in criteria were five years limit journal (2013-2018) use article in English. The Results as much as 386 articles found, and selected 15 article that suitable with criteria The Result introduction of age friendly health system based on the WHO guidelines in the following areas:Information, education and training, community-based health care management systems, and the physical environment. Discussions aged friendly health system to support older adults health of choronic diseases, well-being, and ability to age in place.

Keywords: age friendly, health system, elderly

1. Introduction

The elderly experience a decrease in the anatomical, physiological, social and economic aspects of their lives [1]. The elderly have shown that there was an increasing demand for age friendly health systems for the management of chronic diseases. This can cause the elderly people to need age friendly health systems[2]. Based on the focus groups found and backed by the background research and a consensus meeting of experts, the WHO developed a set of age-friendly principles. The first dimension of the principles is in the areas of information, education and training; the second is in the area of community-based health care management systems and the third is in the

area of the physical environment. These principles can be adapted to outpatient services and hospitals in addition to primary care centers or clinics[3].

An age friendly health system is a health care system that aims to provide the elderly with the best care possible, reducing the health care-related harm to the elderly and optimizing value of all, including the patients, their families and caregivers, health care providers and the health systems[4]. The patient's goals and preferences are valued, the family caregivers are supported and included in the treatment plan and there are safe and better transitions of the patients from different care settings. The systems intend to enhance the quality of care for the elderly and optimize the value of the health systems in measurable ways[5].

In an age-friendly health system, health care-related harm to the elderly is dramatically reduced and approaches zero; the elderly get the best care possible and are satisfied with their care. Value is optimized for everyone and the initiative builds upon a number of fundamental characteristics common to existing geriatric care models, including leadership committed to addressing ageism, the reliable use of evidence-based care, the use of nurses who are specifically trained and proficient in the care of older adults, high performing care teams focused on measurable outcomes, a systematic approach for coordinating care with other organizations and for engaging with the patients and their families and caregivers and a clear process for eliciting patient goals and priorities and using those goals to individualize care [6].

The implementation of age-friendly health systems would reduce the risk of harm for the elderly and improve their health outcomes while avoiding unwanted or duplicative care. In addition, ensuring the reliable execution of these interventions requires a set of foundational elements including leadership, teamwork and good information and communications systems. Importantly, the goal of the initiative is to improve the care for the elderly across all care settings: inpatient, post-acute, and in-home and ambulatory settings[7].

Based on all of the studies, an age friendly health system based on WHO's guidelines are according to the following areas: information, education and training, community based health care management systems and the physical environment[8]. This systematic review aims to identify age friendly health systems for the elderly.

2. Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement[6].

2.7 Data Sources and Searches

The databases searched within included SCOPUS, ScienceDirect, Proquest, Pubmed and Google Scholar, in order to provide studies related to identifying age friendly health systems for the elderly from between 2013 and 2019.

2.8 Study Selection

The studies were selected according to the inclusion criteria. They were open access, cross-sectional and qualitative studies with elderly participants in the form of full-text articles in the English language. We excluded the studies with non-elderly participants and with poor study protocols.

2.9 Data extraction and quality assessment

All of the citations retrieved from the electronic databases were imported into the Mendeley Program. Two reviewers (BU, SNK) independently analyzed the titles and abstracts of every study retrieved from the literature search to identify potentially eligible studies. The full text of the remaining studies was obtained for further examination. The last review was conducted by the first reviewer (TPD).

In this article, the authors conducted a relevant systematic review of the data using the keywords "age friendly", "health system", "elderly". The data of the studies was independently extracted by the same two reviewers by including the first author's name, the year of publication, the sample size, the study design, the duration of the trial and the general characteristics of the participants (age and gender). A detailed description of the age friendly health system was also included. The WHO's guidelines were the main outcome of this systematic review.

3. Result

3.1 Study Size

We conducted the identification of 567 studies using database sources. Seven duplicate studies were excluded, continued by 401 studies due to containing non-elderly participants, being irrelevant studies or using poor study protocols. The 6 remaining studies were included in the current systematic review.

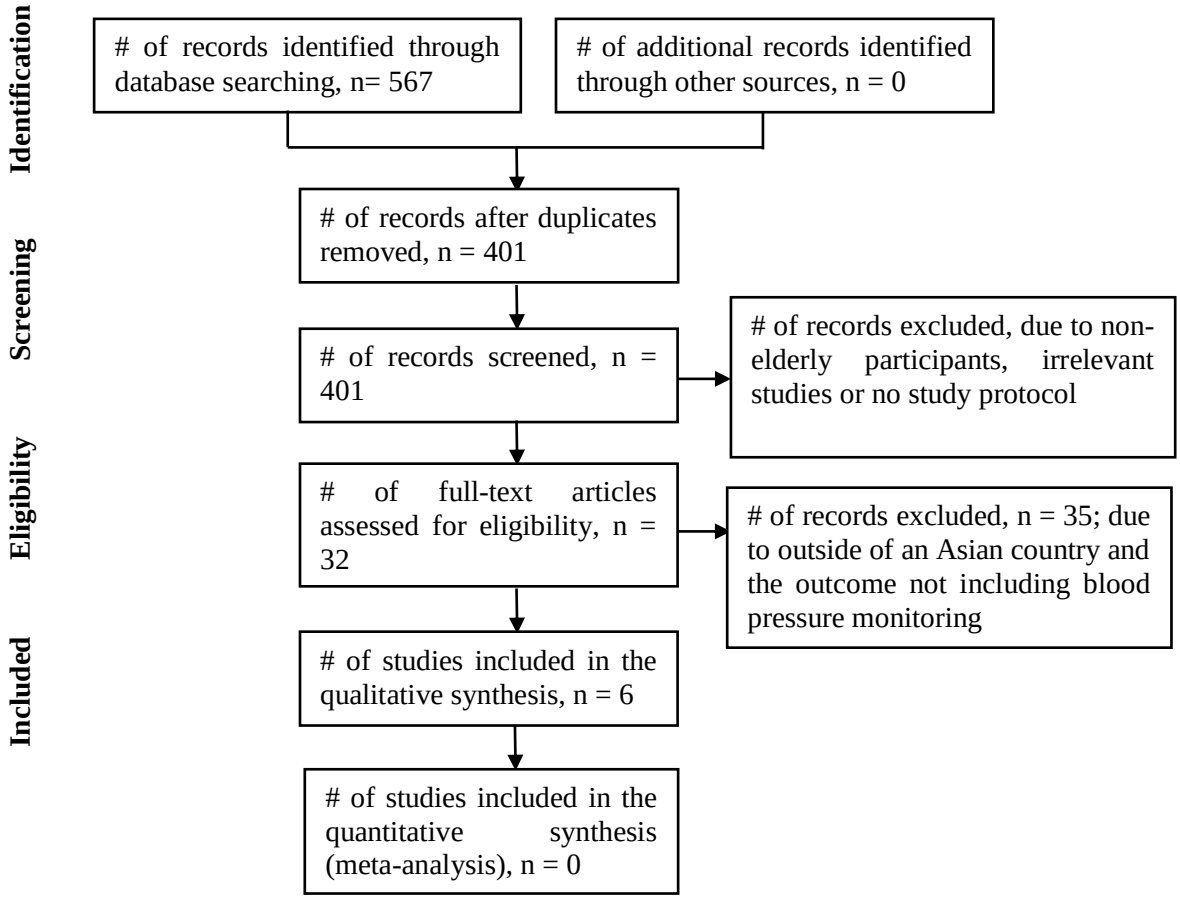

Figure 5. Flow diagram of the literature sources used to identify age friendly health systems

3.2 Study Characteristics

The data was extracted from each study according to the requirements. The extracted data included the characteristics of the study, the characteristics of the age friendly health system, the characteristics of the results and the summary of the results.

The standard protocol was used for selecting the studies as suggested in the systematic review method guide, PRISMA. The steps taken were:

1. The removal of duplications.
2. The examination independently of the titles, abstracts and keywords and deleting citations that were not relevant according to the inclusion criteria.

3. If the title and abstract are likely to be in accordance with the inclusion criteria and the objectives of the systematic review, then the next step was the selection of journals where the full text was available.
4. The final step was the selection of the articles.

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3.3 Description of the study characteristics, including the outcome, measurement, interventions and results.

	First Author (Year)		**Study Characteristic** **1. Design** **2. Sample**	**Outcome and Measurement**	**Intervention** **1. Treatment group(s)** **2. Type, dose, frequency and administration method** **3. Duration per session/Total number of sessions/Total Duration of intervention**	**Results**
1	Alhamdan AA *et al* (2015)	Evaluation of the health care services provided for older adults in primary health care centers and their internal environment. A step towards creating age friendly health centers	1. Cross-sectional 2. 564	Age-friendly PHCC toolkit of the WHO	-	The clinical management of patients reached an acceptable level. However, the aspects related to information, physical barriers and transportation must be improved
2	Cramm, Van Dijk, & Nieboer, (2018)	The creation of age-friendly environments is especially important for frail older people	1. *Cross-sectional* and Qualitative 2. Sample a. *Cross-sectional* : 558	*Age friendly cities with 8 domains according to the WHO framework*	-	7 of the 8 domains of the WHO Framework (transportation, housing, social participation, respect and social approval, civic participation, communication and information and community support and health services) show significant results. Interviews were

			b. Qualitative : 32				conducted with weak and non-weak elderly people.
3	Xie, (2018)	Age-Friendly Communities and Life Satisfaction Among the Elderly in Urban China	1. Survey 2. 9965	*Age-Friendly Community Indicators. Housing. Local amenities. Community services. Social inclusion*	-		Age friendly communities affect the subjective well-being of the elderly and this significantly increases the life satisfaction of the elderly.
4	S. Park & Lee, (2017)	Age-friendly environments and life satisfaction among South Korean elders: person - environment fit perspective	1. *Cross sectional* 2. 1657	*Indicators from the World Health Organizations (WHO) framework for age friendly cities (ACF)*	-		Consistent with the environmental docility hypothesis, the members of the most vulnerable subgroup in the Korean context are older adults who are living alone and the poor, who are more likely to have higher life satisfaction when they have higher levels of support in their physical and social environments. Interestingly, a higher level of support in the service environment was related to lower life satisfaction for this subgroup.
5	Wang, Gonzales, & Morrow-Howell (2017)	Applying the WHO's Age-Friendly Communities Framework to a National Survey in China	1. *Cross-sectional* 2. 453	*The CHARLS community survey contained the questions used*	-		In the domain of applying the WHO community and health service Age-Friendly Communities Framework, there was a significant effect on both the rural (0.08) and urban (0.46) populations. Applying the WHO Age-Friendly Communities Framework is needed

							for rural elderly people.
6	Woo, Mak, & Yeung (2013)	Age-Friendly Primary Health Care: An Assessment of Current service Provision for Older Adults in Hong Kong	1. Qualitative 2. 12 hospital staff working in a public system, consisting of geriatrics (5), nurses (4) and health staff (1)	-	-		Age-Friendly Primary Health Care was able to improve the Current Service Provision.

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4. iscussion

The age-friendly environmental factors may have something of an effect on the health results. Several factors that may hinder the health care of the elderly have been found to be related to physical difficulties when accessing
the health centers in terms of both their structure and in the transmission of information[4].

Finally, 7 out of the 8 domains of the WHO Framework (transportation, housing, social participation, respect and social approval, civic participation, communication and information, community support and health services) showed significant results. Interviews were conducted with both weak and non-weak elderly people. The results showed that gender, age and especially fragility were related to the environmental characteristics. The elderly who were aware of their fragility admitted that they needed an age friendly environment[9]

Age friendly communities affect the subjective well-being of the elderly and significantly increase the life satisfaction of the elderly as well[10]. Age friendly environmental characteristics include the modification of the environmental resources that can improve the well-being of the psychology of the elderly.

According to the WHO, the community and health service Age-Friendly Framework had a significant effect on both rural (0.08) and urban (0.46) populations. The WHO Age-Friendly Communities Framework is needed for the rural elderly [11]. The Age-Friendly Primary Health Care was able to improve the Current Service Provision [3].

5. Implication

The purpose of this systematic review was to identify age-friendly health system. Based on the results of the analysis, there were many positive effects provided by the age friendly health system for the elderly. Based on a review of the journals selected, it was found that the elderly need an age friendly health system according to the reviewed environmental characteristics. This could increase the well-being of the elderly,

6. Conclusion

An age-friendly health system can support the elderly health concerning chronic diseases, well-being, and ability to age in place. Based on this data, we fully recommend the use of age friendly health systems for the elderly applied to elderly health services.

Reference

[1]. Miller, C. A 2012 Nursing For Wellnes In Older Adults (Sixth ed.). *Philadelphia: Lippincott Williams & Wilkins*

[2]. Mate KS, Berman A, Laderman M, Kabcenell A, Fulmer T 2018 Healthcare Creating Age-Friendly Health Systems – A vision for better care of older adults. *Healthcare* [Internet].**6(1)**:4–6. Available from: https://doi.org/10.1016/j.hjdsi.2017.05.005

[3]. Faan TF, Ba NL 2017 Age-friendly Health Systems for Older Adults With Dementia. TJNP *J Nurse Pract* [Internet]. 2012;1–6. Available from: https://doi.org/10.1016/j.nurpra. 09.001

[4]. Neville S, Napier S, Adams J, Wham C, Jackson D 2016 An integrative review of the factors related to building age-friendly rural communities1–11.

[5]. Alhamdan AA, Alshammari SA, Al-Amoud MM, Hameed 2018 Age-friendly primary care health centers.2(4):180–3.

[6]. Grewal GS, Kishore J 2010 Age-Friendly Primary Health Care Services : *Emerging Need* in.

[7]. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions : explanation and elaboration. **69**

[8]. Cramm JM, Dijk HMVAN, Nieboer AP. The creation of age-friendly environments is especially important to frail older people.

[9]. Park S, Lee S 2017 Age-friendly environments and life satisfaction among South Korean elders: person–environment fit perspective. *Aging Ment Heal*.**21(7)**:693–702.

[10]. Wang Y, Gonzales E, Morrow-Howell N 2017 Applying WHO's Age-Friendly Communities Framework to a National Survey in China. J *Gerontol Soc Work* [Internet]. **60(3**):215–31. Available from: http://dx.doi.org/10.1080/01634372.2017.1292980

[11]. Woo, Mak B, Yeung F 2013 Age-Friendly Primary Health Care: An Assessment of Current Service Provision for Older Adults in Hong Kong. *Heal Serv Insights* [Internet]. **69**. Available from: http://www.la-press.com/age-friendly-primary-health-care-an-assessment-of-current-service-prov-article-a3818

[12]. Cramm JM, Van Dijk HM, Nieboer AP. The creation of age-friendly environments is especially important to frail older people. *Ageing Soc*. 2018;**38(4)**:700–20.

[13]. Xie L. Age-Friendly Communities and Life Satisfaction Among the Elderly in Urban China. *Res Aging*. 2018;**40(9)**:883–905.

PHP-809

THE EFFECT OF PREOPERATIVE EDUCATION ON ANXIETY LEVEL: A SYSTEMATIC REVIEW

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ABSTRACT

Preoperative education interventions are effective in informing patients who undergoing surgery, thus can reduce anxiety and postoperative fear. This systematic review aimed to identify effects of preoperative education on anxiety undergoing surgery, follow the PRISMA statement guidelines. In this study, articles taken from some electronic data bases such as Scopus, PubMed, and Science Direct from 2014 – 2018. All included studies were access base on (1) random controled trial, (2) case-control studies and (3) quasi experimental. There are 15 selected articles from 2589 articles included in this study. Preoperative patients are given education with written, verbal and video methods. Most measurements of anxiety results using STAI. Preoperative education interventions are very effective to reduce anxiety levels in patients undergoing surgery.

Keywords: education, preoperative, anxiety

1. Introduction

Surgical patients often experience anxiety before surgery, which is believed to start immediately after the surgical procedure is planned and they are made aware of it [1]. Patient knowledge deficits regarding anesthesia and the role of the anesthetic in care can contribute to their fear and anxiety [2]. Increased anxiety may lead to pathophysiological responses such as hypertension, an increase in pain sensitivity and the refusal of the surgical procedure [3].

Previous patient surveys about anesthesia revealed that as many as 8-55% of patients were extremely scared during anesthesia [2]. Patients undergoing orthopedic surgery felt anxiety by as much as 52% out of the total sample of 90 people [3].

The effect if the anxiety didn't immediately resolve itself was physiological changes occurring such as fear and uncertainty that affect the prognosis of the disease [3] and healing [4]. During the pre-surgery stage, the patients are exposed to a variety of conditions that trigger the anxiety condition such as incisions, needles, going into the operating room and anesthesia and it is also associated with a lack of awareness or control, medical errors and the ongoing consequences of the surgery, discomfort after surgery, privacy, quality of care and so on. Anxiety can change the patient's thoughts, cognitive, feelings and behavior [5].

Surgical preparation and postoperative care are very important in order to reduce the risk factors and complications. Health education provided to operating patients is a standard of care that must be done to fulfill their belief in healing. Preoperative education can also correct misunderstandings, give

the patients a sense of control over their role and responsibilities in terms of their care and it can contribute to positive surgical outcomes [6].

Many studies conducting an assessment of preoperative health education on anxiety levels used the face-to-face method, video and booklet methods, but there had been no previous systematic review discussing the effect of preoperative education on anxiety for those undergoing surgery so then health care workers can provide these interventions to the patients undergoing surgery. The purpose of this systematic review was to determine the effect of preoperative education on the anxiety level of patients undergoing surgery.

2. Method

This systematic review used a guide based on the Preferred Reporting Item for Systematic Reviews and Meta-Analyzes (PRISMA) guidelines ***[7].***

2.1 Literature search strategy

Using electronic databases, such as Scopus, PubMed and Science Direct with the publication copyright between 2014 and 2019, the search was carried out with "education", "preoperating" and "anxiety" as the main keywords. All of the databases were searched from 2014 through to January 2019, using the PICOS framework to identity the keywords themselves.

2.2 Inclusion and exclusion criteria

The inclusion criteria for this systematic review were English language journals and where the research subject was adults undergoing surgery. Randomized controlled trials, quasi-experiments and pilot studies were included in this review. The main outcome measured was the level of anxiety in preoperative patients who were older than 18 years of age.

2.3 Study selection

The titles and abstracts were independently screened by the reviewer against the inclusion criteria. The reviewer assigned the inclusion codes of yes, no or unsure. The full text articles were then obtained and assessed for eligibility. The reviewers compared the screening results and discussed any disagreements regarding the study eligibility.

3. Result

A total of 2604 articles were found using the selected keywords. Screening was then carried out by looking at the titles and abstracts obtained of the 603 articles. There were 14 articles that met the criteria of this input using the keywords "education", "preoperating" and "anxiety". The articles used were heterogeneous in terms of their research designs. There were several findings related to various pre-operative educational interventions.

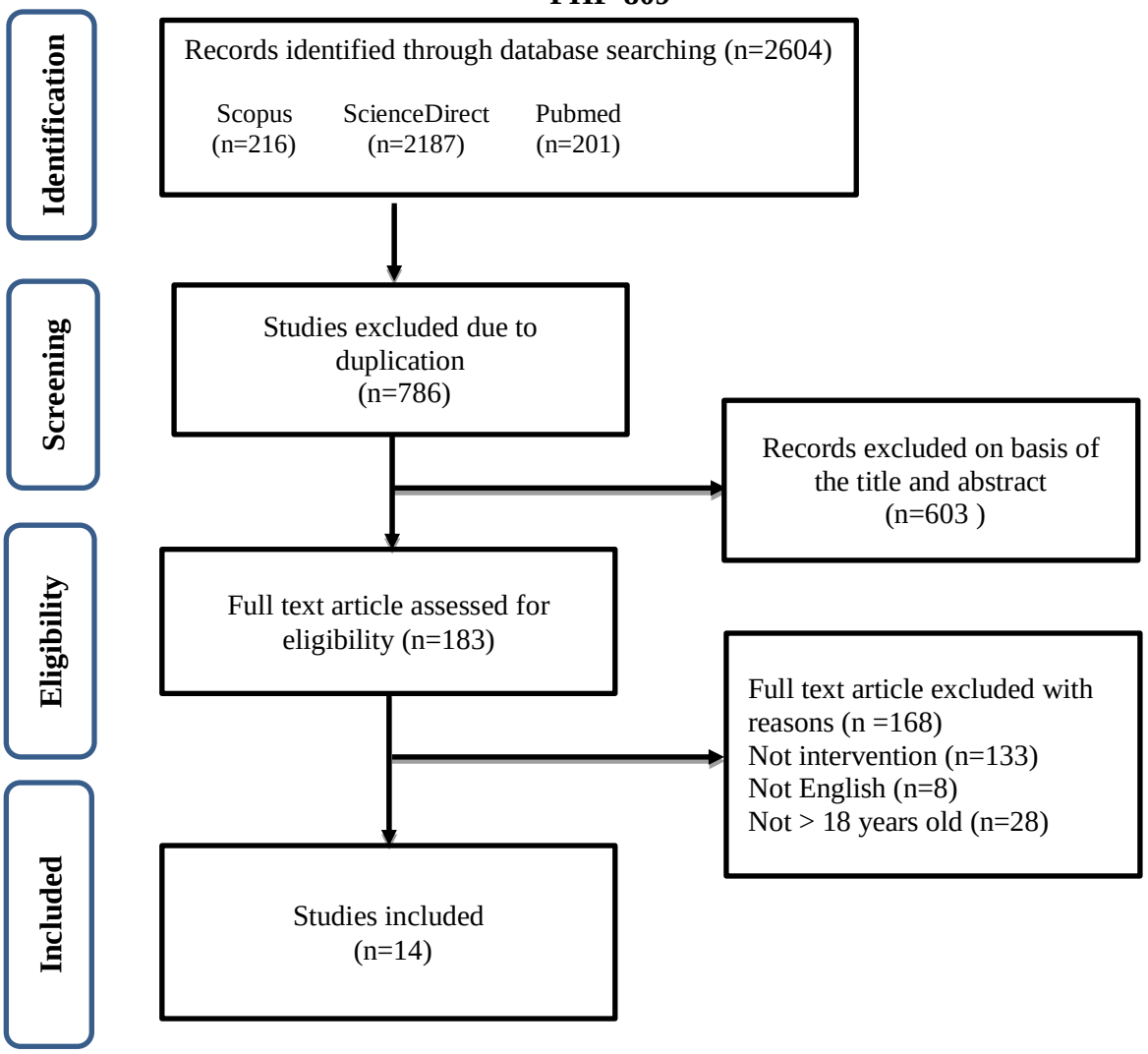

Figure 1. Study inclusion based on the preferred reporting items for systematic reviews

The total respondents in the selected literature were 2482 respondents in the range of 20600 - 1364 respondents per study. The respondents were between the ages of 18 - 60 years old. The PICOT table shows the characteristics and interventions carried out in the study. Some of the articles used video, booklet and multimedia methods; 14 articles were included in this review.

4. Discussion

The majority of the articles reviewed showed that preoperative education can reduce anxiety in the patients undergoing surgery. There was only one article that said that the education given to the patients scheduled for thyroid surgery using written ingredients did not affect their anxiety [6]. Some of the media used in preoperative education have also proven to be effective at reducing the patient's level of anxiety. In the patients undergoing surgery, the hemodynamic value was lower in the group receiving preoperative education compared to the group that did not receive preoperative education [8]. Likewise in cervical herniation and the patients undergoing surgery, the results of the integrated education are more effective than conventional models at reducing patient anxiety and uncertainty[4]. The video method, via a 5-point Likert Scale score for measuring postoperative satisfaction, was found to be significantly different between the two groups [1]. There were significant differences between the mean scores of the verbal booklet groups and education [5]. The instrument used in the

majority of the measurements of anxiety was STAI.

During the preoperative phase, the patients are exposed to various conditions that trigger anxiety. This condition is often because of needles and incisions, going into the operating theater, the anesthesia and the associated lack of awareness or control, medical mistakes and on-going consequences of surgery, discomfort after surgery, privacy, quality of care and so on. Anxiety can change one's thoughts, cognitive, feelings and behaviors. It is associated with postoperative pain and it has been shown that it can reduce the safety of the body and delay recovery [5]. Preoperative anxiety and fear may lead to increases in the levels of the stress hormones, resulting in undesirable metabolic responses before anesthesia, including high systemic catecholamine levels that result in increased arterial blood pressure and heart rate [8]. Preoperative anxiety has been classically related to the patient's concerns about disease, hospitalization, anesthesia and the surgery itself. Moreover, fear of the unknown is one of the most important sources of anxiety among surgical outpatients presenting in the pre-anesthetic consultation, especially before invasive surgery [8]. Short-term psychological interventions may prevent preoperative anxiety in cancer patients [8]. Preoperative anxiety has been shown to be reduced when additional anesthesia information in print and video format is made available prior to surgery [8]. Audio visual media is a type of media used in learning activities involving both hearing and sight in one process or activity [9]. The advantage of video-based education is the ability to create continuity in the data storage, easy application and cost effective [10]. Education using video or audio visual media can be as effective as using the face to face method [11]. The previous studies have shown that a preoperative education video on anesthesia can increase the patient´s knowledge about the surgical procedure and it enhances the patient's education, thus reducing preoperative anxiety [12].

5. Funding

This systematic review explains that education in the form of an intervention before the operation is very effective when it is given to reduce the levels of anxiety in the patients undergoing surgery. Preoperative education is very important to improve the health status of the postoperative patients. Media that can be used in delivering education such as videos, booklets and other multimedia have already been proven to be effective. Preoperative patients are given education with written, verbal and video methods to reduce their anxiety levels which are mostly measured using the STAI instrument. The most effective way to reduce anxiety levels is to use a combination of verbal and video methods.

References

[1] Cakmak M, Kose I, Zinzircioglu C, Karaman Y, Tekgul Z T, Pektas S, Balik Y, Gonullu M and Bozkurt P S 2018 Effect of video-based education on anxiety and satisfaction of patients undergoing spinal anesthesia *Brazilian J. Anesthesiol.* **68** 274–9

[2] Ortiz J, Wang S, Elayda M A and Tolpin D A 2015 Preoperative patient education: can we improve satisfaction and reduce anxiety? *Brazilian J. Anesthesiol. (English Ed.* **65** 7–13

[3] Lee C H, Liu J T, Lin S C, Hsu T Y, Lin C Y and Lin L Y 2018 Effects of Educational Intervention on State Anxiety and Pain in People Undergoing Spinal Surgery: A Randomized Controlled Trial *Pain Manag. Nurs.* **19** 163–71

[4] Chuang M F, Tung H H, Clinciu D L, Huang J S, Iqbal U, Chang C J, Su I C, Lai F C and Li

Y C 2016 The effect of an integrated education model on anxiety and uncertainty in patients undergoing cervical disc herniation surgery *Comput. Methods Programs Biomed.* **133** 17–23

[5] Amini K, Alihossaini Z and Ghahremani Z 2018 Randomized Clinical Trial Comparison of the Effect of Verbal Education and Education Booklet on Preoperative Anxiety *J. Perianesthesia Nurs.* 1–8

[6] Gezer D and Arslan S 2018 The Effect of Education on the Anxiety Level of Patients Before Thyroidectomy *J. PeriAnesthesia Nurs.* 1–7

[7] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration *PLoS Med.* **6** e1000100

[8] Lemos M F, Lemos-Neto S V., Barrucand L, Verçosa N and Tibirica E 2018 Preoperative education reduces preoperative anxiety in cancer patients undergoing surgery: Usefulness of the self-reported Beck anxiety inventory *Brazilian J. Anesthesiol.* 6–11

[9] Arsyad A 2011 *Media Pembelajaran* (Jakarta: PT Raja Grafindo Persada)

[10] MoemenNasab M, Rahemi S, Ayatollahi A and Aeen M 2002 The Effect of Video-Based Instruction on Student's Cognitive Learning *J. Med. Educ.* **1**

[11] Moonaghi H K, Hasanzadeh F, Shamsoddini S, Emamimoghadam Z and Ebrahimzadeh S 2012 A comparison of face to face and video-based education on attitude related to diet and fluids: Adherence in hemodialysis patients **17**

[12] Leino-kilpi H, Lund T and Montin L 2017 Increased preoperative knowledge reduces surgery-related anxiety : a randomised clinical trial in 100 spinal stenosis patients

PHP-821

FACTORS RELATED TO NURSING JOB SATISFACTION: A SYSTEMATIC REVIEW

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ABSTRACT

Job satisfaction is an important thing related to nurse performance, also related to increasing patient satisfaction. The purpose of this article is to identify factors that are related to nurse job satisfaction. The author conducts a review of the relevant literature using the keywords "job satisfaction, nursing, factors". The source of the articles used is obtained from the search through limited Scopus starting from 2015 to 2017. The results of these reviews produce factors related to nurse job satisfaction namely leadership style, praise from superiors, autonomy, circumstances, work environment, desire to keep working, aggression in the workplace, psychological stresses, social capital, organizational commitment, nursing organizational culture, nurse collaboration - doctors, practical safety, long shift, quality nurse's life, supervisor's emotional support, social support, work involvement, and racial differences.

Keywords: Job satisfaction, nurse performance

1. Introduction

Health care facilities have the main task of providing quality and safe health services for the community. Nurses provide a huge contribution by facilitating the comprehensive health services offered to the clients. The nurses must be professional when carrying out their work in terms of providing nursing care. With this work, the nurses are expected to get job satisfaction. The nurses can be interpreted as human resources when providing health services in the hospitals because the number of nurses is dominant compared to the other types of health worker. Nurses are professions that provide continuous health services and they often interact with patients over 24 hours. Therefore, nursing services contribute to determining the quality of care for a hospital. In terms of improving the quality of the nursing services provided, one of the methods is by trying to improve the performance of the nurses. Satisfaction is a model of the gap between expectations (supposed performance standards) and the actual performance obtained by the consumers or customers. Job satisfaction is a positive or pleasant emotional state in work that is related to welfare[4]. Job satisfaction is a multi-dimensional concept that is influenced by several factors such as demographic characteristics, organization-related variables and other turnover relationships.

2. Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement[16].

2.10Data Sources and Searches

The literature used in this Systematic Review consisted of 3 electronic databases, namely Scopus, MEDLINE and CINAHL. The search was limited to the last 4 years between 2015 and 2018.

2.11Study Selection

The protocol standard for selecting the research studies was PRISMA followed by screening to remove any duplication. Then the researcher conducted title-based and abstract screening for the elimination of articles with irrelevant topics. The articles found were then identified based on the inclusion criteria (eligibility criteria) that were determined by reading the text as a whole. Articles that met the criteria were used in the systematic review.

Literature Search

In this article, the authors conducted a relevant systematic review in variously of data used the keywords “job satisfaction”, “organizational factors” and “nursing”.

3. Result

3.1 Study Size

A total of 13 articles were identified to be included in this systematic review. Searching through the Scopus, MEDLINE and CINAHL found 338 articles. After the duplication screening, there were 285 articles left. Of these, 257 articles were eliminated because of irrelevant topics. The full text article identified and eliminated as many as 25 articles on the grounds that it was a review article, the publication was not in English, the research design was not correlational and the outcomes are irrelevant. A total of 13 articles met the criteria for a systematic review.

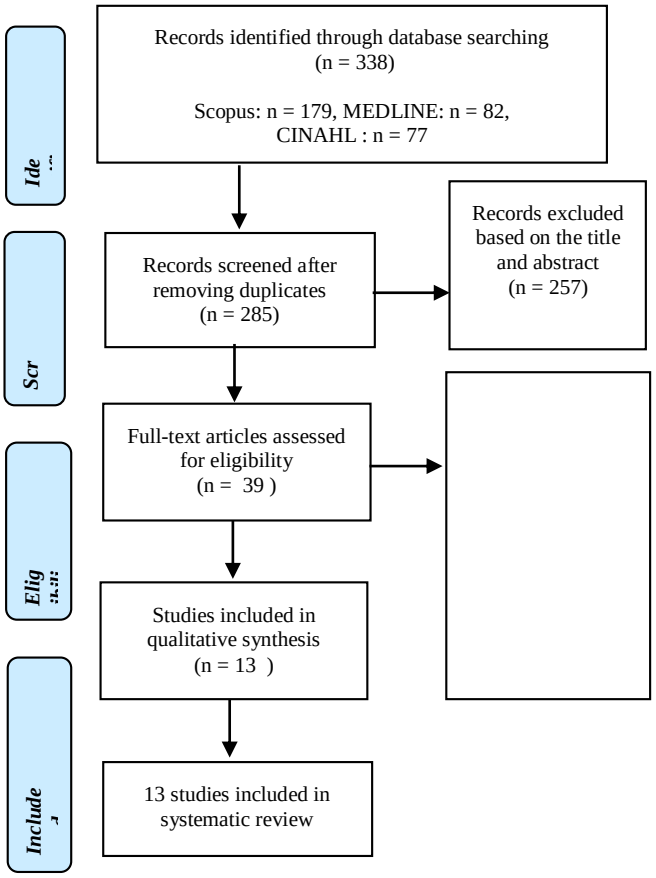

Figure 1. Flow Diagram

3.2 Study Characteristics

The total of 13 studies reviewed were published between 2015 - 2018 and they were conducted in 13 countries: South Korea, European Union, Italy, Palestine, United States, Iceland, Jordan, the USA, Iran and Belgium. The research design of the 13 selected articles was a cross sectional design. The nurse participants consisted of nurses who worked in hospitals. The outcome of the articles reviewed consisted of 2 groups of factors related to nurse job satisfaction, namely individual factors and organizational factors.

4. Discussion

Nurses are a professional that provides continuous health services and they often interact with patients around the clock. Therefore, nursing services make a big contribution in determining the quality of care provided by a hospital. In improving the quality of nursing services, one of ways to do this is by trying to improve the performance of the nurses themselves. Job satisfaction is an important thing related to nurse performance and it is also related to increasing patient satisfaction. The purpose of this systematic review was to explain the factors that are related to nurse job satisfaction so then they can be used get important knowledge in order to optimize nurse performance.

The research examined in this article all used descriptive cross-sectional methods to determine the factors related to nurse job satisfaction. The respondents in this research review were nurses in several

hospitals in various countries. The research was conducted to determine the factors related to nurse job satisfaction, namely leadership style, praise from their superiors, autonomy, circumstances, the work environment, workplace aggression, psychological stresses, social capital, organizational commitment, organizational culture, collaboration, practical safety, shift length, supervisor emotional support and social support.

The role of the supervisor's emotional support refers to the employees' beliefs about the extent to which their supervisors care about them and value the contribution of their work. Employees will see favorable or unfavorable treatment from their supervisor as an indication of perceived and accepted support. Supervisor support is recognized as an important source of employee satisfaction. Such support is often divided into two, namely instrumental support and emotional support. Supervisors provide instrumental support by providing information related to their work and feedback. Supervisors can also provide emotional support to help their employees manage their emotions. Such support includes sympathy, attention, comfort and encouragement. At the individual level, supervisor emotional support is positively related to job satisfaction. For supervisor emotional support at the group level, there is a positive relationship between job satisfaction and work involvement at the individual level[9].

In the past few decades, there has been an increase in the number of hospitals that apply 12 hours per shift, namely day and night. However, a 12 hour shift or more significantly allows for poor quality care and a decrease in patient safety when compared to the nurses who work an 8 hour shift. In addition, it also increases the error rate when working a 12 hour shift compared to shorter shifts. This is because working continuously without adequate rest between shifts can increase fatigue and this can pose a safety threat[2].

As a diverse health workforce can encourage greater cultural health, better service support and diverse population cultures, it should also be associated with greater job satisfaction in care. Nurses who are of a minority face more barriers to promotion and progress in their careers than white nurses[3].

Job satisfaction in each of these studies was measured using several questionnaires, including the *JSS* (*The Job Satisfaction Scale*)[11,[7], *Global Job Satisfaction* by Shepard[[8], the *General Job Satisfaction Scale*[6], Sheingold and Sheingold's questionnaire [10], *the Organizational Satisfaction Questionnaire* by Cortese[1], the *Job Descriptive Index / Job in General* (*JDI/JIG*) [11] and *the Index of Work Satisfaction* by Cortese (2007) and Stemps (1998)[[3].

This systematic review has implications for nursing practices. The results of several of these studies are intended to improve the working conditions through effective measures, such as flexibility in the work shifts, utilizing the nurses' skills to the maximum, the appropriate division of shift hours, scheduling, adequate staff, good quality collaborations with doctors, clear definitions regarding their job descriptions and assignments, reward systems / work praise, an appropriate leadership style, good quality of life, the determination of appropriate wages, high practice safety, encouraging nurse participation in organizations and decision making, creating a satisfying work environment, paying attention to the emotional responses of the nurses and encouraging them to keep their job.

Nursing administrators, policy makers and the heads of professional associations need to institutionalize appropriate policies and regulations to reduce the conflict between as many work and family lives as possible. They also need to develop workplace policies that target the identification, management and prevention of both work subtypes and conflict. Organizations must strive to develop

policies to balance work against cultural differences. This also requires attention and an intervention from the nurses, nurse educators, researchers, administrators and policy makers to deal with the conflict.

In addition, this study provides additional evidence of the benefits that hospitals can achieve and obtain through staff emotional support. This suggests the importance of promoting a healthy work environment through education and supervisor training to increase the support for the nurse's work and to improve the communication between the nurses and their supervisors. Therefore, this study provides valuable insights for the hospital health managers who must consider supervisor emotional support as an effective means of nurse welfare.

The aforementioned is an effort to improve the work satisfaction of all nurses, in order to influence the desire of the nurses to keep working and to prevent nurse turnover. In addition, it is important for an organization to carry out a management strategy to improve the high quality of the nurse-doctor collaboration so then the nurses are able to work effectively with their colleagues, improve the quality of the nursing services and increase the number of patients accessing quality health services.

5. Conclusion

The results of the systematic review focused on the research conducted in 15 journals about the factors related to nurse job satisfaction included leadership style, praise from their superiors, autonomy, the work environment, the desire to keep working, aggression in the workplace, psychological stress, social capital, organizational culture, collaboration, practical safety, long shifts, supervisor emotional support and social support.

References

[1] Galletta M, Portoghese I, Carta M G, D'Aloja E and Campagna M 2016 The Effect of Nurse-Physician Collaboration on Job Satisfaction, Team Commitment, and Turnover Intention in Nurses *Res. Nurs. Heal.***39** 375–85

[2] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Gøtzsche P C, Ioannidis J P A, Clarke M and Devereaux P J 2009 *The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions : explanation and elaboration* vol 62

[3] Pohl S and Galletta M 2017 The role of supervisor emotional support on individual job satisfaction: A multilevel analysis *Appl. Nurs. Res.***33** 61–6

[4] Ball J, Day T, Murrells T, Dall'Ora C, Rafferty A M, Griffiths P and Maben J 2017 Cross-sectional examination of the association between shift length and hospital nurses job satisfaction and nurse reported quality measures *BMC Nurs.***16** 26

[5] Doede M 2017 Race as a predictor of job satisfaction and turnover in US nurses *J. Nurs. Manag.***25** 207–14

[6] Sveinsdóttir H, Ragnarsdóttir E D and Blöndal K 2016 Praise matters: The influence of nurse unit managers' praise on nurses' practice, work environment and job satisfaction: A questionnaire study *J. Adv. Nurs.***72** 558–68

[7] Orgambídez-ramos A and Almeida H De 2017 Work engagement , social support , and job satisfaction in Portuguese nursing staff : A winning combination *Appl. Nurs. Res.***36** 37–41

[8] Al-hamdan Z, Manojlovich M and Tanima B 2016 Jordanian Nursing Work Environments ,

Intent to Stay , and Job 1–8

[9] Jaradat Y, Nielsen M B, Kristensen P, Nijem K, Bjertness E, Stigum H and Bast-Pettersen R 2016 Workplace aggression, psychological distress, and job satisfaction among Palestinian nurses: A cross-sectional study *Appl. Nurs. Res.***32** 190–8

[10] Shin J I and Lee E 2016 The effect of social capital on job satisfaction and quality of care among hospital nurses in South Korea *J. Nurs. Manag.***24** 934–42

[11] Ibrahim N K, Alzahrani N A, Batwie A A, Abushal R A, Almogati G G and Abdulrahman M 2016 Quality of life , job satisfaction and their related factors among nurses working in king Abdulaziz University Hospital , Jeddah , Saudi Arabia *Contemp. Nurse***0** 1–13

[12] Abdelhafiz, I. M., Alloubani, A. M. D., & Almatari, M. (2016). Impact of leadership styles adopted by head nurses on job satisfaction: A comparative study between governmental and private hospitals in Jordan.

[13] Athey, E. K., Assistant, R. N., Leslie, M. S., Assistant, C. N. M., Briggs, L. A., Assistant, A., … Greene, J. (2016). How important are autonomy and work setting to nurse practitioners ' job satisfaction ?, *28*, 320–326. https://doi.org/10.1002/2327-6924.12292

[14] Hurtado, D. A., Kim, S. S., Subramanian, S. V., Dennerlein, J. T., Christiani, D. C., Hashimoto, D. M., & Sorensen, G. (2017). Nurses' but not supervisors' safety practices are linked with job satisfaction. *Journal of Nursing Management*, 1–7. https://doi.org/10.1111/jonm.12484

[15] Morsiani, G., Bagnasco, A., & Sasso, L. (2017). How staff nurses perceive the impact of nurse managers' leadership style in terms of job satisfaction: a mixed method study. *Journal of Nursing Management*, *25*(2), 119–128.https://doi.org/10.1111/jonm.12448

[16] Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions : explanation and elaboration. 2009;**69**

3.3 Description of the study characteristics, outcomes, measurements, interventions and results.

First Author (Year)	Title	Study Characteristic	Outcome and Measurement	Results
Abdelhafiz (2015)	Impact of Leadership Style Adopted by Head Nurses on Job Satisfaction: a Comparative Study Between Governmental and Private Hospitals in Jordan.	3. Quantitative, *cross-sectional*, komparatif and correlasionaldesain 4. 225 respondents	1. Descriptive statistics for the demographic data, MLQ and job satisfaction. Differences between the groups were identified using a T-test and ANOVA. 2. Identify the strength of the relationship between 2 continuous variables with the Pearson Product-Moment correlation	1. Transformational leadership is more widely used by the nurse head managers. 2. The level of job satisfaction between the nursing staff in public hospitals is higher than in private hospitals. 3. There is a positive relationship between transformational leadership and nurse job satisfaction. 4. There is a positive correlation between transactional leadership and nurse job satisfaction. 5. There is a negative correlation between passive-avoidant leadership and job satisfaction.
Sveinsdottir, et.al (2015)	Praise Matters: The Influence of Nurse Unit Managers' Praise on Nurses' Practice, Work Environment and Job Satisfaction: a Questionnaire Study is especially important to frail older people	3. *Cross-sectional explorative survey design* 4. 383 nurses in the surgery room	1. Job satisfaction questionnaire (JSS / The Job Satisfaction Scale) 2. Professional practice questionnaires (PPS- / The Professional Scale – Opportunities and PPS-IO / The Professional Practice Scale-Importance of Opportunities) 3. Workload questionnaire (WLS / The Work Load Scale). 4. Work climate questionnaire 5. Questionnaire on organizational commitment	Nurses who receive frequent praise very often show a high level of job satisfaction.
Athey, et.al (2016)	How Important are Autonomy	3. *Cross-sectional* 4. 8311 practicing nurses licensed	1. Questionnaire on the social-	1. There is a relationship between autonomy and the working conditions.

	and Work Setting to Nurse Practitioner's Job Satisfaction ?	from several countries in the United States	demographic characteristics. 2. Questionnaire with 5 dependent variables that measures the aspects of nurse job satisfaction. 3. Autonomy aspect questionnaire (list of arrangements, approval of the utilization of nursing skills, relationship with doctors in nurse practice) 4. Questionnaire aspects focused on the working conditions (type of practice and specificity)	2. There is a significant relationship between autonomy and nurse job satisfaction. 3. There is a significant relationship between the working conditions and job satisfaction. 4. The highest satisfaction is in the indicators of nurse skills that are maximally utilized. The working conditions show a low level of relationship with job satisfaction.
Al-Hamdan, et. al (2016)	Jordanian Nursing Work Environments, Intent to Stay and Job Satisfaction	3. *Quantitative descriptive cross-sectional survey design* 4. 650 registered nurses working in 3 hospitals in Jordan	1. Questionnaire on the social-demographic characteristics. 2. Questionnaire about the nurse's work environment (The PES-NWI). 3. Questionnaire about the desire to keep working (The McCain Intent to Stay Scale). 4. Questionnaire about job satisfaction (Shepard's (1974) Global Job Satisfaction).	1. There is a positive relationship between the work environment and nurse work satisfaction. 2. There is a positive relationship between the nurse's work environment and the desire to keep working. 3. There is a positive relationship between the work environment, the desire to keep working and nurse job satisfaction.
Jaradat, et. al (2016)	Workplace Aggression, Psychological Distress, and Job Satisfaction among Palestinian Nurses : A Cross-Sectional Study	3. *Cross sectional* 4. 372 nurses	1. Questionnaire on the social-demographic characteristics. 2. Questionnaire about workplace aggression (WHO). 3. Questionnaire about psychological pressure (General Questionnaire, GHQ-30). 4. Questionnaire about job	1. Exposure to verbal aggression is most commonly received by the nurses in the workplace. Patients and the patients' families are the main source of aggression. Men have the highest percentage of exposure to aggression. Younger nurses have a higher exposure to aggression. 2. There is a relationship between exposure to workplace aggression,

			satisfaction (Generic Job Satisfaction Scale).	psychological distress and nurse job satisfaction.
Jilin Shin &Eunjooee, (2016)	The Effect of Social Capital on Job Satisfaction and Quality of Care among Hospital Nurses in South Korea	3. *Cross-sectional correlational design* 4. 432 nurses from 2 teaching hospitals in South Korea	1. Social capital questionnaire (The Social Capital Outcome for Nurse (SCON)). 2. Job satisfaction questionnaire (Sheingold and Sheingold (2013)). 3. The QoC questionnaire with Service Quality (SERVQUAL) was developed Parasuraman (1994) and revised Lee (2005) in Korean.	a. Nurses have a higher level of trust, cohesiveness, and closeness with their colleagues in the workplace but their external trust is lower in the executive section of the hospital and others. b. The level of social capital is significantly different from the length of clinical practice and the length of their career in the unit. c. There is a positive relationship between social capital, job satisfaction and service quality.
Kim, et.al (2016)	The Impact of Organizational Commitment and Nursing Organizational Culture on Job Satisfaction in Korean American Registered Nurses	1. *Cross-sectional design* 2. 163 Korean American Registered Nurses (KARNs) who work in US hospitals	1. Job satisfaction questionnaire with a job satisfaction index. 2. The nursing organization culture questionnaire was developed by Yang (1998) and modified by Lee (2003). 3. The organizational commitment questionnaire was developed by Mowday, Steers, and Porter (1779) and revised by Kim (1986).	1. Organizational commitment has the highest mean score, followed by job satisfaction and there is a slightly lower level of organizational culture. 2. There is a significant relationship between organizational commitment, the organizational culture of nursing, marital status and the workplace with job satisfaction. 3. Organizational commitment is the strongest variable related to job satisfaction, followed by organizational culture.
Galleta, et.al (2016)	*The Effect of Nurse-Physician Collaboration on Job Satisfaction, Team Commitment, and Turnover Intention in Nurses*	1. *Cross-sectional study* 2. 1,024 nurses in 72 units from three hospitals in Italy	1. Questionnaire about job satisfaction (The Organizational Satisfaction Questionnaire validated by Cortese (2001)). 2. Questionnaire about team affective commitment (The Organizational	1. There is a relationship between job satisfaction and the intention to leave with affective commitment. 2. There is a positive relationship between nurse-doctor collaborations with the team's affective commitment. 3. There is a positive relationship between

			Commitment Questionnaire validated by Pierro, Tanucci, Cavalieri, and Ricca's (1992)). 3. Questionnaire about intention to leave the unit (Hom, Griffeth, &Sellaro (1984)). 4. Doctor-nurse collaboration questionnaire (The Nursing Work Index-Revised (Aiken & Patrician, 2000)).	nurse-doctor collaborations and the level of job satisfaction with the team's affective commitment.
Morsiani, et.al (2016)	How Staff Nurses Perceive The Impact of Nurse Managers' Leadership Style in Terms of Job Satisfaction : a Mixed Method Study	1. *Mixed Method Study* 2. 87 staff nurses from the Department of Internal Medicine from 3 acute hospitals in Northern Italy (Genoa, Modena and Florence)	1. The Multifactor Leadership Questionnaire (MLQ) questionnaire by Bass and Avolio (1995) based on the Full Range Leadershio Development Theory. 2. Focus group with semi-structured questions.	The leadership style that is mostly related to nurse job satisfaction is transformational leadership style
Hurtado, et.al (2017)	Nurses but not Supervisor Safety Practices are Linked with Job Satisfaction	1. *Cross-sectional study* 2. 1052 nurses in 94 units from 2 hospitals in Boston	1. Job satisfaction questionnaire (response variable). 2. Safety practice questionnaire (predictor variable).	1. The value of supervisor safety practices is better than their unit staff. 2. Job satisfaction was higher for the nurses in units with better safety practices than for the nurses in units whose average safety practices were lower.
Jane Ball, et. Al (2017)	Cross-Sectional Examination of The Association Between Shift Length and Hospital Nurses Job Satisfaction and Nurse Reported Quality Measure	1. *Cross-sectional* 2. 2917 nurses from 12 European Union countries and 3 international partner countries outside of Europe	The questionnaire was closed (practical environment, staff and number of patients at the last working shift, quality and safety measures, frequency of side effects, no final treatment, job insecurity and working hours).	a. The duration of the shift is significantly related to the low quality of nursing services. b. There is a significant relationship between job dissatisfaction and the length of the nurse's shift. c. The cancellation of the remaining care measures in higher levels for nurses working> 12 hours.
Pohl &Galleta (2017)	The Role of Supervisor Emotional	1. *Cross-sectional study*	1. Job satisfaction questionnaire (The Index of Work	There is a significant relationship between the supervisor's emotional support

	Support on Individual Job Satisfaction : a Multilevel Analysis	2. 323 nurses from 3 hospitals in Belgium	Satisfaction (Cortese, 2007; Stamps, 1998)). 2. Work engagement questionnaire (Utrecht Work Engagement Scale / UWES: (Schaufeli et al., 2006)). 3. Nurse's emotional support questionnaire; The Perceived Organizational Support (POS) scale (Eisenberger, Huntington, Hutchison, & Sowa, 1986)	and the level of nurse job satisfaction.
Orgambídez-Ramos & Almeida (2017)	Work Engagement, Social Support, and Job Satisfaction in Portuguese Nursing Staff : a Winning Combination	1. Cross-sectional study, descriptive, correlational 2. 215 nurses from 3 hospitals in Portugal	1. Social support questionnaire (The Job Content Questionnaire (JCQ)). 2. The Work Scale (UWES) questionnaire. 3. Questionnaire about job satisfaction (The Job Satisfaction Scale (JSS))	1. There is a positive relationship between social support and job satisfaction. 2. There is a positive relationship between work involvement and job satisfaction.

PHP-830

INTERVENTIONS FOR IMPROVING MANAGEMENT OF HYPERTENSION IN THE COMMUNITY SETTING: A SYSTEMATIC REVIEW

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ABSTRACT

Hypertension management is an effort used as a comprehensive control of hypertension. These efforts need to be carried out routinely and consistently in order to maintain the patient's health condition. Some interventions were carried out to improve hypertension management capabilities on patients with hypertension. This study aimed to examine what interventions could be done to improve hypertension management in the community. Articles were collected by implementing five stages i.e. (1) determining the topic, (2) identifying keywords, (3) identifying articles in accordance with the research topic, (4) identifying articles based on predetermined inclusion criteria, (5) analyzing search results. The search results found 15 relevant articles from Scopus, EBSCO, and Proquest with experimental designs and diverse interventions to improve hypertension management. There were several interventions used to improve hypertension management implementing both electronic media and manual to involve families and groups such as follow-up from health workers, health coaches, group-based programs, family members based, telehealth, and empowerment.

Keywords: self-management, hypertension, community

1. Introduction

Hypertension is one of cardiovascular diseases that is still a health problem globally. The prevalence of hypertension is estimated to increase every year. The data collected by the American Heart Association in 2017 showed that the number of patients with hypertension is increasing for men aged 20 - 44 years, from 11% to 30%, while the number of women who are younger than 45 years old has risen from 10% to 19% [1]. The prevalence of adults with hypertension is estimated to reach 1.56 million by 2025.

Hypertension is often called the silent killer because it is an unexpected disease with uncertain causes. It can cause potential complications if it is not controlled properly. Uncontrolled hypertension can lead to complications that can be compared to other diseases. It can even cause death. The WHO estimates that 7.4 million people die each year due to the complications of coronary heart disease while 6.7 million people die because of stroke [1]; 9.4 million people die each year in the world caused by a complication of hypertension [2]

Although hypertension develops slowly and surely, some efforts can be undertaken to control blood pressure. The management of hypertension can be done as one of the efforts to control hypertension in order to prevent the complication of other diseases [3]. The management of hypertension includes giving a combination of drugs and enhancing the lifestyle modifications i.e. limiting their salt intake, exercise, having a rest, controlling stress, regular treatment and checking

their blood pressure routinely [1] . Low awareness and poor willingness to improve their health condition is still a problem when it comes to managing hypertension [4] .

We synthesized several studies focused on the interventions that can be done to improve the management of hypertension and who could be involved in this effort. We reviewed quantitative type research to examine which interventions could be used to improve hypertension self management.

2. Methods

2.1 Literature search strategy

This study started through a search for articles in the Scopus, Proquest and Ebsco databases that took place February 8th through to February 23rd. The articles were limited to the last 5 years for publication, from 2014 to 2019, with keywords such as "self-management" AND "hypertension" AND "community". The studies were also limited to the areas of nursing articles written in English.

2.2 Inclusion and exclusion criteria

2.2.1 Study Design. The articles were chosen through an experimental study that was published in the reputation database that was reviewed in English.

2.2.2 Population. The population criteria of this study were patients with hypertension aged greater than or equal to 18 years old, inclusive of both men and women.

2.3 Intervention

The actions given were in the form of nursing interventions in the patient's community. Some of the articles formed a class for the purpose of health coaching, education and the simulation of a lifestyle that can be applied to the patients. All of the interventions involved the families, groups and the sufferers in order to improve the management of hypertension in the study group. In contrast, in the control group, only standard interventions such as the provision of knowledge without any other intervention that could support the expected goals were implemented.

2.4 Clinical outcomes

The criteria of the results expected from intervention were measured using the Hypertension Self-Management Form score and a blood pressure monitor.

3. Results

3.1 Selection Criteria and Process

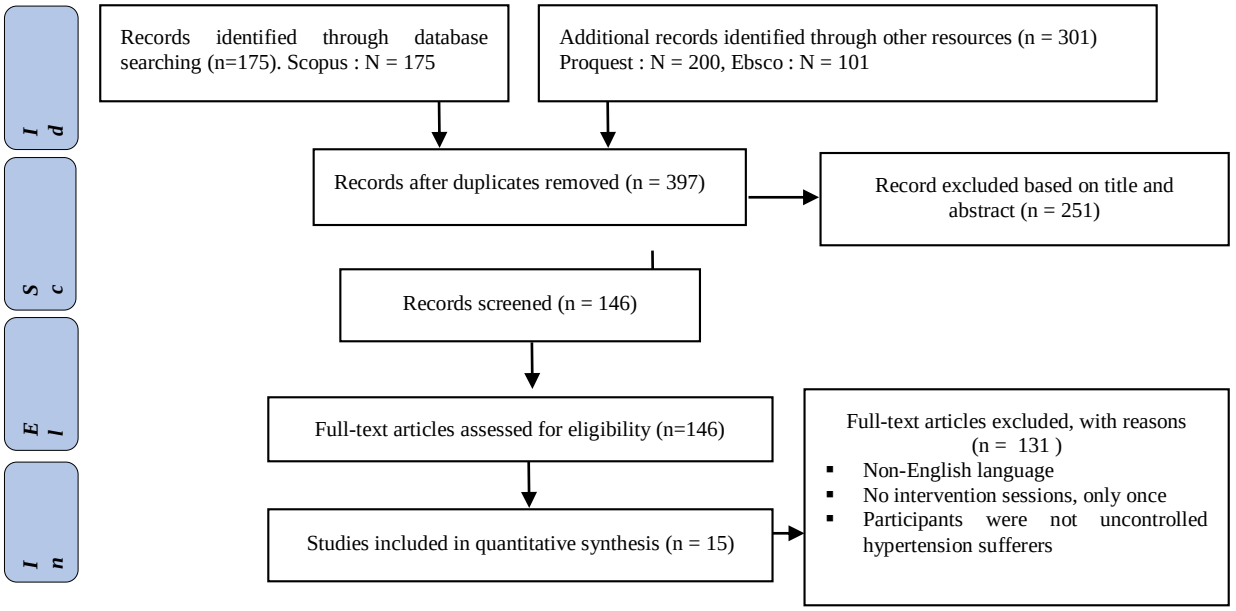

Figure 1. PRISMA study flow diagram

The selection of the articles was based on a predetermined topic, related to the nursing interventions in order to improve the management of hypertension in the community area. After obtaining 476 articles that matched the keywords, the reviewers filtered the editorial titles in order to find out if there were duplicate journals. After deleting the duplicate journals, the reviewer sorted out the articles according to the predetermined inclusion and exclusion criteria. Next, the reviewer read the full text to ascertain whether the articles were in accordance with the systematic review that would be done by the reviewer. There were 15 selected articles: [5], [6], [7], [8], [9], [4], [10], [11], [12], [13], [14], [15], [16], [17] and [18] . These articles were in accordance with the criteria expected by the reviewer (Figure 1). The total respondents involved in this systematic review were 2.731.

3.2 Kind of Intervention

The interventions carried out in this systematic review consisted of several types: health coaching [5] [6]; [10], mobile phone monitoring [7]; [8]; [11]; [13]; [14], an education program and improving the management program of hypertension overall [9]; [12]; [16]; [17]; [4]; [15]. All of the interventions were carried out by the people around the patient and they involved the patients directly so then they were active in the programs. The supervision was carried out by nurses and other health workers.

3.3 Result Measurement

There were several types of instrument used to measure hypertension self-management abilities after being given the intervention: The Perceived Competence Scale for Hypertension Self-Management [5], blood pressure [16]; [6]; [8]; [10]; [18], the Morisky Medication Adherence Scale (MMAS-8) [6]; [18], the Hypertension Self-Management Form [4], the Short-form Chronic Disease Self-Efficacy Scale [7]; [4] and self-care behavior [9]; [11].

Table. 1 Type of Study in the Setting up of the *Systematic Review*

Author	Type of Study	Participants	Intervention	Outcome
[5]	Quasi-experimental	146 participants	All of the participants got information about hypertension, physical activity, nutrition, medication management, stress management and an individualized action plan. They were measured at 8 weeks and 16 weeks.	Health coaches for hypertension control (HCHC) could improve the self-management of hypertension among the populations
Yatim et al. (2018)	Quasi-experimental	45 participants	Each educational program about Hypertension Self-Management Education was given for about 2 hours weekly	HSME can improve the knowledge and practices about management hypertension
[19]	Cluster randomized trial	554 participants	The patient and their family were trained and the family had the task of supervision	Family supervision had a positive effect on monitoring blood pressure and taking the antihypertensive medication

Author	Type of Study	Participants	Intervention	Outcome
			related to antihypertensive medication, blood pressure monitoring and seeking professional health care	
Wu et al. (2018)	Quasi-experimental	477 participants	The intervention of Taking Control of Your Blood pressure (TCYB) given through a phone coaching program for 12 months	There was an increase in medication adherence and controlled diastolic pressure
Zhu et al. (2017)	Quasi-experimental, a single-blind randomized controlled trial	134 participants	The study group got a 12 weeks intervention in the form of nurse-led hypertension management: i.e. the delivery system design, decision support, clinical information system and self-management support	1. Decreased blood pressure of the study group 2. Increased self-care of hypertension in the study group
Kim et al. (2016)	Quasi-experimental	95 participants	A wireless self-monitoring program about health behaviors, medication adherence and the control of blood pressure given for 6 months	1. Increased motivation and the management of hypertension 2. Improved health behavior in the patients with hypertension
Shin et al. (2016)	Quasi-experimental,	77 participants	12 month intervention through an	The ability of the management of hypertension increased

Author	Type of Study	Participants	Intervention	Outcome
	pre-test-post-test controlled design		Empowerment Program for Self-Management (EPSM) given to the participants	among rural older adults
Kilic (2018)	Quasi-experiment, pre-test-post-test	155 participants	An educational program based on the Roy Adaptation Model supported by the Hypertension Management Guide for 1 hour weekly completed in 6 weeks	4. Patients awareness about hypertension increased 5. Improving the health-promoting lifestyle
Otubuah (2018)	Quasi experimental, pre-test-post test	300 participants	There were 3 sessions every week for 4 weeks on the intervention about health coaching in the self-management hypertension of blood pressure and medication adherence	1. Patients can control their blood pressure 2. Medication adherence was improved by this intervention
Calano et al. (2019)	Quasi-experimental, one group pre-test post-test design	50 participants	Blood pressure monitoring, health education, motivational interviews and house to house visits every 2 weeks for 2 months	This intervention can improve knowledge, motivation, adherence and blood pressure control
Jung & Lee (2017)	Quasi-experimental	64 participants	Intervention of eHealth Self Management based in the	Self-efficacy, self-care behavior and social support increased in the intervention group

Author	Type of Study	Participants	Intervention	Outcome
			community for 24 weeks	
Han & Park (2017)	Quasi-experimental, a one group pre-test post-test design	23 participants	Hypertension Management Program based on Self-Efficacy (HMPS) performed for about 8 weeks	**1.** Self-efficacy didn't have a significant result **2.** Improved knowledge of hypertension management **3.** Blood pressure can significantly be controlled
Pan et al (2018)	Quasi-experimental	110 participants	Home telemonitoring for blood pressure was given for 3 months	This intervention is effective at controlling blood pressure
[20]	Quasi-experimental, non blinded randomized controlled trial	350 participants	The study group used a Hypertension Personal Control Program (HPCP) and a Home Blood Pressure Monitoring device (HBPM) for 6 month	This intervention can support blood pressure monitoring
Maslakpak et al. (2018)	Quasi-experimental, single-blind randomized controlled trial	100 participants	An educational program about the management of hypertension held in 4 months	This intervention gave a significant result in the management of hypertension

3.4 Analysis of the Intervention

3.4.1 Health Coaching. The Health Coaching program could be used in the management of hypertension. It facilitated the control of hypertension, consisting of nutrition, physical activity, smoking, stress management, medication and lifestyle [5]. It has a positive influence on self-monitoring for the management of hypertension because the health workers provided more integrated

health education, focused on the patients and they were involved in providing the patient with support for self-management. The provision of continuous health coaching and follow-ups could help the patients to maintain their hypertension management even though the program had stopped, meaning that the patient's blood pressure could be controlled properly.

The patients felt cared for and fully supported in improving their health by the provision of this program. The intervention helped them to be motivated and it made their health behavior change [10]. Its provision also helped the patients to understand the information needed when doing the admission in the class provided [6]. In addition to providing a positive influence on patients with hypertension, it also helped the coaches to understand the disease. It increased the coach's knowledge and attention to hypertension and lifestyle, so then they would not be affected by the disease [5].

3.4.2 Mobile-phone monitor. The regular monitoring of the behavior and blood pressure of patients with hypertension could help them to control their health behavior. They could interact and consult with the nurses by telephone or through an application [7] . This intervention also provided access to the patients' family and friends to encourage them to support the patent such as through blood pressure monitoring, education about hypertension and positive behavioral changes for managing hypertension [8]. In addition, this intervention could also be used by the patients who live alone. The existence of a mobile-phone monitor helped them to remember what needs to be done and it also facilitated consultation with the health workers even if not face-to-face [11]; [13]. This intervention could be used both as a reminder of the things to do and to take the patient's health record [14].

3.4.3 Program for Improving the Management of Hypertension. The program for improving the management of hypertension provided by the nurses was in the form of education, simulation, counseling and supervision. The education and counseling program provided by the nurses could help patients have a better understanding and knowledge of their current health condition. The education program provided was also not just a lecture but there were also management simulations that could be done every day so then it was easier for patients to understand [4]. The nurse also provided homework that must be completed by the patients [12]. In addition, the supervision carried out by the family also helped them when applying the knowledge obtained from the education program [17]; [15].

This intervention could be carried out by individual patients or in groups formed to facilitate the intervention. Patients with hypertension who are collected into group and given education could increase their awareness and motivation in order to perform good health behavior [16]; [9]. A program given to the community around the patients would also support them in terms of carrying out good health behavior [18].

4. Discussion

There were 15 articles about nursing interventions that can be used to improve the self-management of hypertension. Health coaching had a significant influence on improving the management of hypertension capabilities and controlling blood pressure. There were 3 studies (n = 923) that used health coaching for 16 weeks, 24 months and 4 weeks respectively. There were 5 studies (n = 753) that used mobile-phone monitor interventions for 12 weeks, 24 weeks and 6 months respectively. The last intervention obtained in this systematic review was the management program for hypertension. There were 7 studies (n = 1,004) that used a management program as a form of

hypertension intervention with the support of the family, community and the patients themselves to improve the management of hypertension on health behavior.

The three types of interventions found in this systematic review had a significant influence on knowledge, self-efficacy, motivation, self-management ability and blood pressure control. The intervention involved groups, families and health workers. The analysis of the interventions found that health workers can collaboration with the patients' family and with the community. All of the community-based programs effectively incorporate the trained family and volunteers in order to promote professional information about hypertension and coaching on the health behavior for the patients with hypertension. The patients with hypertension felt cared for and supported, so they were motivated enough to behave to promote their good health. In addition, they also found it easy to access information about hypertension, the about development of their health condition and about what needs to be done in their daily lives as an effort to control hypertension. The surrounding environment involved in systematic review interventions could become a form of supervision or control if the patient is neglectful in managing their hypertension. The follow-up was conducted at least every 2 weeks and regularly after the intervention. This could be used as an evaluation to find out whether the program really affects the patients even though the intervention itself was over.

This study had several limitations. For example, randomized controlled trials were not implemented in all of the research designs. There were a number of articles that did not have a control group, so they could not examine the extent of the influence of the intervention compared to an untreated group. The reviewers were limited to only English being used in the articles, so there might still be other interventions that could improve the management of hypertension that have not yet been analyzed because they used a language other than English.

5. Conclusion

The conclusion of this systematic review was that the management of hypertension could be improved through the interventions of health coaching, mobile-phone monitoring and the improvement of the management program of hypertension including education, simulation, counseling and supervision. In addition, these interventions could also allow the patients to easily control their blood pressure. The involvement of the surrounding environment was very important in terms of supporting the patients to do good self-management so then they could achieve better health conditions. Nurses should use some of these interventions to help to improve the ability of the patients with hypertension to carry out the self-management of hypertension and thus to reduce the likelihood of disease recurrence, the possibility of the condition becoming worse and the complications of other diseases emerging. The nurses must involve and empower the communities around the patients to support and assist the patients in carrying out good health behaviors. Evaluations also need to be done routinely to find out how the health conditions of patients with hypertension develop in the community.

References

[1] Reboussin D M, Allen N B, Griswold M E, Guallar E, Hong Y, Lackland D T, Miller E P R, Polonsky T, Thompson-Paul A M and Vupputuri S 2018 Systematic Review for the 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A

Report of the American College of Cardiology/American Heart Association *Circulation* **138** e595–616

[2] Shahaj O, Denneny D, Schwappach A, Pearce G, Epiphaniou E, Parke H L, Taylor S J C and Pinnock H 2019 Supporting self-management for people with hypertension: a meta-review of quantitative and qualitative systematic reviews *J. Hypertens.* **37** 264–79

[3] Kang H and Park H-A 2016 A Mobile App for Hypertension Management Based on Clinical Practice Guidelines: Development and Deployment *JMIR mHealth uHealth* **4** e12

[4] Kilic D 2018 The Effect of Education Provided Using the Roy ' s Adaptation Model on Hypertension Management *Int. J. Caring Sci.* **11** 333–44

[5] Dye C J, Williams J E and Evatt J H 2015 Improving Hypertension Self-Management With Community Health Coaches *Health Promot. Pract.* **16** 271–81

[6] Wu J, Pharmd D M C, Li Q, Hinderliter A, Bosworth H B, Tillman J and Dewalt D 2018 The effect of a practice- - based multicomponent intervention that includes health coaching on medication adherence and blood pressure control in rural primary care *J. Clin. Hypertens.* 1–8

[7] Zhu X, Kam F, Wong Y, Lai C and Wu H 2017 Development and evaluation of a nurse-led hypertension management model: A randomized controlled trial *Int. J. Nurs. Stud.* 171–8

[8] Kim J Y, Ph D, Wineinger N E, Ph D and Steinhubl S R 2016 The Influence of Wireless Self-Monitoring Program on the Relationship Between Patient Activation and Health Behaviors , Medication Adherence , and Blood Pressure Levels in Hypertensive Patients : A Substudy of a Randomized Controlled Trial Corresponding A *J. Med. Internt Res.* **18** 1–14

[9] Shin D, Kim C and Choi Y 2016 Effects of an empowerment program for self-management among rural older adults with hypertension in South Korea *Aust. J. Rural Health* **24** 213–9

[10] Otubuah P N 2018 *Effects of Health Coaching on Improving Self-monitoring and Medication Adherence among African*

[11] Jung H and Lee J E 2017 The impact of community-based eHealth self-management intervention among elderly living alone with hypertension *J. Telemed. Telecare* **23** 167–73

[12] Han Y and Park Y 2017 The Effects of the Hypertension Management Program based on Self-efficacy for the Elderly in South Korea *Nurs. Midwifery Stud.* **20** 1769–76

[13] Pan F, Wu H, Liu C, Zhang X, Peng W and Wei X 2018 Effects of home telemonitoring on the control of high blood pressure : a randomised control trial in the Fangzhuang Community Health Center , Beijing *Aust. J. Prim. Health* **24** 398–403

[14] Persell S D, Karmali K N, Stein N, Li J, Peprah Y A, Lipiszko D, Ciolino J D and Sato H 2018 Design of a randomized controlled trial comparing a mobile phone-based hypertension health coaching application to home blood pressure monitoring alone: The Smart Hypertension Control Study *Contemp. Clin. Trials* **73** 92–7

[15] Maslakpak M H, Rezaei B and Parizad N 2018 Does family involvement in patient education improve hypertension management? A single-blind randomized, parallel group, controlled trial *Cogent Med.* **5** 1–13

[16] Yatim H M, Wong Y Y, Lim S H, Hassali M A, Hong Y H, Dali A F and Neoh C F 2018 Evaluation of a group-based Hypertension Self-Management Education Programme among Hypertensive Community Dwellers *Eur. J. Integr. Med.* **24** 79–84

[17] Shen Y, Peng X, Wang M, Zheng X, Xu G, Lü L, Xu K, Burstrom B, Burstrom K and Wang J 2016 Family member-based supervision of patients with hypertension : a cluster randomized trial in rural China *J. Hum. Hypertens.* 1–8

[18] Calano B J D, Cacal M J B, Cal C B, Bongar M V V and Macindo J R B 2019 Effectiveness of a Community-Based Health Program on the Blood Pressure Control, Adherence, and Knowledge of Adults with Hypertension: A PRECEDE-PROCEED Model Approach *J. Clin. Nurs.* 0–1

[19] Shen Y, Peng X, Wang M, Zheng X, Xu G, Lü L, Xu K, Burstrom B, Burstrom K and Wang J 2016 Family member-based supervision of patients with hypertension : a cluster randomized trial in rural China *J. Hum. Hypertens.* 1–8

[20] Persell S D, Karmali K N, Stein N, Li J, Peprah Y A, Lipiszko D, Ciolino J D and Sato H 2018 Design of a randomized controlled trial comparing a mobile phone-based hypertension health coaching application to home blood pressure monitoring alone: The Smart Hypertension Control Study *Contemp. Clin. Trials* **73** 92–7

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PHP-836

EXPERIENCE OF STIGMA BY FAMILY CAREGIVERS OF PEOPLE WITH SCHIZOPHRENIA : A SYSTEMATIC REVIEW

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ABSTRACT

Problems related to stigma don't only affect persons suffering from mental illness but also families. This systematic review sought to incorporate the experiences of stigma faced by family caregivers of people with schizophrenia. The literature review was employed the experiences of stigma faced by family caregivers of people with schizophrenia. The databases, Scopus, and sciencedirect were systematically searched. Authors independently rated the reporting of the qualitative studies included. Thematic synthesis was used to analyse the data. The search identified 329 papers. Five teen research papers met the study inclusion criteria. Being socially rejected and being oppressed by others and nine subcategories were identified during thematic analysis as pivotal factors across the experience of stigma. In being socially rejected, others do not have a desire to communicate and start or continue cohabitation with the patients and their families and distance themselves from them with fear. Identifying and highlighting the importance of psychosocial problems in family caregiver with schizophrenia will ultimately influence positive outcomes families have the unpleasant and upsetting experiences of stigma. The findings reveals the need to develop strategies to help patients and their families effectively encounter stigma.

Keywords: stigma, family, caregivers, schizoprhenia, mental disorder

1. Introduction

The prescence of schizoprhenic patients in the middle of the family often creates a burden on the family. More than 21 million persons worldwide are diagnosed with schizophrenia (World Health Organization, 2014) and in Indonesia have been reported to be 18.5 million (Riskesdas, 2018). Lack of family knowledge of mental problems makes the burden of the family complex. Aggressive behavior worsens social stigma, and increases discrimination against people with mental disorders. The social stigma in schizoprhenic patients not only has negative consequences for sufferers but also for their family members [1]. Stigma becomes a social problem when the environment gives a negative label for a person's behavior. Social stigma is strongly influenced by myths that have developed in society, including mental illness is a disease caused by God's curse [2].

As a result of such stigma, resistance attitudes develop, both in people with mental disorders and their families. Such stigma ultimately makes families feel the need to hide family members with mental disorders, and even encourage them to take pasung actions. Stigma soisal is associated as a source of shame that is embedded in individuals with mental disturbances by society. Caregivers who have kinship relationships with people with mental disorders can also experience stigma and eventually experience higher symptoms of depression [3]. Families affected by stigma will limit their relationship with friends and family so that social support received by the family will be low [3].

Study conducted by [4] specifically explores the extent to which guilt and shame contribute to the burden of caregivers. Gonyea in his research was influenced by Transactional Theory [5] which was developed by Lazarus and Folkman (1987) which showed that the cognitive assessment process mediated stressful relationships between people. Thus, variations in adaptation to the same stressors can be associated with differences in individual expectations, interpretations and evaluations of stressful events. Lazarus & Folkman (1987) classifies stressors into two domains, Personal Stresor (commitment and trust) and Environmental Stresor (every aspect outside the personal that can be a threat to one's personal condition). In the primary appraisal, the individual will determine the meaning of the event he experienced. Primary appraisal is the process of determining the meaning of an event experienced by an individual, whether the event is perceived as positive, neutral or negative by the individual. This systematic review research question is how stigma affects family life as caregivers. This systematic review aims to describe how stigma affects the lives of families of schizophrenic patients as caregivers.

2. Methods

The method used in Systematic Review begins with the selection of the topic of stigma in the family of schizoprhenic patients. Then the keywords are determined to find the articles with multiple databases such as EBSCO, Science Direct, Scopus, and ProQuest. The keywords used are "stigma", "schizoprhenia", and "family". This search is limited to the last 10 years from 2008 to 2018. Found 9 articles in Science Direct, and 320 on Scopus.

Articles were selected for review based on studies that were in accordance with the inclusion criteria. Inclusion criteria in this systematic review are English articles, stigma in families with schizophrenia patients, and research designs are qualitative studies with phenomenological approaches, case studies, ethnography, and focus group discussions. 15 best articles reviewed.

3. Result

3.1 Study Selection and Eligibility Criteria

Table 1 shows a number of studies that were screened in this systematic review. Inclusion criteria are English-language articles, stigma in families with patients with schizophrenia, and research designs are qualitative studies with phenomenological approaches, case studies, ethnography, and focus group discussions.

The following criteria are used as inclusion and exclusion criteria for this systematic review:

1) Primary results: This article should include schizophrenia (not limited to the age group studied) with a primary focus on the stigma experienced by the family.

2) Measurement of primary outcomes: This study should include a description of the stigma experienced by families with schizophrenia.

3) Study design: Qualitative studies with phenomenological approaches, case studies, ethnography, and focus group discussions. Other quantitative studies are included if the research design is explained. Articles are excluded if they are review articles, editorials,

letters, opinion papers, general practice papers, meta-analyzes, multiple publications, protocol papers only, or published outside the review time frame.

4) Language or location: Studies from all countries are included if published in English to enable a global understanding of stigma in families with schizophrenia.

Table 1. Literature search strategy

Searching tools - Database	EBSCO	Science Direct	SCOPUS	Journal of Universitas Airlangga
Results of searching	-	9	320	-
Full text, pdf, 2008-2018,	-	9	63	-
Similar titles	-	-	-	-
Eligible, suitable with the inclusion and exclusion criteria.	-	2	13	-
Final selected articles				15

3.2 Study Characteristics

The study reviewed in this article is 15 articles for stigma in families with schizophrenia. The research method is used by various articles ranging from qualitative studies with phenomenology approaches, case studies, ethnography, and focus group discussions.

3.4 Result of Individual Studies

3.3.1 Being socially rejected indicates. Being socially rejected indicates the feeling of loneliness and takes shape as a result of the unwillingness of others to communicate with the patients and their families [6]. Persons move away from the patients and their families and avoid helping them in times of need. Being socially rejected is a common sense in all or most of the patients and their families and is characterized and experienced with attributes including the feeling of being rejected, being ignored by others, others' refusal to start or continue cohabitation with the patient, or the family member and others' fear of the patient [6].

Caregivers spoke profusely about the emotional distress they experienced because of having a family member with mental illness [7].

A small number of caregivers reported negative reactions directly as a consequence of 'Others finding out', for example being labelled and avoided as a member of a 'mad house'[8]. This experience of being socially devalued simply by close association with an ill relative can also be explained using the concept of 'contamination' put forward by Goffman and taken up in later studies on family stigma [9]

3.3.2 Being opressed by other. This concept refers to that the patients' and their families' rights are violated in different situations and they encounter discrimination by others. They feel that others have an inappropriate judgment toward them and behave aggressively with them. Also, the patients and their families encounter others' humiliating and ridiculing behaviors because of the disorder. Being oppressed by others is common for most of the patients and their families and is characterized and experienced with attributes, including sadness from others' prying, encountering the aggressive behavior of others, sadness from the misjudgment of others, facing injustice by others, and being humiliated and ridiculed by others [6].

Consistent with the findings from participants with schizophrenia, narratives characterizing perceived discrimination and reduced social engagement are two important dimensions of internalized stigma experienced by family caregivers. Although no caregivers in the semistructured interviews spoke directly about their reputation being tarnished because of mental illness in the family (a scale item in the Affiliate Stigma Scale), they depicted in detail a variety of situations in which they were looked down upon or ostracized socially [7].

Particularly salient were experiences of being blamed, and critical comments and avoidance by others, which were linked to emotional distress, hopelessness and social withdrawal [8].

The extreme example of a caregiver whowas asked by villagers to kill her own daughter who had behaved aggressively to her in public illustrates the high social importance of adhering to behavioural codes of conduct [8].

4. Discussion

Few studies explore the stigma of schizophrenia using qualitative techniques, and only a few use focus groups. Family members reported discrimination against them. They felt that any discrimination towards their mentally ill relatives was also directed against them [10].

The findings of the review revealed that the patients with schizophrenia spectrum disorders and their families have the experiences of being socially rejected and being oppressed by others. In being socially rejected, others do not have a desire to communicate and start or continue cohabitation with the patients and their families and stay away from them with fear. In being oppressed by others, persons behave aggressively with the patients and their families, violate their rights, and humiliate and ridicule them with their incorrect judgment [6]

5. Conclusion

Patients with schizophrenia spectrum disorders and their families have the unpleasant and upsetting experiences of stigma and it imposes pressures and extreme difficulties on them, besides the difficulties that are related to the nature and the symptoms of the disorder.

6. Reference

[1] P. W. Corrigan, A. C. Watson, and F. E. Miller, "Blame, shame, and contamination: The impact of mental illness and drug dependence stigma on family members," *J. Fam. Psychol.*, vol. 20, no. 2, pp. 239–246, 2006.

[2] N. Helena and C. Daulima, "Preventing Pasung by Mentally Patients' Families," *Enfermería clínica*, vol. 28, pp. 256–259, 2018.

[3] S. Magana, J. Garcia, M. Hernandez, and R. Cortez, "Psychological Distress Among Latino Family Caregivers of Adults With Schizophrenia: The Roles of Burden and Stigma," vol. 58, no. 3, 2007.

[4] J. G. Gonyea, R. Paris, and L. De Saxe Zerden, "Adult daughters and aging mothers: The role of guilt in the experience of caregiver burden," *Aging Ment. Heal.*, vol. 12, no. 5, pp. 559–567, 2008.

[5] R. S. Lazarus and S. Folkman, "Transactional theory and research on emotions and coping," vol. 1, no. March, pp. 141–169, 1987.

[6] F. Rezayat, E. Mohammadi, M. Fallahi-khoshknab, and V. Sharifi, "Experience and the meaning of stigma in patients with schizophrenia spectrum disorders and their families: A qualitative study," *Japan J. Nurs. Sci.*, 2018.

[7] Y. Ling, I. Wong, D. Kong, L. Tu, and R. Frasso, "' My bitterness is deeper than the ocean ': understanding internalized stigma from the perspectives of persons with schizophrenia and their family caregivers," *Int. J. Ment. Health Syst.*, pp. 1–15, 2018.

[8] M. Varghese, J. Pereira, S. Naik, M. Balaji, and V. Patel, "Experiences of stigma and discrimination faced by family caregivers of people with schizophrenia in India," *Soc. Sci. Med.*, vol. 178, pp. 66–77, 2017.

[9] J. E. Larson, D. Ed, P. Corrigan, and D. Psy, “The Stigma of Families with Mental Illness,” no. April, pp. 87–91, 2008.

[10] Æ. R. Oraa, Æ. M. Arı, and Æ. J. Guimon, “Stigma and discrimination towards people with schizophrenia and their family members,” pp. 14–23, 2007.

PHP-842

SCHOOL-BASED PROMOTION AND PREVENTION IN DENTAL AND ORAL HEALTH: A SYSTEMATIC REVIEW

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ABSTRACT

Dental and oral health is an integral part of overall body health which greatly affects public health. Dental caries is the most common dental health problem in school children. The aim of this systematic review was to describe the effectiveness of school-based dental promotion and prevention studies conducted among student between 2014 and 2019. Four electronic databases were searched for effective papers using standardized search methods, and key findings of effective studies were summarized. Studies retrieved concerned dental health promotion and prevention activities was conducted in school. Key search terms were developed and used to search selected databases, which identified 956 articles. Ten articles met the inclusion/exclusion criteria and were included in the review. Of these studies, the type of oral health promotion and prevention tasks and instructions in dental and oral health was conducted varied. The school is considered an important platform for oral health promotion and disease prevention. Healthy lifestyles including regular tooth brushing with use of fluoridated toothpaste are essential to achieve better dental health of children. This can be more readily achieved when the family and schools are involved in oral health promotion.

Keywords: school-based, promotion, prevention, dental, oral

1. Introduction

Dental and oral health is very important for the health of the body, which affects quality of life. This can affect more general health conditions [1]. Dental caries are still a major health problem in most industrialized countries because it affects 60 - 90% of school-aged children and most adults [2]. In the Southeast Asia region, it affects 70% to 95% of the population. The average number of cavities, be they missing and filled (DMFT), reported in the Project database of the WHO Profile / WHO Oral Health Region for the Regional Member Countries was 1.87 in 2011[3].

Most dental caries can be prevented or even recovered well from if they are detected at an early stage and if an effective intervention is available. However, the effectiveness of oral health education and clinical prevention programs in improving oral health outcomes is still questionable. Dental health promotion can increase knowledge but it does that mean dental and oral health behaviors will be a matter of debate [4].

Socio-demographic factors, a weak belief in the importance of regular brushing and joint events of general health risk behavior are identified as the possible risk factors for poor dental health status and/or poor oral health behavior [5,6]. Many low-income children do not have access to oral health services and community interventions [7]. The promotion and prevention of dental and oral health has been carried out supported by a recent systematic review. It shows strong evidence that dental and oral health can be improved by promoting and preventing models of psychological behavior change as a basis for the intervention [8]. Health education usually uses various methods and the media involved is varied, so each method and media used will produce different results. Evaluating the various types of promotions and the prevention of dental health through various methods and media is an important part of finding out the most effective forms of promotion so then they can be used as part of health education programs in schools.

Across the world, the school is considered to be an important platform for the promotion of oral health and disease prevention. This is as the school environment, with a comprehensive approach, can be integrated and participatory related to the promotion of oral health which may be the most effective at reducing the incidence of dental caries in children. A healthy lifestyle, including brushing your teeth regularly using fluoridated toothpaste, is very important to achieve better dental health in children. This can be more easily achieved when both the families and schools are involved in oral health promotion [9,10]. The main aim of this review was to systematically examine all of the relevant evidence that might explain the promotion and prevention of dental and oral health carried out in schools.

2. Research methods

2.1 Eligibility Criteria

Types of Studies: the selection of the studies was focused on randomized controlled trials or cluster randomized trials and pre-test-post-test. The search was not limited by state because the need for promotion and prevention of oral health is universal. However, the articles entered were limited to English. *Type of Participant*: school children aged 2-14 years in both public and private schools. *Type of Intervention*: studies that implement a promotion and prevention that was effective at improving the dental and oral health in schools. *Type of comparison*: studies comparing the participants who were given a promotion and prevention in relation to oral and dental health compared with those not given the intervention. *Type of outcome*: the research was chosen which leads to beneficial results obtained from education and health interventions that educate and improve on dental and oral health.

2.2 Information Sources

The systematic exploration of the existing literature on the promotion and prevention of oral health in schools was done by searching the computerized electronic databases for relevant studies, including PubMed, Science Direct, SAGE Journal and Scopus. They were searched for English language articles between 2014 (January) and 2019 (February).

2.3 Data Collection Process

Duplicates will be deleted using the Mendeley duplicate identification tool and then manually as needed. The remaining studies will then be filtered into 2 stages. The first phase will consist of the title and screening of the abstracts. Any studies that are not set in a school and not including health results will be removed in this phase. The second stage, full-text screening, will be carried out independently, which will follow the prescribed inclusion criteria. The search results and screening process will be presented in the study flow diagram, following the PRISMA template[11]. The studies included will be presented in the "Study characteristics included" table, which contains the methods, participants, interventions, their results and notes.

2.4 Search Strategy

This systematic review was conducted to identify and explore the various ways of promoting and preventing dental and oral health carried out in school-aged children in the school environment, both in terms of awareness and in terms of the behaviors related to health and health outcomes.

Table 1. Search strategy of this study

In [Title]	In [Title, Abstract, Keyword]
((("Oral Health/education"[Mesh]) AND ("Oral Health"[Mesh] OR "Health Education, Dental"[Mesh])) AND "School Health Services"[Mesh]) AND "Health Promotion"[Mesh]	"(Effectiveness[Title,Abstract, Keyword])" OR "(Effect[Title,Abstract, Keyword])" OR "(Impact[Title,Abstract, Keyword])" OR "(Evaluation[Title,Abstract, Keyword])" OR(Influnce[Title,Abstract, Keyword])" OR Health Education, Dental [MeSH Terms]

2.5 Data collection and managem

The standard data collection form will be used to extract the data from the included studies for the assessment of the quality of the studies and to facilitate the synthesis of the evidence. The information extracted will include the population characteristics (number of participants, age range, nationality and basic characteristics), the details of the intervention (control conditions, number of sessions delivered, duration and frequency of sessions, delivery format), the methodology (design and duration of study, characteristics of recruitment level and completion)

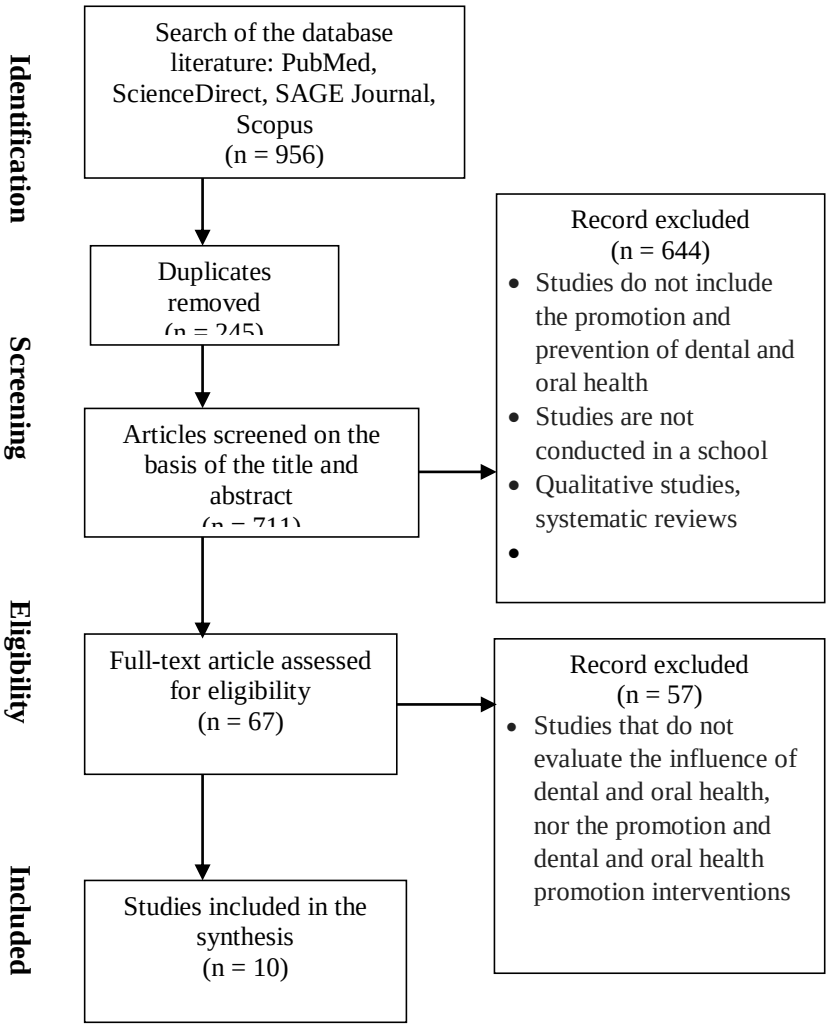

Figure 1. PRISMA flow diagram

and the results (type of outcome measure and measurement time).

2.6 Risk of bias assessment

The risk of bias was assessed using the Cochrane Collaboration tool, which encourages judgment in the following areas: randomization, quality of randomization (any important imbalance at baseline), the concealment of allocation, level of disguise, incomplete data results (due to friction or vice versa), selective reporting and other sources of bias, considering other factors such as making an the intention to handle the analysis and having a funding role in the study[12]. No study was excluded based on the risk of bias assessment.

3. Results

3.1 Study Selection

A total of 10 studies were identified to be included in the review. Searching through the PubMed, ScienceDirect, SAGE, and Scopus databases provided a total of 956 articles. After adjusting for duplicates, this dropped to 711 articles. Of these, 644 studies were discarded because after reviewing the abstracts, it appeared that the papers clearly did not meet the criteria. Among others the study did not include promotion and prevention of dental and oral health, the studies were not carried out in schools or they were qualitative and systematic study reviews. The full text of the remaining 67 articles was examined in more detail; 57 articles did not meet the inclusion criteria as described, as illustrated in Figure 1.

3.2 Study Characteristics

3.2.1 Methods. The 10 studies finally selected for review consisted of cluster randomized trials and only one pre-test-post-test. The studies were published in English where the duration of the interventions ranged from 1 month to 3 years with a follow-up that also varied from 2 weeks to 2 years in the form of 1 - 3 follow-ups.

3.2.2 Participants. The study involved a total of 8170 participants. The main inclusion criteria were that the study must have been carried out in a school and that the intervention was carried out involving school children or those in pre-school (2-16 years). The studies incorporated both public schools and private schools.

3.2.3 Interventions. Studies conducted throughout the world are not restricted by the State because the need for the promotion and prevention of dental and oral health is universal. Most of the interventions carried out are oral health education, which is delivered by professionals, trained teachers or their peers with a variety of media. Training on the brushing of the teeth is also an option as an intervention and the latest is to intervene to create a Sense Of Coherence (SOC), where the purpose of the intervention is to make the school environment a place to develop children's oral health awareness by involving the teachers, school staff and children.

Outcomes

Out of all of the studies, the results assessed partially were changes in Oral Health Knowledge (OHK), Oral Health Behavior (OHB) and child oral health-related quality of life (COHRQoL) in addition to clinical examinations such as caries events with two indices: DMFT Composite (the number of teeth decaying, missing and filling due to dental caries, scores 0–28) and OHS-Composite (number of oral cavity sextants free of dental plaque, bleeding on probing and calculus, score 0-12).

3.3 Syntheses of Result

The examination shows that the knowledge of dental and oral health, oral and dental health behaviors and quality of life related to children's oral health can be improved through oral health prevention interventions and health promotion. Nine out of 10 studies showed a positive impact. Agouropoulos [13] observed that the application of fluoride varnish tended to reduce the incidence of real caries

and early enamel lesions (p = 0.05). Blake [14] reported that the knowledge of oral health and oral health behavior increased significantly and persisted until the follow-up 6 weeks after the intervention. Freeman [15] observed significant effects on toothbrushing knowledge and fluoride health (p <.03) and that it had a limited effect on COHRQoL (p <.06).

Author, Country	Year	Design	Sample size (n)	Age (Years Old)	Interventions	Outcomes	Duration	Follow Up
Tomazoni, Brazil	2019	CRT	356	8-14	Education	Attitude and OHRQoL were increased	2 mo	2 wk and 3mo
Bardawel Syria	2018	CRT	220	10-11	1. E-Learning 2. Leaflet	Oral and gingival health was increased	3 mo	6 wk and 12 wk
Qadri Germany	2017	CRT	854	9-12	Education	Increasing dental health, Reduce caries incidence	18 mo	19 mo
Haleem Pakistan	2016	CRT	935	10-11	Education	OHK and OHB were increased		6 mo and 12 mo
Hilgert Brazil	2015	CRT	242	6-7	1. Supervised tooth-brushing, 2. Sealants 3. Treatment	Reduce caries incidence	3 y	2 y
Petersen Thailand	2015	CRT	3.706	4-6	Education.	Reduce caries incidence	2 y	-
Freeman Ireland	2015	CRT	383	7-8	Education	OHK, OHB and COHRQoL were increased	1 y	1 y
Hedman Sweden	2015	CRT	534	12-16	Education	OHK and OHB were increased	2y	-

Blake UK	2014	Pretest Post-test	1050	9-12	Education	OHK and OHB were increased	1 mo	6 wk
Agoropoulos Greece	2014	RCT	424	2-5	Education	DMFS increments	2 y (Twice a year)	2 y

CRT=clustered randomized trial; RCT=randomized control trial; OHRQoL=oral health-related quality of life; COHRQoL=child oralhealth-related quality of life; OHK=oral health knowledge; OHB=oral health behavior,

Petersen [9] observed that the DMFT and DMFS increment *("enamel and dentine")* was 1.19 and 1.91 for the control group and 1.04 and 1.59 for the intervention group. These represent a 12.6% and 16.8% reduction in caries respectively. The DMFT and DMFS increments *("dentine threshold")* were 0.26 and 0.44 for the control group and 0.19 and 0.29 for the intervention group, representing a 26.9% and 34.1% reduction in caries respectively. Haleem observed that the adolescents' oral health knowledge (OHK) in the DL and PL groups increased significantly by a single OHE session compared to their baseline knowledge ($p < 0.05$) and that the increase was sustained over 6 months. Although one-time OHE resulted in a significant improvement in the adolescents' oral health behavior (OHB) related to the prevention of gingivitis in the 2 groups ($p < 0.05$), no significant change was observed in their behavior towards the prevention of oral cancer. One-time teacher-led OHE was ineffective at improving the adolescents' OHK and OHB. The oral hygiene status (OHS) of the participants in all 3 groups did not change statistically after one-time OHE. The OHK, OHB and OHS indices increased significantly 6 months after RR-OHE than the initial scores ($p < 0.001$), irrespective of the OHE strategy[16].

Qadri showed that a significant incident rate ratio between the caries increment was found, with a 35% higher risk in the control group. However, the parents' socioeconomic characteristics modified the effect of the program on their children, as a high socioeconomic status in the intervention group was associated with a 94% reduction in the incidence risk ratio ($p < 0.001$)[17]. Bardaweel reported that the leaflet cluster (107 participants) had statistically significant better oral health knowledge than the E-learning cluster (104 participants) at 6 weeks ($P < 0.05$) and at 12 weeks ($P < 0.05$) (leaflet cluster:100 participants, E-learning cluster:100 participants). The mean knowledge gained compared to the baseline was higher in the leaflet cluster than in the E-learning cluster. A significant reduction in the Plaque Index (PI) means at 6 weeks and 12 weeks was observed in both clusters ($P < 0.05$) when compared to the baseline. The children in the leaflet cluster had significantly less plaque than those in the E-learning cluster at 6 weeks ($P < 0.05$) and at 12 weeks ($P < 0.05$). Similarly, a significant reduction in the Gingival Index (GI) means at 6 weeks and 12 weeks was observed in both clusters when compared to the baseline ($P < 0.05$). Children in the leaflet cluster had statistically significant better gingival health than the E-learning cluster at 6 weeks ($P < 0.05$) and 12 weeks ($P < 0.05$)[18]. Tomazoni reported that children from the Sense of Coherence (SOC)-based intervention group reported fewer impacts from their oral health on their daily lives (Child Perceptions Questionnaire mean, 7.22) than those from the control group (9.14). The intervention group also

reported greater improvement of SOC at 2 weeks (SOC mean, 52.98) and 3 months (52.75) than the control group (52.21 and51.65, respectively)[19].

4. Discussion

Of all of the activities related to dental and oral health carried out in schools, oral health education is the most common activity followed by supervised brushing exercises, fluoride applications, using E-Learning multimedia games and leaflets. Five studies showed a significant increase in Oral Health Knowledge (OHK) and Oral Health Behavior (OHB)[14–16,18,20]. Three studies showed a positive impact in reducing the incidence of caries [9,13,17] and 2 studies showed an improvement in quality of life [15,19]. However, the study conducted by Hilgert showed no difference in the caries prevention effect between School-based Supervised tooth-brushing (STB) and no intervention related to the occlusal surface low caries risk in the first permanent molar over 3 years[21].

The results of the study conducted by Bardaweel shows that leaflets are effective tools in improving oral health and they can be used in education as part of a school-based oral health promotion with positive results. It can thus be concluded that short-term oral health promotion programs can be beneficial at improving oral hygiene practices in children[18]. School-based oral health promotions informed by behavioral theory can be properly delivered by primary dental care practices and they can improve the children's knowledge of oral hygiene and some aspects of oral hygiene behavior[14]. The research findings from Haleem suggest the complementary role of trained teachers and peers who can act as available experts throughout the school system to periodically repeat and reinforce the messages because repetition and reinforcement plays a key role in the success of school-based OHE programs[16].

5. Conclusion

The purpose of this study was to identify and explore the effectiveness of the various ways to promote dental and oral health as carried out in school-aged children in the school environment. This study shows the effectiveness of the promotion and prevention of dental and oral health carried out in schools both short and long term. For the long term, it requires repetition and strengthening. In the delivery of the promotions and prevention of dental and oral health, this can be done by professionals, trained teachers or their peers. The results of this systematic review can be demonstrated by the stakeholders as being an effective promotion and prevention determination carried out in schools. This is because interventions in the school environment have been identified as the most creative and cost-effective way to improve dental and oral health.

References

[1] WHO 2003 WHO Information Series on Oral Health Promotion : An Essential Element of

[2] Petersen P E, Bourgeois D, Ogawa H, Estupinan-day S and Ndiaye C 2005 Policy and Practice The global burden of oral diseases and risks to oral health **022806** 661–9

[3] WHO 2013 Strategy for Oral Health in South-East Asia, 2013–2020 **15**

[4] Watt R G and Marinho V C 2005 Does oral health promotion improve oral hygiene and gingival health ? **37** 35–47

[5] Sharma U, Gill N, Gulati A, Arora R, Bal I S, Agnihotri A, Passi S, Verma L and Gauba K 2016 Oral health behavior: Prevalence and pattern of dental caries in 11–16-year-old children of various socioeconomic strata *J. Pierre Fauchard Acad. (India Sect.***30** 36–41

[6] Peltzer K and Pengpid S 2017 Dental health status and oral health behavior among university students from five ASEAN countries *Nagoya J. Med. Sci.***79** 123–33

[7] Williams R, Rogo E J, Gurenlian J R and Portillo K M 2018 An evaluation of a school-based dental sealant programme *Int. J. Dent. Hyg.***16** e65–72

[8] Ej K, Vascott D, Hocking A, Nield H, Dorr C and Barrett H A 2016 A review of approaches for dental practice teams for promoting oral health 1–18

[9] Petersen P E, Hunsrisakhun J, Thearmontree A, Pithpornchaiyakul S, Hintao J, Jürgensen N and Ellwood R P 2015 School-based intervention for improving the oral health of children in southern Thailand 44–50

[10] Edasseri A, Barnett T A, Kâ K, Henderson M and Nicolau B 2017 Oral Health–Promoting School Environments and Dental Caries in Québec Children *Am. J. Prev. Med.* 1–8

[11] Liberati A, Altman D G, Tetzlaff J, Mulrow C, Ioannidis J P A, Clarke M, Devereaux P J, Kleijnen J and Moher D 2009 Annals of Internal Medicine Academia and Clinic The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : **151**

[12] Higgins J P T, Altman D G, Gøtzsche P C, Jüni P, Moher D and Oxman A D 2011 The Cochrane Collaboration ' s tool for assessing risk of bias in randomised trials 1–9

[13] Agouropoulos A, Twetman S, Pandis N and Kavvadia K 2014 ScienceDirect Caries-preventive effectiveness of fluoride varnish as adjunct to oral health promotion and supervised tooth brushing in preschool children : A double-blind randomized controlled trial *J. Dent.***42** 1277–83

[14] Blake H, Hons B A, Dawett B, Leighton P, Hons B A, Rose-brady L, Deery C, Ed F D S R C S, Paed F D S, Ed R C S and Eng F D S R C S 2015 Children ' s Oral Health – Related Knowledge **XX** 1–12

[15] Freeman R, Gibson B, Humphris G, Leonard H, Yuan S and Whelton H 2015 School-based health education programmes , health-learning capacity and child oral health – related quality of life

[16] Haleem A, Khan M K, Sufia S, Chaudhry S, Siddiqui M I and Khan A A 2016 The role of repetition and reinforcement in school-based oral health education-a cluster randomized controlled trial *BMC Public Health* 1–11

[17] Qadri G, Alkilzy M, Franze M, Hoffmann W and Splieth C 2018 School-based oral health education increases caries inequalities 153–9

[18] Bardaweel S Al and Dashash M 2018 E-learning or educational leaflet : does it make a difference in oral health promotion ? A clustered randomized trial 1–8

[19] Tomazoni F, Vettore M V, Baker S R and Ardenghi T M 2019 Can a School-Based Intervention Improve the Oral Health-Related Quality of Life of Brazilian Children ? **XX** 1–10

[20] Hedman E 2015 Dental Hygienists Working in Schools – A Two-year **13** 177–88

[21] Hilgert L A, Leal S C, Mulder J, Creugers N H J and Frencken J E 2015 Caries-preventive Effect of Supervised Toothbrushing and Sealants

PHP-846

THE INFLUENCE OF DIABETIC FOOT EXERCISE IN SENSORY PERIPHERAL NEUROPATHY WITH MONOFILAMENT TEST ON DIABETES MELLITUS CLIENTS

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ABSTRACT

Peripheral neuropathy is a long-term complication that attacks the nerves and loses the sensation of protection which affects about 50% of people with diabetes mellitus (DM). Diabetic foot exercises can help blood circulation, especially in the legs or lower limbs. This researched aimed to analyze the effect of diabetic foot exercise on sensory peripheral neuropathy in DM clients. The study design used quasi-experimental pre-post test with control group. Samples were 28 respondents using purposive sampling and divided into two groups of 14 respondents each. The independent variable is diabetic foot training, and the dependent variable is peripheral sensory neuropathy. Interventions are carried out 3 times a week for 4 weeks. The research instrument was Weinstein Monofilament 10 g Semmes and a diabetic foot training checklist. Data analysis using the Wilcoxon-signed rank test and Mann Whitney test with $\alpha \leq 0.05$. The Wilcoxon-signed rank test in the treatment group showed differences in sensory peripheral neuropathy after treatment (p=0,000) and no difference in the control group (p=0.564). The Mann Whitney test results showed differences in sensory peripheral neuropathy between the treatment group and the control group after treatment p=0.039. Diabetic foot exercises can be used as an alternative measure to improve sensory peripheral neuropathy

Keyword:
sensory peripheral neuropathy, diabetic foot exercises, monofilament test

1. Introduction

International Diabetes Federation (IDF) in 2017 stated that Indonesia ranks 6th in the number of diabetics in the world [1]. In 2017 the number of diabetics in Indonesia reached 10.3 million people and among them 73.7% were unaware that they had diabetes. The prevalence of diabetes mellitus (DM) in Indonesia has reached 9.1 million people. IDF estimates that the number of diabetics in Indonesia will continue to soar to reach 16.7 million in 2045 [2].

Increased prevalence of DM patients can increase complications such as heart disease, nephropathy, retinopathy, diabetic foot injury, and neuropathy. Neuropathy is one of the long-term complications that affects about 50% of people with diabetes. Peripheral neuropathy is a broad and potentially disabling pathological condition that includes more than 100 different forms and manifestations of nerve damage. The diverse pathogenesis of peripheral neuropathy affects autonomic, motor and / or sensory neurons, and symptoms that describe these conditions are abnormal skin sensations, muscle dysfunction and, especially, chronic pain [3]. Neuropathy is strongly associated with the duration and severity of hyperglycemia. Disease prevalence increases with increasing duration of DM and poor glycemic control [4].

About 11.9 million adults in the United States aged> 40 years have been diagnosed with diabetes and among them, 3.9 million (32.7%) have diabetes neuropathy and 1.6 million (13.1%) have comorbid neuropathy and retinopathy [5]. The prevalence of diabetic peripheral neuropathy

ranges from 16% to 66%. Amputation in diabetics is 10 to 20 times more common than non-diabetes [1]. Patients with diabetic neuropathy are more often hospitalized than other diabetes complications. Diabetic neuropathy increases in patients within 5-10 years after the onset of this disease. Diabetic peripheral neuropathy (DPN) has a strong association with other complications such as diabetic retinopathy (67% versus 21%) and micro albuminuria (51% vs 41%). It has been observed that 56% of patients with DM less than 5 years have moderate / severe DPN [4]. As many as 1,785 DM patients in 2008 to 2009 in Indonesia experienced 63.5% of neuropathy complications, 42% diabetic retinopathy, 73% nephropathy, 16% spectacular, and 27.6% microvascular complications [6]. Research in Persadia Units at dr. Soetomo Hospital Surabaya showed that 30.8% of 26 respondents who did not experience diabetes ulcers complained of neuropathy [7]. One of the factors that trigger diabetic foot ulcers is neuropathy. International Diabetes Federation reports that 1 in 6 diabetics will experience diabetes ulcers during their lifetime [8]. Diabetic foot exercises are activities or exercises carried out by DM patients to help blood circulation, especially in the legs or lower leg [9].

Based on a preliminary study at the Gedongan Community Health Center in Mojokerto, East Java, DM was included in the list of the 10 biggest diseases in the last 3 years. People with DM every year always experience an increase, in 2015 there were 2,434 patients, in 2016 there were 3,085 patients, in 2017 there were 3,343 patients. In March 2018 there were 32 DM patients with neuropathy. Observations and interviews during preliminary studies with outpatients at the Gedongan Community Health Center with DM showed that 7 out of 12 patients complained of frequent leg pain, calluses, and dry feet. The Gedongan Community Health Center in Mojokerto has not yet intervened specifically in diabetic neuropathy to reduce the incidence of foot ulcers. The intervention given to DM patients is to schedule control patients, health education, and anti-diabetes drugs on a regular basis according to the doctor's advice.

Most cases of peripheral neuropathy cannot be fully treated because the underlying cause is unknown or incurable, so the main goal associated with the treatment of most forms of peripheral neuropathy is to control or correct troublesome symptoms [10]. Exercise is known to increase several metabolic factors that can affect nerve health [11]. Based on previous reviews, researchers were interested in conducting research on the effects of diabetic foot exercise on sensory peripheral neuropathy in DM patients at Gedongan Health Center, Mojokerto City.

2. Methods

The research design used was quasy experiment (pre-post test with control design) and the project was approved by the Health Research Ethics Committee of Faculty of Nursing Universitas Airlangga (ethical number 989-KEPK). The sample in this study was DM clients at Gedongan Health Center, Mojokerto. The sample size in this study were 28 clients who were divided into two groups. The sampling technique used in this study was purposive sampling. The instrument used was a 10 g monofilament type type diabetes test Semmes-Weinstein monofilament neuropathy measuring 10 g with a thickness of 5.07 and a checklist for diabetic foot exercises.

Retrieval of data in this study was conducted at Gedongan Community Health Center, Mojokerto City, then followed up and routinely intervened through clients' home visits. Samples were divided into treatment groups and the controls were matched pairs. The researcher explained the objectives, benefits, procedures, and research time in detail to the respondents. After that, the researchers asked the respondents for their consent to participate by signing an agreement letter in the study. At the first home visit the researchers conducted a pre test to determine the initial value of

the dependent variable by examining the value of sensory neuropathy using a 10 g monofilament device in the treatment and control groups. Foot gymnastics interventions were carried out every 3x / week for 4 weeks, referring to Harmaya (2014) in the treatment group while intervention was not carried out in the control group [12]. At the end of the fourth week the researchers conducted a post test to determine the final value of the dependent variable, namely the value of sensory peripheral neuropathy with 10 g monofilament in the tre

The research analysis was carried out with the help of SPSS v16 software. Bivariate analysis used the Mann Whitney Test statistical test using the degree of significance $\alpha \leq 0.05$ to compare the results of the treatment and control groups. The Wilcoxon signed rank statistical test compared the results of the pretest and posttest in the intervention group and the control group.

3. Result

Table 1. Characteristics of Respondents

Characteristics of Respondents	Treatment Group (n=14)		Control Group (n=14)	
	n	**%**	**n**	**%**
Gender				
Men	4	28,6	4	28,6
Woman	10	71,4	10	71,4
Total	14	100	14	100
Age				
36-45 years	0	0,0	2	14,3
46-55 years	9	64,3	4	28,6
56-65 years	5	35,7	8	57,1
Total	14	100	14	100
Duration diagnosed with DM				
<5 years	5	35,7	6	42,9
5-10 years	5	35,7	2	14,3
>10 years	4	28,6	6	42,9
Total	14	100	14	100
Profession				
Do not have job	8	57,1	5	35,7
Pensionary	1	7,1	2	14,3
Civil servants	1	7,1	2	14,3
Entrepreneur	3	21,4	2	14,3
Other	1	7,1	3	21,4
Total	14	100	14	100

Most of the respondents were women (71.4%). The majority of respondents were in the range of the early elderly and the late elderly (92.85%); age of 46-55 years (46.43%) and age 56-65 (46.43%). Most of the patients who participated in this study were diagnosed for less than 5 years (39.28%). Most of them do not have job (46.43%).

Table 2. Sensory peripheral neuropathy before and after diabetic foot exercises in the treatment and control groups

Groups	Mean		p value Wilcoxon signed rank test	p value Mann-Whitney test	
	Pretest	Posttest		Pretest	Posttest
Treatment group	2,64	1,64	0,000	0,541	0,039
Control group	2,57	2,64	0,564		

In the treatment group before diabetic foot exercise, the average value of sensory peripheral neuropathy was 2.64, which meant that the DM patients in the treatment group had sensory peripheral neuropathy on average. After diabetic foot exercise, the mean sensory peripheral neuropathy showed a decrease to 1.64, meaning that sensory peripheral neuropathy scores improved. The results of statistical tests showed that there were significant differences between the values of sensory peripheral neuropathy before and after diabetic foot exercise in the intervention group (p = 0,000) while in the control group it meant that there were no differences in sensory peripheral neuropathy (p = 0.564). Whereas in the post-intervention results there were differences in sensory peripheral neuropathy between the treatment and control groups (p = 0.039).

4. Discussion

Patients with diabetes and neuropathy are associated with low nerve conduction due to demyelination and loss of large myelin fibers, and decreased potential for nerve action due to loss of axons [13,14]. In patients with peripheral diabetic neuropathy, loss of sensation in the foot causes recurrent minor injuries (calluses, nails, foot deformities) or external causes (shoes, burns, foreign objects) that are not detected at that time and consequently can cause foot ulceration. This can be followed by ulcer infection, which can eventually cause amputation of the foot, especially in patients with peripheral arterial disease [15]. In diabetic patients, regular physical activity reduces weight, increases blood glucose control and insulin sensitivity which all lead to a reduced risk of developing neuropathy [9].

The results of this study indicate that diabetic foot exercise can reduce sensory peripheral neuropathy. Exercise positively influences other pathological factors associated with diabetic peripheral neuropathy, by promoting microvascular function and fat oxidation, by reducing oxidative stress and increasing neurotropic factors [16,17]. Exercise-induced Neurotrophin-3 (NT3) increases are associated with increased peripheral nerve conduction velocity and reduction in neuropathic pain [18]. Neurotrophin-3 (NT-3) is known to promote the survival and differentiation of existing neurons and to encourage the growth of new synapses and neurons.

Foot and toes exercises are one of the exercises that can modulate the level of sorbitol in the body so as to prevent a decrease in blood flow in the endoneural blood flow [19]. Providing stimulation in the form of exercise or leg exercises can produce potential action resulting in depolarization which results in increased Na + / K + ATP activity, axonal transport is increased, patients feel sensory sensations / sensory responses. Foot exercises can help smooth and improve blood circulation in the legs. It also helps in the process of wound healing in diebetes foot ulcer [20]. In addition to this effect, the main reason for a large increase in blood flow during exercise is a decrease in oxygen in the tissues, which is one of the chemical factors found in diabetic patients. The

decrease in oxygen causes dilation because of its direct effect on muscle arterioles. Muscles consume oxygen quickly during exercise, and the amount of oxygen in the tissue decreases. In the absence of oxygen, the arteriolar wall cannot continue to contract, and lack of oxygen causes the release of vasodilators. This causes vasodilation of local arterioles so that all capillaries are open and blood flow increases. Blood circulation that smoothly carries oxygen and nutrients to the tissues and nerve cells that will affect the metabolic process of Schwann cells so that axon function can be maintained. The optimal function of nerve cells in DM patients will maintain sensory function of their feet [21].

Foot exercises play a role in controlling blood glucose levels to improve peripheral blood circulation which can be seen from the value of the Ankle Brachial Index (ABI) in DM patients [22]. Decreasing glucose levels in the blood will improve myelin nerve function and axons so that DM patients will be able to feel pain, heat, vibration, and pressure. In other words, the nerve endings of patients experience increased conduction and recurrent sensitivity in protection against risky conditions, which are detected by examining the sensation of protection using monofilament 10 g.

5. Conclusions

DM patients who perform foot exercises will experience a decrease in the value of peripheral sensory neuropathy because foot exercise movements can improve myelin nerves and axon function so that nerve endings undergo improved conduction and sensitive return detected by monofilament 10 g. There was a decrease in sensory peripheral neuropathy in the intervention group and there was no decrease in the value of sensory peripheral neuropathy in the control group proving the theory above that foot exercise can help smoothen so as to improve blood circulation and sensitivity to prevent numbness. Community health nurses can provide education about foot exercise to DM patients, especially patients with peripheral neuropathy. DM patients are able to do leg exercises independently at home to improve the status of sensory peripheral neuropathy so that it can prevent the occurrence of ulcers.

6. References

[1] Federation ID. IDF Diabetes Atlas Eighth: Eighth edition 2017. 8th ed. International Diabetes Federation. IDF Diabetes Atlas, 8th edn. Brussels, Belgium: International Diabetes Federation, 2017. http://www.diabetesatlas.org. 2017. 1–150 p.

[2] PERKENI. Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia 2015. 2015.

[3] Dobson JL, McMillan J, Li L. Benefits of exercise intervention in reducing neuropathic pain. Front Cell Neurosci [Internet]. 2014 Apr 4;8(April):1–9. Available from: http://journal.frontiersin.org/article/10.3389/fncel.2014.00102/abstract

[4] Chawla A, Chawla R, Jaggi S. Microvasular and macrovascular complications in diabetes mellitus: Distinct or continuum? Indian J Endocrinol Metab [Internet]. Medknow Publications & Media Pvt Ltd; 2016;20(4):546–51. Available from: https://www.ncbi.nlm.nih.gov/pubmed/27366724

[5] Ahmad S, Mittal M. Diabetic Neuropathies. JIMSA [Internet]. 2015;28(1):51–3. Available from: http://journals.lww.com/continuum/Abstract/2003/09060/Diabetic_Neuropathies.3.aspx

[6] Soewondo P, Soegondo S, Suastika K, Pranoto A, Soeatmadji DW, Tjokroprawiro A. The DiabCare Asia 2008 study – Outcomes on control and complications of type 2 diabetic patients in Indonesia. Med J Indones [Internet]. 2010 Nov 1;235. Available from: http://mji.ui.ac.id/journal/index.php/mji/article/view/412

[7] Widyawati IY, Irawaty D, Sabri L. Latihan Active Lower Range of Motion Menurunkan

Tanda dan Gejala Neuropati Diabetikum. J Ners. 2010;5(2):107–17.

[8] International Diabetes Federation. IDF Diabetes Atlas 8th Edition. Brussels, Belgium; 2017.

[9] Francia P, Gulisano M, Anichini R, Seghieri G. Diabetic foot and exercise therapy: step by step the role of rigid posture and biomechanics treatment. Curr Diabetes Rev [Internet]. 2014/03/. Bentham Science Publishers; 2014 Mar;10(2):86–99. Available from: https://www.ncbi.nlm.nih.gov/pubmed/24807636

[10] Nathan DM. The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Study at 30 Years: Overview. Diabetes Care [Internet]. 2014 Jan 19;37(1):9–16. Available from: http://care.diabetesjournals.org/lookup/doi/10.2337/dc13-2112

[11] Nimmo MA, Leggate M, Viana JL, King JA. The effect of physical activity on mediators of inflammation. Diabetes Obes Metab. England; 2013 Sep;15 Suppl 3:51–60.

[12] Harmaya DP, Sukawana IW, Lestari M. Pengaruh Masase Kaki Terhadap Sensasi Proteksi Pada Kaki Pasien Diabetes Melitus Tipe Ii Dengandiabetic Peripheral Neuropathy. COPING (Community Publ Nursing) [Internet]. 2014 Oct 21;2(3). Available from: https://ojs.unud.ac.id/index.php/coping/article/view/10771

[13] Kobori M, Yagihashi S, Shiina N, Shiozawa N, Haginoya A, Ojima M, et al. Four-year sequential nerve conduction changes since first visit in Japanese patients with early type 2 diabetes. J Diabetes Investig. Japan; 2017 May;8(3):369–76.

[14] Charles M, Soedamah-Muthu SS, Tesfaye S, Fuller JH, Arezzo JC, Chaturvedi N, et al. Low peripheral nerve conduction velocities and amplitudes are strongly related to diabetic microvascular complications in type 1 diabetes: the EURODIAB Prospective Complications Study. Diabetes Care. United States; 2010 Dec;33(12):2648–53.

[15] Alexiadou K, Doupis J. Management of Diabetic Foot Ulcers. Diabetes Ther [Internet]. 2012 Sep 3;3(4). Available from: http://link.springer.com/10.1007/s13670-015-0133-x

[16] Colberg SR, Sigal RJ, Fernhall B, Regensteiner JG, Blissmer BJ, Rubin RR, et al. Exercise and type 2 diabetes: the American College of Sports Medicine and the American Diabetes Association: joint position statement. Diabetes Care. United States; 2010 Dec;33(12):e147-67.

[17] Kluding PM, Pasnoor M, Singh R, Jernigan S, Farmer K, Rucker J, et al. The effect of exercise on neuropathic symptoms, nerve function, and cutaneous innervation in people with diabetic peripheral neuropathy. J Diabetes Complications. United States; 2012;26(5):424–9.

[18] Li H, Shen Z, Lu Y, Lin F, Wu Y, Jiang Z. Muscle NT-3 levels increased by exercise training contribute to the improvement in caudal nerve conduction velocity in diabetic rats. Mol Med Rep. Greece; 2012 Jul;6(1):69–74.

[19] Dixit S, Maiya AG, Shastry BA. Effect of aerobic exercise on peripheral nerve functions of population with diabetic peripheral neuropathy in type 2 diabetes: a single blind, parallel group randomized controlled trial. J Diabetes Complications. United States; 2014;28(3):332–9.

[20] Eraydin Ş, Avşar G. The Effect of Foot Exercises on Wound Healing in Type 2 Diabetic Patients With a Foot Ulcer. J Wound, Ostomy Cont Nurs. 2018;45(2):123–30.

[21] Han JW, Sin MY, Yoon YS. Cell therapy for diabetic neuropathy using adult stem or progenitor cells. Diabetes Metab J. 2013;37(2):91–105.

[22] Barone Gibbs B, Dobrosielski DA, Althouse AD, Stewart KJ. The effect of exercise training on ankle-brachial index in type 2 diabetes. Bönig H, editor. Atherosclerosis [Internet]. 2013 Sep 19;230(1):125–30. Available from: https://dx.plos.org/10.1371/journal.pone.0178059

PHP-853

THE IMPACT OF FAMILY SUPPORT ON PSYCHOLOGICAL ADAPTATION IN HAEMODIALYSIS PATIENT WITH CHRONIC RENAL FAILURE

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ABSTRACT

Chronic Renal Failure patient undergo haemodialysis therapy along their life, so they need good psychological adaptation to the therapy. People who suffer chronic illness such as chronic renal failure need family support for their life. The aimed was to determine the correlation between family support to psychological adaptation of haemodialysis therapy in patients with chronic renal failure. Correlation study used as design. Sample was selected using purpossive sampling technique and obtained 35 samples**.** Data collected by questionairre of family support and psyvhological adaptation. Data was analyzed by *Spearman Rank test***.** The result showed significant relationship between family support and psychological adaptation in hemodialysis patient. Individual with good psychological adaptation has a confidence to face various unpleasant condition, like haemodialysis therapy. While family support can provide a buffer effect which withstand the negative effects of stress to the physical health and to improve health.

Keywords: haemodialysis, Chronic kidney failure, psychological, family, support

1. Introduction

Chronic renal failure is incompetence of kidney function irreversibly which involve the failure of kidney to maintain the balance of metabolic, fluid and electrolytes [1]. Chronic renal failure involve the hyperthropy of nefrons resulting the produce of high amount of filtrate causing the decrease of glomerulus filtration rate while tubule reabsorbtion is still increase [2]. Haemodialysis is one of medical management of chronic renal failure by excrete the fluid and waste product using machine when kidney are incompetence to do this function. The aim of haemodialysis is to maintain patient's well-being. Individual with long-term haemodialysis feel worry about their live. Haemodialysis caused alter of the lifestyle in family. Some activities like social activities, family time will be lost and it could create conflict among family member, frustration, gulity feeling and depression. The long term effect of haemodialysis is not only influent family member relationship but also the self-psychological adaptation [1]

According to WHO and Global Burden Disease (GDB), kidney and urinary tract disease contributes 850.000 of deaths every year. Data from Dr.Soetomo hospital in 2004-2006 is found that around 2000 patients are diagnosed with chronic renal failure, whereas 60-70% are being in late phase of treatment. Patient who undergo haemodialysis in long period can suffer physical, mental stressed, and alter of lifestyle and personality [1]. According to research in hemodialysis patient of Moewardi Surakarta hospital showed that 30% patient experience light level of stress, 40% on medium level of stress and 30% on high-stress level. Self adaptation is individual ability to reconcile themself appropiately by using adaptation mechanism. Family is group of people who is connected by marriage, adoption and born which aimed to create and maintain culture, impove development of physical, mental, emotional and social in each members [2]

According to research of [3], it is showed that the family support on patient with chronic disease is still low. While according to family support model show that family is the main part whom needed by patient with cronic disease as a support. Another research prove that many factors like family lifestyle, socio-economic status and belief of illness can affect the progress of illness [6]. Therefore, it's need good psychological adaptation so it has good therapeutical impact on patient. But not a little patient who undergo hemodialysis therapy feel badmood and give up to pass the process.

According to that problems, researcher aim to explore about relation of famiy support and psychological adaptation in chronic renal failure who undergo haeemodialysis. The research location was done in Rumah Sakit Tentara (army hospital) of Dr. Soepraoen Malang in hemodialysis unit. Rumah Sakit Tentara (army hospital) of Dr.Soperaoen is type B hospital.

2. Materials and Method

2.1 Research Design, population, sample and variables

Type of the study is analytic observational with cross sectional design. The population of this study was patients with chronic renal failure who undergo hemodialysis as many as 64 people. The eligibility criteria for this study was 18-65 years old, undergo hemodialysis ± 1 month, subject has a willing to participate the study, capable in reading and writing, and able to be verbally communicate. The exclusion criteria was patient with physical disability and sedative drug consumption. After screening the population based on inclusion and exclusion criteria, there was 35 samples obtained. The sampling technique was used in this study was purposive sampling. The independent variable in the study was family support. The dependent variable in this study was psychological adaptation in hemodialysis therapy.

2.2 Instruments

The instruments used in this study were family support questionairre and psychological adaptation to hemodialysis questionairre. Family questionairre used likert scale with graded answer, like always, often, sometimes and never. Family support questionairre used three domains to be assesed. Those three domains were emotional support, self-appreciation support and informational support. The number of question was 21 with score 0-3 and range of scores 0-63. The total score intepretation is the higher score showed the better family support on individu. The validity and reliability test for family support questionairre was 0.87 (r=0.87).

The psychological adaptation to hemodialysis used 5 domains to be assesed. Those were emotional regulation, self- effication, optimism, objective-realistic and empathy. Psychological adaptation questionairre used likert scale with graded answer, like always, often, sometimes and never. The number of question was 18 with score 0-3 and range of scores 0-54. The total score intepretation is the higher score showed the better psychological adaptation on individu. The validity and reliability test for psychological adaptation to hemodialysis questionairre was 0.75 (r=0.75).

2.5. Research procedures

The sample collecting was done by observing and interviewing the candidate in Hemodialysis Unit at Rumah Sakit Tentara (Army Hospital) Soepraoen Malang based on eligibility criteria. After the participants was selected, researcher did a home visit to give them an inform consent to participate in this study. Then, the participants would be asked to fill the questionairres. This study held on January, 23rd- March, 6th 2015.

2.6 Analysis of Data

The collected data was analyzed using *Spearman Rank* analysis using SPSS 16 program for Windows

2.7 Ethical Clereance

This study was approved on January, 18, 2015 by Legal Ethic Comitte at Medical Faculty of Brawijaya University Malang with the series number of ethical clearance 043/EC/KEPK-S1-PSIK/01/2015.

3. Results

Characteristic respondents on [Table 1] showed that the majority of the respondents are female. The average of age of respondents is 48-60 years old. The majority of occupation status was unemployed. The majority of education level was elementary school. The majority of haemodialysisi period was 1-7 months. From the 35 samples studied [Table 2], it was found that the highest aspect of family support was the aspect of emotional support, which was 100% (35 people) while the lowest was in the aspect of informational support which was 60% (20 people). The result will be represent in diagram pie below.

Based on these result, most of the psychological adaptations of patients to hemodialysis therapy are good at 89% (30 people). From the 35 samples studied [Table 3], it was found that the highest aspect of psychological adaptation was emotional regulation, which about 33 people (94%) while the lowest was in the aspect of empathy, which about 18 people (54%).

Based on data analysis using the Spearman Rank test with the SPSS 16.0 for Windows Evaluation Version computer program and the significance level of 95% ($\alpha = 0.05$), it was found that there was a relationship between family support and psychological adaptation with p value 0.006. Where is the value of sig $<\alpha$ ($0.006 < 0.05$). Whereas in the Spearman correlation (r) value was (+0.458) which indicates that the correlation (r) was positive and had moderate strength. Positive means that the higher the family support given, the higher the level of adaptation of patients with Chronic Kidney Failure to Hemodialysis therapy or vice versa, the lower the family support given, the lower the level of adaptation of patients with Chronic Renal Failure to Hemodilaisis therapy.

4. Discussion

4.1 Family Support

Family is a place where there are rules, emotional attachments, and their respective roles in family members [7] so that they can strengthen family relationship. The majority of participants of this study were 48-60 years old (about 22 people). The early age of elderly can influence the aging process and cause various problems, both biologically, mentally, and economically. When someone is getting older, they will get declining in physical ability, so that it can lead to a decline their social role [8]. Therefore, it is necessary to help elderly individuals to maintain maximum dignity and autonomy even in situations of physical, social and psychological loss [1]. Social support for elderly is important, because it can decrease parental depression and protect them from negative depression [9].

Based on the results of the study, related to socio-economic status, family support with a good category was given more to participantss who did not work as many as 27 people (87%) compared to those who worked only 5 people (16%). This is in accordance with the results research stating that patients who do not work either only as housewives or retirees, the intensity of meetings between patients and families is often [10].

In addition, based on the results of the study, the majority of participantss who received family support in the good category came from participantss who lived together, either husband or wife, as many as 17 people (57%). This is in accordance with the statement of which explains that, social support will be more meaningful to someone if given by people who have a significant relationship with the individual concerned, in other words, the support is obtained from parents, partners (husband or wife), children and other family relatives [11]. Social suport can be effective to be done by close relation person, for example, family or close friend [12]

According to result of Family Support on emotional support domain, it showed that of 35

participants (100%) had good emotional support from partnerships. This result is also supported by [13] research on cancer patient who undergo chemotherapy, showed that from 50 respondents, there was 3 respondents (6%) got low family support, 17 respondents (34%) showed moderate family support, and 30 respondents (60%) who got high family support**.** This is also agreed to the opinion [14] which states that patients who receive support from family will feel comfortable, possessing, peaceful, and loved.

On the appreciation support domain, it showed that 23 people (66%) got good appreciation support from their family. Appreciation support from family is the form of affective function of family on elderly people which can increase psychososial status [7].

4.2 Psychological Adaptation

Based on the results of the study, there were 33 participants who had emotional regulation in high category, while 2 participantss had moderate emotional regulation and no participantss were in the low emotion regulation category. This is in line with the opinion of ([15]) that adaptive people are a person who is able to express their emotion both positive and negative emotions

Based on the results of the study, there were 31 participantss in the category of high self-efficacy and 4 participantss with the category of moderate self-efficacy. This statement is agreed with statement of [16], individuals who have high self-efficacy will be very easy in facing challenges. The individual does not feel doubt because he has good self-confidence. This individual according to [16] will quickly face problems and be able to get up from the failure that he experienced.

Based on the results of the study, there were 27 people with a high optimism category and 8 people with a moderate optimism category. Optimistic individuals are healthier than pesimistic person and less depressed, better at school, more productive at work, and more victorious in sports [15].

On the objective-realistic attitude, it showed that 23 people (66%) who had high objective-realsitic attitude. Individual with good psychological adaptation could accept their weakness and superiority, had a sharpness to see the reality and handle their reality fairly [17].

On the empathy domain, it showed that 18 people (53%) had high empathy. The high empathy skill is needed because another people want to be understood and appreciated**.** The real form of ths pattern is through communication about expectations, through appropriate norms, through rewards and punishments and giving coping assistance [18]. When someone gets family support, the patient will feel calm, get encouragement, and consent from his family [17]. Family support can provide a buffer effect which withstand the negative effects of stress to the physical health and to improve health. This is also agree with research of [19] which stated that in hemodialysis patients, one component of psychological adaptation (psychological adaptation), namely self-efficacy and emotions can be a buffer effect from the onset of depression or stress.

5. Limitation of the study

Limitation in this study was the data collection technique for this study based on questionairre only. The weakness of this method could possibly made the respondets are not honest when they answered the question. The method could be better if it also used interview to validate the respondent's answer.

6. Conclusion

Patients with chronic renal failure receive family support of 89% in the good category. The level of psychological adaptation of patients with chronic kidney failure was 89% in the good category. There is a significant relationship between family support and the level of psychological adaptation of patients with chronic renal failure to undergo hemodialysis therapy. In future, researchers could develop the family intervention which can help patient to reach optimal psychological adaptation.

7. Tables

Table 1. Characteristic respondents (n=35)

Participant Characteristic	Total and Percentage	
	N	%
Gender		
1. Male	17	49
2. Female	18	51
Age		
1. 22- 34 years old	3	9
2. 35- 47 years old	5	14
3. 48-60 years old	22	63
4. ≥ 61 years old	5	14
Occupation		
1. Employed	5	14
2. Unemployed	30	86
Educational Level		
1. Elementary school	16	46
2. Junior high school	6	17
3. Senior high school/ vocational	10	29
4. Bachelor/ diploma	3	8
Haemodialysis Time Period		
1. 1-7 month	17	49
2. 8-12 month	6	17
3. 2- 5 years	12	34

Table 2. Result of family support questionairre on three domain (n=35)

Domain of Family Support	Good		Average		Low	
	n	%	n	%	n	%
1. Emotional Support	35	100	0	0	0	0
2. Information support	20	57	15	43	0	0
3. Appreciation support	23	66	12	34	0	0

Table 3. Result on psychological adaptation on five domain

Domain of psychological adaptation	High		Average		Low	
	n	%	n	%	n	%
1. Emotional regulation	33	94	2	6	0	0
2. Self efficacy	31	89	4	11	0	0
3. Optimism	27	77	8	23	0	0
4. Realistic- objective behaviour	23	66	11	31	1	3
5. Empathy	18	53	15	44	1	3

Table 4. Bivariate analysis of family support to psychological adaptation

Correlations			dukungan_keluarga	adaptasi
Spearman's rho	dukungan_keluarga	Correlation Coefficient	1.000	.458**
		Sig (2-tailed)	-	.006
		N	35	35
	adaptasi	Correlation Coefficient	.458**	1.000
		Sig (2-tailed)	.006	-
		N	35	35

**correlation is significant at the 0.001 level (2-tailed)

8. References

[1] Suzanne c. smeltzer brenda g. bare. Buku Ajar Keperawatan Medikal-Bedah brunner & suddarth vol.2 ,ed.8. Jakarta: Buku Kedokteran EGC; 2001.

[2] Baradero M, Dayrit MW, Siswadi Y. Keperawatan Perioperatif : Prinsip dan Praktik. Jakarta: penerbit buku kedokteran EGC; 2005.

[3] Zamanzadeh V, Heidarzardeh M, Oshvandi KH, Lakdizaji S. Relationship Between Wuality of Life and Social Support Hemodiaylisis Patients in Imam Khimini and Sina Educational Hospital of Tabriz University of Medical Science. Med J Tabriz Univ Med Sci Spring. 2007;29(1):49–54.

[4] Supartini Y. Buku Ajar Konsep Keperawatan Anak. Jakarta: EGC; 2004.

[5] Bader J. Good grief! Helping families cope. washington D.C: ST : Alexander Graham Bell Association for the deaf and hard of hearing Inc; 2001.

[6] Maria Clara Vélez, Palacio C, Moreno AI, Alicia Krikorian. Psychological and family-related facts of suffering in patients with chronic diseases. Tech Reg Anesth Pain Manag [Internet]. 2013;17(1). Available from: https://www.sciencedirect.com/science/article/pii/S1084208X13000736#!

[7] Marilyn FM. Keperawatan Keluarga Teori dan Praktik. Jakarta: EGC; 1992.

[8] Tamher S, Noorkasiani. Kesehatan Usia Lanjut dengan Pendekatan Asuhan Keperawatan [Internet]. Jakarta: salemba medika; 2009. Available from: https://books.google.co.id/books?id=m4DCnlySI-

YC&pg=PR2&dq=Tamher,+S.+%26+Noorkasiani.+(2009).+Kesehatan+Usia+Lanjut+Dengan+Pendekatan+Asuhan+Keperawatan.&hl=en&sa=X&ved=0ahUKEwjf9OHcjo7hAhXX63MBHQfsCqkQ6AEIKjAA#v=onepage&q=Tamher%2C S. %26 Noorkasiani.

[9] Santrock J. Life Span Development. New York: McGraw-Hill; 2002.

[10] Bandung JKPK. Hubungan antara dukungan sosial keluarga dengan kepatuhan pasien diabetes mellitus dalam melaksanakan program diet di Poli Penyakit Dalam RSUD Cibabat Cimahi. Daft Isi. 2010;4080(5340):1.

[11] Taylor S. Health psychology. New York: McGraw-Hill; 1995.

[12] Gotlib IH, Hammen CL. Psychological aspects of de- pression: Toward a cognitive-interpersonal integration. West Sussex, England: Wiley; 1992.

[13] Setyaningsih FD, Makmuroch, Andayani TR. Hubungan Antara Dukungan Emosional Keluarga dan Resiliensi Dengan Kecemasan Menghadapi Kemoterapi Pada PAsien Kanker di RSUD Dr. Moewardi Surakarta. Uversitas Sebelas Maret; 2011.

[14] Sarafino EP, Smith TW. Health Psychology Biopsychosocial Interactions. india: Wiley India Pvt. Limited, 2011; 2011.

[15] Barr FR, Reivich K, Shatte A. The Resilience Factor 7 Keys to Finding Your Inner Strength and Overcoming Life's Hurdles Notes. 2002;1–24.

[16] Bandura A. Self-Efficacy : The Exercise Control. Worth Publishers, 1997; 1997.

[17] Suprajitno. Asuhan Keperawatan Keluarga: Aplikasi dalam Praktik. Jakarta: EGC; 2004.

[18] Caplan G. Support systems and community mental health : lectures on concept development / Gerald Caplan. New York: Behavioral Publications; 1974.

[19] Jiro. Emergence and Essence of the KJ Method. Japanese J Qual Psychol. 2003;

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FACTORS ASSOCIATED WITH PERFORMANCE OF CADRES OF INTEGRATED HEALTH SERVICE FOR OLDER ADULT AT THE MOKODITEK COMMUNITY HEALTH CENTER OF THE DISTRICT OF BOLAANG MONGONDOW UTARA

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ABSTRACT

Older adult is one of the stages of life which is marked by deterioration of physical and mentally functions. The purpose of the research is to identify the factors associated with performance of cadres of Posyandu Lansia (integrated health service for older adult at the Puskesmas Mokoditek. This study is a quantitative research that utilizes descriptive analytical method based on the Cross Sectional research design. Samples are derived using Total Sampling method from a sample frame with total sample size of 30 people. The analysis with Chi-Square resulted in values of p = 0,039 where p was larger than α =0,05 = (0,000> 0,05). Therefore it can be concluded that there was a correlation between the cadres' knowledge and interest toward cadres performance at Posyandu Lansia of Puskesmas Mokoditek of the District of Bolaang Mongondow Utara.

Keywords: knowledge, interest, performance.

Introduction

A country is said to have an old structure if it has an elderly population above seven percent. Increased life expectancy (Life Ecpectancy).

In the world the percentage of elderly people in 2015 reached 12.3% and it is estimated that in 2025 it will increase to 14.9% while in ASIA the elderly population in 2015 will be 11.6% and estimated in 2025 will increase to 15% (Ministry of Health , 2017)

Increasing life expectancy (Life Ecpectancy) is one indicator of the success of health development in Indonesia. This can be seen from the data on the percentage of elderly people in Indonesia in 2013 who reached 8.9% and in 2017 it reached 9.03% of the total population from 2013 to 2017 an increase. Women have a higher life expectancy of 9.53% compared to 8.54% in men. In Indonesia there are 19 provinces (55.88%) in the Indonesian province which have an old population structure and the three provinces with the largest percentage of elderly are DI Yogyakarta (13 , 81%), Central Java (12.59) and East Java (12.25%). While there are three provinces with the smallest percentage of elderly being Papua (3.20%), West Papua (4.33%) and Riau Islands (4.35%) (Ministry of Health, 2017).

According to data from the 2017 Bolaang Mongondow Health Office, there are 8451 people with a population of elderly. The number of elderly people in the working area of the Mokoditek health center is 463 people, males number 174 people, women number 289 people. Elderly people

who actively participated in the elderly posyandu from six posyandu service units were 244 people and 219 were inactive because some of the elderly entered the mokoditek working area lived with children outside the work area of the Mokoditek Health Center. The increasing number of elderly people raises problems, especially in terms of health and welfare of the elderly. This problem if not handled will develop into a more complex problem.

Inactivity of cadres in running posyandu also occurred in four posyandu under the responsibility of the Mokoditek Health Center. This condition has been seen from the results of the initial survey conducted by researchers who monitored the operation of the posyandu that the posyandu activities were still not in accordance with targets expected and the number of cadres who are not active in carrying out their duties.

The Mokoditek Health Center has six posyandu units, with a cadre of 30 people. Each posyandu unit has five cadres, but at the posyandu activity the cadre attendance is only 3-4 people, and many still need help from local health workers to carry out posyandu services with a "five table pattern".

Research Methods

Research design is a forum to answer research questions or test the truth of hypotheses (Setiadi, 2007). In this study conducted using quantitative methods with Cross Sectional design, namely studying the relationship between the dependent variable (Knowledge, Cadre Performance) and Independent Variables (cadre interest) through momentary measurement or just one time and carried out at the same time.

Cross Sectional Design is used based on the purpose of the research, which is to find out the Factors Associated with the Performance of Elderly Posyandu Cadres in the North Bolaang Mongondow Mokoditek Health Center Work Area.

Research Tools and Materials

The sample in this study were all cadres in the work area of the Mokoditek Health Center with a total sampling technique and the number of samples taken was 30 people. The sample in this study was taken according to the criteria set by the researcher, namely according to the criteria of inclusion:

1. Elderly Posyandu cadres who are still active

2. Aged 20-40 years

3. Willing to be a Respondent

RESULTS

1. Characteristics of Respondents

a. Age cadre

Table 5.1 Frequency Distribution by Age of Respondents in Bolaang Mongondow North Mokoditek Health Center, June 2016

Umur	Frekuensi (f)	Percent (%)
20-25 tahun	6	20
26-30 tahun	10	33,3
31-40 tahun	14	46,7
Total (N)	30	100

Source: Primary Data

Based on the table above it can be seen that the characteristics of respondents based on age showed that the most respondents were 31-40 years, 14 people or 46.7%.

b. Level of education

Table 5.2 Educational Frequency Disribution Respondents at Bolaang Mongondow North Mokoditek Health Center, June 2016

Pendidikan	Frekuensi (f)	Percent (%)
SD	2	6,7
SLTP	4	13,3
SLTA	24	80
Total (N)	30	100

Sources: Primary Data

Based on the table above, it was seen that the characteristics of the respondents were mostly high school students, namely 24 people or 80%.

2. Univariate analysis

a. Knowledge of older adulth Posyandu Cadres.

Table 5.3 Frequency Distribution in Knowledge of Respondents in Bolaang Mongondow North Mokoditek Health Center, June 2016.

Pengetahuan	Frekuensi (f)	Percent (%)
Baik	26	86,7
Kurang	4	13,3
Total (N)	30	100

Sources: Primary Data

Based on the table above, it can be seen that the characteristics of respondents based on knowledge show that the most are categorized as good, namely 26 people or 86.7%.

b. Interest in Older Adult Posyandu Cadres

Table 5.4 Frequency Distribution by Interest of Respondents in Bolaang Mongondow North Mokoditek Health Center, June 2016

Minat	Frekuensi (f)	Percent (%)
Baik	27	90
Kurang	3	10
Total (N)	30	100

Sources: Primary Data

Based on the table above, it can be seen that the characteristics of respondents based on knowledge show that the most are categorized as good ie 90 people or 10%.

c. **Performance of Older Adult Posyandu Cadres**

Table 5.5 Frequency Distribution According to the Performance of Respondents in Bolaang Mongondow North Mokoditek Health Center, June 2016

Kinerja	Frekuensi (f)	Percent (%)
Baik	27	90
Kurang	3	10
Total (N)	30	100

Sources: Primary Data

Based on the table above it can be seen that the characteristics of respondents based on knowledge show that the most are categorized as good, namely 27 people or 90%.

3. Bivariate Analysis

a. Relationship between Knowledge and Performance of Elderly Posyandu Cadres at North Bolaang Mongondow Mokoditek Health Center

Table 5.6 Cross Tabulation of Knowledge Relating to the Performance of Elderly Posyandu Cadres at North Bolaang Mongondow Mokoditek Health Center.

Pengetahuan	Kinerja Kader					
	Baik		Kurang			
	n	%	n	%	n	%
Baik	25	83,3	1	3,3	26	86,7
Kurang	2	6,7	2	6,7	4	13,3
Total (N)	27	90	3	10	30	100

Based on the table above shows that there is a relationship between knowledge with the performance of the elderly posyandu cadres in the North Bolaang Mongondow Mokoditek Health Center with the Chi-Square Signed Rank Test results on respondents, namely there is a significant relationship with the value p = 0.039 and can be seen in the cadre knowledge level as many as 26 people or 86.7% with the performance of cadres in either category 27 people or 90%.

b. Relationship between Interest and Performance of Elderly Posyandu Cadres at North Bolaang Mongondow Mokoditek Health Center

Table 5.7 Cross Tabulation of Interest Related to the Performance of Elderly Posyandu Cadres at North Bolaang Mongondow Mokoditek Health Center

Minat	Kinerja Kader					
	Baik		Kurang			
	n	%	n	%	n	%
Baik	27	90	0	0	27	90
Kurang	0	0	3	10	3	10
Total (N)	27	90	3	10	30	100
Signifikan, 0,000						

Based on the table above shows that there is a relationship between knowledge with the performance of the elderly posyandu cadres in the North Bolaang Mongondow Mokoditek Health Center with the Chi-Square Signed Rank Test results on respondents that there is a significant relationship with p = 0,000 and can be seen as much as good category cadre interest 27 people or 90% with the performance of cadres in either category 27 people or 90%.

Discussion

1. Cadre Knowledge About Elderly Posyandu

The results of the study were found from 30 respondents with a good level of knowledge of as many as 26 people or 86.7% and in the poor category as many as 4 people or 3.8%. This is due to the fact that most education is graduated from high school. The higher a person's education, the easier it is to receive information so much knowledge possessed. Conversely, less education will hinder the development of interest in the values introduced.

Knowledge is the result of knowing and this happens after people do sensing an object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch so that most human knowledge is obtained through the eyes and ears. This knowledge domain is very important for the formation of one's actions (Notoatmodjo, 2007).

2. Cadre Interest About Elderly Posyandu

The results of the study were found from 30 respondents with the interest of the elderly Posyandu cadres in the good category, namely as many as 27 people or 90% and the poor categories as many as 3 people or 10%. This is because not about one's knowledge but because of someone's willingness to carry out their duties.

Good or less knowledge does not become a benchmark in carrying out an action because someone's interest is based on a high willingness to do something.

3. Performance of Elderly Posyandu Cadres

The results of the study found 30 respondents with the performance of elderly posyandu cadres in the good category, namely as many as 27 people or 90% and the poor category as many as 3 people or 10% people. This is due to the fact that the cadres are the driving force for posyandu, the management of a posyandu is said to be successful, largely determined by the performance of the cadres.

Performance is someone's success in carrying out tasks And Responsibility. In this case the performance can be measured based on the description of the work both during the implementation of the posyandu and outside the day of the implementation of the posyandu (Ministry of Health, 2011).

4. Related Knowledge with the Performance of Elderly Posyandu Cadres at North Bolaang Mongondow Mokoditek Health Center

The results of the study were 30 respondents about the relationship of knowledge with the performance of elderly posyandu cadres at the North Bolaang Mongondow Mokoditek health center through testing using the SPSS program v. 20 shows that a significant value of 0,000 where the value is smaller than $\alpha = 0.039$ thus H1 is accepted. This shows that there is a relationship between knowledge with the performance of posyandu cadres in the performance of elderly posyandu cadres at the Bolaang Mongondow North Health Center.

Knowledge is the result of knowing and this happens after people do sensing an object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch so that most human knowledge is obtained through the eyes and ears. This knowledge domain is very important for the formation of one's actions (Notoatmodjo, 2007)

From the results found in this study, the researcher assumes that if the cadre's knowledge about the elderly posyandu can affect good performance as well. Knowledge of assignments is very important for every cadre at work. Good knowledge of tasks and responsibilities within an organization tends to be will improve the quality of his work. This research is in line with the research conducted by Latief (2010), where sufficient knowledge can improve the performance of one's cadres. Similarly, the research conducted by Adliana (2013) said that the higher the level of knowledge of cadres, the better the performance of these cadres.

Thus the researcher concludes that if the cadre's knowledge is good or sufficient, the performance of the elderly posynadu cadre will be good so that the elderly posyandu can run well.

5. Relationship of Interest with the Performance of Old Posyandu Cadres in North Bolaang Mongondow Mokoditek Health Center

The results of the study of 30 respondents about the relationship of interest with the performance of elderly posyandu cadres at the North Bolaang Mongondow mokoditek health center through testing using the SPSS v.20 program showed that a significant value is 0,000 where the value is smaller than $\alpha = 0{,}000$ so H1 is accepted there is a relationship between knowledge with the performance of posyandu cadres in the performance of elderly posyandu cadres at the Bolaang Mongondow North Health Center.

According to Sutjipto, 2001 interest is the tendency of someone to behave based on his interest in certain types of activities and someone's interest in something will be more visible if the person has a sense of pleasure in the object. From the results found in this study, the researcher assumes that if the interest of cadres is good, the performance of cadres is also good because if someone is interested in a job then its performance will be good because it pursues the work it does. Previous research by Bangsawan (2013) showed that there was a relationship between interest and cadre performance in implementing posyandu on the elderly with P-Value = 0.02. Behavior in implementing Posyandu is what affects the assessment of cadre performance.

Thus the researcher concludes that if the interest of posyandu cadres is good or sufficient, it can improve the performance of cadres in carrying out their duties as posyandu cadres for the elderly.

Conclusion

1. Almost all interests of elderly cadres at the posyandu in the elderly at the Mokoditek health center are in good category.
2. Almost all knowledge of elderly cadres at the posyandu in the elderly at the Mokoditek health center are in good category.

3. Almost all the knowledge of the performance of elderly cadres at the posyandu in the elderly at the Mokoditek health center are in a good category.
4. Analyzed the relationship between knowledge and performance of elderly Posyandu cadres in the North Bolaang Mongondow Mokoditek Health Center work area
5. It was analyzed that there was a relationship between the interest and the performance of elderly posyandu cadres in the North Sumatra Bolaang Mongondow Mokoditek Health Center work area.

Suggestion

Based on the conclusions described above, the suggestions that can be given are as follows:

1. For educational institutions

   The results obtained in this study are expected to be a reference material for use in research then related to cadre performance.

2. For research locations

   The results of this study are expected to be a consideration for relevant parties in the Bolaang Mongondow North Mokoditek health center in determining the direction of policy and development in improving the performance of elderly posyandu cadres in optimizing the services of elderly posyandu

3. For researchers

   It is expected to be the basis and learning experience for researchers to better understand and understand the interests and performance of elderly posyandu cadres.

Bibliography

Ahmadi. A, 2003, *Ilmu Pendidikan*, Jakarta, Rineke Cipta

BKMM, 2006, *Indonesia Memasuki Era lansia*, diambil tanggal 12 Mei 2016 dari http://www.bkkm.go.id

Depkes, 2005, *Rencana Strategi Departemen Kesehatan*, Jakarta, Depkes RI

Djaali, 2007, *Pengukuran Dalam Bidang Pendidikan*, Jakarta, Gramedia

Efenddy.F, 2009, *Keperawatan Kesehatan Komunitas Teori Dan Praktik Dalam Keperawatan Jilid 1*, Jakarta, salemba medika.

Hidayat, A.A.A., 2007, *Riset Keperawatan dan Teknik Penulisan Ilmiah*, Salemba Medika, Jakarta

Kemenkes, 2013, *Riset Kesehatan Dasar Jakarta Badan Penelitian dan pengembangan Kesehatan*, Kementrian RI

Kemenkes RI, 2017, Pusat Data dan Informasi, Jakarta Selatan

Maryam.R.S,dkk, 2008, *Mengenal Usia Lanjut dan Perawatannya*, Jakarta, Salemba Mediaka.

Mubarak,dkk, 2009, *Ilmu Keperawatan Komunitas Konsep Dan Aplikasi Buku 2*, Jakarta, Salemba Medika.

Muhibbidin. S, 2005, *Psikologi Pendidikan*, Bandung, PT. Remaja Rosdakarya

Notoatmodjo. S, 2003, *Promosi Kesehatan: Teoro Dan Aplikasi Edisi 10*, Jakarta, Rineke Cipta

Notoatmodjo. S, 2007, *Perilaku Kesehatan dan Ilmu Perilaku*, Jakarta, Rineke Cipta

Potter. P.A, Perry. A.G, 2009, *Buku Ajar Fundamental Edisi 7*, Jakarta, Salemba Medika

Stanley,dkk, 2006, *Buku Ajar Keperawatan Gerontik*, Jakarta, EGC

Setiadi, 2007, *Konsep Dan Penulisan Riset Keperawatan*, Graham Ilmu, Yogyakarta

Slameto, 2003, *Belajar Dan Factor-Faktor Yang Memepengaruhinya*, Jakarta, Rineke Cipta

Smeltzer, 2001, *Buku Ajar Keperawatan Medical Beda*, Jakarta, EGC

Tamher.S, Noorkasiani, 2009, *Kesehatan Usia Lanjut Dengan Pendekatan Asuhan Keperawatan*, Jakarta, Salemba Medika

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FACTORS AFFECTING THE DIETARY COMPLIANCE OF SASAK'S ELDERLY WITH HYPERTENSION BASED ON TRANSCULTURAL NURSING THEORY

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ABSTRACT

The low compliance of dietary hypertension can cause uncontrolled blood pressure. Sasak's elderly have any culture consumption a lot of salt. The transcultural nursing theory used to know health behaviour according to cultural. This study aimed to analyze factors affecting dietary compliance of the elderly with hypertension. Design of this study was cross-sectional. Samples taken used purposive sampling and obtained 52 elderly. Data were collected through questionnaires and analyzed using Spearman's Rho test with a significance level 0.05. This study showed education level did not have a correlation (p= 0.7, r=0,039) and there were correlation between economy factor (p= 0.000, r=0,542), family support (p= 0.000, r=0,542), culture and lifestyle (p= 0.000, r=0,542) with dietary compliance of elderly with hypertension. Those meant that economic, family support, culture, and lifestyle were factors that affect dietary compliance of elderly with hypertension. The elderly expected to maintain compliance by involving a healthy lifestyle with family support to control bloodpressure.

Keywords: factors, dietary compliance, elderly, hypertension

1. Introduction

Hypertension is a systemic increase of arterial blood pressure which gradually occurs over a long period of time. The diagnosis of hypertension is intended for conditions when blood pressure readings are over 130/80 mmHg [1,2]. Uncontrolled hypertension can cause disruption of the blood circulation system, including acute myocardia, blood vessels swallowing, heart failure, brain hemorrhage, and stroke. Moreover, hypertension also can causes blindness, kidney failure, cognitive impairment, and death [1].

Together with increasing age, peripheral blood vessel resistance will also increase and can lead to hypertension. In elderly people, the blood vessels have hypertrophy occurring naturally with age, making it lose elasticity, so that the blood flow is inhibited and increases blood pressure [3]. So, it causes hypertension in elderly people [4]. A definitive causative factor of hypertension in elderly people remains unclear. Some articles have found that age, lifestyle, education and a high sodium diet are risk factors of hypertension. Lifestyle related to diet preference has an impact on the incidence and prevalence of hypertension. Junk food consumption, low fiber diet, high fat and high sodium diet also contribute to the incidence of hypertension. Furthermore, alcoholism, smoking, and a sedentary lifestyle are also high risk lifestyle behaviors which cause hypertension [5–8].

A previous pilot study in Tanjung Karang Village (including in the working area of Tanjung Karang Primary Health Care) has shown that 12 out of 20 elderly are diagnosed with hypertension

(60%). Most of the elderly said that their family didn't provide a low sodium diet for them. Only 4 out of 12 hypertension elderly patients (33.33%) have ever tried a low sodium diet, but they said the taste of the food was not good and they didn't want to obey the diet. Based on family explanations, they usually add one or more teaspoons of salt to their food. This indicates that the consumption of salt among Sasak's elderly remains high. The recommendation for salt consumption per day is not more than 1.5 teaspoons or 5-6 grams/day [6].

Badan Pusat Statistik Nusa Tenggara Barat (2014) reported that 107,364 elderly are diagnosed with hypertension, 5,000 people among them live in Mataram (Dinkes Kota Mataram, 2014). In 2013, there were 920 elderly with hypertension under the working area of Tanjung Karang Primary Health Care, which increased to 1,006 people in 2014. From the previous pilot study, specifically in Tanjung Karang Village, there are 74 cases of hypertension among 120 elderly. Every month Tanjung Karang Primary Health Care have already done *Posyandu* for elderly, which has several activities such as gymnastics for the elderly, general check-up, provision of medicine, and education or socialization of the elderly about hypertension. Socialization about hypertension as an issue is important because most of the elderly and their families still do not have awareness to control their sodium consumption.

High sodium intake can increase the risk of hypertension incidence. A high concentration of sodium will increase plasma volume inside the body and cause high blood pressure [5,6,9]. The conclusion from the previous pilot study is that the elderly in Mataram still can't control their sodium intake. This habit is suspected to have a correlation with culture and local wisdom of the community. Some cultures are well known to have a strong relationship with the health of the community, for example the way of cooking, eating pattern, also preference and acceptability of food. This kind of culture will influence the health of the community, whether it gives positive or negative impacts [10].

Socio-economic factor, occupation, education, local facilities, genetic factors, eating patterns, and culture are strongly related to the risk and disease pattern in a community [11]. Therefore, transcultural nursing is used as an approach to explain individual or community behaviors which are related to health. Transcultural nursing focuses on 7 factors that influence behavior such as family or social support, cultural value and lifestyle, educational background, family finances, religion and life philosophy, law and politics, and technology [12]. Up to now, research about factors which influence behavior, especially about diet compliance, among elderly in Tanjung Karang is still limited. So, further research is necessary for this issue.

Based on the explanation above, this research is aimed to analyze factors related to dietary compliance of Sasak's elderly with hypertension in the working area of Tanjung Karang Primary Health Care through a transcultural nursing approach. The research will include some factors to be observed, i.e. family or social support, cultural value and lifestyle, and educational background. Meanwhile, some factors like family finances, religion and life philosophy, law and politics, and technology are not included in the research.

2. Research Methods

2.1 Research design

This study was a correlational study and used s cross sectional design to analyze factors affecting adherence of diet hypertension among Sasak's elderly.

2.2 *Population and sample*

The population of this study is the elderly with hypertension in Tanjung Karang Primary Health Care work area, amounting to 74 elderly. The samples are that 52 elderly were matched with inclusion and exclusion criteria. Inclusion criteria in this study is people over 60 years old living in Tanjung Karang, elderly who are in Sasak's tribe, living with their families, and agreeing to be a sample in this study. The exclusion criteria in this study were elderly with hearing loss, cognitive and psychiatric disorders.

2.3 *Variables*

The independent variables in this study are family support, culture, lifestyle, educational level, and economical status. The dependent variable is the elderly's hypertension related to diet.

2.4 *Instruments*

Questionnaires was used to collect data. This study used 3 questionnaires to collect data i.e. hypertension diet compliance questionnaire, family support questionnaire, and culture and lifestyle questionnaire. Each questionnaire has been tested for validity and reliability before the study was conducted, namely the hypertension diet compliance questionnaire has a Cronbach alpha value of 0.788, the family support questionnaire has a Cronbach alpha 0.812 value, and culture and lifestyle support questionnaire has a Cronbach alpha value of 0.873.

2.5 *Research procedures*

The study was carried out at the work area of Tanjung Karang Health Center on January 8-15, 2016. Before this research, the proposal was subject to an ethical test at the Health Research Ethics Commission, Faculty of Medicine, Airlangga University. Ethical feasibility was declared with certificate number 424 / EC / KEPK / FKUA / A / 2016 so that research can be conducted. Data collection used the questionnaires and was conducted by home visits.

2.6 *Analysis of research*

The collected data was use analyzed by Spearman rho to know the association between both variables with a significance level of <0.05. Correlation coefficient (r) was used to know how strong the correlation is between two variables..

3. Results

Table 1. The characteristics of respondents

Characteristics	n	%
Sex		
Female	33	63.5
Male	11	36.5
Age in years		
60-74 years	44	84.6
75-90 years	8	15.4
Number of Family		
3 People	5	9.6
4 People	17	32.7
5 People	14	26.9
>5 People	16	30.8
Education Level		
No School	32	61.5
Elementary School	20	38.5
Economic Status		
≤1.4 million rupiah	41	78.8
>1.4 million rupiah	11	21.2
Family Support		
Less	44	84.6
Good	8	15.4
Culture and lifestyle		
Adhere culture	38	73.1
Unadhere culture	14	26.9
Diet of Hypertension		
Not Obey	35	67.3
Obey	17	32.7

Table 1 shows the participants' gender, with 33 female (63.5%) and 19 male respondents (36.5%). The participants' age category was 60-74 years with 44 respondents (84.6%) and at the age of 75-90 years with 8 respondents (15.4%). Based on the number of families the minimum count is 3 people with 5 respondents (9.6%). The education level of respondents is up to elementary school

(38.5%) and another one has no schooling. Respondents' economic condition are 41 respondents (78.8%) under regional minimum salary (less than 1,400.000) and 11 respondents more than UMR (more than 1,400.000). The majority of family support of respondents overall is less than 84.6% and family support is good at only 8 respondents (15.4). Respondents' culture and lifestyle is 38 respondents adhering to the culture (73.1%) and 14 respondents (26.9%) unadhering to the culture to eat too much salt. That shows that the majority of Sasak's elderly adhere to the culture and often consume over 1.5 teaspoons of salt. Respondents' compliance with diet hypertension is 35 respondents (67.3%) not obeying diet hypertension, and only 17 respondents (32.7%) were obeying diet hypertension.

Table 2. The correlation of education level and diet adherence

Education level	Diet Adherence				Total	
	No		Yes			
	n	%	n	%	n	%
No school	22	42.3	10	19.2	32	61.5
SD	13	25	7	13.5	20	38.5
SLTP	0	0	0	0	0	0
SLTA	0	0	0	0	0	0
PT	0	0	0	0	0	0
Total	35	67.3	17	32.7	52	100
***Spearman's rho* p=0.7 r= 0.039**						

Table 2. Showed that p=0.7 (p>0.05) or H_1 rejected, it means that there is no correlation between education level with adherence of diet hypertension.

Table 3. The correlation of economical level and diet adherence

Economic level	Diet adherence				Total	
	No		Yes			
	n	%	n	%	n	%
Under UMR	33	63.5	8	15.4	41	78.9
Top UMR	2	3.8	9	17.3	11	21.1
Total	35	67.3	17	32.7	52	100
***Spearman's rho* p= 0.000 r= 0.542**						

Table 3. Showed that p=0.000 (p>0.05) or H_1 accepted, it means that there is a correlation between economic condition and diet adherence. *Correlation coefficient* r=0.542 means a positive correlation, a better economic level so a better level of adherence.

Table 4. The correlation of family support with diet adherence

Family Support	Diet Adherence				Total	
	No		Yes			
	n	%	n	%	n	%
Bad	35	67.3	9	17.3	44	84.6
Good	0	0	8	15.4	8	15.4
Total	35	67.3	17	32.7	52	100
***Spearman's rho* p= 0.000 r= 0.612**						

Table 4. Showed that p=0.000 (p<0.05) or H_1 accepted, it means there is a correlation between family support with diet adherence. *Correlation coefficient* r=0.612 means a positive correlation, better family support so a better level of adherence.

Table 5. The correlation of culture and life style with diet adherence

Culture and Lifestyle	Diet adherence				Total	
	No		Yes			
	n	%	n	%	n	%
Following culture	34	65.4	4	7.7	38	73.1
Not following	1	1.9	13	25	14	26.9
Total	35	67.3	17	32.7	52	100
***Spearman's rho* p= 0,000 r= 0.779**						

Table 5. Shows that p=0.000 (p<0.05) or H1 accepted, it means there is a correlation between culture and lifestyle with diet adherence. *Correlation coefficient* r=0.779 means a positive correlation, a better culture and lifestyle so a better level of adherence.

4. Discussion

Based on the research findings, there was a correlation between economic level with hypertension diet adherence and a positive middle correlation. It means that a high economic level will have high adherence to diet hypertension. The result was matched with transcultural nursing from Leininger (1984), where people who are sick will use all the material sources to become healthy. This theory showed that family income will affect health behavior [12]. Families with low income couldn't fulfill their need for diet hypertension.

Respondents in this study lived with little family in their home so the income that they had should be divided and not focused on the elderly needed. The researcher thought that economic status effects adherence to diet hypertension, with a good economic status the family and elderly can buy any foods based on diet DASH.

This research finds that there was a correlation between family support with diet adherence and a positive strong correlation. It means that good family will support and motivate a family sickness in regard to health behavior. This study matched with transcultural nursing, family support will give time, notice, and remind respondents to fulfill their physical, mental, and social needs. Family support is a core factor that impacts health behavior [12]. In other research, Haastrup, et al (2014) stated that living with a supportive family can increase compliance of the diet regiment [13]. That means the

family is a support system for elderly with hypertension in serving healthy food for their diet and increasing diet adherence.

The majority of respondents in this research were living with their family, but they have not got good support from family. Their families do not know about hypertension, what they should do when hypertension relapses, and they do not accompany the elderly to go to public health. Most of the respondents' families cooked for the elderly but it is not relevant with diet hypertension. This condition makes the elderly have a low adherence of diet hypertension.

According to the results of the research, there is a strong positive correlation between family incomes and dietary compliance of elderly with hypertension. This finding supports transcultural nursing theory, that culture and lifestyle are some factors which influence someone's behavior, including health behavior [12]. In another way, it also can be said that culture and lifestyle have an impact on the dietary compliance of the elderly with hypertension.

The results of much of the research shows that most of the elderly practice a culture and lifestyle which didn't support them in their diet, so that it lowers dietary compliance among them. Based on research from Tailakh (2014) in Arab, culture and lifestyle influence blood pleasure and cause Arab people to have a positive culture such as: they know about a healthy lifestyle, how to reduce health risks, and eat a heart healthy diet. Arab people often consumption vegetables, fruits, healthy fat, nuts, etc. [14]. From this research we know if the culture in the community is healthy, it can influence a diet of hypertension. Cultural acculturation provides a positive impact for a diet of hypertension but if the culture is bad this makes for wrong health behaviors. Some of Sasak's elderly with hypertension who adhere to the culture have a bad diet because their culture consumes a high level of salt.

To overcome those culture and lifestyle factors the nursing process should adopt a strategy which accommodates the local wisdom of the communities' culture [12]. Not all cultures should be eliminated. Yet, some cultures which have a positive influence on health should be promoted in order to increase the health of the community. From the research, it was also known that salt consumption among the elderly was >1.5 teaspoons/day and they consumed another sodium source like MSG and preserved food [6].

Eating behavior which is high in sodium consumption should be changed because it is not good for the elderly, especially for elderly with hypertension. Even though most of the elderly still practice a high sodium diet, some of them are already aware that they need to manage their diet by consuming high-fiber food such as vegetables, fruits, nuts and minimize their consumption of meat and preserved food. That kind of diet is well known as the DASH (Dietary Approaches to Stop Hypertension) diet. DASH diet has already proven to have benefit in lower and control blood pressure. The principle of the DASH diet is limiting fat consumption and eating more foods which are rich in potassium, calcium, and magnesium. Examples of suggested foods for this diet are fruits, vegetables, cereals, and low-fat milk. Besides, this diet also recommends consumption of plant-based protein sources like nuts, rather than animal-based protein sources i.e. meats, poultry, and fish [15,16].

5. Conclusion

Based on the research findings, it is known that there is no correlation between educational background and dietary compliance among the elderly with hypertension in Tanjung Karang Village

(including in Tanjung Karang Primary Health Care). This happens because the elderly already have access to knowledge about hypertension from their environment. On the other hand, socio-economy, social/family support, cultural value, and lifestyle are positively correlated with dietary compliance among the elderly with hypertension in Tanjung Karang Village (including in Tanjung Karang Primary Health Care).

The transcultural nursing approach can be made as one of recommendation to provide a nursing process in a community which still has low awareness about dietary compliance for elderly with hypertension. Primary Health Care should give more education about hypertension to increase social/family support and motivation for the elderly with hypertension. This is so that dietary compliance among them could also be improved. For the researcher, further study in the field of factors that influence or correlate with dietary compliance among elderly with hypertension is still necessary. The scope and sample size for future research could be improved in order to get a more accurate result and additional findings. For the research instrument, it is suggested to use a more detailed questionnaire such as FFQ (Food Frequency Questionnaire).

References

[1] Whelton P K, Carey R M, Aronow W S, Casey D E, Collins K J, Himmelfarb C D, Depalma S M, Gidding S, Jamerson K A, Jones D W, Maclaughlin E J, Muntner P, Ovbiagele B, Smith S C, Spencer C C, Stafford R S, Taler S J, Thomas R J, Williams K A, Williamson J D, Wright J T, Halperin J L, Past I, Al-khatib S M, Beckman J A, Birtcher K K, Bozkurt B, Deswal A, Fleisher L A and Gentile F 2018 *Clinical Practice Guideline 2017 ACC / AHA / AAPA / ABC / ACPM / AGS / APhA / ASH / ASPC / NMA / PCNA Guideline for the Prevention , Detection , Evaluation , and Management of High Blood Pressure in Adults A Report of the American College of Cardiology /*

[2] Reboussin D M, Allen N B, Griswold M E, Guallar E, Hong Y, Lackland D T, Miller E P R, Polonsky T, Thompson-Paul A M and Vupputuri S 2018 Systematic Review for the 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association *Hypertens. (Dallas, Tex. 1979)* **71** e116–35

[3] Aspiani R Y 2014 *Buku Ajar Asuhan Keperawatan Gerontik:Aplikasi NANDA, NIC dan NOC* (Jakarta: Trans Info Media (TIM))

[4] Currie G and Delles C 2018 Blood pressure targets in the elderly *J. Hypertens.* **36** 234–6

[5] Chan Q, Stamler J and Elliott P 2015 Dietary Factors and Higher Blood Pressure in African-Americans *Curr. Hypertens. Rep.* **17**

[6] G. R, R.M. S, V. S, A. G and V. M 2007 Dietary salt intake and hypertension in an urban South Indian population - [CURES - 53] *J. Assoc. Physicians India* **55** 405–11

[7] J. Deaver U, . K, . R and Samuel A J 2016 Hypertension: Contributing Risk Factors and Lifestyle Modification among Hypertensive Clients *Int. J. Pract. Nurs.* **3** 109–13

[8] Kishore J, Gupta N, Kohli C and Kumar N 2016 Prevalence of Hypertension and Determination of Its Risk Factors in Rural Delhi *Int. J. Hypertens.* **2016** 1–6

[9] Whelton P K, Carey R M, Aronow W S, Casey Jr. D E, Collins K J, Himmelfarb C D, DePalma S M, Gidding S, Jamerson K A, Jones D W, MacLaughlin E J, Muntner P, Ovbiagele B, Smith Jr. S C, Spencer C C, Stafford R S, Taler S J, Thomas R J, Williams Sr. K A, Williamson J D and Wright Jr. J T 2017 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults *J. Am. Coll. Cardiol.* **71** e127–248

[10] Tamher dan Noorkasiani 2012 *Kesehatan Usia Lanjut dengan Pendekatan Asuhan Keperawatan* ed R Angriani (Jakarta: Salemba Medika)

[11] Pease G 2005 Theory and Practice of Nursing: An Integrated Approach to Caring Practice ed L Basford and O Slevin *AORN J.* **82** 899–899

[12] MM L 1988 Leininger's theory of nursing: cultural care diversity and universality. *Nurs. Sci. Q.* **1** 152–60

[13] E.A, Haastrup, L.O D and A.J T 2014 Family Support as Predictor of Adhernce to Diet Regimen among People with Type II Diabetes in Lagos State *IOSR J. Nurs. Heal. Sci.* **3** 15–21

[14] Tailakh A K, Evangelista L S, Morisky D E, Mentes J C, Pike N A and Phillips L R 2016 Acculturation, Medication Adherence, Lifestyle Behaviors, and Blood Pressure Control Among Arab Americans *J. Transcult. Nurs.* **27** 57–64

[15] Nih, Nhlbi and Hhs U S D of 2006 Lowering Your Blood Pressure With DASH *Natl. Hear. Lung Blood Inst.* 1–64

[16] Group F and Size S 2014 DASH Eating Plan 2–5

PHP-864

SMARTPHONE ADDICTION AND INTERNET ADDICTION: PREDICTORS OF PHUBBING (TOXIC IN INTERPERSONAL RELATIONSHIPS): SYSTEMATIC REVIEW

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ABSTRACT

The development of communication and information technology which followed the development of the internet gave rise to a reality called new media. One form of new media that is experiencing rapid development is smartphones, with all the conveniences offered by features, people forget about the negative effects, such as the behavior of Phubbing. Phubbing behavior is the act of seeing a smartphone while having face-to-face conversations with others, highlighting a number of factors that can cause someone to use their smartphone while having face-to-face conversations with others including smartphone addiction, SMS addiction, social media addiction, internet addiction, and game addiction on line. The purpose of this article is to identify predictors from phubbing. Reviews are carried out in the following databases: Scopus, Science Direct, PubMed, SAGE, ProQuest, Spinger links. The keywords used are: Smartphone addiction, Internet Addiction, Phubbing. The journal is limited by the year of publication 2013-2019. Of the 56 jounals obtained, 15 journals identified smartphone addiction and internet addiction as predictors of phubbing. Of all the journals obtained by the main predictor from phubbing is smartphone addiction and internet addiction.

Keywords: smartphone addiction; internet addiction; phubbing; interpersonal relationship

1. Introduction

Phubbing is a term taken from the words Phone and Snubbing. Phone means mobile phones, smartphones, gadgets. While snubbing is a modern behavior that is ignoring, refusal, or also what is considered insulting during social interaction (interpersonal communication)[1] [2] [3] [4] [5]. Phubbing is a behavior in which someone is more focused on smartphones when interacting with other people, whether in the form of communication between two or more people or when interacting, where someone starts playing with a smartphone without a clear purpose. The goal is not to start talking to other people, not responding to other people's talk[6].

Recent research reports that 90% of people use smartphones as smart devices for social activity and interaction, 69.1% experience smartphone addiction[7]. Smartphones have become a part of human life. Many people feel inseparable from their smartphones. The age group of mobile phone users is dominated by 13-20 years. It often has an impact on dependence regardless of the surrounding environment. At this age good interaction skills are needed. So that, peer relations can be guaranteed well[8].

Data from the Adult Research Center showed that 46% of smartphone users in the United States claimed that they could not live without a smartphone. Many of them were experiencing mental disorders, such as phubbing. In India, teenagers who experience phubbing behavior are around

49.3%, smartphone users: 77%, using social media features like Facebook and WhatsApp: 62.4%. Phubbing duration 1-2 Hours: 79.1%; frequency ½ to 1 day around 89.3%, adolescents phubbing at home: 65.9%, and having been favored 1-3 times/day: 51.2%[13]. The research conducted by Hanika [14] in 2015 found that 54% felt anxious, 82% do phubbing; 54% do phubbing by receiving calls (calls) and messages; 36% experience intensity of using a smartphone throughout the day, and 64% did not ask permission from the other person to use a smartphone during interaction/communication.

The preoccupation with our smartphones has changed the way we interact with other people. Despite the many advantages of smartphones, it can damage our personal relationships and our well-being. We show the harmful effects of phubbing, revealing that phubbed individuals experience a sense of social exclusion, which leads to an increased need for attention and generates individuals who are tied to social media[15].

Phubbing is a new term. There was less research about phubbing and its predictors. So that, this systematic review was aimed to identify the predictors of phubbing.

2. Research Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement.

2.12Data sources and searches

The results obtained were obtained from databases: Scopus, Science Direct, PubMed, SAGE, ProQuest, Springer links. There were 59 journals found, which included: Scopus database 12 articles, Science Direct 10 articles, Springer links 8 articles, SAGE 7 articles, PubMed 10 articles, and ProQuest 12 articles. Keywords used were “smartphone addiction” AND “internet addiction” AND “phubbing” AND “interpersonal relationship”. All journals that have been obtained were then screened according to the journal psychology area, computer sciences, art and humanities, and social sciences. Only 56 articles remained.

2.13Study selection

The papers went through 3 stages of screening to determine accuracy and avoid duplicate titles, citations, and abstracts. In the first stage, filtering all relevant data is based on the content. Second, all articles were read at least 3 times and each article was independently assessed by the researcher. In the last step the researcher finalized the data to determine the appropriate articles before extracting and analyzing.

2.14Data extraction and quality assessment

All citations retrieved from electronic databases were imported to Mendeley Desktop. Two reviewers (AY, YSA) independently analyzed the titles and abstracts of every study retrieved from the literature search to identify potentially eligible studies. The full text of the remaining studies was obtained for further examination. The last review was conducted by a first reviewer (TPD).

The research data was extracted independently by the same two reviewers by including the first author's name, year of publication, sample size, research design, and general characteristics of

participants (age).. A detailed explanation of the phubbing predictor factors and the negative impact on relationships when face-to-face interactions are documented. We use a smartphone and internet addiction as the main results of this systematic review.

Data of included studies were independently extracted by the same two reviewers by including first author's name, year of publication, sample size, study design, characteristics of participants (age) and the main outcome of interest is the predictors of phubbing.

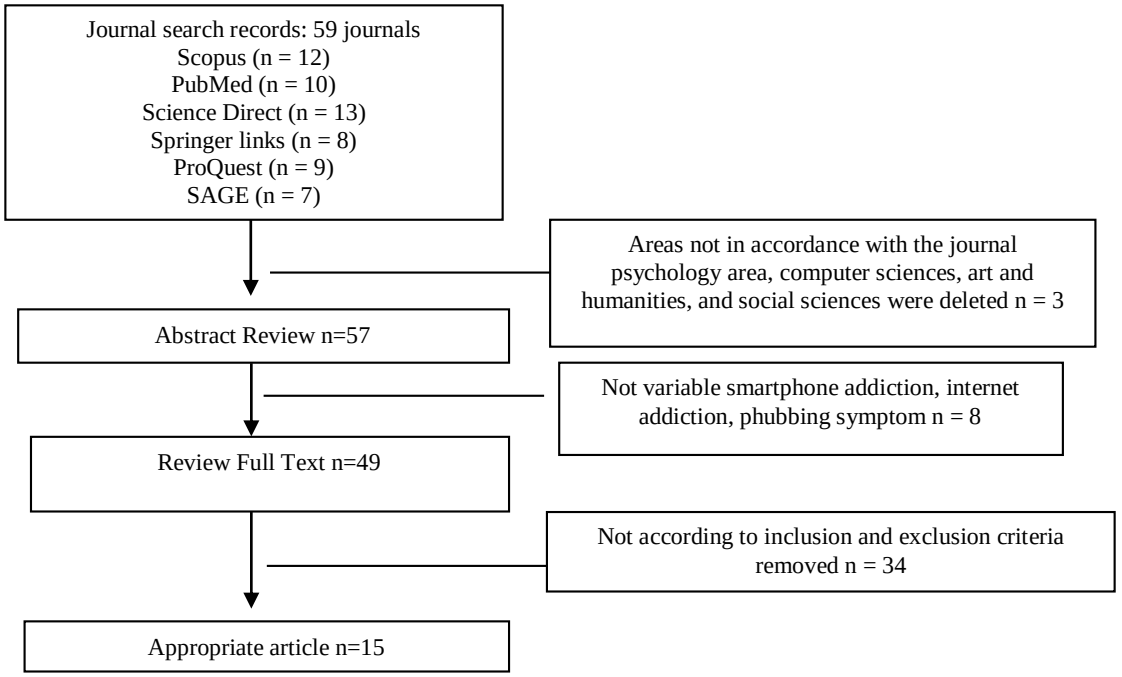

Figure 1. Flowchart of literature search

3. Results

From 15 journals reviewed, the number of samples varied between 125 - 1475 respondents, and involved respondents between the ages of 14-55 years. The total number of respondents was 6,666. The study used various designs, such as: descriptive analysis, comparison, correlation, experimental and qualitative, cross-sectional, and mixed method (qualitative and quantitative). The study was conducted in various countries, including: Turkey, England, Brunei, America, Germany, Poland, India, and Belgium.

The results of the study conducted by Karadağ et al. [16] involved 409 respondents, which were selected randomly. Data were obtained from 8 students (who gave the same score for all items and who were believed to have responded dishonestly), which might negatively affect the reliability of the study, and which was deleted before the start of the analysis. Thus, data from 401 participants were used in the study. Of the 401 participants, 114 were male (28.4%), while 287 were male (71.6%). Their average age is 21.9. In total, 70% of participants have smart phones, 92% use social media, and 75% spend 2 hours or more on the Internet per day. The findings indicate that the highest correlation value explains pubbing is mobile addiction, other correlation values reflect a dependence on cell phones. There is an increasing tendency towards cell phone use, and this tendency

is the basis of phubbing. According to Chotpitayasunondh and Douglas [17], in a study in the UK, with 276 respondents aged 18-66 years, the results revealed that there was a positive correlation between smartphone addiction and phubbing behavior.

Research by Davey et al. [13] in India with 400 respondents aged 15-29 years for 6 months (November 15, 2016-May 15, 2017), found that the prevalence of phubbing is 49.3%. The most important predictors associated with phubbing were internet addiction ($p<0.0001$, OR=2.26), smartphone addiction (OR 25.9), fear of missing out (OR 18.8), and lack of self-control ($p<0,0001$, OR=0.73-1.72).

4. Discussion

Phubbing is the behavior of ignoring others in the social environment when two or more people are interacting and when they are more focused on smartphones[29]. This phenomenon occurs when someone suddenly turns his gaze to their phone in the midst of social interaction[17]. Phubbing is considered an impolite behavior; can damage emotional closeness in human interactions, which can then hinder relationships[11]. This is due to smartphone and internet addiction[24]. People will become anxious (nomophobia)[18]. So that, they are more apathetic towards the environment because it is more focused on what is in his hand. Communication should extend from the heart to the finger, which is far closer. This can be seen anywhere when eating together, meeting, lecturing, or gathering with friends or family[30] [31]. For many couples phubbing behavior occurs when they are together at home, in bed, and when eating together[21].

The reason people do phubbing is: receiving calls, texting, chatting/social media, playing games, watching movies, bored with the other person, to be happy, and bored during lectures or lessons [2][14]. According to research in Denmark involving 25 students aged 16-20 years, students feel annoyed at being harassed for the sake of smartphones, because they are more carried away with Facebook and Instagram when spending time with friends and family[32].

This phubbing behavior arises from people who are addicted to smartphones and the internet[17][33]. People with addiction will focus more on smartphones and the internet, rather than talking to other people in the real world (interaction), and who will experience nomophobia. Phubbing is considered an impolite behavior which can damage emotional closeness in human interaction, which can then hinder relationships[11], lead to negative emotions, and being close-minded. Viewing a smartphone will hamper the communication in the relationship between two people during face-to-face interactions[28].

"Smartphones are making my housemates and me become anti-social. We may be sociable in virtual social network, but virtual is virtual, and it's difficult to correlate with real life. . . Staring at my cell phone will estrange my friends from me. At the end, I just want to tell my dear friends, when spending time with people you care about, please put your smartphone away" [34].

A predictor of phubbing is smartphone addiction, including: addiction to short messages, social media, internet and games[16], fear of missing out[17], and PIU (Problematic Instagram Use), causing phubbing higher than fear of missing out[22].

The negative impact of phubbing is interference with romantic relationships and social interactions between parents in children, which can be almost non-existent. This is unfortunate,

because empirical studies also show that phubbing is associated with a number of negative interpersonal consequences such as lower communication quality[35], feeling less satisfied during interaction[4] [26], and mood decreasing because the couple gives more time to the media and their smartphone than to the their partner[36]. It threatens four basic needs: belonging, self-esteem, meaningful existence, and control[35]. If it is not realized, the quality of communication is poor[37], with lower relationship satisfaction[38], and dissatisfied relations between parents and children[19]. Problematic parent-child relationships will be worse when viewed from smartphone addiction behavior by children[19], and lack of warm feelings from parents involved in phubbing[39]. Many problems that arise in couples are uncomfortable when one partner is more focused on the smartphone [27][40].

The role of smartphones everywhere in everyday life gradually demands a lot of attention. The use of smartphones is not constructive and are used to post more on social media, online shops, communicate virtually, and online games. Given the lack of research on this and reference.

Nurses must work with professionals from various disciplines and conduct education planning in hospitals to promote healthy use of the Internet and smart phones. Nurses who interact with educators, parents, and adolescents in the fields of public health, adolescent health, and psychology know the impact of internet and smartphone use on adolescent development. Nurses can also do further research to prevent phubbing.

5. Conclusion

This systematic review identifies smartphone and internet addiction as the predictors of phubbing. The parent's role in assisting children who use smartphones is needed, also to restrict the use of smartphone for young aged children. Nurses as educators must be able to provide education related to restrictions on the use of the internet and smartphones.

References

[1] J. Henley, "Smartphones and the rise of child accidents," *The Guardian*, 2015.

[2] N. Guliz and T. Koc, "Time for Digital Detox : Misuse of Mobile Technology and Phubbing Time for Digital Detox : Misuse Of Mobile Technology And Phubbing," *Procedia - Soc. Behav. Sci.*, vol. 195, no. July, pp. 1022–1031, 2015.

[3] T. Nazir and M. Pişkin, "Phubbing: A Technological Invasion Which Connected the World But Disconnected Humans," *Int. J. Indian Psychol.*, vol. 3, no. 4, pp. 2348–5396, 2016.

[4] Abeele Mariek M.P. Vanden, A. Marjolijn, and S. P. Alexander, "The effect of mobile messaging during a conversation on impression formation and interaction quality," *Comput. Human Behav.*, vol. 62, pp. 562–569, 2016.

[5] A. Panda and N. K. Jain, "Compulsive smartphone usage and users' ill-being among young Indians: Does personality matter?," *Telemat. Informatics*, vol. 35, no. 5, pp. 1355–1372, 2018.

[6] M. E. David and J. A. Roberts, "Phubbed and Alone: Phone Snubbing, Social Exclusion, and Attachment to Social Media," *J. Assoc. Consum. Res.*, vol. 2, no. 2, pp. 155–163, 2017.

[7] S.-S. Cha and B.-K. Seo, "Smartphone use and smartphone addiction in middle school students in Korea: Prevalence, social networking service, and game use," *Heal. Psychol. open*, vol. 5, no. 1, pp. 2055102918755046–2055102918755046, Feb. 2018.

[8] A. Lepp, J. E. Barkley, and A. C. Karpinski, "The relationship between cell phone use, academic performance, anxiety, and Satisfaction with Life in college students," *Comput. Human Behav.*, vol. 31, no. 1, pp. 343–350, 2014.

[9] S. Haug, R. P. Castro, M. Kwon, A. Filler, T. Kowatsch, and M. P. Schaub, "Smartphone use and smartphone addiction among young people in Switzerland," *J. Behav. Addict.*, vol. 4, no. 4, pp. 299–307, Dec. 2015.

[10] Young Katie, "98% of Gen Z Own a Smartphone - GlobalWebIndex Blog," *GlobalWebindex*, 2017. .

[11] S. T. T'ng, K. H. Ho, and S. K. Low, "Are you 'phubbing' me? The Determinants of Phubbing Behavior and Assessment of Measurement Invariance across Sex Differences," *Int. Multidiscip. J. Soc. Sci.*, vol. 7, no. 2, p. 159, 2018.

[12] C. Pritta, "SOCIAL NETWORKING SITES IMPACTS ON," *Pro Quest*, 2014.

[13] S. Davey *et al.*, "Predictors and consequences of 'Phubbing' among adolescents and youth in India: An impact evaluation study," *J. Family Community Med.*, vol. 25, no. 1, pp. 35–42, 2018.

[14] Hanika and M. Ita, "FENOMENA PHUBBING DI ERA MILENIA (Ketergantungan Seseorang pada Smartphone terhadap Lingkungannya)," vol. 4, no. 1, pp. 42–51, 2015.

[15] J. Roberts and M. David, *Put down your phone and listen to me: How boss phubbing undermines the psychological conditions necessary for employee engagement*, vol. 75. 2017.

[16] E. Karadağ *et al.*, "Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model," *J. Behav. Addict.*, vol. 4, no. 2, pp. 60–74, 2015.

[17] V. Chotpitayasunondh and K. M. Douglas, "How 'phubbing' becomes the norm: The antecedents and consequences of snubbing via smartphone," *Comput. Human Behav.*, vol. 63, pp. 9–18, 2016.

[18] M. Anshari, Y. Alas, G. Hardaker, J. H. Jaidin, M. Smith, and A. D. Ahad, "Computers in Human Behavior Smartphone habit and behavior in Brunei : Personalization , gender , and generation gap," *Comput. Human Behav.*, vol. 64, pp. 719–727, 2016.

[19] B. T. Mcdaniel, A. M. Galovan, J. D. Cravens, and M. Drouin, "' Technoference ' and implications for mothers ' and fathers ' couple and coparenting relationship quality," *Comput. Human Behav.*, vol. 80, pp. 303–313, 2017.

[20] J. A. Roberts and M. E. David, "My life has become a major distraction from my cell phone: Partner phubbing and relationship satisfaction among romantic partners," *Comput. Human Behav.*, vol. 54, no. January, pp. 134–141, 2016.

[21] H. Krasnova, O. Abramova, I. Notter, and U. Bern, "Why phubbing is toxic for your relationship : understanding the role of smartphone jealousy among ' generation y ' users," *SAGE*, 2016.

[22] S. Balta and E. Emirtekin, "Neuroticism , Trait Fear of Missing Out , and Phubbing : The Mediating Role of State Fear of Missing Out and Problematic Instagram Use," 2018.

[23] A. Błachnio and A. Przepiorka, "Be Aware ! If You Start Using Facebook Problematically You Will Feel Lonely : Phubbing , and Facebook Intrusion . A Cross-Sectional Study," pp. 1–9, 2018.

[24] E. Karadağ *et al.*, "The Virtual World's Current Addiction: Phubbing," *Addicta Turkish J. Addict.*, vol. 3, no. 2, pp. 223–269, 2016.

[25] L. Simone, "The Mere Presence of Mobile Phones During Parent-Teen Interactions," *Proquest*, 2018.

[26] Epps Courtney, "An exploration of how technology use influences relational ethic," *Pro Quest*, no. April, 2016.

[27] González-Rivera, S. Abreu, and Urbistondo-Rodríguez, "Phubbing in Romatic Relationonships Cell Phone Use, Couple Satisfacation,.pdf." 2018.

[28] M. M. P. Vanden Abeele, M. Postma-nilsenova, M. M. P. Vanden Abeele, and M. Postma-nilsenova, "More Than Just Gaze : An Experimental Vignette Study Examining How Phone-Gazing and and Phubbing-While-Listening Compare in Their Effect on Affiliation More Than Just Gaze : An Experimental Vignette Study Examining How Phone-Gazing and Newspaper-Gazing an," *Commun. Res. Reports*, vol. 35, no. 4, pp. 303–313, 2018.

[29] M. J. Blanca and R. Bendayan, "Spanish version of the phubbing scale: Internet addiction, facebook intrusion, and fear of missing out as correlates," *Psicothema*, vol. 30, no. 4, pp. 449–454, 2018.

[30] M. Samaha and N. S. Hawi, "Relationships among smartphone addiction, stress, academic performance, and satisfaction with life," *Comput. Human Behav.*, vol. 57, pp. 321–325, 2016.

[31] Y. Yusnita and Hamdani M. Syam, "Pengaruh Perilaku Phubbing Akibat penggunaan Smartphone Berlebihan Terhadap Interaksi Sosial Manusia," *urnal Ilm. Mhs. FISIP Unsyiah*, vol. 2, pp. 1–13, 2017.

[32] J. Aagaard, "Digital akrasia : a qualitative study of phubbing," *AI Soc.*, vol. 0, no. 0, p. 0, 2019.

[33] K. E. et All, "Determinants of phubbing , which is the sum of many virtual addictions : A structural equation model," vol. 4, no. 2, pp. 60–74, 2015.

[34] J. Cohn, "' Devilish Smartphones ' and the ' Stone-Cold ' Internet : Implications of the Technology Addiction Trope in College Student Digital Literacy Narratives," *Comput. Compos.*, vol. 42, pp. 80–94, 2016.

[35] V. Chotpitayasunondh and K. M. Douglas, "The effects of 'phubbing' on social interaction," *J. Appl. Soc. Psychol.*, vol. 48, no. 6, pp. 304–316, 2018.

[36] J. A. Roberts and M. E. David, "My life has become a major distraction from my cell phone: Partner phubbing and relationship satisfaction among romantic partners," *Comput. Human Behav.*, vol. 54, pp. 134–141, Jan. 2016.

[37] Rainie Lee and K. Zickuhr, "Americans' views on mobile etiquette," *Pew Research Center*, from http://www. pewinternet.org/2015/08/26/americans-views-on-mobile-etiquette/, Washington, DC, 2015.

[38] B. T. Mcdaniel and S. Coyne, "'Technoference': The Interference of Technology in Couple Relationships and Implications for Women's Personal and Relational Well-Being," no. December, 2014.

[39] L. A. Stockdale, S. M. Coyne, and L. M. Padilla-walker, "Parent and Child Technoference and Socioemotional Behavioral Outcomes: A Nationally Representative Study of 10- to 20-Year-Old Adolescents," *Comput. Human Behav.*, 2018.

[40] B. McDaniel, A. Galovan, J. Cravens, and M. Drouin, *"Technoference" and Implications for Mothers' and Fathers' Couple and Coparenting Relationship Quality*, vol. 80. 2017.

Appendix

Table 4. The characteristics of the study evaluated the predictors of phubbing

Author	Title	Country	Design	Population/Sample	Age	Analysis	Results
E. Karadağ *et al* [16]	Determinants of phubbing, which is the sum of many virtual addictions: A structural equation model	Turkey	Correlational	409 students	The average age is 21 years	As a result of the Pearson product-moment correlation analyses to check for multicollinearity Multiple Regression Analysis	Predictor of phubbing is an addiction to smartphones, addicted to SMS, addicted to social media, addicted to the internet, addicted to games.
V. Chotpitayasunondh and K. M. Douglas [17]	How "phubbing" becomes the norm: The antecedents and consequences of snubbing via smartphone	English	Cross-sectional	276 Students	Ages 18-66 years old	Spearman's A Mann-Whitney U test	Smartphone addiction is predicted to be a significant cause of phubbing behavior (b ¼ 0.45, p <0.001). Next, when the effect is active smartphone addiction from every variable counted, then that is revealed that internet addiction (b ¼ 0.41, p <0.001) and fear loss (b ¼ 0.33, p <0.001) was a positive predictor addicted to smartphones, while self-control negatively predicts smartphone addiction (b ¼ 0.12, p ¼ 0.016).
M. Anshari, Y. Alas, G. Hardaker, J. H. Jaidin, M. Smith, and A. D. Ahad [18]	Smartphone habit and behavior in Brunei: Personalization, gender, and generation gap	Brunei	Cross-sectional	589 respondents	Ages 15-55 years old	T-test	High usage patterns with almost two thirds of respondents showing smartphone use for more than 6 hours per day. This high level is combined with the fact that more than 46% of respondents indicated that they cannot live without a smartphone, they make it clear that there are mental disorders such as nomophobia and phubbing.
B. T. Mcdaniel, A. M. Galovan, J. D. Cravens, and M. Drouin [19]	Technoference" and implications for mothers' and fathers' couple and co-parenting relationship quality	America	Cross-sectional	182 respondents	The average age is 32-37 years	Multilevel structural equation model (SEM)	Individuals felt insecure, more phubbing from their partners (b ¼ 0.26, p <0.001). We also found that their partners had greater media use (b ¼ 0.13, p <0.05) and that many problems from couples were more likely attributed to the use of smartphones (b ¼ 0.46, p <0.001) and greater phubbing behavior with their partners. Furthermore, the relationship between phubbing and problematic

							phone calls from partner use was stronger for women than men (b ¼ 0.22, p <0.05).
J. A. Roberts and M. E. David [20]	My life has become a major distraction from my cell phone: Partner phubbing and relationship satisfaction among romantic partners	America	Cross-sectional	308 respondents	Ages 18-29 years old	Chi-square	The use of media and problematic telephone calls from partners significantly causes phubbing, so the more time and attention their partners give to the media and their calls, and the more disturbed they will be in their relationships.
H. Krasnova, O. Abramova, I. Notter, and U. Bern [21]	Why phubbing is toxic for your relationship, understanding the role of smartphone jealousy among " generation y" users	German	Qualitative Quantitative	1475 respondents	Ages 26-40 years old	Wilcoxon rank-sum test and Mann-Whitney Partial Least Squares (PLS)	The use of smartphones by couples on a regular basis, this technique allows to reduce the process of answering questions by helping respondents to focus on certain situations with the highest memory. About one third of the respondents (33.6%) claimed that the incident occurred when spending time together at home, 19.6% remembered that their partners too often used smartphones in bed before going to sleep. Furthermore, phubbing couples are seen when they eat together at home (10.8%), while on a trip at a place public transportation or in the car (9.8%), and when out (4.5%). Other opportunities are less prominent, with respondents considering watching TV (2.1%), walking (2.4%), or shopping (0.7%). 22 respondents (8.4%) stated that their partners had never used a smartphone for too long.
S. Balta and E. Emirtekin [22]	Neuroticism, trait fear of missing out, and phubbing: the mediating role of state fear of missing out	Turkey	Cross-sectional	423 respondents	Ages 14-21 years	Path analysis	Fear of missing out/FoMO (β = .30, p <.001; 95% CI [.16, .43]) and PIU (problematic Instagram use) (β = .54, p <.001; 95% CI [.37, .71]) are directly related to phubbing while trait-FoMO (β = .35, p <.001; 95% CI [.26, .44]) and neuroticism (β = .09, p <.05; 95% CI [0.00, 0.19])

	and problematic Instagram use						were indirectly related to phubbing through each country-FoMO and PIU. The dual mediation model describes 25% of FoMO countries, 50% of PIUs, and 73% of phubbing ones. Parallel to the hypothesis, neuroticism is not directly associated with phubbing through the use of troubled Instagram. Neuroticism is related to the use of higher troubled Instagram, and in turn, problematic use of Instagram causes higher phubbing.
A. Błachnio and A. Przepiorka [23]	Be aware! If you start using Facebook problematically you will feel lonely: phubbing, loneliness, self-esteem, and Facebook intrusion. A cross-sectional study	Poland	Cross-sectional	597 respondents	The average age is 21 years	equation models	Women scored higher than men on both phubbing factors of communication disorders, Women ¼ 2.05, SD ¼ 0.73, Mmen ¼ 1.86, SD ¼ 0.70, F (1, 613) ¼ 9,370, p 00 .002, and on telephone obsession, Mwomen ¼ 3.06, SD ¼ 0.82, Mmen ¼ 2.73, SD ¼ 0.83, F (1, 613) ¼ 20,634, p <0,001. Low loneliness contributes to Facebook's intrusion, but a high level of Facebook intrusion leads to an increase in loneliness and affects both phubbing dimensions, namely, communication disruption and telephone obsession.
S. Davey *et al.* [13]	Predictors and consequences of "Phubbing" among adolescents and youth in India: An impact evaluation study	India	Qualitative quantitative	400 respondents	Ages 15-29 years	Chi-square test	The prevalence of phubbing is 49.3%. The most important predictors associated with phubber were internet addiction (p <0.0001, Odds Ratio 2.26), smartphone addiction (OR 25.9), fear of being left behind (OR 18.8), and lack of self-control (p <0, 0001, OR = 0.73-1.72). Phubbing also has significant consequences for social health, relationship health, and self-development, and is significantly associated with depression and distress. Logistic regression analysis showed a significant effect of phubbing predictors on the consequences of phubbing in phubbers, especially in depressed and depressed states.

E. Karadağ *et al.* [24]	The virtual world's current addiction: phubbing	Turkey	Qualitative	759 respondents	Young adults	Factor analysis (EFA) Confirmatory factor analysis (CFA) to test two models	Support structure which is consistent with the original validation study, with two factors: communication disorders and telephone obsession. Internal consistency found adequate evidence of concurrent validity is given through a hierarchical regression model that shows a positive relationship with a measure of internet addiction, Facebook intrusion, and fear of missing out.
L. Simone [25]	The mere presence of mobile phones during parent-teen interaction	America	Experimental and qualitative	200 respondents	Age of 18-29 years	ANOVA	Experience of the quality of conversation, closeness of conversation, and conversation (listening) of partners when interactions occur in front of a cellphone which has a detrimental effect on interpersonal relations.
Epps Courtney [26]	An exploration of how technology use influences relational ethic scores of emerging adult romantic relationships	America	Correlation	248 respondents Ages 18-25		MANOVA	Negative perceptions of the impact of using technology on respondents' relationships are associated with lower relational outcomes for relational ethics, trust, intimacy, and relationship satisfaction.
González-Rivera, S. Abreu, and Urbiston do-Rodrígue z [27]	Phubbing in romantic relationships: cell phone use, couple satisfaction, psychological well-being and mental health	America	Comparison	252 participants	An average age of 33 years	Comparison analysis t test equipment T-test SEM	The greater the phubbing of partners, the greater the conflict in smartphone use, dissatisfaction in partner relationships, and disruption to mental health (anxiety, depression and stress). The structural model results from Phubbing in the Couple were phubbing predicting lower satisfaction in the pair (β = -, 57, p<0.001). In turn, low satisfaction leads to low psychological well-being (β = .44, p<.001) and greater negative mental health, which is higher depression, greater anxiety and greater stress (β = -.28, p <.001). Regarding the direct effects of phubbing, we found a significant effect on mental health (β = .25, p <0.001), but did not affect psychological well-being (β = .95, p> .001). In addition, the indirect effects observed of

							the meaning between phubbing and negative mental health (β = .16, 95% CI [.06, 18]) and between phubbing and psychological well-being (β = -.24, 95% CI [-. 72, -.39]).
M. M. P. Vanden Abeele, M. Postma-nilsenova, M. M. P. Vanden Abeele, and M. Postma-nilsenova [28]	More than just gaze: an experimental vignette study examining how phone-gazing and newspaper-gazing and phubbing-while-speaking and phubbing-while-listening compare in their effect on affiliation	Belgium	Experimental	125 respondents	The average age is 24 years	ANOVA	Stare at the smartphone during the interaction harms the relationship more than staring at the newspaper. Also, looking at a smartphone is hampering affiliation when listening rather than when talking. These findings indicate that looking at a smartphone raises the assessment of relationships in interaction partners.

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SOCIO-CULTURAL DIMENSIONS OF LEPROSY IN ASIAN: A SYSTEMATIC REVIEW

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ABSTRACT

Leprosy is a complex and a high burden disease to the community. The Chronic Problems caused by leprosy are often amplified by local socio-cultural in many parts of the world. This systematic review aims to identify and describe the socio-cultural dimensions of leprosy in Asian. Electronic searches were undertaken using ProQuest, Scopus, ScienceDirect, EBSCO, and PubMed databases. All relevant articles written in English and focuses on socio-cultural of leprosy were included. 15 articles were included in this review. On the process of the analysis of the articles showed that the socio-cultural dimensions of leprosy comprise stigma; discrimination against women was higher than men; traditional and religious healers; misconceptions about disease; and negative attitudes towards leprosy patients in most communities. The socio-cultural has been shown to be a factor influencing access to health services and treatment adherence. Appropiate interventions are needed in accordance with the local socio-cultural to achieve a change in the health seeking behavior.

Keywords: leprosy, socio-cultural demensions, asian

1. Introduction

Leprosy is a contagious disease that causes serious problems and is very complex because it is not only medical but also includes social, economic, cultural, security and social security issues [1]. The risk of leprosy transmission is higher in one family, this is because family members relate directly to patients every day and these relationships last a long time [2]. The implementation of the program to prevent leprosy transmission has often encountered several obstacles related to differences in community characteristics, differences in culture in the family, and coverage of areas far from health care facilities [3].

The existence of a culture that is believed by individuals can influence the perception and selection of care undertaken by lepers [4]. Errors in decision making for the treatment of leprosy will greatly affect the prognosis of the disease suffered. In leprosy if there is a delay in case finding, it causes the sufferer of leprosy to suffer fatally from the condition, namely permanent damage or disability in the limbs. In addition, in the presence of inadequate treatment, it is difficult for the M. leprae bacteria to be turned off, resulting in the development of the spread of leprosy [5].

When diagnosed with leprosy, patients often try to conceal the disease, for example by seeking treatment from a health center at some distance from their home. To avoid negative behavior from their community, leprosy patients and, on occasion, their spouses may withdraw from communication with other members of their community [6]. In addition to self-isolation practiced by leprosy patients, community members also express their negative attitudes by avoiding them, forcing them to leave,

gossiping about them, and refusing to share public transport with them [7]. Such behaviors have a negative impact on the physical, psychological and socio-economic status of people affected by leprosy.

Psychologically, they may suffer mental stress and anxiety leading to depression and even, in some cases, suicide. In many cases, their economic situation may decline, their marital partner may reject them, and opportunities for further education may be reduced [8]. To prevent stigma and to reduce the manifestations that cause so much suffering to individuals and their families, effective interventions are needed [9]. This systematic review aims to identify interventions that have been used to reduce such stigma and to assess their efficacy. The results of this review will be useful for health personnel and other professionals who wish to develop interventions to address leprosy-related stigma.

2. Methods

Data retrieved from databases ProQuest, Scopus, ScienceDirect, EBSCO, and PubMed. Search articles using keywords leprosy, Hansen disease, socio-cultural, and Asia. The selection of articles using the following criteria: written in Thai or English, using qualitative, quantitative, or mixed methods. All publication years were included.

On the process of the analysis of the articles showed that the stigma, traditional and religious healers, misconceptions and negative attitudes towards leprosy patients in most communities.

A total of 906 articles were found, the results came from four databases: 304 articles in ProQuest, 92 articles on Scopus, 108 articles on EBSCO, 198 articles on PubMed, and 204 articles on ScienceDirect. The results of the article selection are in accordance with the inclusion criteria of 15 articles, then given the serial number and analysis of the article to facilitate the review process. The socio-cultural has been shown to be a factor influencing access to health services and treatment adherence.

In this systematic review of the 15 studies is about all populations were Leprosy patients, the number of samples varied between 1-500 Leprosy patients. The research was conducted in Asia, Middle East, Including Indonesia, India, Pakistan, China, Bangladesh, and Nepal.

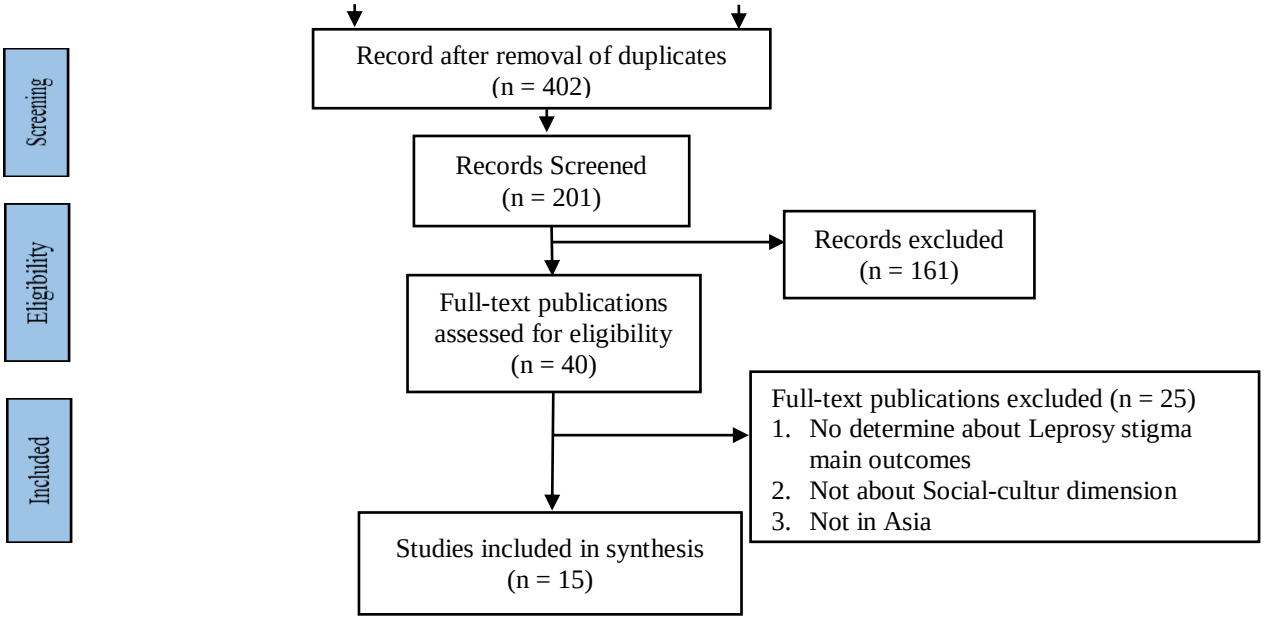

Figure 1. Selected paper Process
Figure 1. Selected paper Process

3. Results and Analysis

3.1. Stigma

The systematic review found 5 journals describing stigma about discrimination. The journal compiled by Varkevisser *et al.* in 2008 stated that strong traditions, low status of women, limited mobility, illiteracy and low knowledge of leprosy appear to be important social cultural factors that explain why women are not reported. However, accessible and well-known services increase women's participation and help reduce stigma, which in three of the four communities appears to be greater for women than men [10]. In addition, in the journal Zodpey *et al.* in 2000 it is stated that leprosy patients are isolated and refrain from various activities in the family which would have a significantly greater effect on women than men. Similarly, though, men and women are equally affected in terms of their social life, women suffer more isolation and rejection from society [11].

In the systemic review it was also that found some articles describe socioeconomic and culturally-defined social-pattern interactions which are considered as the most important thing in the spread of diseases transmitted through person-to-person contact. An understanding of contact patterns in this region can help to develop more effective control measures. Focus group discussions are used in exploring patterns of social contact in northwestern Bangladesh. The patterns of social contact that are very relevant in the home and environment, across age groups and sexes, are reported in all group discussions. This concept requires further exploration but control programs in the South Asia region can benefit from considering differences in gender-based social contact patterns for risk assessment and planning for preventive interventions [12].

Kazeem and Adigun in their 2011 journal also stated that stigma is still an important feature of the leprosy landscape that leads to seclusion, job loss, housing loss, ridicule and rejection from the community. The reason leprosy depends on history and culture on mythology is in terms of origin and transmission of disease, and its aesthetic features such as confusing physical disability, and ulcers that are typical of untreated leprosy [13]. Whereas Bedford in 2008 researched and published his journal which discussed the status of them (Leprosy sufferers) as an indigenous minority in Peninsular Malaysia, leprosy in the Orang Asli community assumed an additional social configuration beyond its clinical manifestations. The stigma that occurs is mostly in India, Malaysia and Bangladesh.

3.2. Discrimination Against Women Was Higher Than Men

From a number of journals that have been reviewed, only a few journals discuss discrimination of women with men. Among others are Varkevisser *et al* journal in 2008 where the low status of women appears to be the important social cultural factors that explain why women are not reported. However, accessible and well-known services increase women's participation and help reduce stigma, which in three of the four communities appears to be greater for women than men [14]. In addition, Zodpey *et al.* in 2000 in the journal states that leprosy patients are isolated and refrained from various activities in the family which would have a significantly greater effect on women than men. Similarly, though, men and women are equally affected in terms of their social life, women suffer more isolation and rejection from society[11].

3.3. Traditional and Religious Healers

In the journal of Mull 1989 in Pakistan the findings of this study emphasize the need for better training from doctors and other health care providers in early diagnosis of leprosy and better health education than diagnosed patients so that it is truly effective [15]. Treatment of leprosy should include extended family counseling and broad community education and increased communication with the patient itself.

3.4. Misconception

In the results of a journal review on the topic of misunderstanding only 1 journal was found from several journals. As in the Sabiena journal in Bangladesh, 2013 explained the spread of transmitted diseases through person-to-person contact, while Desancha in 2015 in Nepal explained the understanding of biomedical disease, namely non-biomedical beliefs about injuries and the broad application of traditional 'hot-cold' disease models used to explain foot ulceration [12].

4. Discussion

There are several studies in Asia that discuss socio-culture in leprosy. in this discussion the focus will be on how socio-cultural can negatively influence the selection of health services (access to diagnosis, treatment, and adherence) to lepers [16]. To improve our understanding of socio-culture in leprosy patients we must understand the factors that can affect socio-cultural conditions in leprosy first [17]. At most the health prevention and care behaviors of leprosy are influenced by local perceptions and complex psychosocial factors [18].

Socio-cultural has been found as a factor that causes patients to delay in seeking access to health services. As we have analyzed, some studies show that patients affected by leprosy come late to health services after being disabled [19]. A study found that people who have leprosy are ashamed of their scars and try to hide them [10]. Another study shows that lepers prefer to come to religious leaders and traditional medicine, so the time to come in health services is already late and transmission in a community is increasing [4].

The existence of negative factors from the local socio-cultural leprosy patients, consequently inhibits control efforts (13). Finally are the patients who reported being late and disabled. In the study, it was explained that discretion in women was greater than men, making leprosy patients late to health services, delayed diagnosis and inadequate treatment [20].

Leprosy patients avoid free care in government health services because the condition of leprosy patients can be identified in public by the community [11]. Leprosy patients prefer to religious leaders and traditional medicine because leprosy patients consider their illnesses to be caused by a curse of God or ghost and the condition of leprosy patients can be more easily hidden [21]. The consequence of this behavior is that patients receive ineffective treatment from religious leaders and traditional medicine [22].

5. Limitations

Most of the articles related to socio-cultural are either cross-sectional or qualitative studies. One important limitation of the data is its limited geographic coverage. Thus, these findings may not be representative of all endemic areas affected by these diseases in Asia. Sample sizes tended to be small in many of the studies, and selection/observation bias was not taken into account properly. Therefore, it is necessary to be cautious with generalizing the results.

6. Conclusion

The socio-cultural has been shown to be a factor influencing access to health services and treatment adherence. Appropriate interventions are needed in accordance with the local socio-cultural to achieve a change in the health seeking behavior.

The tradition of the kyai or the physician in finding a cure for illness is wrong and must be justified in the context of health in leprosy. In addition to handling leprosy, the community's stigma regarding leprosy and even discrimination between women and men should be abolished. Likewise, misconceptions must also be straightened out with the correct knowledge related to leprosy, so that the handling will be even more effective and even reduce the stigma and transmission chain.

Table 1. Description and Paper Analyze

No	Author, Country, and Years of Publication	Study Design	Number of Samples	Research's Subject and Kind of method	Main Results
1	Haidarali Abedi *et al.,* Pakistan 2013	Qualitative: Phenomenology	10	▪ Individual + family ▪ In-depth interview, containing participants experience about idea and feeling of health and knowledges family about Leprosy (economic and health)	The health, family and economic situation which is negatively affected by leprosy requires a comprehensive health care program. Such as, a comprehensive health promotion program that must be planned as a comprehensive community-based program.
2	Sabiena G. *et al*., Bangladesh 2013	Qualitative	12	▪ Individual ▪ Focus Group Discussion (Social contact pattern)	Socioeconomically and culturally-defined social-pattern interactions are considered as the most important thing in the spread of diseases transmitted through person-to-person contact. An understanding of contact patterns in this region can help to develop more effective control measures. Focus group discussions are used in exploring patterns of social contact in northwestern Bangladesh. The patterns of social contact that are very relevant in the home and environment, across age groups and sexes, are reported in all group discussions. This concept requires further exploration but control programs in the South Asia region can benefit from considering differences in gender-based social contact patterns for risk assessment and planning for preventive interventions.
3	Mull J.D. *et al.* Pakistan 1989	Qualitative: Phenomenology	128	▪ Individual ▪ In-depth interview by questionnaire	The findings of this study emphasize the need for better training from doctors and other health care providers in early diagnosis of leprosy and better health education than diagnosed patients so that it is truly effective. Treatment of leprosy should include extended family counseling and broad community education and increased communication with the patient itself.
4	Varkevisser C.M.. *et al* Netherlands 2008	Partially qualitative and quantitative	500	▪ Individual ▪ partially quantitative (analysis of the records of patients who according to prescription could have completed treatment) and partially qualitative (interviews/focus group discussions)	Biological factors appear similar in four countries: regardless of the M / F ratio, there are more men than women who are registered with multi-bacillary leprosy (MB). Strong traditions, low status of women, limited mobility, illiteracy and low knowledge of leprosy appear to be important social cultural factors that explain why women are not reported. However, accessible and well-known services increase women's participation and help reduce stigma, which in three of the four communities appears to be greater for women than men. This positive effect can still be higher if the service will improve community education and patients with active participation of patients and former patients themselves.
5	Zodpey S.P. *et al.* India 2000	Quantitative : Structural interview	486	▪ Individual ▪ the Modified Kuppuswamy' s scale of socio-economic status (SES) classification, using occupation, education and per capita income as parameters	It was observed that leprosy patients isolated and refrained from various activities in the family would have a significantly greater effect on women compared to men. Similarly, though, men and women are equally affected in terms of their social life, women suffer more isolation and rejection from society.

6	Desancha M. *et al.* Nepal 2015	Qualitative: Exploratory	21	▪ Individual ▪ Three focus groups and a series of field observations were used to explore the explanatory models of foot ulceration thought to be used by leprosy affected people to understand and explain this specific comorbidity	The findings indicate that there are a variety of health beliefs including those outside the understanding of biomedical disease, namely non-biomedical beliefs about injuries and the broad application of traditional 'hot-cold' disease models used to explain foot ulceration.
7	Kazeem O & Adegun T. UK 2011	Qualitative: Phenomenology	36	▪ Individual ▪ In-depth interview containing leprosy stigma in various context and managing leprosy stigma	Stigma is still a critical feature of the leprosy landscape that leads to seclusion, job loss, housing loss, ridicule and rejection from the community. Leprosy relies on history and culture on mythology about the origin and transmission of disease, and its aesthetic features such as enigmatic physical defects, and ulcers that are typical of untreated leprosy.
8	Peters R.M.H. *et al.* Netherlands 2014	Qualitative: Phenomenology	53	▪ Individual ▪ semi-structured in-depth interviews focus on six points who knows, care, social stigma, feelings, self-isolation and agency.	Women overcome this through acceptance, self-comfort, trust in God, focus on recovery, friendship or finding inspiration in others.
9	Staples J. India 2011	Qualitative: Phenomenology	1	▪ Individual ▪ In-depth interview	Such biographical analysis, with a broader background in ethnographic research, allows a more subtle reading of the stigma associated with leprosy, contextualized in relation to various intersecting socio-political, cultural and economic problems.
10	Bedford, K.J.A Tannessee 2008	Open inductive qualitative	32	▪ Individual ▪ In-depth interview with key interlocutors (patients, community members, and health care professionals), focus group discussions, case studies and narratives, and direct and participatory observation	In the context of Gombak Hospital, leprosy is an illness where notions of responsibility, compliance, and stigma collide, and where experiences of health, illness, and treatment-seeking behavior are expressed along ideological and ethnic lines. In light of their status as the indigenous minority of Peninsular Malaysia, leprosy in the Orang Asli community assumes additional social configurations beyond its clinical manifestations.
11	Susanto T. *et al.* Jember Indonesia 2017	Qualitative: Phenomenology	17	▪ Individual ▪ Focus group interviews, which the investigators had arranged	This analysis identifies five themes around the experiences of people participating in the SCG in the community: self-perceived conditions, adherence to treatment, ability to carry out personal care, types of assistance and services received, and acceptance and support of people affected by leprosy. Based on participants' adherence to taking treatment, participants in this study were divided into obedient or non-adherent groups, where the drug administration was related to discomfort or complaints experienced by participants as a side effect caused by treatment. Compliance with treatment is associated with a lack of confidence in the

					treatment provided by the "Puskesmas", understanding of short-term and long-term MDT therapy regimens, and efforts to reduce side effects from treatment.
12	Peters R.M.H. *et al.* Netherlands 2013	Qualitative: Phenomenology	53	▪ Individual ▪ In-depth interview and 20 focus groups discussions.	The continued need for implementation of leprosy services in Indonesia is very evident. The diversities in people's experiences with leprosy indicate a demand for responsive leprosy services to serve the diverse needs, including services for those formally declared to be "cured
13	Kolay S.K. *et al.* Turki 2016	Quantitative : Cross-sectional study	101	▪ Individual ▪ Pre-tested close-ended questionnaires	The study noted that the tribal people were affected by leprosy not only in terms of the physical problems, but also by the stigmatization that affects their social participation. These need to be addressed by the progress of the national leprosy program.
14	Lal V. *et al.* India 2014	Qualitative: Phenomenology	20	▪ Individual ▪ In-depth interview to explore the experiences of parents with regard to the diagnosis of leprosy and the treatment of their child	No parent has knowledge about reactions. Although the current strategy has enabled early case detection, there are related challenges to ensuring treatment completion. Emphasis should be placed on interpersonal communication to empower parents, enabling them to value side effects and recognize complications early and actively engage as treatment partners when their children use MDT.
15	Pradhan S. *et al.* Australia 2016	Qualitative: Phenomenology	2	▪ Individual ▪ Case study	Hansen (HD) can have disastrous effects on the quality of life of patients, especially when treatment is delayed. Nerve damage and its sequel are a major concern for health care providers. Early diagnosis and treatment is the only way to reduce damage caused by HD. Sometimes cultural beliefs and practices become obstacles to early diagnosis and initiation of multi-drug therapy (MDT). Two cases reported late arrivals because of their belief that tattoos not only prevent the spread of the disease but also contain diseases, allowing healing.

References

[1] Susanto T, Dewi EI, Rahmawati I. The experiences of people affected by leprosy who participated in self-care groups in the community : A qualitative study in Indonesia. Lepr Rev [Internet]. 2017;88:543–53. Available from: https://www.lepra.org.uk/ platforms/lepra/files/lr/ Dec17/ Lep543-553.pdf

[2] Teasdale K, Wildt GDE, Das PK, Da M, Virmond CL, De NG, et al. The patient perspective of the diagnostic process for leprosy in Brazil . An exploratory study. 2015;21–36.

[3] Tan V, Cruz E Dela, Gelber R, Saunderson P, Balagon V, Pannikar V. The frequency of drug resistance mutations in Mycobacterium leprae isolates in untreated and relapsed leprosy patients from Myanmar , Indonesia and the Philippines. 2007;343–52.

[4] Pradhan S, Kumar P. Cultural practice and beliefs hampering the treatment of leprosy-an area of concern Cultural practice and beliefs hampering the treatment of leprosy- an area of concern. 2016;(March).

[5] Korte RTDE, Vellacott EL, Pongtiku A, Rantetampang AL, Brakel WIMHVAN. Neglected tropical diseases (NTD) morbidity and disability toolkit validation : A cross-sectional validation study of the EMIC-AP stigma scale for affected persons and the WHOQOL-DIS scale in Papua , Indonesia. 2018;219–30.

[6] Manton J. Leprosy in Eastern Nigeria and the social history of colonial skin. 2011;124–34.

[7] John AS, Samuel P, Rao S, Das S. Assessment of needs and quality care issues of women with leprosy. 2010;34–40.

[8] Wang S, Junchao GU. Delayed diagnosis of leprosy cases that persist in China. 2017;354–63.

[9] Bakker MI, May L, Hatta M, Kwenang A, Klatser PR, Oskam L, et al. Genetic , household and spatial clustering of leprosy on an island in Indonesia : a population-based study. 2005;10:1–10.

[10] Peters RMH, Hofker ME, Brakel WH Van, Marjolein BM. Narratives Around Concealment and Agency for Stigma- reduction : A Study of Women Affected by Leprosy in Cirebon District , Indonesia. 25(4):5–21.

[11] Unit CE, Medicine S, Gandhi I, Unit LC, Medical G. Gender differentials in the social and family life of leprosy patients. 2000;505–10.

[12] Feenstra SG, Nahar Q, Pahan D, Oskam L, Richardus JH. A Qualitative Exploration of Social Contact Patterns Relevant to Airborne Infectious Diseases in Northwest Bangladesh. 2013;31(4):424–34.

[13] Kazeem O, Adegun T. Leprosy Stigma : Ironing out the creases. 2011;103–8.

[14] An exploration of health, family and economic experiences of leprosy patients, Iran.pdf.

[15] Mull JD, Wood CS, Cans LP, Mull DS. CULTURE AND ‘ COMPLIANCE ’ AMONG PATIENTS IN PAKISTAN. 1989;29(7).

[16] Leprosy G, Office SL, Bengal W. What parents should know while their child is on MDT : Insights from a qualitative study in Eastern India. 2014;700107:81–4.

[17] Peters RMH, Lusli M, Miranda-galarza B, Brakel WH Van, Zweekhorst MBM, Damayanti R, et al. The Meaning of Leprosy and Everyday Experiences : An Exploration in Cirebon , Indonesia. 2013;2013.

[18] Bedford J. Perceptions of Leprosy in the Orang Asli (Indigenous Minority) of Peninsular Malaysia [Internet]. When Culture Impacts Health: Global Lessons for Effective Health Research. Elsevier; 2013. 193–203 p. Available from: http://dx.doi.org/10.1016/B978-0-12-415921-1.00017-8

[19] Staples J. Nuancing ‘ leprosy stigma ’ through ethnographic biography in South India. 2011;109–23.

[20] Desancha M, Jha K, Williams A. Health beliefs surrounding leprosy induced foot ulceration ; an exploratory qualitative study from South Nepal. 2015;254–64.

[21] Patrobas P, Yulizar M. Gender and leprosy : case studies in Indonesia , Nigeria , Nepal and Brazil. 2009;65–76.

[22] Report S. Knowledge , attitude and stigma experienced by leprosy patients in tribal concentrated Bastar district of Hindistan ' da ChhattisgarhBastar Bölgesinde bir köyde lepra hastalarının bilgi , tutum ve damgalama durumu. 2016;14(3):178–87.

[23] Greenwood DA, Gee PM, Fatkin KJ, Peeples M. A Systematic Review of Reviews Evaluating Technology-Enabled Diabetes Self-Management Education and Support. 2017;

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THE OPTIMALLY MANAGEMENT OF WANDERING BEHAVIOR IN DEMENTIA ELDERLY : A SYSTEMATIC REVIEW

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ABSTRACT

Background. Wandering is defined as the behavior of aimless mobilization or disorientation of dementia client which has its own pattern such as hitting, repetitive, or walking aimlessly, irregular frequency, overreaching, and difficulty finding the right path. Wandering behavior affects walking aimlessly, missing for days, risk of injury, and death. Treatment of wandering behavior so far still uses traditional methods. The aim of this study is to provide an overview of the management of wandering behavior interventions optimally in the care facility and community settings. Method. This systematic review comes from RCT articles obtained from SCOPUS, Science Direct, Google Scholar, ProQuest, CINAHL, and CNBI published in English. The given intervention was well documented, as was the management program provided. Results. Ten articles identified for review. Study settings include NH, elderly care facilities, and communities. This study was conducted in several countries from four continents, mostly from Australia. Participants consisted of 542 residents and 31 NH. The intervention given has an effect on decreasing wandering behavior. Conclusion. Alternative interventions given can be applied in care facilities. The wandering care management program is recommended to be used asplan for the wandering care program by nurses.

Keywords: optimally, management, wandering, dementia

1. Introduction

Dementia is a condition that describes a decline in cognitive function and mental deterioration, usually found in the elderly where everything will have an impact on the patient's ADL accompanied by changes in behavior [1]. Dementia is a degenerative disease that is considered terrible and presents its own challenges for clients, families, caregivers, and health workers, so it requires special care, easy access, high costs, and related care quality issues [2]. Symptoms of dementia include progressive setbacks in memory and other cognitive abilities, decreased personal ability to implement ADL, disorientation and wandering [3].

Wandering is one of the problems of dementia behavior and is very dangerous, so it requires special handling by caregivers, clients, and health workers. Wandering behavior is likely due to loss of memory, anxiety, suspicion, illusion, and aggression. Risks that can occur in wandering behaviors include falls, injuries, hip fractures, and loss [3]. Basically wandering is defined as the behavior of

aimless mobilization or disorientation of people with dementia who have their own patterns (hitting, repetitive, or walking aimlessly), irregular frequencies, overreaching, and difficulty finding the right path [4].

The prevalence of dementia is estimated at 35.6 million in 2010 globally and will double every 20 years [1]. The increased population of dementia was certainly accompanied by an increase in wandering behavior, in the Netherlands, there were 80% of cases of wandering behavior in clients of dementia, 15% - 28% occurred in the nursing home and/or other health facilities [5]. A study in Texas in the United States said one in five people with dementia had to wander and 40% were lost, and needed help to go home [6].

Wandering behavior is a problem for the caregiver even in nursing practice. Treatment for clients with wandering behavior still uses traditional methods so far, namely by providing restraint and/or neuroleptic therapy [7]. Furthermore, it gives stress and anxiety to caregivers and nurses so that it becomes one of the causes of increasing caregiver burden. This is more due to the lack of information and alternative interventions about wandering care management, so the aim of this article is to provide an overview of the management in wandering behavior optimally in the care facility and community.

Studies conducted on wandering behavior are still rarely found. Studies that aim to reduce the behavior of wandering and prevent the occurrence of elderly people are lost. Programs for treatment on wandering have not specifically focused on the main problem. So the alternative intervention provided is still common. This review will discuss the management of optimal care in reducing wandering behavior, which has not found a similar review until now.

2. Method

2.1 Search Strategy

This review aims to review articles by exploring them systematically and conducting critical assessments of articles that discuss interventions on wandering behavior in dementia clients. This review is based on the PRISMA-P (the preferred reporting items for Systematic Reviews and Meta-Analyzes) statement [8].

This review is based on several articles obtained from published literature in various international journals. Journal search strategy used the keywords wandering, dementia, and elderly. Journal entries included years between 2013 - 2018, English, nursing, Psychology, Professional Health, and publication titles including Alzheimer's and Dementia, The American Journal of Geriatric and Psychiatry, Geriatric Nursing, International Journal of Nursing Studies, Archives of Gerontology and Geriatric. This search was done on the SCOPUS database, Science Direct, CINAHL Plus, PubMed Central, Google Scholar, and CNBI. The article that appears an election process by separating the title and abstract of the article according to the keyword.

Articles found from search results are then exported to Mandalay, whereas if duplicate articles are found they are moved or deleted. Then the article was reviewed based on full text and summarized into the PICOT table. The PICOT table is able to well describe the intentions and contents of the contested articles.

Screening of titles, abstracts, and full text is done independently by the AK, the final decision is made by AY, AV, and RF.

2.2 Eligible Criteria

This review includes articles with a quasi-experimental design [9], [10], [11], [12], [13], [14], [15], [16], [17], and [18]. The article includes articles with a control group and without a control group and pre-posttest design. This is intended to obtain various articles and can deepen the process and results of the review.

2.3 Participants

Participants in the review of this article are elderly with dementia who are treated or who are outpatients in the care facilities of elderly [10], [13], [14], [18], nursing home [9], [12], [15], [16], [17], community [11], which later this client was called resident, youth, and caregiver. These diverse participants provide their own challenges in reviewing them because they have a different mindset. But because the entire article has the purpose of providing input and/or an overview of the interventions for decreasing wandering behavior, the article plays a role in the process and results of this review.

2.4 Setting

A nursing home (NH) is a care facility that has a domestic environment and provides 24-hour service that serves as a supporter and caregiver to clients who need assistance in implementing ADLs, clients who need help with their health problems, and are at high risk or susceptible to disruption [19]. The settings used in these articles are nursing home, dementia care facility, and hospital. In addition, community settings also exist in the article but do not include the order of the community at home or in the family.

2.5 Intervention

The article provides various alternative wandering interventions, both simple to complex interventions [9], [10], [11], [12], [13], [18], [16], in the form of a program care [14]. Alternative interventions can be implemented or applied in the care facility or community, so as to be able to provide input or other alternatives in the provision of interventions or care for wandering clients.

The articles that provide intervention are those that use the control group [10] and some do not use the control group [15], [16], [13], [18]. Articles with more than one intervention group consisted of 2 intervention groups [11], [17], [12], [18], and more than 4 small groups [9].

2.6 Comparison

In this review process, articles that provide a comparison or difference from the intervention given are [10], [11], [17], [12], [9], [18]. Articles that only look at the effects of an intervention or only compare before and after intervention are [13], [14], [16].

2.7 Outcomes

The articles used in this review also explained the results of their studies in the form of health-related conditions, especially wandering and/or articles that provide an overview of interventions and provide treatment programs to wandering clients [14].

These articles provide an overview and incidence of wandering behavior in residents both in the nursing home, hospital inpatient room, psychogeriatric clinic, dementia care facilities, and the community. Wandering behavior that occurs at the resident is a big burden for the caregiver and

resident himself, which can cause the resident to be lost from the care home or residence for days and some can even return but there are also those who do not return and are even found dead.

Exclusion. Wandering residents who get intervention with traditional methods, namely restraint and neuroleptic therapy which causes side effects from the provision of these therapies.

2.8 Data Extraction

The data needed in this review is taken from articles that have been sorted out by AK and carried out by AY, RF, and AV. The data needed is then recorded in a special note which is agreed upon. Eligible articles are articles that provide information according to selected data, namely: study characteristics, non-pharmacological interventions (protocol, frequency, duration, method, type of activity/intervention provided), and data on wandering and dementia. In addition to this, all data relating to wandering and non-pharmacological interventions are also recorded such as intervention programs, agitation, the risk of falling, and others.

2.9 Quality Assessment

The articles used in this review also carried out an assessment of the risk of bias using a risk bias instrument from the National Institutes of Health (NIH) [20]. The instrument used is a quality bias instrument for the Intervention Control Study (consisting of 14 questions), Pre-Post Study without Group Control (consisting of 11 questions). Instruments consisting of 14 questions are given the following criteria: good (low bias) if the value is 12-14, medium (moderate bias) if the value is 7-11, low (high bias) if the value is 0-6.

2.10 Summary Measures

Data relating to the objectives of the study in the article are recorded and well presented. The data is in the form of demographic data, intervention and/or program data, success or decline data from wandering, and other data related or influential to the study conducted. Although in this review it does not show the meta-analysis of the review, the data plays a major role in describing the results of the studies conducted, making it easier to understand the review process.

3. Result

3.1 Quality of Included Studies

The articles were assessed for risk of bias given the results that were obtained: for articles on intervention control the results were 2 articles with good or low bias articles, 4 articles with moderate result or moderate bias, and 2 articles with bad or high bias. Two articles with Pre-Post design tests without control group found moderate results or moderate bias 1 article and good results or low bias 1 article.

3.2 Term and Definitions

Articles that display definitions related to wandering behavior such as "absences" [10], "lost" [9], "missing" [14], "mobility" or "ambulation" [16], "motor activity" [12], and "wandering" [18], [15], [11], [17], [9], [13]. All articles reviewed show the intervention given. Articles that show programs offered are in articles [14].

3.3 Overview of Finding Studies

The extracted article came from 10 Quasi-Experiment studies. These articles are all used in compiling this review.

3.4 Study Characteristics

The articles with quasi-experimental design study included in the study countries were 10 articles, namely Australia 4 articles [10], [12], [13], [16], from Japan [15], Hong Kong [14], New York [9], France [11], Finland [18], and Spain [17]. While for articles in the form of intervention programs [14]. All of the study articles were published between 2013 and 2018.

The articles all show the conduct of research and displays the time of studying it.

3.5 Characteristics of Participants

Participants in the study articles were varied, namely there were 542 resident participants, 31 in a nursing home. In reviewing this article, articles with research respondents consisted of 30 youth groups with 30 elderly groups [11].Articles involving caregivers as respondents with clients [13], [14].

3.6 Characteristics Searching Articles

was Article searches were run in September 2018 and were found with keywords "wandering and elderly and dementia" there were 7789 journals consisting of 1580 Google Scholar, Scopus 290 articles, CINAHL 451 articles, ProQuest 866 articles, CNBI 834, and Science Direct as many as 2665 articles. Then the search is continued by giving restrictions "in English, area Nursing, Psychology, Professional Health, and publication titles including Alzheimer's and Dementia,

The American Journal of Geriatric and Psychiatry, Geriatric Nursing, International Journal of Nursing Studies, Archives of Gerontology and Geriatrics, years 2013 - 2018 "in Science Direct obtained 122 articles, Scopus 42 articles, while from Google Scholar with restrictions in 2013 - 2018 as many as 227 articles, ProQuest 117 articles, CINAHL 104 articles, and CNBI 89 articles.

Duplication of articles obtained as many as 124 articles, which were then analyzed based on the title to, as many as 159 articles. Furthermore, the selection based on abstract found as many as 63 articles. At the end of the selection of articles based on full text, 10 articles were selected.

3.7 Characteristics Outcome

Based on the results of the study presented in articles relating to health problems, the results are in the form of interventions and apply to as many as 10 articles from 10 Quasi-experiment articles. For results in the form of a treatment program there was one.

Six articles provide alternative interventions that can be included in the elderly dementia program and are useful for reducing wandering behavior. Three articles with interventions to detect wandering behavior and prevent the incident of elderly dementia missing.

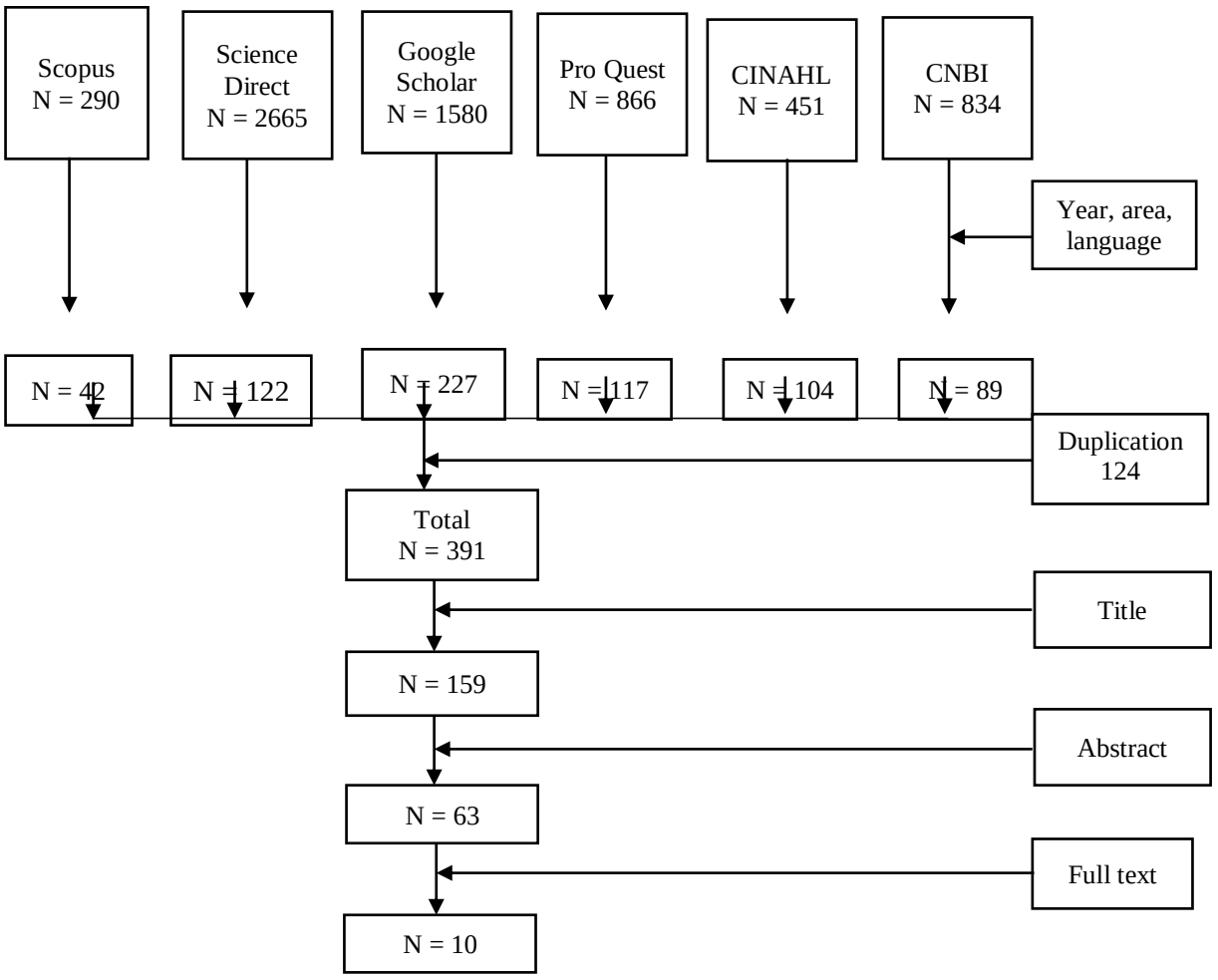

Figure 1. Flowchart of literature search

4. Discussion

The systematic review article that discusses the reduction in wandering behavior interventions for dementia clients during the search for this article has not been found. Studies discussing interventions for wandering are limited. Interventions for wandering still focus on a single modality of intervention to dementia. However, a multi-dimensional approach can provide a better outcome versus a single modality of intervention, which might be not applicable to all patients [14]. This is because interventions or programs for managing wandering behavior are still focused on intervention in care facilities, thus causing a lack of information about alternative interventions and/or programs that are able to provide new input or alternatives in providing care to dementia clients with wandering behavior. The home-based program and most of the interventions were tailor-made according to the needs of the patients and knowledge of caregivers [14]. So it is not surprising that the care of wandering clients often causes a source of stress and anxiety for clients and caregivers which ultimately creates a heavy burden on caregivers [2].

There has not been a definite definition of "wandering", based on the search for existing articles which found several wandering terms so far. Due to the wide variety of behaviors and typologies that wandering involves, a formal definition of the wandering concept does not exist, the number of definitions of wandering is significant [17]. Wandering is defined as the event of going missing or trying to run aimlessly caused by a decrease in psychological functions such as anxiety, suspicion, illusion, and aggression [2]. Wandering is also defined as behavior that is a manifestation of dementia syndrome which includes memory loss, language/communication problems, decreased attention, inability to make decisions, confusion, and visual problems [1]. Another article mentions wandering as a condition of mobilization behavior without any purpose or disorientation of people with dementia who have certain patterns, with certain frequencies, overreach, and inability to find the right path [5]. A literature review mentions the definition of wandering as follows:

"*a syndrome of dementia-related locomotion behaviour having a frequent, repetitive, temporally-disordered, and/or spatially disoriented nature that is manifested in lapping, random, and/or pacing patterns, some of which are associated with eloping, eloping attempts, or getting lost unless accompanied*" [15].

Based on the conclusions of the 10 articles, it was found that wandering behavior can be intervened upon by providing interventions that are appropriate to the client's needs and which are easily implemented in nursing facilities as well as in the community. The intervention is basically an easy and inexpensive intervention to implement, but for GPS intervention [7] on wandering clients who leave the house, it is still difficult to apply in developing countries, this is more of an economic problem from the client's family or caregiver. Caregivers avoid uses device for reduction wandering. That because a minority of caregivers can afford the cost of high technological tracking devices, compliance to wearing these devices, aged or uneducated caregivers also encountered difficulty in using devices [14].

Other interventions that are still difficult to implement which are also found are interventions in the form of application-based applications on Android that provide various information relating to wandering [21].This application actually has great benefits because it can help overcome caregiver problems wherever they are. But this application is also quite difficult to implement because it takes sufficient time to provide training in applying the application and educating in regard to the importance of the application, in addition to the caregiver's economic problems or the client's family.

In addition there are also interventions in the form of computerized programs [22], [23], [17], and robotic pet programs [12] which should be able to be implemented in care facilities also constrained by facilities and infrastructure and the ability of staff from hospitals, nursing homes or other dementia care facilities. This intervention also requires good coordination by an organization that is able to protect against a variety of unwanted actions that might be able to emerge.

Various interventions that can be applied easily and cheaply in the treatment facilities include providing meaningful activities for clients but which give effective and efficient value. Such as interacting with officers and/or with other residents [6], giving light assignments and setting rules that must be obeyed by clients [16], giving therapy Snoezelen [10], providing a therapeutic environment for clients [24], applying communication styles that are in accordance with the culture of the client [25], providing activities that are able to be comfortable and relax clients [26], and

provide physical activities such as gymnastics, walking, etc. [13]. These interventions will be very useful in providing care to wandering clients with continuous and routine implementation [27], healing gardens and activities to do in the garden [28], and it will be better if the intervention is included as a list of interventions that can be implemented in the service facilities in the form of activities or programs, as well as standards operational procedure. The significant reduction in missing episodes or elopement might be related to heightened supervision of the caregivers, home adaptation, and engagement of patients in purposely designed activities [14].

In some countries with advanced dementia care facilities, dementia care programs have been established as a service procedure to their residents. In developing countries, implementation for wandering still uses restraint and neuroleptic drugs. Treatment for wandering still uses the traditional method so far, which given restraint or combining with neuroleptic drug, where those given cause much side effects that are difficult to intervene upon [29].

The program to manage wanderers includes programs to prevent clients from elopement by identifying missing risks, assessing the type of wandering and risk of missing clients, developing and implementing risk prevention strategies, managing emergency responses and responding to missing events that include conditions when the client returns safely and the risk of recurrence is lost [30]. Other programs that might be able to be implemented are cultural transformation programs, the transformation of service facilities design, the transformation of client care at home and in the community, the transformation of acute service utilization, the transformation of care costs, the transformation of nursing home changes into elderly villages, and the transformation of community-friendly elderly [31].

Intervention programs for nursing include behavioral management programs, risk reduction prevention, end-of-life care, and rational use of antibiotics. Other programs that can be implemented are programs to increase awareness and knowledge of dementia, care focuses on early detection in primary health care facilities, plays a role in client care, improves disease therapy processes, protects clients and manages behavioral and psychological problems, records all clinical decisions of dementia, build relationships with caregivers and health workers, develop services that are aimed at improving the quality and care of organizations, plan all forms of existing services, arrange coordination of care, facilitate access to information and compile a list of convenient of priorities[27].

The optimally program managing for wandering have to apply both of detection of risk of losing and most alternative interventions, and administration management. Where those are not only set-up facilities, management or administration, but also staff knowledge, nursing or caregivers skill, and good communication under them. Nurse or caregivers have to owned skill for found need wanderer, culture wanderer and community around, and found the most intervention applicable for wanderer.

5. Discussion

This review is able to provide positive value for dementia service facilities, especially those who care for clients with wandering behavior. The findings of this review are important in improving the quality of care through improving client care programs or at a minimum through increasing interventions for wandering, especially those focusing on health care facilities and communities.

This review is also able to provide evidence for the application of alternative interventions offered and the client management programs provided. Future studies are expected to increase understanding and prevention of the risk of wandering behavior in order to achieve maximum service quality.

6. References

[1] R. W. Byard and N. E. I. Langlois, "Wandering Dementia-A Syndrome with Forensic Implications," J. Forensic Sci., no. 8, pp. 2–4, 2018.

[2] A. Hammoud, M. Deriaz, and D. Konstantas, "Wandering Behaviors Detection for Dementia Patients : a Survey Wandering Behaviors Detection for Dementia Patients : a Survey," no. May, 2018.

[3] H. Oakley, P. Jarrett, and R. McCloskey, "The relationship between dementia and falling in long-stay hospital patients," Am. J. Geriatr. Psychiatry, vol. 1), no. 3, p. S147, 2013.

[4] S. N. Ahn and S. Ashida, "Music therapy for dementia," Maturitas, vol. 71, no. 1, pp. 6–7, 2012.

[5] Y. T. Kwak, Y. Yang, and M.-S. Koo, "Wandering in Dementia," Dement. Neurocognitive Disord., vol. 14, no. 3, p. 99, 2015.

[6] L. Volicer, J. T. Van Der Steen, and D. H. M. Frijters, "Involvement in activities and wandering in nursing home residents with cognitive impairment," Alzheimer Dis. Assoc. Disord., vol. 27, no. 3, pp. 272–277, 2013.

[7] N. Shoval, G. Auslander, K. Cohen-Shalom, M. Isaacson, R. Landau, and J. Heinik, "What can we learn about the mobility of the elderly in the GPS era?," J. Transp. Geogr., vol. 18, no. 5, pp. 603–612, 2010.

[8] A. D. Moher D, Liberati A, tetzlaff J, "The PRISMA Group, Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement," Ann Intern Med, vol. 151, pp. 264–269, 2009.

[9] K. D. Ray and M. S. Mittelman, "Music therapy: A nonpharmacological approach to the care of agitation and depressive symptoms for nursing home residents with dementia," Dementia, vol. 16, no. 6, pp. 689–710, 2017.

[10] M. Bauer, J. A. Rayner, J. Tang, S. Koch, C. While, and F. O'Keefe, "An evaluation of Snoezelen®compared to 'common best practice' for allaying the symptoms of wandering and restlessness among residents with dementia in aged care facilities," Geriatr. Nurs. (Minneap)., vol. 36, no. 6, pp. 462–466, 2015.

[11] B. Staub, N. Doignon-Camus, E. Bacon, and A. Bonnefond, "Investigating sustained attention ability in the elderly by using two different approaches: Inhibiting ongoing behavior versus responding on rare occasions," Acta Psychol. (Amst)., vol. 146, no. 1, pp. 51–57, 2014.

[12] W. Moyle et al., "Effect of a robotic seal on the motor activity and sleep patterns of older people with dementia, as measured by wearable technology: A cluster-randomised controlled trial," Maturitas, vol. 110, no. December 2017, pp. 10–17, 2018.

[13] V. Traynor, N. Veerhuis, K. Johnson, J. Hazelton, and S. Gopalan, "Evaluating the effects of a physical activity on agitation and wandering (PAAW) experienced by individuals living with a dementia in care homes," J. Res. Nurs., vol. 23, no. 2–3, pp. 125–138, 2018.

[14] W. M. Lau, T. Y. Chan, and S. L. Szeto, "Effectiveness of a home-based missing incident prevention program for community-dwelling elderly patients with dementia," Int. Psychogeriatrics, no. May, pp. 1–9, 2018.

[15] C. T. Katsumi Komatsu, "Rescue Method, Rescue System, Wandering Care Method, and Wandering Person care system", US Pat. Apl. Publ., 2018.

[16] M. MacAndrew, E. Fielding, A. Kolanowski, M. O'Reilly, and E. Beattie, "Observing wandering-related boundary transgression in people with severe dementia," Aging Ment. Heal., vol. 21, no. 11, pp. 1197–1205, 2017.

[17] E. Batista, F. Casino, and A. Solanas, "On wandering detection methods in context-aware scenarios," IISA 2016 - 7th Int. Conf. Information, Intell. Syst. Appl., 2016.

[18] T. Särkämö et al., "Cognitive, emotional, and social benefits of regular musical activities in early dementia: Randomized controlled study," Gerontologist, vol. 54, no. 4, pp. 634–650, 2014.

[19] M. H. Woolford, C. Weller, and J. E. Ibrahim, "Unexplained Absences and Risk of Death and Injury Among Nursing Home Residents: A Systematic Review," J. Am. Med. Dir. Assoc., vol. 18, no. 4, p. 366.e1-366.e15, 2017.

[20] B. and L. I. (NIH) National Heart, "Quality Assessment Tool for Controlled Intervention Studies and Before-After Studies," NIH, 2014.

[21] S. Y. Carrizales-Villagómez, M. A. Nuño-Maganda, and J. Rubio-Loyola, "A Platform for e-Health Control and Location Services for Wandering Patients," Mob. Inf. Syst., vol. 2018, 2018.

[22] V. Varadharajan, U. Tupakula, and K. Karmakar, "Secure Monitoring of Patients with Wandering Behavior in Hospital Environments," IEEE Access, vol. 6, no. c, pp. 11523–11533, 2017.

[23] S. Teipel, C. Babiloni, J. Hoey, J. Kaye, T. Kirste, and O. K. Burmeister, "Information and communication technology solutions for outdoor navigation in dementia," Alzheimer's Dement., vol. 12, no. 6, pp. 695–707, 2016.

[24] et al Jiska Cohen, "The impact of enviromental factors on engagement and mood of persons with dementia attending recreational groups", Pod. Present., 2017.

[25] H. Kim, D. L. Woods, J. C. Mentes, J. L. Martin, A. Moon, and L. R. Phillips, "The nursing assistants' communication style and the behavioral symptoms of dementia in Korean-American nursing home residents," Geriatr. Nurs. (Minneap)., vol. 35, no. 2S, pp. S11–S16, 2014.

[26] M. MacAndrew, D. Brooks, and E. Beattie, "NonPharmacological interventions for managing wandering in the community: A narrative review of the evidence base," Health Soc. Care Community, no. May, pp. 1–14, 2018.

[27] S. Borson and J. Chodosh, "Developing Dementia-Capable Health Care Systems. A 12-Step Program.," Clin. Geriatr. Med., vol. 30, no. 3, pp. 395–420, 2014.

[28] T. R. Jonveaux et al., "Evaluation of benefits of a healing garden for alzheimer patients: New methodology to evaluate a design concept integrating artistic and neuropsychological approaches," Alzheimer's Dement., vol. 1), pp. S442–S443, 2011.

[29] L. Qiang, Z. Weichao, and W. Weilan, "Detecting dementia-related wandering locomotion of elderly by Leveraging Active Infrared Sensors," Sci. Res., 2018.

[30] R. G. Stefanacci and D. Haimowitz, "Elopement - Missing in action," Geriatr. Nurs. (Minneap)., vol. 34, no. 3, pp. 235–238, 2013.

[31] D. Levitt, "New strategies and innovations to engage seniors in eldercare," Healthc. Manag. Forum, vol. 31, no. 4, pp. 142–146, 2018Susanto T, Dewi EI, Rahmawati I. The experiences of people affected by leprosy who participated in self-care groups in the community : A qualitative study in Indonesia. Lepr Rev [Internet]. 2017;88:543–53. Available from: https://www.lepra.org.uk/ platforms/lepra/files/lr/ Dec17/ Lep543-553.pdf

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IMPROVING BEHAVIOR BEHAVIOR OF TUBERCULOSIS TRANSMISSION THROUGH COUNCELING IN THE WORKING AREA OF PUCANG SEWU HEALTH CENTER, SURABAYA

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ABSTRACT

The increase in cases of pulmonary tuberculosis can be a picture of the risk of high disease transmission in the community. East Java Province ranks second in Indonesia in the discovery of clients of pulmonary tuberculosis smear positive for new cases. Prevention of transmission of pulmonary tuberculosis can be done by maintaining a healthy lifestyle such as paying attention to the ethics of coughing, removing phlegm in place, eating nutritious food , adequate rest, regular exercise, avoid smoking and alcohol. Health education has increased knowledge, but it is not enough to change the prevention behavior of tuberculosis transmission. Counseling is an interaction process to facilitate changes in client behavior. In this case the role of nurses in improving the behavior of preventing tuberculosis is to provide counseling to clients and families about the importance of wearing masks and disposing of phlegm which is not carelessly disposed of in a closed place that has been given a disinfectant to prevent transmission. This study aims to determine the effect of counseling on improving the prevention behavior of pulmonary tuberculosis transmission. This type of research is analytic with the design of "Non Equivalent Control Group Design". The population was all pulmonary tuberculosis patients in the work area of PucangSewu Health Center in Surabaya, which was recorded in 2017 as many as 70 people. The sampling technique used purposive sampling a sample of 32 people divided into 4 groups, 2 treatment groups and 2 control groups. Counseling is done in 2 meetings, then 4 home visits are carried out. Data collection using questionnaires and analyzed using statistical tests "Wilcoxon Sign Rank test". The results of the study obtained a value of ρ: 0,000, smaller than α = 0.05 indicating a significant difference from transmission prevention behavior before and after counseling. Indicators that can be used in measuring the effectiveness of counseling are behavior change, positive mental health, problem solving, achieving personal effectiveness, and decision making. In conclusion, counseling can influence the increase in prevention behavior of pulmonary tuberculosis transmission. The process of adopting new behaviors requires more time so that giving counseling repeatedly so that behavior can change so as not to transmit to others.

Keywords: counseling, knowledge, attitude, pshycomotor, behavior of tuberculosis patiens

Introduction

Tuberculosis is major global health problem, estimated is 10 million people develop TB disease, and caused 1.3 million deaths (WHO, 2017). In Indonesia there were 360.770 cases and 162.412 new cases (Ministry of Health, 2016). East Java Province determined the second place in Indonesia in the discovery of clients of pulmonary tuberculosis smear positive for new cases. The case finding in 2014 was 52%, with the number of cases of positive smear TB as many as 21,036 clients (East Java Health Office, 2014). The amount of data on patients with pulmonary tuberculosis with positive smear in the Pucang Sewu Health Center area of Surabaya in 2015 cases of pulmonary tuberculosis included 60 cases 36 or 60% cases of positive smear, 2016 cases of tuberculosis patients cases 62 cases 42 or 67% cases of positive smear and in 2017 cases of pulmonary tuberculosis which included 70 cases, 51 or 73% of cases suspected of positive smear. Increased risk of positive smear tuberculosis from 2016 to 2017 (UPTD Puskesmas Pucang Sewu Surabaya, 2017).

The source of transmission of pulmonary tuberculosis is through sputum microorganisms that are released by tuberculosis patients who do not wear masks. Infection will occur if another person breathes air containing the infectious sputum. When coughing or sneezing, the patient spreads germs into the air in the form of sputum (nuclei droplet). One cough can produce around 3000 sputum spills (Ministry of Health, 2014). Risk factors for contracting pulmonary tuberculosis depend on several factors, including environmental factors, increased concentration of germs in the air influenced by air ventilation and lighting of the environment, age and immunity of a person's body (Ministry of Health, 2014). Therefore prevention of transmission of pulmonary tuberculosis can be done by maintaining a healthy lifestyle such as paying attention to the ethics of coughing, removing phlegm in its place, eating nutritious food, adequate rest, regular exercise, avoiding cigarettes and alcohol (CDC Government, 2016).

From the data mentioned that 90% of TB transmission in Pucang Sewu Health Center is caused by Environment, 85% due to behavior and 25% due to lack of understanding about TB, Behavior is one of the high enough factors causing risk of contracting pulmonary tuberculosis in Pucang sewu Health Center (UPTD Pucang Sewu Health Center, 2017). Although counseling to prevent transmission of TB has been carried out but their behavior has not changed, this indicates a lack of awareness of the patient on the behavior of preventing tuberculosis.

Lack of awareness of clients of pulmonary tuberculosis will have a negative impact on clients and families which can result in other family members experiencing transmission of tuberculosis. Awareness in tuberculosis sufferers is influenced by discomfort and feeling tight when wearing masks, besides that there is stigma in the community who still stay away from and exclude tuberculosis patients even though counseling has been conducted to the community to increase their insight and awareness in preventing tuberculosis cases.

Counseling is a process of providing assistance that is carried out through counseling interviews by an expert (counselor) to individuals who are experiencing a problem (client) that leads to the overcoming of problems faced by clients (Prayitno, Erman Amti, 2003). Counseling is the "heart of his heart" a comprehensive guidance service. This means that if counseling services have been carried out, the counseling problem will be resolved effectively and other guidance efforts can only follow or act as a companion. In this case the role of nurses in improving the behavior of preventing tuberculosis is to provide counseling to clients and families about the importance of wearing masks

and disposing of phlegm which is not carelessly disposed of in a closed place that has been given disinfectant to prevent transmission.

Research Purposes

This study aims to determine the effect of counseling on improving the prevention behavior of pulmonary tuberculosis transmission.

Methodology

A quasy experiment study was conducted among all TB patients who recorded in working area of Pucang Sewu Health Center Surabaya which were recorded in 2017. Sample was selected by purposive sampling, inclusion criteria for patients with positive bta, ages 20 - 55 years, and TB patients without complications. Respondents were divided into 2 groups, tretament group and control group. As a control group that only received health education / counseling about TB and a group as tratment groups that were treated or given counseling. Researchers conducted counseling in groups according to agreement twice. Furthermore, observations were made by coming directly for 4 visits to assess whether there was a change in behavior.

Instruments used in data collection this study were interviewing and observational checlist. An interviewing questionnaire was development by researchers based on references from previous studies to collect data about a study subject's characteristics and patient knowledge about TB Disease. An observational checklist to observe respondent's practice to prevent tuberculosis transmission. The analysis in this study used the Wilcoxon Sign Rank test used on ordinal scale data to determine whether there was an effect of preventive behavior changes before and after counseling.

Result and Discussion

Tabel 1 characteristics of respondents

ge	control		Treatment	
	Frekuensi	ɔersentase (%)	Frekuensi	ɔersentase (%)
) – 55	16	100%	16	100%
ɛx	control		Treatment	
	Frekuensi	ɔersentase (%)	Frekuensi	ɔersentase (%)
Male	11	68,7%	9	56,3%
Female	5	31,3%	7	43,7%
ɔtal	16	100%	16	100%

Tabel 2. Knowledge

nowledege	Treatment				Control			
	Pre		ɔst		Pre		Post	
	∑	%	∑	%	∑	%	∑	%
ɔor	8	50,0	0	0	11	68,8	0	0
verage	8	50,0	0	0	5	31,2	2	12,5
ood	0	0,0	16	100	0	0,0	14	87,5
ɔtal	l6	100	0	100	16	100	0	100
	p value = 0,000				*p value* = 0,000			

Tabel 3. Practice

ractice	Treatment				Control			
	Pre		Post		Pre		Post	
	∑	%	∑	%	∑	%	∑	%
ɔor	16	100	0	0	16	100	12	75
verage	0	0	5	31,3	0	0	4	25
ood	0	0	11	68,7	0	0	0	0
ɔtal	16	100	0	100	16	100	0	100
	p value = 0,000				*p* value = 0,046			

Discussion

According to studied sample knowledge related to tuberculosis improved after the counceling implementation. This agrees with the study conducted by Howyida, et al., who reported that the majority of TB patients knew most knowledge about tuberculosis (definition, causes, types, and mode of transmission, immunization, symptoms, tratment, complications, investigations, follow up nutrition pattern, drug contraindications, preventive methods and common helath symptom from disease).

Prayitno and Erman Amti (2004: 94), revealed that guidance was held in order to help individuals to better identify various information about themselves. Counseling is done which is giving knowledge and also prevention methods so that healthy behavior among respondents with pulmonary TB can change so that TB transmission can be minimized. For someone who provides counseling who has the task of resolving various obstacles in TB treatment and prevention methods during TB treatment that can be done by seeking health education through counseling methods to patients as well as providing health education media for example with leaflet charts and demonstrating how to transmit and prevention of TB. So there is an influence in terms of knowledge between before and after health education and counseling.

As regard to prevention transmission practice, the study result revealed that more than half of respondent wear masks, throw sputum in place, and take medicine on time. According WHO that what causes a person to act there reasons is facilities and infrastructure. The respondent's actions before giving less counseling were caused by the unavailability of facilities and infrastructure at home such as the availability of masks and sputum shelter, causing patients to throw phlegm carelessly and not wearing masks.. The purpose of counseling results in changes in behavior that

allow clients to live more productively. Efforts to facilitate the occurrence of behavior changes are done through interviews (although counseling is always done in interviews, but not all interviews can be interpreted as counseling) Patterson in Sofyan (2009). Counseling has a considerable impact, where respondents want to take TB prevention measures. Because counseling has been done twice, the results of the questionnaire show changes in the actions of pulmonary TB patients despite the gradual changes in the respondents' daily lives.

From the results above, there was an influence of counseling on improving behavior (knowledge, attitudes, actions) to prevent tuberculosis transmission in the work area of Pucang Sewu Health Center Surabaya. It means that counseling given for 2 meetings has a change in behavior for respondents in taking preventive measures for pulmonary TB.

Indicators that can be used in measuring the effectiveness of counseling are behavior change, positive mental health, problem solving, achieving personal effectiveness, and decision making (Shertz in Nurihsan, 2008). they already know that TB is a cough that usually has more than two weeks of symptoms. Which is mentioned that Mycobacterium tuberculosis is one of the lower respiratory tract diseases which most of the tuberculosis bacillus enter into the lung tissue through airbone infection and subsequently undergo a process known as the primary focus of the ghon (Wijaya, 2013). TB sufferers can actually recover completely, namely by doing routine treatment. In accordance with the theory that tuberculosis sufferers must be treated and treatment must be adequate. Tuberculosis treatment takes a minimum of 6 months. In eradicating tuberculosis, the state has guidelines in the treatment of tuberculosis called the Tuberculosis Program.

During the treatment period so as not to cause transmission to other family members, precautionary measures must be taken, namely by giving counseling by increasing knowledge and prevention methods so that the attitudes and actions of respondents at home can change to a better direction. The process of adopting new behaviors also requires more time and also has to be done giving repeated counseling so that behavior can change so that a good attitude is formed so as not to transmit it to others.

Conclusion

The impelemented counceling revealed significant improvements of patients knowledge about TB and practice to prevent transmission of TB. There were highly statistically significant relationship between counseling implementation and patient’s knowledge and practice of preventive tuberculosis.

Recommendation

Suggest conducting counseling to all patients and family, and continuous educational program during the follow up visits to upgrade their knowledge and practice

Reference

Howyida,S. Abd Elhameed, Heba, A.Aly, Abeer, Y.Mahdy. (2012). **Effect of Counseling on Self-Care Management mong Adult Patients with Pulmonary Tuberculosis**. Life Science Journal;9(1) : p956-964

Tola HH, Shojaeizadeh D, Tol A, Garmaroudi G, Yekaninejad MS, Kebede A, et al. (2016). **Psychological and Educational Intervention to Improve Tuberculosis Treatment Adherence in Ethiopia Based on Health Belief Model: A Cluster Randomized Control Trial**. PLoS ONE 11(5):

Veintramuthu Sankar, Rinku Mary Joseph, Pinky Mariyam Thomas, eet al. (2017). **Pictogram : A Better Tool for Counseling Tuberculosis Patients on Medication Use, Diet and Lifestyle Modifications.** Athens Journal of Health;4(1): p 61-82

World Health Organization (WHO). (2018). Global Tuberculosis Report.

A Juntika Nurihsan & Akur Sudianto. (2005). *Menejemen Bimbingan Konseling dan Konseling*. PT. Gramedia Widia Sarana Indonesia: Jakarta.

Depkes RI. (2009). *Pedoman Nasional Penanggulangan Tuberkulosis*. Direktorat Jenderal Bina Kesehatan Masyarakat: Jakarta.

Dinkes Kota Surabaya. (2017). *Profil Kesehatan Kota Surabaya Tahun 2016*. Dinkes Kota Surabaya.

Kemenkes RI. (2014). *Pedoman Nasional Pengendalian Tuberkulosis*. Jakarta.

Kemenkes RI. (2014). *Profil Kesehatan Indonesia Tahun 2013*. Jakarta.

Kemenkes RI. (2016). *Profil Kesehatan Indonesia Tahun 2015*. Jakarta.

Prayitno, Erman Amti. (2004). *Dasar-daras Bimbingan dan Konseling,, (Jakarta: Rineka Cipta Revisi VI*. PT. Rineka Cipta: Jakarta.

Tabita, Jeane. (2016). *Medical Record* UPTD Puskesmas Pucangsewu Surabaya

Tabita, Jeane. (2016). *Pencatatan dan Pelaporan Data Kunjungan Pasien Poli*. UPTD Pucangsewu Surabaya

Notoatmodjo, Soekidjo. (2003). *Pendidikan Dan Perilaku Kesehatan*. Jakarta : Rineka Cipta

Sarafino, E.P. (2006). *Health Psychology*: Biopsychosocial Interactions. 5th

Setiati S, Alwi I, Sudoyo AW, Stiyohadi B, Syam AF. (2014). *Buku ajar ilmu penyakit dalam jilid I. VI*. Interna Publishing: Jakarta.

Sofyan,Wilis, DR. (2010). *Konseling Individual Teori dan Praktek*. Alfabeta: Bandung.

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EFFECT SPIRITUAL SUPPORT AGAINST IMPROVEMENT COPING MECHANISMS ON THE ODHA IN BANYUWANGI COMMUNITY SUPPORT DISTRICT BANYUWANGI

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ABSTRACT

There is a wide-ranging impact on ODHA such as physical problems, psychosocial, emotional and spiritual. Indicated by changes in the character of ODHAsuch as living in stress, depression, feeling lack of spiritual support and changing coping mechanisms. The purpose of this study was to determine the effect of spiritual support to increase coping mechanisms to ODHA. This study used quasy experimental designdata collection. The population in this study all ODHA in Banyuwangi Regency. The sample size used a simple random sampling technique and obtained 88 respondents. Independent variables of spiritual support and dependent variable coping mechanism was measured by questionnaire. Data were analyzed using ordinal regression with $\alpha \leq 0.05$. The analysis of the data using Ordinal regression test obtained p value=0.000 and magnitude of spiritual support=17,422. It can be concluded that the value of p value 0.000<0.05 then H0 is rejected, which means there is the influence of spiritual support to increase coping mechanisms to ODHA in Banyuwangi district. The results of this study indicate that with spiritual support, it will directly improve the coping mechanism of ODHA and individuals will have good self-control in social communication, stimulate physiological functions, increase subjective awareness and defense mechanisms.

Keywords: Spiritual Support, Coping Mechanisms, ODHA

1. Introduction

HIV / AIDS emerged at the end of the 20th century, and spread very quickly throughout the world. An epidemic until 2011, HIV has infected more than 60 million adults and children. AIDS has approached 20 million infections in adults and children. The international community has responded to the HIV / AIDS pandemic, HIV continues to spread causing more than 14,000 new infections every day. Currently AIDS is the leading cause of death in Africa and a quarter of the world [1].

Since the discovery of the disease AIDS (Acquired Immune Deficiency Syndrome) and its causative virus HIV (Human Immunodeficiency Virus), there has been a wide-ranging impact on ODHA such as physical problems, psychosocial, emotional and spiritual. Indicated by changes in the character of ODHAsuch as living in stress, depression, feeling lack of spiritual support and changing coping mechanisms [2].

HIV cases were first reported in Indonesia in 1987. Until 2012, HIV / AIDS cases have spread in 345 of 497 (69.4%) districts / cities in all provinces of Indonesia. The number of new HIV cases each year has reached around 20,000 cases. In 2012 there were 21,511 new cases, of which 57.1% were 20-39 years old [3]. The total number of HIV / AIDS cases up to December 2013 was 1676 cases with 272 patients already dead and 769 in AIDS. Furthermore, when viewed from the highest risk factors for transmission through sex (81%) then the second is through syringes (10%), and from mother to child (2%). Additionally there are things that are not unexpected, namely the occurrence of HIV / AIDS in housewives which amounted to 392 cases and the incidence of under-fives was 36 cases [4].

Based on a preliminary study conducted on 8 ODHA in Banyuwangi Regency precisely in BCS on March 20, 2014, data was obtained showing that 5 out of 8 ODHA stated that they still refused to acknowledge what had happened to them, they often felt depressed, they also surrender in the face of the disease and still lack of spiritual support given by family, environment and other parties. So it can be concluded that the majority of ODHA in Banyuwangi District with a lack of spiritual support decreased the coping mechanism.

Spiritual plays an important role in the treatment of HIV / AIDS. Infected individuals HIV also experience changes in spiritual function, including behavior change and verbalizing distress. When experiencing stress, individuals will seek support from their religious beliefs. This support is very necessary to be able to accept the state of illness experienced, especially if the disease requires a long healing process with uncertain results. Praying or praying, reading scriptures and other religious practices often help meet spiritual needs which are also a protection for the body [5].

Depressed conditions or stress on ODHA will create coping mechanisms in an effort to overcome the problems that occur. Coping mechanisms are ways that individuals solve problems, adjust to changes, and respond to threatening situations. Coping mechanisms are very important to be used by individuals to solve problems, effective coping will help individuals free from prolonged stress. A study shows that coping mechanisms are related to individual responses to problems [6].

Spiritual influences a person's coping mechanism, so that one must hone spiritual intelligence skills to build a coprosive coping mechanism. A good development in the spiritual aspect can make a person more able to interpret life and have self-acceptance of his condition so that he gives a positive response to the changes that occur in him [7].

The above makes the researcher interested in conducting a study about "The Influence of Spiritual Support on Increasing the Coping Mechanism in ODHA in Banyuwangi Regency". In taking the title, the researchers were interested to find out whether there was a coping increase on PLHAs after being given spiritual support, and also as a further mission so that the number of HIV / AIDS cases especially in Banyuwangi Regency decreased.

2. Methods

This study researchers used quasi experimental research designs using cross sectional approaches. The population of this study was 113 people living with HIV in the BCS (Banyuwangi Community Support) Banyuwangi Regency. The sampling technique in this study was Purposive sampling. The number of respondents is 88 respondents. The instruments spiritual support using a questionnaire consisting of 28 item questions with 4 choices of answers namely always, often, sometimes, and never. The instrument for improving coping mechanisms using a questionnaire

consists of 25 questions with 4 choices of answers namely always, often, sometimes, and never. Data processing is done by editing by checking back from questionnaire data. Coding is done by coding each characteristic. Data obtained at the time of the study will be analyzed by quasi experimental analysis techniques systematically so that the research will find out the description of spiritual support and improvement of coping mechanisms using statistical tests using SPSS version 16.0 for Windows.

3. Results

Table 1 shows that of the 88 respondents, the majority of respondents were 31-40 years old, 59 respondents (67.0%). Most of the total 88 respondents were male, 63 respondents (71.6%). Nearly half of the total education of high school respondents is 32 (36.4%). Most of the 88 respondents, based on marital status with the number of unmarried at 49 respondents (55.7%). It can be seen that from 88 research respondents most of them were private employees, namely 46 respondents (52.3%).

Based on table 2, it is known that the spiritual support of ODHA in Banyuwangi Community Support (BCS) Banyuwangi District mostly has good spiritual support, at 74 respondents (84.1%). Whereas for the Koping Mechanism for ODHA in Banyuwangi Community Support (BCS) Banyuwangi Regency most of them have good coping mechanisms at 72 respondents (81.8%). Based on the results of table 3 shows respondents who have good spiritual support and have good coping techniques at 69 respondents, amounting to 78.4%.

On the results of the statistic test using Ordinal Regression test (Table 4) to 88 ODHA respondents in the Banyuwangi Regency BCS (Banyuwangi Community Support), get the value p = 0,000. Because the value of p 0,000 <0,05, Ho is rejected, so it can be concluded that there is an influence of spiritual support for improving coping mechanisms for ODHA in the Banyuwangi Regency BCS (Banyuwangi Community Support). The results of the Ordinal Regression statistical test (Table 5) to 88 respondents, it was found that there was an influence of spiritual support for the improvement of coping mechanisms in the Banyuwangi District of Banyuwangi (17.422).

Table 1 Characteristics of respondents at BCS (Banyuwangi Community Support) on 10-28 September 2014.

		Frequency	Percentage
Age	20-30	29	33,00%
	31-40	59	67,00%
Gender	Man	63	71,6
	Women	20	22,7
	Shemale	5	5,7
Education Level	Elementary school	10	11,4
	Junior high school	20	22,7
	High school	32	36,4
	College	26	29,5
Marriage Status	Married	19	21,6
	Single	49	55,7
	Divorce	20	22,7

Job	PNS/TNI/POLRI	1	1,1
	Private employees	46	52,3
	Entrepreneur	21	23,9
	Farmers / Breeders	4	4,5
	Retired	1	1,1
	Housewife	15	17

Table 2 Spiritual support and Coping Mechanisms for ODHA in BCS, Banyuwangi Regency on 10-28 September 2014

		Frequency	Percentage
Spiritual Support	Well	74	84,1
	Enough	9	10,2
	Less	5	5,7
Coping mechanism	Well	72	81,8
	Enough	11	12,5
	Less	5	5,7

Table 3 Cross Tabulation of Spiritual Support with Coping Mechanisms on ODHA in Banyuwangi Community Support (BCS) Banyuwangi Regency

Category		Coping mechanism						Total	
		Well		Enough		Less			
		N	%	N	%	N	%	N	%
Spiritual support	Well	69	78.4	4	4.5	1	1.1	74	84.1
	Enough	2	2.3	3	3.4	4	4.5	9	10.2
	Less	1	1.1	4	4.5	0	0	5	5.7
Total		72	81.8	11	12.5	5	5.7	88	100.0

Table 4 Results of the Ordinal Regression Test for Spiritual Support with the Coping Mechanism in ODHA in Banyuwangi Community Support (BCS) Banyuwangi Regency on 10-28 September 2014

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	49.418			
Final	26.754	22.664	1	.000

Table 5 Ordinal Regression test results for the amount of Spiritual Support for ODHA in Banyuwangi Community Support (BCS), Banyuwangi Regency on 10-28 September 2014

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[mekanismekoping = 1,00]	4.192	.745	31.674	1	.000	2.732	5.652
	[mekanismekoping = 2,00]	5.960	1.021	34.051	1	.000	3.958	7.961
Location	dukunganspiritual	1.942	.465	17.422	1	.000	1.030	2.854

4. Discussion

Based on the results of the study showed that spiritual support for ODHA in the Banyuwangi Regency BCS was as good as 74 respondents (84.1%) and coping mechanisms for ODHA in the Banyuwangi District BCS both at 72 respondents (81.8%).

The results of the statistic test using Ordinal Regression test to 88 ODHA respondents in the Banyuwangi Regency BCS (Banyuwangi Community Support), get the value p = 0,000. Because the value of p 0,000 <0,01, Ho is rejected, so it can be concluded that there is an influence of spiritual support for improving coping mechanisms for ODHA in the Banyuwangi Regency BCS (Banyuwangi Community Support). From the results of the Ordinal Regression statistical test to 88 respondents, it was found that there was an influence of spiritual support for the improvement of coping mechanisms in the Banyuwangi District of Banyuwangi (17.422).

This emphasizes how the spiritual dimension spreads across all other dimensions, whether identified or developed by individuals or not. Individuals are strengthened through their "spirit", which results in a transition towards prosperity. The influence of spirituality is especially important in the period of illness. When illness, loss, or pain affects a person, the person's energy is depleted, and the person's spirit is affected. How this affects a person's motivation to recover, participates in healing and the ability to change is often underestimated [8].

According to Nursalam and Ninuk Dian Kurniawati [9], it was revealed that coping effectively kept a central place on the body's resilience and the body's resistance to disorders and attacks of a disease both physical and psychological, social, spiritual. Not only limited to mild illness, but precisely the emphasis on the condition of the pain.

If individuals are in a position of stress humans will use various ways to overcome them, individuals can use one or more available coping resources. Someone who faces a serious illness and is considered a terminal illness will show a high awareness of his beliefs that appear in his daily behavior. Therefore individuals need every effort to overcome stress due to the conditions they experience [10].

Iyus Yosep [11], states that every change in every human beings can be a stressor that can influence the coping mechanism of the individual. The state of elongated emotional stressors that affect the entire personality of the individual and the functions of his life. This is related to emotions and has the same understanding with the state of feelings or emotions. Like other aspects of personality, emotions or mood play a role in the process of adaptation. There are four functions of emotional adaptation, namely as a form of social communication, stimulating physiological functions, subjective awareness and defense mechanisms.

Based on the results of cross tabulation between the two variables of spiritual support and coping mechanism, it shows that out of 88 respondents 69 respondents (78.4%) showed good spiritual support and coping mechanisms.

From the description above it can be concluded that spiritual support will both improve coping mechanisms for ODHA as evidenced by a total of 88 respondents who have 74 respondents who have good spiritual support and 72 respondents have good coping mechanisms. While respondents who had spiritual support and good coping mechanisms were 69 respondents. With good spiritual and spiritual support, ODHA will have faith and fulfill religious obligations, as well as the need to get forgiveness, love, establish a relationship full of trust with God and establish a relationship with someone, with others and with the environment. It will even strengthen the relationship with God or the Most High which guides one's life. Whereas the good coping mechanism on ODHA will affect the entire individual personality and function of life. Someone who faces a serious illness and is considered a terminal illness will show a high awareness of his beliefs that appear in his daily behavior. Coping mechanisms are closely related to one's emotions. This can be proven by a good coping mechanism that will shape the emotions of a person to be better, so that a better form of social communication can emerge, can stimulate physiological functions, subjective awareness and improve the defense mechanism of emerging stressors.

According to Khumsaen and Natawan [12], there is little data available regarding the influence of spiritual well-being on QOL among HIV-infected persons, particularly in rural health settings. These findings were also obtained in a quantitative study that assessed the quality of life of women with HIV/AIDS, where the domain of spirituality showed the best results. It covered aspects related to forgiveness and guilt and concern about the future and death. Spirituality was a positive strategy to confront HIV/AIDS, as well as to address biopsychosocial changes the disease causes in the lives of individuals.

Religion was a path to obtain support. For some people, having a religion that offered support for the difficulties experienced at that time in their life was more important than having a specific religion. This fact made the interviewees become members of a religious community, and change religion, church, or belief after they discovered the diagnosis, or even distance themselves from it after overcoming the main problems related to the disease. God represents a supreme being, who is the creator and ruler of everything. He could send suffering and pain, but could also provide relief and healing. The respondents believed that, if they were guilty and the disease was a punishment by God, they could expect healing, because God is infinite in all attributes. He is the source of life, truth, and love [13].

The most commonly used coping styles were acceptance and religion. The coping strategies intervention was found effective in significantly improving active coping, instrumental support, emotional support at post-test 1(after one month of intervention) and post-test 2 (after three months

of intervention) [14]. Research results Pinho *et al*., [15] show that religion has been associated with better conditions in which to deal with the problems developed by feelings of helplessness and denial experienced by ODHA. Individuals who reported having religion presented higher levels of satisfaction in life, leading to better adherence. Religiosity and spirituality have been shown as significant coping strategies among this specific population.

5. Conclusion

Spiritual support for ODHA in BCS, Banyuwangi Regency, namely 74 respondents (84.1%) had good spiritual support. The Koping Mechanism on ODHA in BCS Banyuwangi Regency, which is 72 respondents (81.8%) have good coping mechanisms. The results of the statistic test using Ordinal Regression test to 88 ODHA respondents in the Banyuwangi Regency BCS (Banyuwangi Community Support), get the value p = 0,000. Because the value of p 0,000 <0,01, H0 is rejected, so it can be concluded that there is an influence of spiritual support for improving coping mechanisms for ODHA in the Banyuwangi Regency BCS (Banyuwangi Community Support), which is 17.422.

ODHA is expected to have a more confident attitude and be active in spiritual activities around the environment and at the same time interact with the community, so that ODHA will have good coping mechanisms. It is hoped that the results of this study will be used as an illustration for BCS (Banyuwangi Community Support) to hold religious activities by bringing ulemas to help ODHA who have problems regarding spiritual support and can help improve coping mechanisms for ODHA. It is recommended to do further research with the theme of providing spiritual support to the OHDA and coping mechanisms and their development process before and after being given spiritual support.

References

[1] UNAIDS, *Global report: UNAIDS report on the global AIDS epidemic*. 2010.
[2] Nasronudin, *HIV & AIDS Pendekatan Biologi Molekuler Klinis dan Sosial*, Edition 1. Surabaya: Airlangga University Press, 2007.
[3] Kementerian Kesehatan RI, *Pedoman pelaksanaan pencegahan penularan HIV Dan sifilis dari ibu ke anak bagi tenaga kesehatan*. Jakarta: Kementerian Kesehatan RI, 2014.
[4] Depkes, "Profil Kesehatan Kabupaten Banyuuwangi," *Depkes*, 2016.
[5] Achir Yani S. Hamid, *Bunga Rampai Asuhan Keperawatan Kesehatan Jiwa*. Jakarta: EGC, 2008.
[6] T. W. S. Edward P. Sarafino, *Health Psychology Biopsychosocial Interaction*. 2011.
[7] A. I. Amal and E. Khofsoh, "Potret Kebutuhan Spiritual Pasien HIV / AIDS Description Of Spiritual Need Among Hiv Aids Patient," pp. 70–74.
[8] P. A. Potter, *Buku Ajar Fundamental Keperawatan : Konsep, Proses dan Praktik*. Jakarta: EGC, 2005.
[9] Nursalam dan Ninuk, *Asuhan Keperawatan pada Pasien Terinfeksi HIV/AIDS*. Jakarta: Salemba Medika, 2013.
[10] Abdul Nasir dan Abdul Munith, *Dasar- dasarKeperawatan Jiwa: Pengantar Teori*. Jakarta: Salemba Medika, 2011.
[11] Yosep Iyus, *Keperwatan Jiwa*. Jakarta: Refika Aditama, 2011.
[12] N. Khumsaen, "Factors Influencing Quality of Life Among People Living With HIV (PLWH) in Suphanburi Province ," *J. Assoc. Nurses AIDS Care*, vol. 23, no. 1, pp. 63–72, 2012.
[13] C. Roberto *et al.*, "Spiritual support for people living with HIV / AIDS : A Brazilian explorative , descriptive study," no. November 2011, pp. 514–519, 2012.

[14] D. Khakha and B. Kapoor, “Effect of coping strategies intervention on the coping styles adopted by People living with HIV / AIDS at a tertiary care hospital in the national capital,” no. 2, 2015.

[15] C. M. Pinho *et al.*, “Religious and spiritual coping in people living with HIV / Aids,” vol. 70, no. 2, pp. 392–399, 2017.

PHP-890

FAMILY COUNSELLING ENHANCES ENVIRONMENTAL CONTROL OF ALLERGIC PATIENTS

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ABSTRACT

Allergies can cause complications such as inadequate nutrition, impaired sleep quality, and inhibition of child growth and development. There were about 15% children who suffered from dust allergies in 2017 in Indonesia. Parents lacking of knowledge about environmental control can increase the prevalence of allergic relapse in children. Counselling is a method of health education that aims to improve knowledge, and practice. The purpose of this study was to investigate whether counselling has any influence on allergic related knowledge and environmental control measures skills. The design of study was a pre-experiment design. There were 14 respondents in this study who were recruited at a university hospital based on inclusion criteria with consecutive sampling. The independent variable was counselling, the dependent variable were knowledge and environmental control measures. Data were collected using a questionnaire and a check list. Data were analysed using Wilcoxon Sign Rank Test with significance level of $\alpha<0,05$. Based Wilcoxon Sign Rank Test there was an influence of counselling on knowledge and environmental control measures (knowledge level, p= 0,001; practice level p= 0,001). It is concluded that counselling is significantly increased knowledge and environmental control measures level.

Keywords: allergy, house dust mites, environmental control, counselling, knowledge, practice

Introduction

Despite its importance, the parents' knowledge and skills regarding house dust mites-environmental-control are still lacking [1]. Globally, a review concluded that awareness of this type of allergy remains low [2]. If left untreated, the environment full of house dust mites will cause allergy and asthma attack to sensitive individual [3–5]. Knowledge of parents with children allergic to house dust mites in the Allergy Outpatient Room at the Airlangga University Hospital regarding environmental control to reduce the house dust mite population is still inadequate. A survey conducted on March 5, 2018. showed that there were 3 out of 3 parents (100%) who were unable to provide the right answer when they were given questions about how to wash linen to reduce the population of house dust mites; and 2 out of 3 parents (66%) have not been able to provide appropriate answers on how to clean the environment to reduce the population of house dust mites. Existing studies on environmental controls that have been carried out shows that the knowledge of parents with house dust mite allergic children on environmental control is still low, even in 2003 after being given health education only 50% of parents had good knowledge regarding environmental control.

Allergy is a hypersensitivity reaction due to an induction by IgE that is specific to certain allergens, which binds to mast cells. Allergens are ingredients that are generally harmless and are found in many environments but can cause allergic reactions if in contact with allergic patients [3,4,6–8]. In sort, allergies to house dust mites are a hypersensitivity reaction to house dust mite allergens.

Dust and dust mites are the most common allergens in the room and most often cause allergies

[3,4,6,9–14]. House dust mites are the most common allergens found in rooms such as in the carpets and beds [2,15,16]. House dust mites are animals of the araknoidea class [3,17]. Stools and debris from house dust mites can cause allergies [18,19]. Home dust mite allergies can be reduced by environmental controls [11,20] however, parents' knowledge of environmental control is considered to be lacking.

The prevalence of allergies in the world has continued to increase for more than 50 years. The results of sensitization tests for one or more common allergens in 2016 among school children are close to 40% -50% worldwide. In 2012, 10.6% or 7.8 million children reported respiratory allergies [21]. The number of children with allergies in Indonesia is estimated at 15% [19]. The results of research by the University of Indonesia showed an increase in the percentage of children under 12 years of age with allergies to pollution and dust up to four times in the last 20 years, from 2% in 1980 and reaching 8% in 2000 [22]. Knowledge of parents who met the good category amounted to only 50% after being given health education in West Virginia in 2003.

Large number of accessible information about environmental controls to reduce the population of house dust mites, such as mass media, seminars and other health education does not necessarily improve parents' knowledge of environmental control. Lack of knowledge of parents about environmental control can increase the prevalence of allergic events in children. Allergies can cause other complications such as inadequate nutrition, disruption of the quality of sleep, inhibition of growth and development of children [23].

Counselling accompanied by a leaflet on how to properly control the environment can be given to parents who have kids suffering allergy to house dust mites to enhance the parents' knowledge regarding allergic environmental control. Counselling is chosen because it not only improves knowledge, but also provides ample time for parents with individual consultation; thus, it can help resolve individual obstacles in controlling the environment. Counselling is expected to be able to play a role in the process of behavior change, namely awareness, interest, evaluation, trial and adoption of the behavior; therefore, the parents' knowledge, attitude, skills and environmental control measures of house dust mites will increase, resulting in the suppression of the prevalence of allergies. The purpose of this study was to investigate whether counselling has any influence on allergic related knowledge and environmental control measures skills.

Materials and Methods

The research design used was pre-experiment with one-group pre-post-test design. The process of data collection was carried out in July, 2018 at an Outpatient Clinic of Allergy of a university hospital in East Java. The independent variable in this study was counselling regarding environmental control given to parents or children. The dependent variable in this study is the knowledge and actions of parents or children in environmental control to reduce the population of house dust mites.

The population of this study were parents and children with children allergic to house dust mites who were treated at Outpatient Clinic of Allergy Universitas Airlangga Hospital Surabaya in July 2018. Respondents of 14 people were obtained using consecutive sampling with inclusion criteria: 1) parents with children who were suffering allergies to house dust mites, 2) parents or children with children who were seeking treatment at Outpatient Clinic of Allergy Universitas Airlangga Hospital Surabaya 3) parents or children with at least elementary education 4) parents or children who underwent immunotherapy programs every 1 week and 3 weeks .

Data collection techniques were carried out using a knowledge questionnaire developed from Continuing Medical Education questions examinations sourced from The American Academy of Allergy, Asthma & Immunology (AAAAI) [24] and a check list instrument to determine parents' actions towards environmental controls to reduce house dust mite populations. right. Data analysis was conducted using SPSS 16.0 for Windows program and tested the Wilcoxon Signed Rank Test statistically, namely p 5 0.05. This research has passed the ethical review from the health research ethics commission at the Airlangga University Hospital in Surabaya and received the research

protocol approval with number 160 / KEH / 2018.

Results

Based on Table 2. the majority of respondents had never received other information regarding environmental control before counselling at 9 people (64%). A total of 4 respondents received information about environmental control more than 3 months ago or 28.5% of the total respondents. All respondents who had received information about environmental control came from other health education or 36% of the total respondents, and 1 respondent who accessed information about environmental control through the internet in addition to getting other health education or 7% of the total respondents.

Table 1. Respondents' characteristics of Family counselling improves environmental control of house-dust-mites.

Characteristics of respondents		n	%
Respondents' age (year old)	20-29	4	28.5
	30-39	7	50
	> 40	3	21.5
Kid's age (year old)	< 1	1	7
	1-3	4	28.5
	3-5	5	36
	5-6	1	7
	6-18	3	21.5
Education	Basic Education (grades 1-6)	1	7
	Basic Education (grades 7-9)	1	7
	Secondary Education (grades 10-12)	8	57
	Higher education	4	29

Table 2. Information regarding environmental control of house-dust-mites allergy.

Category		n	%
Have received information	Yes	5	36
	No	9	64
When was the last information received (in month)	< 3	1	7
	> 3	4	28.5
Source of information	Other health education sources	5	36
	The internet	1	7

Table 3**.** shows the Wilcoxon Signed Rank Test results. Wilcoxon Signed Rank Test is used to test for differences in pre-test and post-test results. The pre-test results revealed that the knowledge level of most of the 8 respondents scored less (57%) before being given counselling. An increase in the level of knowledge after being given counselling was 12 respondents (86%) had a good level of knowledge. The Wilcoxon Signed Rank Test results obtained $p = 0.001$ so that $p < 0.05$. This shows that there are differences between the results of the pre-test and post-test. It can be concluded that there is an effect of counselling on the knowledge of environmental control of parents with children

who are allergic to house dust mites.

Table 3. Parents' knowledge and skills regarding the environmental control of house-dust mites-allergy at pre and post intervention.

Level	Knowledge				Skills			
	Pre		Post		Pre		Post	
	n	%	n	%	n	%	n	%
Good	1	7	12	86	1	7	9	64
Average	5	36	1	7	6	43	5	36
Poor	8	57	1	7	7	50	0	0
Mean	4.79		8.64		2		3.64	
Standard Deviation	2.007		1.393		1.359		0.497	
p (Wilcoxon signed rank test)	0.001				0.001			

Based on Table 3, it is known that most of the 7 respondents (50%) were in the category of poor in skills of house-dust-mites-allergy environmental control before being given counselling. The level of skills had increased after counselling, which was 9 respondents (64%) in the good category. The Wilcoxon Signed Rank Test between pre and post intervention was p = 0.001, suggesting that there were differences between the results of the pre-test and post-test. It can be concluded that there was an effect of counselling on environmental control measures of parents with children allergic to house dust mites.

Discussion

Parents' knowledge after counselling has increased compared to before counselling. Before being given counselling the level of knowledge of the majority of respondents was in the less category while only one respondent was in the good category. After counselling, post-test results show that counselling can facilitate an increase in the level of knowledge of parents towards environmental controls for allergic children to be better. This is indicated by the majority of respondents in the good category, one respondent in the sufficient category and one respondent in the less category.

Research conducted by Lorensia shows that education is effective in increasing knowledge [25]. Health education controls the environment with counselling methods is the right method for parents with allergic children, because counselling can provide assistance to respondents to develop knowledge, and behavior [26].

This is consistent with the an existing knowledge developed by Lawrence Green which divides factors that influence health behavior into three, namely predisposing factors, supporting factors, and driving factors [27]. Predisposing factors consist of knowledge, attitude, age, and education [25,26]. Supporting factors consist of health service personnel and information [27]. The driving factor consists of family support, health workers, and community leaders. The existence of supporting factors in this case information can increase one's knowledge [27].

The level of knowledge is also influenced by the learning process [25]. The learning process is influenced by the conditions of the subject of learning, among others, capture power, intelligence, memory, motivation and so on. Rogers [28] argues that before accepting an object of learning a sequential process occurs: awareness (the subject is aware of the learning object), interest (the subject feels attracted to the object), evaluation (the subject evaluates the bad or bad object), trial (the subject starts trying to do something in accordance with the object or stimulus), adaption (the subject behaves new in accordance with the knowledge, awareness and attitudes obtained) 21).

Notoatmodjo argues, one of the factors that influence knowledge is education [26]. Knowledge is closely related to education [28]. It is expected that the higher the level of education of a person, the higher the knowledge he has. Besides education, there are many factors that can affect one's

knowledge, including age and experience. The thinking ability will be more mature as the person is getting older. Personal experience can also be used as a source of knowledge [24].

Some respondents who have a sufficient level of knowledge, and one respondent who has a good level of knowledge before being given counselling, can occur because respondents have previously obtained information on environmental control from other sources, namely health education received by respondents when children are allergic test respondents and respondents actively seek information through the internet.

The demographic data of respondents showed that the majority of respondents were in the category of 30-39 years so that most respondents were still classified as at a productive age who were still able to digest various information so that respondents could still be active and continue to learn so that the level of knowledge they possessed became better. Table 1.4 shows a change in knowledge from 57% of respondents in the category of knowledge level less than 86% of respondents are in the category of good knowledge level. In accordance with the theory of Notoatmodjo, the provision of information can facilitate the learning process of individuals to gain a new knowledge [29].

Counselling can be the best choice in providing health education because counselling implements two-way communication between clients and counsellors so that perceptual inequality can be reduced. Another advantage of counselling is the content of counselling based on the problems faced by the client so that the health problems experienced by the client can be solved. However, giving counselling cannot change the knowledge of all respondents. There is one respondent who has not experienced an increase in knowledge; this may be due to several factors including: the age of the respondents who are older than other respondents, and the lack of concentration of respondents during the counselling process takes place.

Knowledge or cognitive is a very important domain in shaping one's actions (covert behavior) [25]. The process of changing respondents' knowledge through counselling will result in changes in house-dust-mite environmental control measures for allergy prevention.

The parents' skills after counselling have increased compared to before counselling. Before being given counselling the majority of respondents' level of skills were in the poor category while only one respondent was in the good category. After counselling, the post-test results showed that counselling can facilitate an increase in the level of parents' skill for environmental control for allergic children. This is shown in Table 1.5 that the majority of respondents became showed good skills in environmental control and some showed sufficient skills.

This finding shows that the health education of environmental control with counselling method is the right method for parents with allergic children, because counselling can provide assistance to respondents to develop knowledge, and behavior [25]. Skinner argues that behavior is a certain order in terms of feelings (affections), thoughts (cognitions), and predisposing actions (conation) of someone to an aspect in the environment [26].

Action is the realization of a person's knowledge and attitudes in a real act [24]. Changes in actions can occur through processes or stages of change, namely knowledge, attitudes, and actions, which means that someone will only be able to perform well if the person already has a good knowledge and followed by a positive attitude. Nevertheless, some study found the different phenomenon: person can perform well even though they have poor knowledge and attitudes they have are still negative [14]. Anas [30] states that the actions of an individual can arise not necessarily based on knowledge and attitude. While Rogers [25] argue the sustainability of a skill or performance unsupported with a good knowledge; if a behavior is not based on knowledge and awareness then the behavior will not last long.

Comparison of respondent's actions before and after counselling can be seen in Table 1.5 before giving counselling the majority of respondents included in the category of poor skill and action in term of controlling the environment, while only one respondent in the category of good action level. The majority of respondent had not been able to choose the right linen and to choose the right temperature for environmental control. At post interventions, the level of action of the majority of

respondents increased to a good category, and some were in average category. These findings can best be explained with the Precede-Procede-Lawrence Green-theory which assert that the provision of health education can change predisposing factors, supporting factors, and driving factors. The current study targeting the predisposing factors to change the respondents' knowledge; knowledge acquisition was considered as the important factors formed new skills and actions of environmental control. The process of forming actions goes through stages, such as perceptions, guided responses, mechanisms, and adoption [25].

Counselling can be the best choice in providing health education because counselling implements two-way communication between clients and counsellors so that perceptual inequality can be reduced. Another advantage of counselling is the content of counselling based on the problems faced by the client so that the health problems experienced by the client can be solved.

Some respondents still cannot the right temperature of water used to clean the house for environmental control; this may be due to several factors, among others: lack of enthusiasm of respondents, lack of concentration of respondents and research rooms that use air conditioner so that it can cause respondent's body temperature to cool down.

Conclusion

An increase in the level of knowledge of parents regarding environmental control after counselling. Moreover, there was an increase in the level of parental action regarding environmental control after counselling.

The results of this study are expected to be the initial data for the next researcher in analyzing and examining parents' knowledge of environmental control. The next researcher is expected to be able to examine the attitude variables that have not been studied in this study, test the validity of the questionnaire used and choose another place for research data collection other than in poly, or can do door to door for research data collection.

References

[1] Callahan K ., Eggleston P ., Rand C ., Kanchanaraksa S, Swarts L . and Wood R . 2003 Knowledge and practice of dust mite control by specialty care *Ann. Allergy, ASthma, Immunol.* **90** 302–7

[2] Calderón M A, Linneberg A, Kleine-Tebbe J, De Blay F, Hernandez Fernandez De Rojas D, Virchow J C and Demoly P 2015 Respiratory allergy caused by house dust mites: What do we really know? *J. Allergy Clin. Immunol.* **136** 38–48

[3] Leas B F, D'Anci K E, Apter A J, Bryant-Stephens T, Lynch M P, Kaczmarek J L and Umscheid C A 2018 Effectiveness of indoor allergen reduction in asthma management: A systematic review *J. Allergy Clin. Immunol.* **141** 1854–69

[4] Wilson J M and Platts-Mills T A E 2018 Home Environmental Interventions for House Dust Mite *J. Allergy Clin. Immunol. Pract.* **6** 1–7

[5] Hauptman M, Peden D and Phipatanakul W 2018 Environmental Control: The First Tenet of Allergy *J. Allergy Clin. Immunol. Pract.* **6** 36–7

[6] Wistiani and Notoatmojo H 2011 Hubungan Pajanan Alergen Terhadap Kejadian Alergi pada Anak *SariPediatri* **13** 185–90

[7] van Boven F E, Arends L R, Braunstahl G J and Gerth van Wijk R 2019 A re-introduction of environmental mite allergen control strategies for asthma treatment and the debate on their effectiveness *Clin. Exp. Allergy* 1–10

[8] Ghosh A, Dutta S, Podder S, Mondal P, Laha A, Saha N C, Moitra S and Saha G K 2018 Sensitivity to House Dust Mites Allergens with Atopic Asthma and Its Relationship with CD14 C(-159T) Polymorphism in Patients of West Bengal, India *J. Med. Entomol.* **55** 14–9

[9] Syarifah F 2016 Waspadai 7 Penyebab Alergi Paling Umum *Liputan 6.com*

[10] Fujita M, Matsui T and Ito A 2015 Biomedical insights into cell adhesion and migration-from a viewpoint of central nervous system tumor immunology *Front Cell Dev Biol* **3** 55

[11] Reisacher W R 2011 Allergy Treatment: Environmental Control Strategies *Otolaryngol. Clin. North Am.* **44** 711–25

[12] Cipriani F, Calamelli E and Ricci G 2017 Allergen Avoidance in Allergic Asthma *Front. Pediatr.* **5**

[13] Burge H A and Rogers C A 2000 Outdoor allergens *Environ. Health Perspect.* **108** 653–9

[14] Rogers C A 2003 Indoor Fungal Exposure *Immunol. Allergy Clin. North Am.* **23** 501–18

[15] Thomas W R 2018 IgE and T-cell responses to house dust mite allergen components *Mol. Immunol.* **100** 120–5

[16] Thomas W R 2015 Hierarchy and molecular properties of house dust mite allergens *Allergol. Int.* **64** 304–11

[17] Rofieq A 2012 A Model of Allergen Inhalant Reduction Level on House Dust Based on Domestic Environment Management and Characteric *proceeding Biology Education Conference* (Surakarta) pp 633–41

[18] Svendsen E R, Gonzales M and Commodore A 2018 The role of the indoor environment: Residential determinants of allergy, asthma and pulmonary function in children from a US-Mexico border community *Sci. Total Environ.* **616**–**617** 1513–23

[19] Judarwanto W 2016 Alergi Makanan: Intoleransi Makanan

[20] Sativa R L 2017 Di Indonesia, Dua Hal Ini yang Paling Sering Picu Alergi Anak

[21] Quamila A 2017 3 Alergi Paling Umum di Indonesia

[22] Sánchez-Borges M, Fernandez-Caldas E, Thomas W R, Chapman M D, Lee B W, Caraballo L, Acevedo N, Chew F T, Ansotegui I J, Behrooz L, Phipatanakul W, Gerth Van Wijk R, Pascal D, Rosario N, Ebisawa M, Geller M, Quirce S, Vrtala S, Valenta R, Ollert M, Canonica G W, Calderón M A, Barnes C S, Custovic A, Benjaponpitak S and Capriles-Hulett A 2017 International consensus (ICON) on: Clinical consequences of mite hypersensitivity, a global problem *World Allergy Organ. J.* **10** 1–26

[23] Lorensia A, Sari N P, Klinis-komunitas D F and Apoteker P S 2017 Efektivitas edukasi untuk meningkatkan pengetahuan masyarakat dalam penanganan rinitis alergi **3** 122–32

[24] Tamsuri A 2008 *Konseling dalam Keperawatan* (Jakarta: EGC)

[25] Soekidjo Notoatmojo 2007 *Promosi Kesehatan dan Ilmu Perilaku* (Jakarta: Rineka Cipta)

[26] Soekidjo Notoatmojo 2003 *Pendidikan dan Perilaku Kesehatan* (Jakarta: Rineka Cipta)

[27] Green L W 1984 Modifying and Developing Health Behavior *Annu. Rev. Public Health* **5** 215–36

[28] Soekidjo Notoatmojo 2005 *Metodologi Penelitian Kesehatan* (Rineka Cipta)

[29] Skinner B F 1963 Operant Behaviour *Am. Psychol.* **18** 503–15

[30] Green L 1991 *Health Promotion Planning, An Educational and Environmental Approach* (California)

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MINDFULNESS-BASED THERAPEUTIC DEVELOPMENT ON PHYSICAL AND PSYCHOLOGICAL PROBLEMS : A SYSTEMATIC REVIEW

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ABSTRACT

Mindfulness is used as an effective nonpharmacological treatment to improve quality of life and to address various health problems. Until now, there have been many developments in mindfulness-based therapies. The literature review was employed for databases including Proquest, PubMed, and Scopus articles from 2009 to 2019. Search terms included mindfulness, therapeutic, development, physical, and psychological. Fifteen articles which include criteria for analysis. The results of this systematic review can show that mindfulness- based therapy can be given to patients with Rheumatoid arthritis, cancer, diabetes mellitus, and post-operative patients. The problems handled are mostly psychological problems and the physical problems only painful. Further research is needed for the development of mindfulness with technology for efficiency and convenience.

Keywords: mindfulness, therapeutic, development, physical, psychological

1. Introduction

Fatigue is a common symptom associated with a wide range of chronic illness [1]. Fatigue can refer to a subjective symptom of malaise and aversion to activity or to objectively impaired performance. It has subjective health complaint that entails emotional, cognitive, and behavioral components [2]. The symptom of fatigue is a poorly defined feeling, and careful inquiry is needed to clarify complaints of fatigue, tiredness, or exhaustion and to distinguish lack of energy from loss of motivation or sleepiness, which may be pointers to specific diagnoses [3]. Patients may complain of difficulty in carrying out normal activities of daily living, inability to work energetically or a feeling of tiredness even upon waking up [4].

Subjective fatigue is normally distributed in the population. The prevalence of clinically significant fatigue depends on the threshold chosen for severity (usually defined in terms of associated disability) and persistence. Surveys report that 5-20% of the general population suffer from such persistent and troublesome fatigue. Fatigue is twice as common in women as in men but is not strongly associated with age or occupation. It is one of the commonest presenting symptoms in primary care, being the main complaint of 5-10% of patients and an important subsidiary symptom in a further 5-10% [3].

Patients generally regard fatigue as important (because it is disabling), whereas doctors do not (because it is diagnostically non-specific). This discrepancy is a potent source of potential difficulty in the doctor-patient relationship. Fatigue may present in association with established medical and psychiatric conditions or be idiopathic. Irrespective of cause, it has a major impact on day to day functioning and quality of life. Without treatment, the prognosis of patients with idiopathic fatigue is surprisingly poor. Half those seen in general practice with fatigue use acupressure based on meridian theory. Acupressure is rapidly gaining acceptance as a safe, cost-effective, non-invasive, and non-pharmacological form of therapy. Proposals are that acupressure stimulates meridians, a network of energy path-ways throughout the body, to increase the flow of *Chi* (bioenergy), subsequently altering the symptom experience. Acupressure is applied to specific points by the use of finger, hand, elbow, foot, and/or acupressure band, an elastic band with a protruding plastic button for stimulation of these pathways to increase the flow of *Chi* [5]. Studies testing the efficacy of acupressure for symptom management have been a focus of research, particularly during the last decade. However, no reviews have been published reporting the efficacy of acupressure for relieving fatigue in various illness.

2. Methods

This systematic review using Fifteen journals from the databases such as Scopus, Science Direct, PubMed, and Pro-Quest were selected was performed using the search terms of acupressure and fatigue. Studies during which acupressure was applied as an intervention and assessed for its effectiveness on relieving fatigue were selected with the last ten year's time limitation. The study consist of Randomized Controlled Trials (RCTs) and Quasi Experiments from several database sources such as Scopus, ScienceDirect, PubMed and Pro-Quest with the last 10 years' time limitation (from 2009 to 2018).

The keywords acupressure, fatigue, acute, chronic, disease, health problem and complementary therapy. The inclusion criteria are set to limit the scope of the systematic review. The inclusion criteria of this systematic review include the research using acupressure intervention on adult age.

The first step in the preparation of this systematic review is the identification of 142 journals that have been collected from various databases based on the reviewer's defined keywords. The journals are selected according to predetermined inclusion criteria

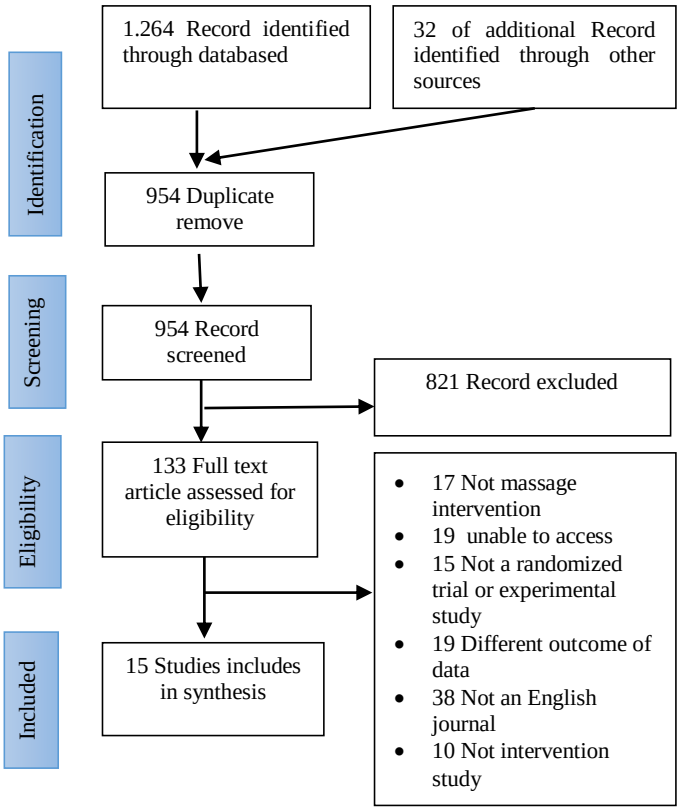

Figure 1. Flow of studies through the review

3. Result

Of the 15 research studies extracted, three covered the use of acupressure to diminish the patient with end stage renal disease , five studies persistent Cancer-Related Fatigue. and the other studies includes postpartum women, post-caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine.

Table 1. Description of the interventions and protocols used in the selected studies.

No	Author	Method	Case	Acupressure point	∑ Sample	Time
1	[6]	QE	End stage renal disease	Combination St36, Sp6, K1, taixi	Acupressure (n = 28) Control (n = 28)	12 minutes 3 times a week For 4 weeks
2	[7]	RCT	End-stage renal Disease	Combination K1, St36, GB34, Sp6	Acupressure (n = 35) Placebo (n = 35) Control (n = 36)	15 minutes 3 times a week 1 week

No	Author	Method	Case	Acupressure point	∑ Sample	Time
3	[9]	RCT	Hemodialysis patients	Combination K1, GB 34, St36, Sp6, BL 23, and HT7	Acupressure (n = 32) Placebo (n = 32) Control (n = 32)	20 minutes 3 times a week For 4 week
4	[10]	QE	Hemodialysis patients	Combination St36, GB34, Sp6, K1	Acupressure (n = 52) Control (n = 66)	3 times a week For 4 week
5	[11]	RCT	Post-caesarean section women	Auricular	Acupressure (n = 40) Control (n = 40)	3 minutes (twice a day) For 5 days
6	[12]	QE	Postpartum women	The combination meridian Acupressure Abdomen, upper limbs, chest, abdomen, and lower limbs, side, back, back and lower limbs	Acupressure (n = 19) Control (n = 20)	90 min For 5 days
7	[13]	RCT	Cancer under chemotherapy	Combination L14, St36 and Sp6	Acupressure (n = 32) Placebo (n = 32) Control (n = 32)	1 day
8	[14]	QE	Hepatocellular Carcinoma Patients	auricular acupoints, including Yintang, Shenting, Cuanzhu, Taiyang, Jingming, Yangbai Fengchi and Baihui	Acupressure (n = 32) Control (n = 32)	4 minutes 2 times a day For 5 days

No	Author	Method	Case	Acupressure point	∑ Sample	Time
9	[15]	RCT	Persistent Cancer-Related Fatigue	Combination CV6, LI4, St36, K3, Ht7, Liv3, Anmian, and Yin Tang	Relaxation acupressure (*n* = 14) Low-intensity acupressure (*n* = 14) High-intensity acupressure (*n* = 15)	24 minutes For 12 weeks
10	[16]	RCT	Breast cancer receiving chemotherapy	Combination LI4, St36, Sp6	Acupressure (n = 24) Control (n = 24)	30 minutes 3 days A week For 12 weeks
11	[17]	RCT	Breast cancer survivors	The combination Relaxing acupressure *yin tang*, *anmian*, H7, Sp6, Liv3. *Du* 20, CV 6, LI4, St 36, Sp 6, K3.	relaxing acupressure (n=94), stimulating acupressure (n = 90) Control (n = 86).	3 minutes 10 weeks
12	[18]	QE	Chronic obstructive pulmonary disease	The combination P6, St 36, CV22, Bl3, Du 14, L1 & L10.	Acupressure (n = 20) Control (n = 20)	20 – 25 min For 4 weeks
13	[19]	RCT	Patients with migraine	The combination P6, Yin Tang	Acupressure (n = 38) Placebo (n = 38)	3 minutes 3 days For 4 weeks
14	[20]	RCT	Female nurses with chronic back pain	The combination GV20, H7 K1, BL60, BL32, GB30	Acupressure (n = 25) Placebo (n = 25)	14 minutes 3 times a week 3 weeks

No	Author	Method	Case	Acupressure point	∑ Sample	Time
15	[21]	RCT	Multiple sclerosis	The combination St36, Sp6, LI4	Acupressure (n = 50) Placebo (n = 50)	18 minutes 2 weeks (14 days)

*RCT : Randomized Controlled Trials
*QE : Quasi Experiments

3.1 The effectiveness of acupressure on fatigue in patient with end stage renal disease

Patients with the end-stage renal disease (ESRD) who require maintenance hemodialysis often reported symptoms of fatigue. Fatigue is viewed by health professionals as something that cannot be changed as it is part of the disease process [22]. In ESRD patients, untreated fatigue may highly affect the quality of life and lead to patients' increased dependency on others, weakness, loss of physical and psychological energy, social isolation, and depression. The elements that can affect the level of fatigue include depression, anemia, sleep disorders, and restless leg syndrome [23]

Four acupoints were used to decrease fatigue, such as Yungchuan (K1) in both feet, Zusanli (St36), Yanglingchuan (GB34) and Sanyingjao (Sp6) in both legs has found can reduced fatigue, depression and increase sleep quality [7].

3.2 The effectiveness of acupressure on fatigue in patients with cancer underwent chemotherapy

Cancer-related fatigue is the commonest symptom in cancer patients, with a high prevalence in most studies. Fatigue in cancer patients is multi-factorial and may be influenced by a variety of demographic, medical, psychosocial, behavioral, and biological factors [24]. Some conditions are commonly associated with fatigue, such as anemia, cachexia, fever, infection, and depression. Fatigue may occur as a part of a cluster of symptoms including pain, difficulty in sleeping, and perceived muscle weakness. The associations among these symptoms might encourage the development of effective integrated treatment strategies [25].

Patient reports suggest that cancer-related fatigue is more severe, more persistent, and more debilitating than "normal" fatigue caused by lack of sleep or overexertion and is not relieved by adequate sleep or rest [26]. Side effects of medications and non-suitable relief of fatigue with medications, shifts the patients to complementary and alternative medicine like acupressure medicine. Results of this investigation showed that acupressure in three points of L14, ST36 and SP6 has short-term effectiveness on the cancer-related fatigue of patients undergoing chemotherapy [27].

3.3 The effectiveness of acupressure on fatigue in patients during transcatheter arterial chemoembolization

Hepatocellular carcinoma (HCC) is the major cause of health problems in many developed

countries and varies according to geographic location [28]. Transcatheter arterial chemoembolization (TACE) can be palliative for unresectable HCC [29]. Fatigue and depression are reported as the most common problems for HCC patients treated with TACE [30]. Unrelieved fatigue and depression may cause patients to withdraw from treatment and can negatively impact quality of life. Some reports have shown that HCC patients have significant fatigue and depression which gradually increases during treatment.

The study explored the effects of acupressure on fatigue and depression during transcatheter arterial chemoembolization in HCC patients. Acupressure contains eight auricular acupoints, including Yintang, Shenting, Cuanzhu, Taiyang, Jingming, Yangbai, Fengchi, and Baihui. Stimulating the Yintang, Cuanzhu, Taiyang, Yangbai, Fengchi, and Baihui acupoints can alleviate headache symptoms. Stimulation of the Shenting acupoints can raise vitality and improve dizziness. Stimulation of the Jingming acupoint can diminish tired eyes. Stimulation of the Fengchi acupoint can improve stiff neck, headache, dizziness, and fatigue [14].

3.4 The effectiveness of acupressure on fatigue in postpartum and post-caesarean section women

In particular, early postpartum mothers reported that maternal fatigue was high in childbirth. If the physical and psychological stresses of the postpartum period persist, they can have a negative impact on the mother and impair her adjustment to daily life, and negative feelings about the maternal experience are likely to lead to postpartum depression. Acupressure massage, which promotes the circulation of blood and lymph, mental stability, and relaxation of muscles, is thought to be effective in decreasing maternal obesity, edema, stress, and fatigue. Postpartum healthcare is one of the major issues in women's lives. Many study find benefits of acupressure massage for postpartum women [31]. This finding strongly suggests that meridian acupressure massage was effective for relieving fatigue in postpartum women.

3.5 The effectiveness of acupressure on fatigue In patient with chronic obstructive pulmonary disease

Multiple factors might play a role in causing or maintaining moderate to severe fatigue in patients with COPD (figure). The amount of airflow limitation is poorly associated with fatigue, and optimal pulmonary pharmacological therapy does not seem to prevent deterioration of fatigue over time [32]. Moreover, COPD exacerbations (particularly those resulting in admission to hospital) were found to be important, precipitating factors of moderate to severe fatigue in patients with COPD.5 In addition to increased breathlessness, many patients report low energy as one of the foremost sensations associated with a COPD exacerbation The infection itself might enhance fatigue [33].

Acupressure was applied by pressing in circular movements on the acupoint with the thumb finger. Seven acupoints were used in the current study which were: P6 (neiguan), St36 (Zusanli), CV 22 (Tiantu), BL3 (Feishu), Du14 (Dazhui), L1 (Zhongfu) & L10 (Yuji). The duration of each session ranged between 20 – 25 min \ session, cosseting of 3 min of massage for neck and each shoulder to free the *Chi* and blood and 3 min for each acupoints to apply

acupressure [18]. The findings concluded that study group has statistically significant improvement in relation to dyspnea, respiratory rate and oxygen saturation than the control group [18].

3.6 The effectiveness of acupressure on fatigue in patient with chronic back pain

Lower back pain (LBP) is an extremely common health problem [34]. Lower back pain causes more global disability than any other condition. Disability-adjusted life years (DALYs) increased from 58.2 million in 1990 to 83 million in 2010 [35]. It is causing an enormous economic burden in both developed and developing countries [36].

LBP is defined as a nonspecific condition that refers to complaints of acute or chronic pain and discomfort in the area between the lower posterior margin of the ribcage and the horizontal gluteal fold [37]. LBP has a major negative impact on individuals' health-related quality of life, including poor general health, psychological distress, sleep disturbances, disability and fatigue [38]. Fatigue limits functionality and can lead to social and psychological impairments. Fatigue is a symptom that can be particularly problematic for LBP patients, can complicate and disrupt recovery and delays optimal return to daily life and work [39]. Chronic low back pain (CLBP) has been associated with altered trunk muscle responses as well as increased muscle fatigability This study showed the positive effect of GV20, H7, K1, BL60, BL32, GB30 acupressure combination on the improvement of fatigue among female nurses with chronic back pain, immediately, 2 weeks, and 4 weeks after the intervention [20].

3.7 The effectiveness of acupressure on fatigue in patient in women with multiple sclerosis

Multiple Sclerosis (MS) is the most prevalent neurological disease [40]. It is characterized by lesions and scarring of the protective myelin sheath of the central nervous system (CNS), leading to neuronal damage and axonal loss. It is more common in women than in men [41]. According to a study in MS is unpredictable and is one of the major diseases affecting patients quality of life [42].

The course of the disease is uncertain and the clients with MS may face physical problems including muscle weakness, bladder and bowel dysfunction, problems with speech, and vision [43] and also hidden difficulties such as fatigue [44]. Fatigue in MS patients may be cause multiple factor. In addition to immunologic abnormalities, multiple sclerosis is associated with an increased prevalence of other conditions including depression [45] and several sleep disorders [46]. For example, although sleep disorders are recognized for contributions to excessive daytime sleepiness, many patients with sleep disorders such as obstructive sleep apnea consider their problems with fatigue, tiredness, or lack of energy. Moreover, treatment of these disorders leads to robust improvement in patient-defined fatigue, tiredness, and lack of energy, as well as sleepiness [47] Acupressure at the acupoints ST36, SP6, LI4 showed significant improvement of the mean scores of fatigue compared to the placebo group at immediately, two, and four weeks after the intervention. Acupressure help to relieving fatigue by increasing chi energy and sleep quality[21].

4. Discussion

Acupressure has been practiced in China for more than 2000 years, but is only recently beginning to gain acceptance by Western medical practitioners as a legitimate means of treating symptoms of illness [48]. This therapy is a means of manipulating the same acupoints as used in acupuncture, but without the use of needles [49]. Acupressure is a noninvasive, safe and effective massage technique that employs pressure and massage to acupoints in order to stimulate the balance of life energy that in term promotes health and comfort [50]. The therapy can be easily taught to patients so that they can manage fatigue, and decrease adverse health outcomes to improve their quality of life [51].

The purposes of acupressure are to regulate and balance the body energy or *Chi*, and further to maintain health, prevent illness or enhance health [52]. This energy referred to as *Chi*. *Chi* flows through the 12 major energy pathways called meridians, each linked to specific internal organs system and 365 acupoints [53]. *Chi* energy also regulate spiritual, emotional, mental and physical health. Acupressure therapy is applied with the fingers on the acupoints and the stimulation lines or meridians of the body surface. The meridians start at the finger tips, connect to the brain and connect to the organ associated with the specific meridian [53]. These meridians can become blocked or slowed. Through applying pressure (acupressure) into one or more of these acupoints, imbalances can be corrected by stimulating or easing energy flow [54].

From the results of the fifteen studies, acupressure is shown to reduce various fatigue patient with end stage renal disease, persistent cancer-related fatigue. And the other studies includes postpartum women, post-caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine. This study shows that there are various acupressure points in relieving fatigue. Further research using combination with one or more other acupoints or using other methods would be very important for accelerating the process of healing for patients. Some experts believe that stimulation of points in acupressure prevents the transfer of acute stimuli and increases the level of endorphins in the blood, and thus, causes pain relief [55], and could cause varying degrees of release and relaxation in the body, and consequently, affect the pain of muscle cramps [56].

A combination of many or all of the following point are typically used : PC6 to include sedation, GB20 to clear heat, LV3 to move and tonify blood, KD 3 to reduce heat, tonify blood and root the kidney, HT7 to calm the spirit , Sp6 to nourish blood and kidney chi and extra point yintang to calm the mind and spirit [57] included points to stimulate generation of *Chi* and blood (ST36), restore yang (LI4), *tonify Chi* /kidney/*yang* (CV6, K3) and raise yang (*Du* 20). Several of these points are commonly used to increase energy and endurance [58] .

This study only contains the effects of acupressure in various patients with limited literary sources. we need to add other literature to support the results of the review, more special reviews are needed as evidence that acupressure can objectively relieve fatigue, for example from the biochemical and neuroimmunological dynamics of the human body.

5. Clinical recommendation

The systematic review begins to establish a credible evidence base for the use of acupressure in relieving fatigue. An evidence-base of reliable and valid evaluation is crucial for clinicians. In terms of the implication for nursing education, practice, and research, the review provides important evidence that acupressure uses a non-invasive, timely, and effective way. In addition, acupressure should be included in the nursing education curriculum to help students learn about the effectiveness of complementary therapies. Health care providers should have begun to incorporate acupressure into their practice to help patients who experience fatigue. before giving therapy, health care providers must have an official practice permit to ensure patient safety. They must also practice based on practical guidelines for acupressure management, because the incorrect application of finger pressure, the inaccuracy acupressure points and the inaccuracy selection of acupoint combinations may give different results to the patient.

6. Conclusions

The results of the study reported the positive impact of acupressure in relieving fatigue level with several cases, especially on patient with end stage renal disease, persistent Cancer-Related Fatigue, postpartum women, post-caesarean section, multiple sclerosis, chronic obstructive pulmonary disease, chronic back pain and migraine. This review shows that acupressure is a noninvasive, timely, and effective action in reducing fatigue in patients with various diseases.

Reference

[1] L. Whitehead, "The Measurement of Fatigue in Chronic Illness: A Systematic Review of Unidimensional and Multidimensional Fatigue Measures," *Journal of Pain and Symptom Management*. 2009.

[2] G. Lewis and S. Wessely, "The epidemiology of fatigue: More questions than answers," *Journal of Epidemiology and Community Health*. 1992.

[3] R. Mayou, "ABC of psychological medicine: Trauma," *BMJ*, 2002.

[4] S. Kalra and R. Sahay, "A LEMON a day keeps fatigue away - The ABCDE of fatigue," *US Endocrinology*, 2018.

[5] Parisi, M. Esposito, M. Carotenuto, Gallai, and M. Roccella, "Acupressure therapy for insomnia in adolescents: a polysomnographic study," *Neuropsychiatr. Dis. Treat.*, no. May 2014, p. 157, 2013.

[6] G. J. McDougall and G. J. McDougall Jr., "Research review: The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease," *Geriatr. Nurs. (Minneap).*, vol. 26, no. 3, pp. 164–165, 2005.

[7] S. L. Tsay, "Acupressure and fatigue in patients with end-stage renal disease - A randomized controlled trial," *Int. J. Nurs. Stud.*, vol. 41, no. 1, pp. 99–106, 2004.

[8] R. Eğlence, N. Karataş, and S. Taşci, "The effect of acupressure on the level of fatigue in hemodialysis patients," *Altern. Ther. Health Med.*, vol. 19, no. 6, pp. 23–31, 2013.

[9] F. Sabouhi, L. Kalani, M. Valiani, M. Mortazavi, and M. Bemanian, "Effect of acupressure on fatigue in patients on hemodialysis," *Iran. J. Nurs.*, 2013.

[10] N. K. Akça, S. Taççi, and N. Karatas, "Effect of Acupressure on fatigue in patients on hemodialysis," *Altern. Ther.*, 2013.

[11] S. Y. Kuo, S. H. Tsai, S. L. Chen, and Y. L. Tzeng, "Auricular acupressure relieves anxiety and fatigue, and reduces cortisol levels in post-caesarean section women: A single-blind, randomised controlled study," *Int. J. Nurs. Stud.*, vol. 53, pp. 17–26, 2016.

[12] G.-S. Jung, I.-R. Choi, H.-Y. Kang, and E.-Y. Choi, "Effects of Meridian Acupressure Massage on Body Composition, Edema, Stress, and Fatigue in Postpartum Women," *J. Altern. Complement. Med.*, vol. 23, no. 10, pp. 787–793, 2017.

[13] A. Ghanbari, M. Sharifi, and M. Adib, "Effects of acupressure on fatigue in patients with cancer

underwent chemotherapy," *Eur. J. Surg. Oncol.*, vol. 45, no. 2, p. e88, 2019.

[14] S. C. Lan, Y. E. Lin, S. C. Chen, Y. F. Lin, and Y. J. Wang, "Effects of acupressure on fatigue and depression in hepatocellular carcinoma patients treated with transcatheter arterial chemoembolization: A quasi-experimental study," *Evidence-based Complement. Altern. Med.*, vol. 2015, 2015.

[15] S. M. Zick, A. Sen, G. K. Wyatt, S. L. Murphy, J. Todd Arnedt, and R. E. Harris, "Investigation of 2 types of self-Administered acupressure for persistent cancer-related fatigue in breast cancer survivors a randomized clinical trial," *JAMA Oncol.*, vol. 2, no. 11, pp. 1470–1476, 2016.

[16] B. Zhang, J. Dong, P. Sun, C. Feng, and Y. Liu, "Effect of therapeutic care for treating fatigue in patients with breast cancer receiving chemotherapy," *Medicine (Baltimore).*, vol. 96, no. 33, p. e7750, 2017.

[17] R. E. Harris, S. M. Zick, G. K. Wyatt, A. Sen, S. L. Murphy, and J. T. Arnedt, "Investigation of 2 Types of Self-administered Acupressure for Persistent Cancer-Related Fatigue in Breast Cancer Survivors," *JAMA Oncol.*, vol. 2, no. 11, p. 1470, 2016.

[18] D. El-saadawy, "Effect of Acupressure on Dyspnea and Fatigue among Patients with Chronic Obstructive Pulmonary Disease," vol. 4, no. 22, pp. 50–61, 2013.

[19] G. Allais *et al.*, "Acupressure in the control of migraine-associated nausea," in *Neurological Sciences*, 2012.

[20] M. Movahedi, S. Ghafari, F. Nazari, and M. Valiani, "The effect of acupressure on fatigue among female nurses with chronic back pain," *Appl. Nurs. Res.*, vol. 36, pp. 111–114, 2017.

[21] F. Bastani, M. Sobhani, and H. S. Emamzadeh Ghasemi, "Effect of Acupressure on Fatigue in Women With Multiple Sclerosis," *Glob. J. Health Sci.*, vol. 7, no. 4, pp. 1–7, 2015.

[22] K. McCann and J. R. P. Boore, "Fatigue in persons with renal failure who require maintenance haemodialysis," *J. Adv. Nurs.*, 2000.

[23] D. O'Sullivan and G. McCarthy, "An exploration of the relationship between fatigue and physical functioning in patients with end stage renal disease receiving haemodialysis," *J. Clin. Nurs.*, 2007.

[24] K. A. Donovan, B. J. Small, M. A. Andrykowski, P. Munster, and P. B. Jacobsen, "Utility of a Cognitive-Behavioral Model to Predict Fatigue Following Breast Cancer Treatment," *Heal. Psychol.*, 2007.

[25] M. Fleming, S. Ravula, S. F. Tatishchev, and H. L. Wang, "Colorectal carcinoma: Pathologic aspects," *Journal of Gastrointestinal Oncology*. 2012.

[26] J. Weis and M. Horneber, *Cancer-related fatigue*. 2015.

[27] S. M. Zick, G. K. Wyatt, S. L. Murphy, J. T. Arnedt, A. Sen, and R. E. Harris, "Acupressure for persistent cancer-related fatigue in breast cancer survivors (AcuCrft): a study protocol for a randomized controlled trial," *BMC Complement Altern Med*, vol. 12, p. 132, 2012.

[28] C. Puoti, "New insights on hepatocellular carcinoma: epidemiology and clinical aspects," *Hepatoma Res.*, 2018.

[29] K. Firouznia *et al.*, "Transcatheter Arterial Chemoembolization Therapy for Patients With Unresectable Hepatocellular Carcinoma," *Hepat. Mon.*, 2014.

[30] Y.-H. Lai *et al.*, "Fatigue Experiences in Hepatocellular Carcinoma Patients During Six Weeks of Stereotactic Radiotherapy," *Oncologist*, 2007.

[31] C. Yeh *et al.*, "Auricular Point Acupressure to Manage Aromatase Inhibitor–Induced Arthralgia in Postmenopausal Breast Cancer Survivors: A Pilot Study," *Oncol. Nurs. Forum*, vol. 44, no. 4, pp. 476–487, 2017.

[32] J. B. Peters *et al.*, "Course of normal and abnormal fatigue in patients with Chronic Obstructive Pulmonary Disease, and its relationship with domains of health status," *Patient Educ. Couns.*, 2011.

[33] R. Kessler *et al.*, "Patient understanding, detection experience of COPD exacerbations: An observational, interview-based study," *Chest*, 2006.

[34] R. Deyo, "Cost, Controversy, Crisis: Low Back Pain And The Health Of The Public," *Annu. Rev. Public Health*, 2002.

[35] D. Hoy *et al.*, "The global burden of neck pain: Estimates from the global burden of disease 2010 study," *Ann. Rheum. Dis.*, 2014.

[36] A. Thelin, S. Holmberg, and N. Thelin, "Functioning in neck and low back pain from a 12-year perspective: A prospective population-based study," *J. Rehabil. Med.*, 2008.

[37] A. Shmagel, R. Foley, and H. Ibrahim, "Epidemiology of Chronic Low Back Pain in US Adults: Data

From the 2009–2010 National Health and Nutrition Examination Survey," *Arthritis Care Res.*, 2016.

[38] F. M. Kovacs, V. Abraira, J. Zamora, and C. Fernández, "The transition from acute to subacute and chronic low back pain: A study based on determinants of quality of life and prediction of chronic disability," *Spine (Phila. Pa. 1976).*, 2005.

[39] M. Sharpe, "ABC of psychological medicine: Fatigue," *BMJ*, 2002.

[40] P. Mao and P. H. Reddy, "Is multiple sclerosis a mitochondrial disease?," *Biochimica et Biophysica Acta - Molecular Basis of Disease*. 2010.

[41] R. N. Schwendimann and N. Alekseeva, "Gender Issues in Multiple Sclerosis," *International Review of Neurobiology*. 2007.

[42] V. Janardhan and R. Bakshi, "Quality of life in patients with multiple sclerosis: The impact of fatigue and depression," *J. Neurol. Sci.*, 2002.

[43] R. W. Motl, E. M. Snook, and R. T. Schapiro, "Symptoms and physical activity behavior in individuals with multiple sclerosis," *Res. Nurs. Heal.*, 2008.

[44] R. Homorodean, D. C. Leucuta, and L. Perju-Dumbravă, "Fatigue in multiple sclerosis," *Hum. Vet. Med.*, 2016.

[45] P. Brenner and F. Piehl, "Fatigue and depression in multiple sclerosis: pharmacological and non-pharmacological interventions," *Acta Neurologica Scandinavica*. 2016.

[46] M. Kaminska, R. J. Kimoff, K. Schwartzman, and D. A. Trojan, "Sleep disorders and fatigue in multiple sclerosis: Evidence for association and interaction," *Journal of the Neurological Sciences*. 2011.

[47] T. J. Braley, R. D. Chervin, and B. M. Segal, "Fatigue, Tiredness, Lack of Energy, and Sleepiness in Multiple Sclerosis Patients Referred for Clinical Polysomnography," *Mult. Scler. Int.*, 2012.

[48] K. B. Collins and D. J. Thomas, "Acupuncture and Acupressure for the Management of Chemotherapy-Induced Nausea and Vomiting," *J. Am. Acad. Nurse Pract.*, 2005.

[49] P. E. Harris, "Acupressure: A review of the literature," *Complement. Ther. Med.*, 1997.

[50] S.-L. Tsay and M.-L. Chen, "Acupressure and quality of sleep in patients with end-stage renal disease--a randomized controlled trial.," *Int. J. Nurs. Stud.*, 2003.

[51] F. C. Lai, I. H. Chen, P. J. Chen, I. J. Chen, H. W. Chien, and C. F. Yuan, "Acupressure, Sleep, and Quality of Life in Institutionalized Older Adults: A Randomized Controlled Trial," *J. Am. Geriatr. Soc.*, 2017.

[52] Y. C. Cho and S. L. Tsay, "The effect of acupressure with massage on fatigue and depression in patients with end-stage renal disease," *J. Nurs. Res.*, 2004.

[53] J.-W. Yang, Q.-Q. Li, F. Li, Q.-N. Fu, X.-H. Zeng, and C.-Z. Liu, "The Holistic Effects of Acupuncture Treatment," *Evidence-Based Complement. Altern. Med.*, 2014.

[54] A. Greeley, "Acupressure: Hands-On Healing.," *Veg. Times*, 2002.

[55] F. Kashefi, S. Ziyadlou, M. Khajehei, A. R. Ashraf, A. Reza Fadaee, and P. Jafari, "Effect of acupressure at the Sanyinjiao point on primary dysmenorrhea: A randomized controlled trial," *Complement. Ther. Clin. Pract.*, 2010.

[56] K. Mohmadi, N. Shahgholian, M. Valiani, and H. Mardanparvar, "The effect of acupressure on muscle cramps in patients undergoing hemodialysis," *Iran. J. Nurs. Midwifery Res.*, 2017.

[57] C. Pearls, " How Do You Treat Insomnia in Your Practice? ," *Med. Acupunct.*, vol. 23, no. 1, pp. 3–6, 2011.

[58] W.-F. Yeung *et al.*, "Prescription of Chinese Herbal Medicine and Selection of Acupoints in Pattern-Based Traditional Chinese Medicine Treatment for Insomnia: A Systematic Review," *Evidence-Based Complement. Altern. Med.*, 2012.

PHP-904

STIGMATIZATION PEOPLE LIVING WITH HIV AIDS (PLWHA) IN THE DISTRICT TULUNGAGUNG EAST JAVA - INDONESIA

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ABSTRACT

People with HIV AIDS (PLWHA) often experience stigma, the stigma that occurs among them is verbal statement and the act of keeping ODHA away from social activities, stigma can disrupt the social role of PLWHA.Stigma can come from anyone including health workers.PLWHA need actions to eliminate the stigma that occurs,so that PLWHA can live as other individuals without getting stigma.The purpose of the review literature is to identify the forms and sources of stigma that occur in PLWHA and efforts to eliminate stigma against PLWHA.The author finds journals that are relevant to the problem by using stigma keywords, health workers, HIV AIDS, and people with HIV AIDS.Journals were obtained from the Science Direct, Proquest, SagePub,and Scopus databases with 54 journals and 14 journals fulfilling the criteria for analysis.Journal analysis states that various efforts have been made to solve the problem of stigma against PLWHA,this effort includes the entry of HIV into health care work programs, the source of stigma from health workers requires special attention,because health workers should be promoters to eliminate stigma,necessary increasing the knowledge and expertise of health workers in handling and treating PLWHA.So that officers can become promoters in eliminating stigma against PLWHA

Keywords: stigma, HIV / AIDS, people with HIV AIDS (PLWHA)

1. Introduction

Stigma One of the problems faced in making efforts to control Human Immunodeficiency Virus (HIV) Acquired Immune Deficiency Syndrome (AIDS) in the community, this is due to the fear of being infected and the lack of knowledge about HIV AIDS. Unfair treatment (discrimination) and stigma are not only carried out by the community but also by health workers, stigmatization can be done intentionally or unintentionally. Various efforts have been made to solve the problem of stigma against people with HIV AIDS (PLWHA), these efforts include the inclusion of HIV programs in the Puskesmas work program, but with socialization and health counseling that have not been able to solve the existing problems [1]

Preventive efforts are very necessary because it can reduce the risk of HIV transmission, prevention efforts are considered most effective because they can prevent someone from being exposed to the risk of transmission , research on HIV treatment therapy has been carried out, one of which is Antiretroviral therapy (ART) can increase PLWHA life expectancy [2]

Handling HIV-AIDS problems is not enough only on health aspects, but also refers to social aspects. This is because, HIV-AIDS sufferers not only experience health problems, but also experience social problems. The social problem in question is the presence of stigma on PLWHA

and family members, the forms of stigma that are obtained vary among others in the form of verbal statements and discrimination [3]

Stigma occurs not only from people in the surrounding environment, but is also often carried out by health workers, who have an important role in advancing in the field of health services. Health workers should provide services to all people in need without distinguishing health and social status. For nurses in particular, they must also have value and self-confidence to provide services including PLWHA. Anxious feelings and worries that the nurse has can cause stigma without the nurse noticing [4]

The stigma can have an impact on many things starting from the onset of depression, psychological distress, and anxiety which will eventually lead to PLWHA being unable to achieve its independence. Other research shows that PLWHA is reluctant to open an identity because it cannot be accepted by its environment, so that most PLWHA has a disruption of social interaction with the surrounding community [5]. Disparities occur in several places that cause PLWHA to get worse with its health status, which is reflected in the treatment received by PLWHA in the work environment and living environment [6]

The purpose of this study was to conduct a systematic review related to PLWHA's perception of the stigma they experienced. This study is expected to provide ideas for further research related to PLWHA's perception of the stigma experienced and can be used as a reference in efforts to handle PLWHA.

2. Methods

Study search strategies that are relevant to the topic are carried out using the ScienceDirect, Proquest, and SagePub databases restricted from 2000 to 2018. The keywords used are "stigma", "HIV", "AIDS", full text articles and abstracts reviewed to choose studies which matches the criteria. The inclusion criteria in this review are stigma in people with HIV / AIDS. Journal searches using the above keywords get 54 journals and articles that match the inclusion criteria there are 14 journals.

3. Results

The journals reviewed in this study are qualitative research journals The number of articles obtained in this review are 14 journals and all of them use qualitative research. The method used to obtain information is using in-depth interviews and FGD (focus group discussion).

The period of research used in these studies varies from 1 month to 1 year, the longer the time the study and the frequency of interviews on average provide good results for the information obtained. The longer the study, the more information that can be extracted, this is indicated by the frequency of frequent interviews and frequently scheduled group meetings.

The sampling method used in the study was 14 studies which were carried out qualitatively. The sample in this study varied, for example age, In this study the age of the sample varied from teenagers to late adulthood. So that the data obtained is very diverse and covers all age ranges.

Based on the description of 14 studies, it is shown that the handling of HIV-AIDS problems is not enough only from the health aspect, but also refers to the social aspects [7]. This is because, HIV-AIDS sufferers not only experience health problems, but also experience social problems [8]. The social problem in question is the existence of stigma on PLWHA and family members, the forms of

stigma that are obtained vary among others in the form of verbal statements and discrimination [9]. Various efforts have been made to solve the problem of stigma against people with HIV AIDS (PLWHA), these efforts include the inclusion of HIV programs in health care work programs, an also include outreach and health counseling that has not been able to solve the existing problems [10]

4. Discussions

The results of the review indicate that stigma raises health problems and social activities, 1 in 4 people with HIV are unaware of their HIV diagnosis, and almost half present with a CD4 count <350 cells / microliter [11] 95% of informants reject their health status [12]. Stigma causes negative self-image and the occurrence of discrimination from the community causes interruption of social PLWHA [13]. Increasing understanding of social support mechanisms contributes to HIV treatment behaviors from PLWHA and can fill knowledge gaps [14]. Family support and peer group support can increase the level of psychological response [15].

Stigma and discrimination in health services carried out by health workers is one of the obstacles to the quality of providing health services to patients with HIV and AIDS, which in turn can reduce the health status of patients with HIV and AIDS, the stigma associated with HIV and AIDS is called a big problem and damages family life , social, and individual economics [16]. The stigma associated with HIV and AIDS is also considered a major barrier in the prevention, treatment and treatment of HIV and AIDS [17].

The stigma that occurs is influenced by several factors known as the power factor of the occurrence of stigma [18]. Power factors include four components including social, political, economic and spiritual factors. Social factors are influenced by weak communication and social contact between health workers and patients. Politically, stigma occurs because there is no policy that regulates the handling of HIV and AIDS patients, and the consequences of stigma and discrimination in patients related to HIV and AIDS. Economic factors, the emergence of stigma and discrimination due to a lack of provision of universal precaution facilities, the absence of rewards and reward services, and no health insurance if HIV and AIDS are contracted [19].

5. Conclusions

The results of a systematic review of research addressing the problem of HIV-AIDS is not enough simply from the health aspects, but also refers to social aspects. This is because HIV-AIDS sufferers not only experience health problems, but also experience social problems. The social problem in question is the existence of stigma on PLWHA and family members, the forms of stigma that are obtained vary among others in the form of verbal statements and discrimination. Various efforts have been made to solve the problem of stigma against people with HIV AIDS (PLWHA), these efforts include the inclusion of HIV programs in health care work programs, but with the outreach and health counseling that has not been able to solve the existing problems.

Bibliography

[1] Y.P. Cuca, A. Asher, J. Okonsky, A. Kaihura, C. Dawson-Rose, A. Webel, HIV Stigma and Social Capital in Women Living With HIV, J. Assoc. Nurses AIDS Care. 28 (2017) 45–54. doi:10.1016/j.jana.2016.09.001.

[2] O.F. Demirel, P.Y. Mayda, N. Yıldız, H. Sağlam, B.T. Koçak, Z. Habip, M.T. Kadak, Balcıoğlu, B. Kocazeybek, Self-stigma, depression, and anxiety levels of people living with HIV in Turkey, Eur.

J. Psychiatry. (2018). doi:10.1016/j.ejpsy.2018.03.002.

[3] K.P. Manhas, I. Mitchell, (Dis)-Trust in transitioning ventilator-dependent children from hospital to homecare, Nurs. Ethics. 22 (2015) 913–927. doi:10.1177/0969733014551598.

[4] S. Elo, H. Kyngäs, The qualitative content analysis process, J. Adv. Nurs. 62 (2008) 107–115.

[5] M. Hill, A. Huff, N. Chumbler, Variation in Networks and Forms of Support for Care-Seeking Across the HIV Care Continuum in the Rural Southeastern United States, 00 (2017) 1–9. doi:10.1111/jrh.12238.

[6] E. Kamitani, J.L. Chen, C. Portillo, J. Tokumoto, C. Dawson-Rose, Shortened and Culturally Appropriate HIV Stigma Scale for Asians Living with HIV in the United States: Psychometric Analysis, J. Assoc. Nurses AIDS Care. (2018) 1–10. doi:10.1016/j.jana.2018.02.007.

[7] E. Kamitani, J. Chen, C. Portillo, J. Tokumoto, C. Dawson-rose, Shortened and culturally appropriate HIV stigma scale for Asians living with HIV in the United States: Psychometric analysis, J. Assoc. Nurses AIDS Care. (2018). doi:10.1016/j.jana.2018.02.007.

[8] L.A. Dardas, L.A. Simmons, The stigma of mental illness in Arab families: A concept analysis, J. Psychiatr. Ment. Health Nurs. 22 (2015) 668–679. doi:10.1111/jpm.12237.

[9] Y.-J. Zhang, Y.-G. Fan, S.-Y. Dai, B.-Z. Li, W.-D. Xu, L.-F. Hu, J. Liu, H. Su, D.-Q. Ye, HIV/AIDS stigma among older PLWHA in south rural China, Int. J. Nurs. Pract. 21 (2015) 221–228. doi:10.1111/ijn.12254.

[10] G. Butt, Stigma in the context of hepatitis C: Concept analysis, J. Adv. Nurs. 62 (2008) 712–724. doi:10.1111/j.1365-2648.2008.04641.x.

[11] H. Pereira, D. Caldeira, S. Monteiro, Perceptions of HIV-Related Stigma in Portugal Among MSM With HIV Infection and an Undetectable Viral Load, J. Assoc. Nurses AIDS Care. 29 (2017) 439–453. doi:10.1016/j.jana.2017.12.002.

[12] W.S. Rice, C.H. Logie, T.M. Napoles, M. Walcott, W. Abigail, M. Kempf, G.M. Wingood, D.J. Konkle-parker, B. Turan, T.E. Wilson, M.O. Johnson, S.D. Weiser, J.M. Turan, Perceptions of intersectional stigma among diverse women living with HIV in the United States, Soc. Sci. Med. 208 (2018) 9–17. doi:10.1016/j.socscimed.2018.05.001.

[13] C. Spooner, A.M.I. Saktiawati, E. Lazuardi, H. Worth, Y.W. Subronto, R.S. Padmawati, Impacts of stigma on HIV risk for women who inject drugs in Java: A qualitative study, Int. J. Drug Policy. 26 (2015) 1244–1250. doi:10.1016/j.drugpo.2015.07.011.

[14] W.A. Alvarenga, M.T.G. Galvão, L.C. Nascimento, M.I.R. Beretta, G. Dupas, Weakened social network: The experience of caregivers of the HIV-exposed infant , Texto e Context. Enferm. 24 (2015) 775–783. doi:10.1590/0104-07072015011160014.

[15] R.V. Msn, S.D. Dsn, HIV / AIDS related stigma : Delivering appropriate nursing care, 2003 (2008) 59–66. doi:10.1016/j.teln.2007.11.004.

[16] C.H. Logie, C.C. Williams, Y. Wang, N. Marcus, M. Kazemi, L. Cioppa, A. Kaida, K. Webster, K. Beaver, A. de Pokomandy, Adapting stigma mechanism frameworks to explore complex pathways between intersectional stigma and HIV-related health outcomes among women living with HIV in Canada, (2019).

[17] B. Charles, L. Jeyaseelan, A.K. Pandian, A.E. Sam, M. Thenmozhi, V. Jayaseelan, Association between stigma, depression and quality of life of people living with HIV/AIDS (PLHA) in South India - A community based cross sectional study, BMC Public Health. 12 (2012) 1. doi:10.1186/1471-2458-12-463.

[18] C.H. Logie, Y. Wang, A. Lacombe-Duncan, A.C. Wagner, A. Kaida, T. Conway, K. Webster, A. de Pokomandy, M.R. Loutfy, HIV-related stigma, racial discrimination, and gender discrimination: Pathways to physical and mental health-related quality of life among a national cohort of women living with HIV, Prev. Med. (Baltim). 107 (2018) 36–44.

[19] H. Harapan, S. Al, S. Anwar, R. Pratama, M. Zia, F. Novianty, S. Nesya, ScienceDirect HIV-related stigmatized attitudes among health care providers in Aceh , Indonesia : The findings from a very low HIV case-load region §, (2015) 1–8. doi:10.1016/j.poamed.2015.05.003.

PHP-910

EFFECT OF HOT-PACK TREATMENT TO IMPROVE SHIVERING GRADE AMONG POST-OPERATIVE CESAREAN-SECTION PATIENTS IN RECOVERY ROOM

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ABSTRACT

Shivering is one of complication that usually appear after spinal anaesthesia. It is correlation with hypothermia condition. Age, type of surgery, duration of exposure in operating room, operating room temperature, surgical procedure, type of anaesthesia, low body mass index, and temperature of intravenous fluid are risk factors of shivering incident. Applying hot-pack treatment could increase the body temperature. And it might reduce shivering grade of post- operative cesarean-section patients. The purpose of this study was to analyse effect of hot- pack treatment toward shivering grade among post-operative caesarean-section patients in recovery room. Pre-experimental design was performed. Twenty-five patients who post- operative caesarean section were willing to participation. Consecutive sampling was applied to collect the participants of this study. Hot-pack with 400C temperature were implement as accordance with the standard procedure operational that created by the researcher based on the literature review. Shivering grade was used to evaluate the participants shivering condition. Wilcoxon Signed Rank Test was used to analyse the data. There were significant effect of implementing hot-pack to decrease shivering grade among post-operative cesarean- section patients (0,000). In sum, skin receptors receive stimulations from administration of hot-packs. Next, hypothalamic as organ which control the body temperature will produce thermal. At the end, those process will reduction of shivering grade among post-operative cesarean-section patients.

Keywords: hot-pack, grade shivering, post-operative cesarean-section

1. Introduction

Surgical actions can cause various problems, one of the complications that may arise after surgery is a decrease in the patients's body temperature or postoperative hypothermia (Ignatavicious, 1999). The process of decreasing body temperature due to surgery will increase the body excess, improve vasoconstriction and changes in system thermoregulation in the hypothalamus. Hypothermic effects can also be corrected and affect postoperative length of stay (Goldberg, 2011). Repeat body temperature must be done immediately because the patients's subsequent effects will increase other discomforts such as chills and surgical injuries due to strain in the surgical wound (Goldberg, 2011).

The results of the Indonesian Basic Health Research (2013) showed births with the caesarean method amounted to 9.8% of the total 49,603 births throughout 2010 to 2013. The incidence of caesarean section in East Java in 2011 was 3,401 operations out of 170,000 deliveries or around 20% of all childbirth (East Java Province of Health Office, 2012). From the data recorded in the medical record of the Private Hospital in

Sidoarjo As long as 318 patients underwent caesarean section from December 2017 to May 2018. Sabiston (2011) reported about 78% of patients with elective abdominal surgery having experience of decreasing temperature body. In addition, from previous studies reported that 100% patients with kidney stone surgery were experienced hypothermia (35°C) in the operating room (Ninik, 2007). Shivering incidents are still often found in conscious recovery rooms. Ten patients reported experienced with shivering at one of the Private Hospital in Sidoarjo.

Post Anaesthetic Shivering is vascular to skeletal muscles on the face, jaw, head, body or extremities that last more than 15 seconds accompanied by hypothermia and vasodilation (Buggy & Crossley, 2008). The incidence of shivering after anaesthesia for patients undergoing spinal anaesthesia is around 40-60% (Nugroho et al., 2016). Shivering is caused by stimulation of the posterior hypothalamus from the dorsa medial portion near the third ventricular wall, called the primary motor center. Many factors can increase the risk of shivering after anaesthesia, including type of anaesthesia, age, temperature and type of intraoperative fluid treatment, operating room temperature and duration of operation (Alfan, Eddy & Arnaz, 2016). Before the patients experiences shivering, it is necessary to take action to warm up the body with heat therapy given to patients whose temperature is ≤ 36 0C (Altman, 1999). Hot packs are closed packages that contain a gel with a temperature of 40 °C (Rosdahl & Kowalski, 2014). Hot packs will be given in the right and left arm of the part in about 15 minutes (Rosdahl & Kowalski, 2014). However, applying hot packs was never given to patients who were experience with shivering in the Recovery Room in one of the private Hospital in Sidoarjo. Therefore, conducted this study was needed to determine the effect of hot-pack on shivering grade in post-operative caesarean section patients in the recovery room one of private hospital in Sidoarjo.

Methods

This research method was pre-experimental with one group pretest - posttest design. The respondents of the study were had pre-test and post-test before and after given an intervention The population in this study were all post-operative caesarean section patients in the Recovery Room (18-22 °C) one of private hospital in Sidoarjo. Consecutive sampling technique was performed. 25 of 30 population were met with inclusion and exclusion criteria during 2 weeks observation. Patients with spinal anaesthesia, body temperature less than 36°C, experiencing with shivering, around 20=45 years old, didn't received pethidine as medication, during stayed in recovery room was covered by blanket with the thickness 1 mm, and willing to participated were the inclusion criteria. Patients with General anaesthesia and experience with emergency condition were excluded from this study. Five patients which were exclude from this study were 3 patients with emergency operating criteria and 2 patients with general anaesthesia. Untoward event during study were found in this study. All of respondents participated until the study done. The instruments of this study were observation check list of shivering grade (Crossley & Mahajan, 2000) and SOP was made by researchers based in the study that conducted by Rosdahl and Kowalski in 2014. Hot compresses which was hot-pack brand resources and poly green brand digital thermometers were used as the tools of this study. Data was analysed by Wilcoxon Rank Test statistics.

Results & Discussion

This study was found that majority respondents were 26-35 years old (42%), senior high school many (64%), housewives (56%), over weight (76%), didn't had experience of caesarean (56%), the length of operation the results was mostly >60 minutes (60%), body temperature before being given hot-pack were 35°C-35.5°C (96%), body temperature in patients after being given hot-pack were 36.1°C-36.5°C (64%), the shivering grade before operation were the second shivering grade (80%), and the shivering grade after operation were the first shivering grade (80%).

Table 1 Characteristics of respondents

Characteristics	Frequency (n)	%
ges		
17-25 years	8	32
26-35 years	12	48
36-45 years	5	20
Education Background		
Junior High School	3	12
Senior High School	16	64
Diploma	5	20
Graduate	1	4
Occupations		
Private	10	40
Entrepreneur	1	4
Housewives	14	56
Body Mass Index Status		
Normal weight	2	8
Over weight	19	76
Obesity	4	16
Experience of Caesarean Section		
Yes	11	44
No	14	56
Duration of Operation		
60 minutes	10	40
>60 minutes	15	60
Body temperature before giving hot-packs		
35°C-35.5°C	24	96
35.6°C-36°C	1	4
Body temperature after giving hot-packs		
35°C-35.5°C	1	4
35.6°C-36°C	8	32
36.1°C-36.5°C	16	64
Shivering Grade Pre-Operation		
0	0	0
1	20	80
2	5	20
Shivering Grade Post-Operation		
0	20	80
1	5	20
2	0	0

Table 2 Effect of hot-packs administration

Shivering grade Pre-Post	n	%
Negative ranks	25	100
Positive ranks	0	0
Ties	0	0
Amount	25	100
P = 0,000 < α =0,05		
Wilcoxon Signed Rank Test		

It can be concluded that the Wilcoxon test result showed the provision of hot-packs on shivering grades which was asymp significant (0,000 <α = 0.05). It means that there was an effect of giving hot-packs to shivering grade in postoperative caesarean section patients in the Recovery Room one of private hospital in Sidoarjo.

It was found that the shivering grade of 20 respondents before the Hot-Pack was given was obtained in the second shivering grade. The results of this study, many shivering occurred in respondents with early adulthood (26-35 years) as much as 48% and in late adulthood (36-45 years) as much as 20%. This is in accordance with the theory which states that ages of the patients can affect the body's metabolism due to hormonal metabolism, thus giving an indirect effect on body temperature (Tamsuri, 2006). The body's core temperature will decrease by 0.003 °C for each increase in ages (Frank, 2000). In the study of Nugroho et al (2016), it was showed that late adults experienced shivering more often than other ages. Age can affect the occurrence of shivering post anaesthesia, where the shivering threshold at old age is lower than 1 °C. In this study, researchers argue that the older the age of the body's core temperature decreases because at this age there has been a decline in metabolism so that the ability to maintain body temperature also begins to decrease.

The Body Mass Index is mostly in the category of overweight as many as 19 respondents (76%). In the study of Vanessa et al (2009) explaining the presence of morphometric influences, among others: body weight, height and body fat of patients to the incidence of hypothermia during surgery and people who are malnourished easily experience a decrease in body temperature (hypothermia). Body temperature is related to the high Body Mass Index, the greater the Body Mass Index, the greater the body temperature (Kogsayreepong et al 2000). Individuals with a thick layer of fat tend to not experience hypothermia because fat is a good enough insulator to channel heat at a speed of one third of the speed of other tissues (Tamsuri, 2006). From the theory above, the researcher argues that respondents who have large Body Mass Index increase body temperature, respondents are not easy to experience shivering because thick layers of fat can transmit heat.

All respondents who underwent surgery for > 60 minutes experienced shivering events (60%). The above results relate to the theory of Vanessa de Brito et al (2009) explaining that there is a relationship between the duration of anaesthesia and the onset of hypothermia. The longer the duration and operation, the body temperature can be lower so that it can trigger shivering. According to Putzu et al (2007) also explained that shivering is a response to hypothermia during surgery between the temperature of the blood and the skin with the core temperature of the body. Respondents who underwent surgery > 60 minutes experienced shivering quite a lot, this was in line with the research which stated that the incidence of shivering after spinal anaesthesia was most prevalent among respondents who underwent surgery with a duration of 61-120 minutes (Madjid et al., 2014).

The researchers argues that the longer an operation will cause a postoperative shivering because the skin is exposed to cold temperatures for too long. During spinal anaesthesia it also inhibits the release of the hormone catecholamine so that it will suppress heat production due to metabolism. In addition, the long duration of operation and the type of operation in caesarean section that carries out incisions in the abdominal wall and uterus causes an increase in heat output from the body to the external environment which increases the risk of hypothermia. This happened because the respondents were exposed to cold room temperatures

longer, not given blankets to cover their hands, shoulders and neck during surgery.

The temperature in the Recovery Room one of private hospital in Sidoarjo was 18°C, so it can increase the risk of shivering. This is in accordance with the theory which states that operating rooms with temperatures less than 200C can cause a decrease in body temperature (Frank, 2008). The researchers argue that cold temperatures or hypothermia in postoperative caesarean patients cause contractions of blood vessels that drain food and oxygen to the tissues until the intake is inadequate, a decrease in blood flow leads to the risk of blood clots forming, which further inhibits tissue oxygenation and causes resistance to the healing phase operation wound.

This study found that the shivering grade of 20 respondents after being given the Hot-pack was obtained in the first shivering grade and 5 respondents in the second shivering grade. The results showed that most experienced a decrease in shivering grade after hot packs were given. Most respondents experienced a rise in body temperature back to normal (36°C - 37°C) and a decrease in shivering grade to 0. This was supported by Rosdahl (2014) that the increase in body temperature returned to normal (36°C-37°C) after administration of hot-pack heat therapy caused by the effects of heat from hot packs that react to skin receptors that function as body temperature regulation both for heat and cold temperatures.

The skin receives heat from hot packs, the temperature of which is regulated according to the tolerance that the respondent can accept (40°C) until the heat can spread from the skin area to the blood vessels that cause vasodilation and re-repair the body temperature that experiences hypothermia and shivering so that the body temperature becomes normal. A total of 5 respondents did not experience a significant increase (second Grade of Shivering) in body temperature after giving a hot pack because they had a body mass that was above normal (obesity), age at the end of the adult and the length of time in the operating room. This is in accordance with Rosdahl's theory (2014) that body mass affects the return of normal body temperature.

Researchers argue that body mass affects the increase or decrease in body temperature. In people who have less or thin body mass, they will quickly experience a decrease in body temperature when exposed to cold or hot temperatures. Heat therapy using hot packs can restore body temperature quickly, sensations and effects of heat delivered through the skin and received by the dermal nerves resulting in dilation of the dilated dermal capillaries make the blood flow more flow to the surface of the skin so that it can spread and the body gets more blood flow flows to the surface of the skin to spread and the body gets adequate blood flow and causes the temperature around the skin to increase. Parts of the body that can have ease in absorbing and returning body heat are parts that are more sensitive to heat, namely the eyelids, neck and the inside of the arm or axilla (Rosdahl, 2014).

Based on the results of the above research, researchers argue that the reduction in shivering grade in postoperative caesarean section patients is influenced by several factors, namely the length of operation or the length of time the patient is exposed to cold air operating room, age, body mass index, nutrition, operating room temperature and blood loss during surgery . Repeated shivering when in the recovery room can occur because it is influenced by various factors including recovery room where the temperature is cooler than the operating room and cleaning the patient after the surgery ends. When in the Recovery room, the patient's post operation was not immediately replaced by his clothes and blankets. When the patient is taken by the clerk the new room will be cleaned and replaced.

Based on the results of the Wilcoxon test analysis obtained a significance value (p) value of 0,000 with a significance level of α 0,005, it means the value of p value <α can be concluded that there is an effect of giving hot-pack to grade shivering in patient post Caesarean surgery in the Recovery Room one of privet hospital in Sepanjang. Rosdahl (2014) argues that the increase in body temperature returns to normal (36°C-37°C) after the administration of hot-pack heat therapy caused by the heat effect of hot packs that react to skin receptors that function as body temperature regulation for both heat and cold temperatures. This is related to the theory (Guyton & Hall, 2014) The mechanism of increasing the temperature when the body is too cold where these 3 ways can increase heat. When the body is too cold, the temperature regulation system performs the exact opposite procedure namely the occurrence of skin vasoconstriction throughout the body caused by stimulation of the posterior hypothalamic sympathetic centre. Piloerection ie sympathetic stimulation causes

the arector pili muscles attached to the hair follicles to contract so that the hair stands upright and increase in thermogenesis (formation of heat) that is the formation of heat by an increased metabolic system that triggers the occurrence of shivering, sympathetic stimulation for the formation of heat and secretion of thyroxine.

Hypothalamic stimulation of the shivering is located in the dorsomedial part of the posterior hypothalamus near the third ventricular wall is an area called the primary motor center for shivering. Effect of hypothalamic temperature on body heat dissipation through evaporation and heat formation which is mainly caused by muscle activity and shivering (Guyton & Hall, 2014). If the body becomes too cold, signals from the skin and possibly also from the inner body receptors give off an uncomfortable cold feeling. Therefore, individuals will make adjustments to the right environment to be able to reach back to comfort such as moving into a hot room or by wearing clothes that have good insulation against cold air. This is a system of bodily regulation that is stronger than that found by physiologists in the past. Even this mechanism is truly an effective mechanism for maintaining body temperature in very cold environments (Guyton & Hall, 2014). This is supported by previous research by (Sutatia B, 2016) with the title of the effectiveness of Hot-Pack on decreasing body temperature in the first 10 minutes experiencing a normal temperature increase (360C-370C).

Based on the results of the above research, researchers argue that there is an effect of giving hot-pack to shivering grade through a mechanism to increase body temperature by giving heat therapy so that the effect of hypothalamic temperature on body heat dissipation through evaporation. Evaporation is a process that requires heat (evaporation heat) which is absorbed from the skin. This invisible evaporation of the skin or lung cannot be controlled for the purpose of regulating the temperature because the evaporation results from continuous diffusion of water molecules through the surface of the skin and respiratory system.

6. References

[1] Alfonsi, P. (2003). Postanaesthetic Shivering. Epidemiology, Pathophysiology and Approaches To Prevention And Management. Minerva Anestesiol ; 61: 2193-2205.
[2] Almalty A.M.R., J.S Petrosky., B. Al-Naami & J. Al-Nabulsis. (2009). An Effective Method For Skin Blood Flow Measurement Using Local Heat Combined With Electrical Stimulation. Journal Of Medical Engineering & Tecnology ; 33 : 663-669. Doi 10.3109/03091900903271646.
[3] Altman, G. (1999). Fundamental & Nursing Skill. Delmar.
[4] Bobak, Lowdermilk & Jensen. (2004). Buku Ajar Keperawatan Maternitas. Edisi 4. Jakarta: EGC.
[5] Brunner & Suddarth. (2002). Buku Ajar Keperawatan Medikal Bedah. Edisi 8. Jakarta: EGC.
[6] Buggy B.J & A.W.A Crossley. (2008). Themoregulation , Mild Perioperative Hypothermia And
[1] [7] Postanesthetic Shivering. British Journal Anesthesia; 84 : 615-624.
[8] Carli, F. (1989). Metabolic Disturbances Of Hypothermia. Bailliere's Clinical Anaesthesiology 3: 405-4019.
[9] Crossley A.W.A & P.R. Mahajan. (1994). The Intensity Of Postoperative Shivering Is Unrelated To Axillary temperature. Anesthesiology ; 49 : 205-207.
[10] Frank SM. (2001). Focus On: Perioperative Hypothermia. Current Anaesthesia & Critical Care. 12 : 79-86
[11] Frank SM, Beattie C. (1992). Epidural Versus General Anaesthesia Ambient Operating Room Temperature and Patient Age As Predictor Of Inadvertent Hypothermia. Anesthesiology. 77 (2) : 228-333
[2] Frank SM., et al. (2000). Predictor Of Hypothermia During Spinal anaesthesia. Anethesiology. 92 (5): 1330-34
[13] Guyton A.C & J.E Hall. (2014). Buku Ajar Fisiologi Kedokteran. Edisi 12. Jakarta: Elsevier.
[14] Hidayat, A.A.A. (2017).Metodologi Penelitian Keperawatan Dan Kesehatan. Jakarta: Salemba Medika.
[15] Ignativicious, D. (1999). Nursing Skill & Advance.
[16] Kogssayreepong S., et al. (2000). Predictor Of Core Hypothermia And The Surgical Intensive Care Unit. Anesthesia Analgesia. 96 (4) : 826-833

[17] Latief, Dkk. (2002). Petunjuk Praktis Anestesiologi. Edisi 2. Jakarta: Badan Penerbit Bagian Anestesiologi Dan Terapi Intensif Fakultas Kedokteran Universitas Indonesia.
[18] Mahmood M.A & R.M Zweifler. (2007). Progress In Shivering Control. Journal Of The Neurological Sciences 261 ; 47-54. doi : 10.1016/j.jns.2007.04038.
[19] Masithoh, Mendri & Majid. (2018). Lamanya Operasi Dan Kejadian Shivering Pada Pasien Pasca Spinal Anestesi. Yogyakarta: Jurusan Keperawatan Poltekkes Kemenkes Yogyakarta.
[20] Masyitah, U.S., Sony & Anggraini D. (2014). Gambaran Efektifitas Petidin 25 Mg Intravena Untuk Mengurangi Reaksi Menggigil Pada Pasien Seksio Sesarea Pasca Anestesi Spinal Di RSUD Arifin Achmad Provinsi Riau.
[21]Minarsih, R. (2013). Efektifitas Pemberian Elemen Penghangat Cairan Intravena Dalam Menurunkan Gejala Hipotermia Pasca Bedah.
[22]Mubarak, W.I., Indrawati & J. Susanto. (2015). Buku Ajar Keperawatan Dasar Buku I. Jakarta : EGC.
[23]Nugroho, A.M., E. Harijanto & A. Fahdika. (2016). Keefektifan Pencegahan Post Anesthesia Shivering (PAS) Pada Ras Melayu: Perbandingan Antara Pemberian Ondansetron 4 mg Intravena Dengan Meperidin 0,35 mg/kg BB Intravena. Jakarta: Departemen Anestesiologi Dan Terapi Intensif FKUI.
[24]Rosdahl, C.B & M.T Kowalski. (2014). Buku Ajar Keperawatan Dasar: Higiene Personal. Edisi 10. Jakarta: EGC.
[25]Scoot F. Nadler, DO, FACSM., Kurt Weingand, Ph.D., DUM., Roger Krue, MD. (2004). The Physiologic Basic And Clinical Application Of Cryotherapy And Thermoteraphy For The Pain Practitioner. Pain Phyician, Vol. 7, No 3. Hal 395-399, 2004. ISSN 1533-3159.
Sherwood, L. (1996). Fisiologi Manusia : Dari Sel Ke Sistem. Edisi 2. Jakarta: Penerbit Buku Kedokteran EGC.
[26] Sumarliyah E, Sulistyowati E & Rosyid F.N (2012). Pengaruh Pembilasan Cavum Abdomen Menggunakan Cairan NaCl 0,9% Hangat Terhadap Peningkatan Suhu Tubuh Post Sectio Sesarea Di Kamar Operasi RSUD Dr. Mohammad Soewandhie Surabaya.
[27] Sutatia, B. (2016). Efektifitas Pemberian Hot-Pack Terhadap Hipotermi Pasien Post Operasi Seksio Caesaria Di Recovery Room.
[28] Tamsuri, A. (2006). Tanda-Tanda Vital Tubuh. Jakarta: EGC
[29] Vanessa de Brito Poveda, et al. (2009). Factor associated to the development of Hypothermia in the Intraoperative Period. Rev Latino-am Enfermagem. 17 (2) :228-33
[30] Widiyanto, W.T., Sodikin & B. Riadiyono. (2013). Efektifitas Convective Warmer Dibandingkan Dengan Blood/Infusion Warmer Dalam Mengatasi Hipotermia Pada Pasien Bedah Laparatomi Pada Paska Bedah Laparatomi Di RSUD Banyumas. Purwokerto: Jurusan Keperawatan Universitas Muhammadiyah Purwokerto.
[31] Workhoven MN. (1986). Intravenous Fluid temperature, Shivering and the parturient. Anesthesia Analgesia. 65: 496-8

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PHP-913

FAMILY AND SOCIAL SUPPORT NEEDS OF ELDERLY WITH DEPRESSION: A SYSTEMATIC REVIEW

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ABSTRACT

Depressive symptoms were important public health issues and the study showed that the prevalence of depressive symptoms significantly differed between empty nest old adults and non-empty nesters (24.1% vs. 19.0%). The results of some study found that respondents had good family and social support did not have depression experience. Database search used an electronic database from Scopus with a range years from 2015– 2019. The keywords in the search were family support, social support, elderly and depression for available database. After getting the database through Scopus, then carried out a review to the stage of making a systematic review. The interactions and communications with the grandchildren, spouse, others family members and friends have an important and crucial in the process of preventing or reducing depressive symptoms in the elderly. Social connection with friends and family members is associated with reduced depressive symptoms in the elderly and further study should pay more attention to comparing factors associated depressive symptoms in the elderly

Keywords : family support, social support, elderly and depression

1. Introduction

The worldwide population is aging rapidly. The older population is predicted to reach 2.03 billion by 2050, and this number will account for 22% of the world's population [1]. The aging of population is accompanied with a series of problems, including depression, which is a remarkable public health problem that affects the mental health of the elderly (Luijendijk et al., 2008). The number of patients with depression increased by 18.4% between 2005 and 2015, and elderly patients suffer from one of the highest incidences of depression (World Health Organization, 2017)[2].

Depressive symptoms were important public health issues and the study showed that the prevalence of depressive symptoms significantly differed between empty nest old adults and non-empty nesters (24.1% vs. 19.0%)[3]. The elderly living alone had highest OR of depressive symptoms. Recent reviews confirm that few social relations and low social support – in particular low perceived emotional support – are risk factors for depression (Schwartzbach et al. 2014 ; Santini et al. 2015)[4]. Depression significantly lowers quality of life among older adults [5].

Social ties are important for a person's physical and mental well-being [6]. In old age, social support comes mainly from the family and friends. Social support is the existence or availability of people who care, appreciate and whom one can trust. The role of social withdrawal is predominantly striking among populations with greater predisposition to morbidity and mortality such as older adults. Depression is often linked to the risk or to the actual separation of emotional bonds and support[7].

2. Methods

2.1 Search strategy and study selection

This systematic review is a quantitative study using the PRISMA review (Figure 1). A literature search is carried out in four database such as Scopus, Sage Journal, Proquest, and PubMed with result limited to the last five years from 2015 to 2019. The keywords used in literature search are family, support, elderly and depression.

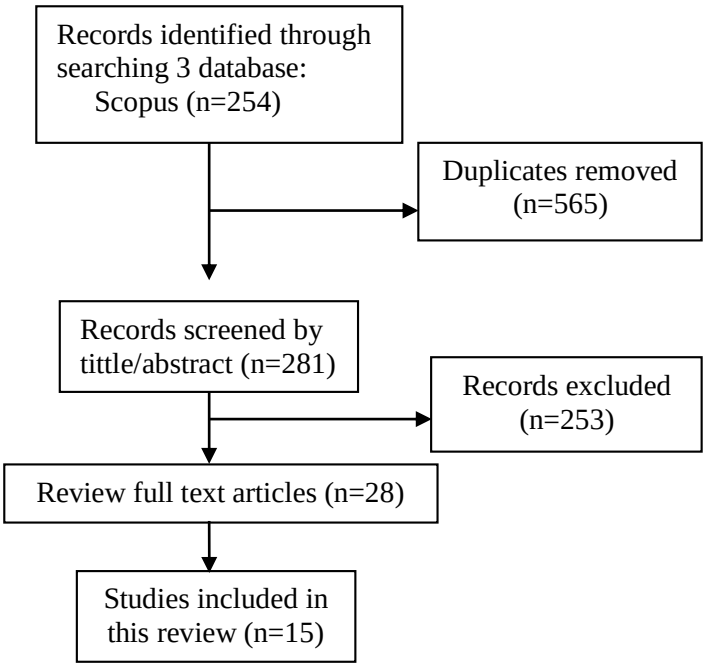

Figure 1. PRISMA flow diagram

2.2 Type of study

This systematic review was aimed to identify Family And Social Support Needs Of Elderly With Depression. A randomized controlled trial study (RCTs), which is in the top position of the evidence hierarchy, is qualified and suitable to answer this kind of question. Therefore, only RCTs were included in this review.

2.3 Inclusion and exclusion criteria

The inclusion criteria for the article are articles in English and which explain Family And Social Support Needs Of Elderly With Depression. Articles would be excluded if the study did not Family And Social Support Needs Of Elderly With Depression.

3. Results

Total articles collected numbered 16 articles. After reviewing the results, the interactions and communications with the grandchildren, spouse, others family members and friends have an important and crucial in the process of preventing or reducing depressive symptoms in the elderly.

3.1 Family Support dan Social Support

The research stated from the multivariate analyses showed that having no family members to

confide in increased the odds of the past year while having three or more family members to confide in decreased the odds of the past year MDD. And also, lower frequency of contact with friends was related to higher odds of the past year MDD. In terms of quality, having no friends to confide in increased the odds of the past year MDD. Similarly, having no friends to rely on increased the odds of the past year MDD while having three or more friends to rely on decreased the odds of the past year MDD [8].

The research stated in rural areas of Liuyang city, Hunan, China Significant differences were found between empty-nest and not-empty-nest older adults regarding loneliness (16.19±3.90 vs. 12.87±3.02, Cohen's d=0.97), depressive symptoms (8.50±6.26 vs. 6.92±5.19, Cohen's d=0.28) and the prevalence of major depressive episodes (10.1% vs. 4.6%) (all $p<0.05$) [9]

The study samples of NESDA and NESDO consisted of 1115 and 359 patients, respectively, with a major depressive disorder in the 6 months before baseline. At the 2-year follow-up assessment, 697 (59.0%) of the 1181 patients were in remission; they no longer fulfilled the criteria of a major depressive disorder in the preceding 6 months. The results produced are the social network characteristics of living in a larger household, the social support characteristic of few negative experiences with the support from a partner or close friend, and limited feelings of loneliness proved to have unique predictive value for a favorable course of depression [4]. Another research with Ordinary Least-Squares (OLS) Regression Analysis and SEM Analysis in China showed Social cohesion, associated with a lower rate of depression [10].

The other research stated from Australia with samples 160 Australian self-identified gay men aged from 65 to 92 years study showed that the relationship between living alone and depressive symptoms weakened with increasing levels of belonging with gay friends [11].

4. Discussion

The results of this study were consistent with the hypothesis that the qualitative of social relationships within ones network is related to depression. Specifically, having three or more family members and friends to confide in or rely on was associated with lower levels of depression in the past year, while not having any family members from whom to seek emotional support was associated with an increased likelihood of having had a depressive episode within the last year [8].

In several studies a higher number of elders with symptoms of depression presented lower perception of affective-consistency, adaptation, and family autonomy factors than those without depressive symptoms; family adaptation was the factor most affected for elders with depressive symptoms. From this result, family becomes essential to the elderly and lack of family support or perceived lack of family support constitutes a relevant factor for the occurrence of depression in the elderly[12].

The evaluation of the influence of family function on depression in a sample of elderly Chinese, with and without depression, found that elderly patients with depression showed worse family functioning and lower social support than elders without depression[13]. According to a Brazilian study, familial dysfunction was higher among elders with depressive symptoms and, therefore, that family abandonment is a risk factor for depression[14]. The family has a fundamental role for the elder, and may aid in treatments and strengthen ties. Thus, the family must be inserted in the daily life of elders[15].

5. Conclusion

The family support and social support have a very important role in the process of prevention or severity in cases of depression in the elderly. The higher social connection quality was more closely and consistently associated with lower odds of the past year depression [8]. Also, another result showed that the presence of depressive symptoms was higher among the elderly with family dysfunction [14].

References

[1] U. Nation, "World Population Aging 2015." Department of Economic and Social Affair PD, 2015.

[2] C. Li, S. Jiang, and X. Zhang, "Intergenerational relationship, family social support, and depression among Chinese elderly: A structural equation modeling analysis," *J. Affect. Disord.*, vol. 248, no. April 2018, pp. 73–80, 2019.

[3] F. Gong, D. Zhao, Y. Zhao, and S. Lu, "The factors associated with geriatric depression in rural China : stratified by household structure," *Psychol. Health Med.*, vol. 8506, no. November, pp. 1–12, 2017.

[4] R. H. S. Van Den Brink, N. Schutter, D. J. C. Hanssen, and B. M. Elzinga, "Prognostic significance of social network , social support and loneliness for course of major depressive disorder in adulthood and old age," 2017.

[5] J. Liu, X. Dong, D. Nguyen, and D. W. L. Lai, "Family Relationships and Depressive Symptoms Among Chinese Older Immigrants in the United States," *Journals Gerontol. Med. Sci.*, vol. 72, no. 8, pp. 113–118, 2017.

[6] M. nyein Aung, S. Moolphate, T. nyein nyein Aung, C. Katonyoo, S. Khamchai, and P. Wannakrairot, "The social network index and its relation to later- life depression among the elderly aged > 80 years in Northern Thailand," *Clin. Interv. Aging*, pp. 1067–1074, 2016.

[7] M. A. S. Gowthamapura Venkatappa Kavana, Eregodu Manjunath Sparshadeep and D. K. S. Sheeba, "Assessment of Depression and Social Support in Elderly Subjects Residing in an Old Age Home: A Pilot Study," *J. Clin. Diagnostic Res.*, 2018.

[8] A. W. Mohammad and H. A. Cath, "The relationship between social support networks and depression in the 2007 National Survey of Mental Health and Well-being," *Soc. Psychiatry Psychiatr. Epidemiol.*, 2017.

[9] G. Wang, M. Hu, S. Xiao, and L. Zhou, "Loneliness and depression among rural empty-nest elderly adults in Liuyang , China : a cross-sectional study," pp. 1–9, 2017.

[10] J. Miao, X. Wu, and X. Sun, "Neighborhood, social cohesion, and the Elderly's depression in Shanghai," *Soc. Sci. Med.*, 2018.

[11] S. Mclaren, "The relationship between living alone and depressive symptoms among older gay men : the moderating role of sense of belonging with gay friends," pp. 1895–1901, 2016.

[12] L. S. Vello, M. A. O. Pereira, and R. C. Popim, "Mental health of the elderly : perceptions related to aging," *Investig. y Educ. en Enferm.*, vol. 32 (1), pp. 60–68, 2014.

[13] J. Wang and X. Zhao, "Family functioning and social support for older patients with depression in an urban area of Shanghai , China," *Arch. Gerontol. Geriatr.*, vol. 55, no. 3, pp. 574–579, 2012.

[14] S. cristina iost P. Simone camargo de oliveira, Ariene Angelini dos Santos, “The relationship between depressive symptoms and family functioning in institutionalized elderly *,” vol. 48, no. 1, pp. 65–71, 2014.

[15] A. A. de Araújo, R. A. S. Rebouças Barbosa, M. S. S. de Menezes, I. I. F. de Medeiros, R. F. de Araújo, and C. A. C. X. de Medeiros, “Quality of Life, Family Support, and Comorbidities in Institutionalized Elders With and Without Symptoms of Depression,” *Psychiatr. Q.*, vol. 87, no. 2, pp. 281–291, 2016.

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Tittle	Population And Sample	Aims and Design Method	Outcome And Conclusion
The relationship between depressive symptoms and family functioning in institutionalized elderly (Simone camargo de oliveira1, Ariene Angelini dos Santos2, Sofa cristina iost Pavarini, 2014)	A total of 225 elderly residents were found in the six institutions studied. Among these, 118 were excluded for not meeting the inclusion criteria of the study. The subjects of this study were 107 elderly in total; 42 men and 65 women	The present study aimed to investigate the relationship between family functioning and depressive symptoms among institutionalized elderly. This is a descriptive, cross-sectional study of quantitative character	In this study, it was found that the majority of elderly had high family dysfunction (57%), followed by good family functioning (22%) and moderate family dysfunction (21%). The presence of depressive symptoms was higher among the elderly with family dysfunction. The results also showed that there was significant correlation between the Family APGAR and depressive symptoms. In multiple logistic regression analysis we concluded that the institutionalized elderly with dysfunctional families were more likely to have depressive symptoms
Quality of Life, Family Support, and Comorbidities in Institutionalized Elders With and Without Symptoms of Depression (Aurigena Antunes de Arau ´jo1, Rosa Ange ´lica Silveira Rebouc ¸as Barbosa2, Marı ´lia Stefani Souza de Menezes, Ingrid Iana Fernandes de Medeiros, Raimundo Fernandes de Arau ´jo Jr, Caroline Addison Carvalho Xavier de Medeiros. 2015)	138 institutionalized elders in the State of Rio Grande do Norte, Brazil. Inclusion criteria include: age ≥60 years, residence in a philanthropic Institution of Long Permanence for Elders, and cognitive ability	Cross-sectional study with institutionalized elders . The aim of this study was to analyze the socio-demographic, quality of life, family support, and comorbidities variables in institutionalized elders with and without symptoms of depression.	Showed that depressive symptoms are closely related to low quality of life in institutionalized elders. Other factors that also negatively influenced the quality of life in this population include: low socioeconomic conditions, unsatisfactory family assistance, and occurrence of comorbidities.
Family Relationships and Depressive Symptoms Among Chinese Older Immigrants in the United States (Jinyu Liu, XinQi Dong, Duy Nguyen, and Daniel W. L. Lai. 2016)	the Population Study of Chinese Elderly in Chicago, a community-engaged, population-based epidemiological study and using a sample of 3,159 Chinese older immigrants	Multivariate negative binomial regression Analysis. This study examines how supportive and negative relationships with family members (children and spouse) influence depressive symptom severity among this population	This study sheds light on the importance of both supportive and negative family relationships for the mental well-being among older Chinese immigrants. The fndings suggest that aiding relationships with children were more important for women than men. This study builds on socioemotional selectivity theory by providing evidence of the significant association between family relationships and wellbeing among older Chinese immigrants. Further, this study extends the knowledge base about older adults' experience of international migration by depicting a nuanced picture of the interactions between positive and negative intergenerational and

			spousal interactions, culture of origin, and gender roles.
Loneliness and depression among rural empty-nest elderly adults in Liuyang, China: a cross-sectional study (Guojun Wang, Mi Hu, Shui-yuan Xiao, Liang Zhou. 2017)	A total of 839 rural older residents aged 60 or above completed the survey (response rate 97.6%). In line with the definition of empty nest, 25 participants who had no children were excluded from the study, while the remaining 814 elderly adults with at least one child were included for analysis.	A cross-sectional multi-stage random cluster survey was conducted from November 2011 to April 2012 in Liuyang, China. To compare loneliness, depressive symptoms and major depressive episodes between empty-nest and not-empty-nest older adults in rural areas of Liuyang city, Hunan, China.	Significant differences were found between empty-nest and not-empty-nest older adults regarding loneliness (16.19±3.90 vs. 12.87±3.02, Cohen's d=0.97), depressive symptoms (8.50±6.26 vs. 6.92±5.19, Cohen's d=0.28) and the prevalence of major depressive episodes (10.1% vs. 4.6%) (all $p<0.05$). Loneliness and depression are more severe among empty-nest than not-empty-nest rural elderly adults. Loneliness was a mediating variable between empty-nest syndrome and depression.
The relationship between social support networks and depression in the 2007 National Survey of Mental Health and Well-being (Aliza Werner-Seidler, Mohammad H. Afzali, Cath Chapman, Matthew Sunderland, Tim Slade. 2017)	A national survey of 8841 participants aged 16–85 years was conducted. A sample divided to be three age groups: younger adults (16–34 years), middle-aged adults (35–54 years), and older adults (55+ years)..	Logistic regression was used to investigate the relationship between social connectivity factors and 12-month prevalence of Major Depressive Disorder in the whole sample	higher social connection quality was more closely and consistently associated with lower odds of the past year depression, relative to frequency of social interaction. The exception to this was for the older group in which fewer than a single friendship interaction each month was associated with a two-fold increased likelihood of the past year depression (OR 2.19, 95% CI 1.14–4.25). Friendship networks were important throughout life, although in middle adulthood, family support was also critically important—those who did not have any family support had more than a three-fold increased odds of the past year depression (OR 3.47, 95% CI 2.07–5.85) High-quality social connection with friends and family members is associated with reduced likelihood of the past year depression
Prognostic significance of social network, social support and loneliness for course of major depressive disorder in adulthood and old age (R. H. S. van den Brink, N. Schutter, D. J. C. Hanssen, B. M. Elzinga, I. M. Rabeling-Keus,M. L. Stek, H. C. Comijs, B. W. J. H. Penninx and R. C. Oude Voshaar. 2017)	sample of 1474 patients with a major depressive disorder, of whom 1181 (80.1%) could be studied over a 2-year period.	to examine the differential predictive values of social network characteristics, social support and loneliness for the course of depressive disorder, and to test whether these predictive associations are modified by gender or age. Two naturalistic cohort studies with the same	Multiple aspects of the social network, social support and loneliness were related to depression course, independent of potential confounders – including depression severity – but when combined, their predictive values were found to overlap to a large extent. Only the social network characteristic of living in a larger household, the social support characteristic of

		design and overlapping instruments.	few negative experiences with the support from a partner or close friend, and limited feelings of loneliness proved to have unique predictive value for a favorable course of depression. If depressed persons experience difficulties in their social relationships, this may impede their recovery. Special attention for interpersonal problems, social isolation and feelings of loneliness seems warranted in depression treatment and relapse prevention
The factors associated with geriatric depression in rural China: stratified by household structure (Fengfeng Gong, Dongdong Zhao, Yuanyuan Zhao, Shanshan Lu, Zhenzhong, Qian & Yehuan Sun. 2017)	The population according to data from the Sixth National Census conducted in China, this county (Dangtu) has a population of 655,534, of which 55% live in the rural areas. And sample was 3182 eligible subjects and gathered data by face-to-face interview	This study aimed to estimate the prevalence of depressive symptoms and related factors of the empty nest elderly in rural China with method Multivariate logistic regression models. The method used Multivariate logistic regression models	The present study showed that the prevalence of depressive symptoms significantly differed between empty nest old adults and non-empty nesters (24.1% vs. 19.0%). The elderly living alone had highest OR of depressive symptoms. Depressive symptoms of empty nest elderly was associated with sleep quality, economic status, pain, social support and ADL. Depressive symptoms obviously prevail among empty nest elderly than non-empty nesters. It reminded us that complementary social support from family and society is essential.
Assessment of Depression and Social Support in Elderly Subjects Residing in an Old Age Home: A Pilot Study (Gowthamapura Venkatappa Kavana, Eregodu Manjunath Sparshadeep, Mohammed A Shiyas, Damodar KP Sheeba. 2016)	The population were an old age home in Taliparamba in the northern district of Kerala, India and sample were 60 elderly subjects of either gender aged >60 years in a selected old age home in northern Kerala, India	To assess the depression status and satisfaction with social support in elderly subjects residing in old age home and then investigate the possible association between depression and social support in them. The methods used The cross-divisional, questionnaire-based pilot study	GDS scores indicated that the percentage of subjects with depression (25%) was significantly low {t (59)=4.47, p=0.001} as compared to normal subjects (75%). GDS scores showed significant negative Pearson's correlation with MSPSS scores (r=-0.268, p=0.038). MSPSS scores indicated that a significantly higher percentage of subjects (63.3%) showed low satisfaction with family support {t(59)=2.85, p=0.006}. General satisfaction with social support was perceived only as moderate by majority (45%) of subjects. Although the depression status is low, it certainly varies inversely as the satisfaction with social support. However the satisfaction with family support perceived in the old age home is poor. Thus, the need for improvement of family relationships of inmates

			with modification of social support system arises at institutional level.
The social network index and its relation to later life depression among the elderly aged ≥80 years in northern Thailand (Myo nyein Aung, saiyud Moolphate, Thin nyein nyein Aung, Chitima Katonyoo, songyos Khamchai, Pongsak Wannakrairot. 2016)	The population were community residents in Chiang Mai Province, Northern Thailand. The representative sample of 435 community residents, aged ≥80 years, were included in a multistage sample.	This study explored the social networks belonging to the elderly aged $80 years and assessed the relation of social network and geriatric depression. This study was a community-based cross-sectional survey	The median age of the sample was 83 years, with females comprising of 54.94% of the sample. The participants' children, their neighbors, and members of Buddhist temples were reported as the most frequent contacts of the study participants. Among the 435 participants, 25% were at risk of social isolation due to having a "limited" social network group (SNI 0–3), whereas 37% had a "medium" social network (SNI 4–5), and 38% had a "diverse" social network (SNI ≥6). Regular and frequent contact with various social contacts may safeguard common geriatric depression among persons aged ≥80 years
Mental health of the elderly: perceptions related to aging (Lais Soares Vello, Maria Alice Ornellas Pereira, Regina Célia Popim. 2014)	The choice of subjects was conducted through a contact made by the researcher with the professionals working at the Family Health Strategy. Thirteen subjects were interviewed, aged 70 years or over, assisted at the service, with a diagnosis related to mental health and who, at the time of the interview, had conditions to answer the proposed questions.	Study undertaken in 2012 using the qualitative method of Minayo and the thematic analysis according to Bardin's suggestions. Data were collected through semi structured interviews that took place in the homes of the elderly people. The guiding question was: At this point in your life, how do you feel? Tell me	The elderly who were satisfied stated that this was due to the good relationship with their family, spouse, to the fact of having autonomy and respect from the society. Those who were shown to be dissatisfied reported lack of family support, physical limitations imposed by age and the presence of illnesses as the main causes.

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THE EFFECTS OF AUDITORY STIMULATION SPIRITUAL EMOTIONAL FREEDOM –TECHNIQUE CARE (ASSEF-TC) ON THE ANXIETY OF OLDER ADULTS AT PRIVATE NURSING HOME, SURABAYA

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ABSTRACT

The problem that frequently occurs in the older adult is anxiety. Anxiety may lead to depression and other emotional illnesses if it continuosly occurs on someone, even it may cause physical illnesses. One technique to improve of anxiety is Auditory Stimulation Care (ASC) and Spiritual Emotional Freedom Technique (SEFT). The researcher combines the two techniques into Auditory Stimulation Spiritual Emotional Freedom-Technique Care (ASSEF-TC). The study was aimed to analyze the influence of ASSEF-TC on the anxiety of the elderly in nursing home at Surabaya. The study was used as a pre-experiment method with one group pre-post design. Population in the study was 36 people and 17 of them were used as a sample by using purposive sampling. ASSEF-TC technique used as an independent variable, the dependent variable was a degree of anxiety. The result of the study shows that the level of the anxiety was decrease after 15 days of ASSEF-TC technique. The result of the Wilcoxon signed rank test shows that there was a significant effect of ASSEF-TC. It can conclude that there was a significant influence of ASSEF-TC techniques on decreasing the level of anxiety.

Keywords: elderly, anxiety, auditory stimulation care, stimulation emotional freedom technique

1. Introduction

The elderly is the age group with the highest anxiety rate in developing countries like Indonesia, comprising up-to 50% of the case in the general population[1]. One of the contributors was psychological changes, including: feeling alienated, experiencing post-power syndrome, contracting with chronic diseases and depleting financial independence [2]. Particularly in the city of Surabaya within which the second-largest city of the country was the most populated area with older adults who experienced anxiety at about 60.7%.

The nursing theory of Roy's adaptation describes humans as an interconnected system with input, control, and output [4] . This theory can explain and can be applied in this study, namely the elderly can adjust to anxiety because of the treatment and procedure effective coping mechanism by building positive perceptions and discard negative perceptions so that the anxiety of the elderly decreases.

The Spiritual Emotional Freedom Technique (SEFT) was proposed as an effective approach that affect the decrease amygdala activity in the limbic system of the brain, which regulates emotional including anxiety [6]. SEFT was suggested to have an advantage in facilitating the flow of energy and tuning in to stimulate individuals' spiritual submission (to God). According to Vink, Aartsen and

Schoevers [7] the beat used in SEFT smoothens the flow of energy and raises positive perceptions and eliminates negative perceptions. On the other hand, the Auditory Stimulation Care (ASC) was proposed as a stimulation to the auditory sense to send signals to the brain positive suggestions. Previous research suggests that stimulating auditory organs would decrease anxiety [8]. The combination of SEFT and ASC is proposed in this study as a nursing intervention to reduce anxiety in older adults.

The general aim of this study was to evaluate the influence of the combination of SEFT and ASC (later called as ASSEF-TC) on the level of anxiety in older adults. The ASSEF-TC was designed as a non-pharmacological intervention that can be delivered by nurses.

2. Method

This study was a pre-experimental research design. Seventeen residents of a nursing home in Surabaya were purposively involved as respondents following informed consent. The intervention was conducted daily for 15 days. This action was carried out by the inventor of SEFT and was followed every day by a trained-certified nurse. The level of anxiety was evaluated pre- and post-15-day intervention. This study's ethical approval was obtained from the Universitas Airlangga HREC under the 281 - KEPK on 11th January 2017.

The evaluation instrument used in this study was the Geriatric Anxiety Inventory (GAI) questionnaire that is specifically developed to assess anxiety level for older adult. The data gathered from the study was collected for analysis using Wilcoxon Signed Rank Test statistical test with a significance level of $p \leq 0.05$.

3. Results

Most of the respondents' ages are over 70 years old, where the highest level of education was diploma, indicating higher education level. The majority of the respondents have lived in nursing homes for between 1-5 years, previously working as self-employed and currently having a sedentary lifestyle (see Table 1).

Table 1. Respondents Demographic

No	Characteristic	Percentage	%
1	Age		
	a. 60-70	7	41%
	b. >70	10	59%
2	Last Education		
	a. ES	-	
	b. JHS	1	6%
	c. SHS	7	41%
	d. College	9	53%
3	Duration of Stay in Private Nursing Home	5	29%
	a. <1 year	12	71%
	b. 1-5 year		
4	Last Job		
	a. Civil servant	5	29%
	b. Private	10	59%
	c. Doesn't work	2	12%
5	Leisure time activities		
	a. Chatting with other	5	29%
	b. Sit/stay in the room	10	59%
	c. making crafts	2	12%

ASSEF-TC techniques that were tested out daily informed the level of anxiety (see Table 2). At the time of the pre-intervention, the respondents were mostly severely anxious, (41%) and least of them had either mild anxiety or at a panic level (12%). When the post test was obtained almost all respondents experienced mild anxiety (82%).

Table 2. Anxiety level before and after treatment

nxiety level of	e test		ost Test	
Non anxious				3%
Mild		?%	1	?%
Moderate		5%		
Severe		1%		
Panic		?%		
Total	7	)0%	7	)0%

The difference in the level of anxiety was evaluated after 15 consecutive days. A significant decrease in the 17-scale anxiety level occurred in 6% of the respondents. The statistical tests showed the p value of 0.00, suggesting that the ASSEF-TC technique was significantly improved the level of anxiety in the respondents (see Table 3).

Table 3. Difference of GAI score before and after treatment

Number of respondent'	Level of Geriatric Anxiety Inventory		
	Pre Test	Post Test	Difference
1	13	2	-11
2	5	0	-5
3	14	4	-10
4	15	3	-12
5	14	1	-13
6	5	0	-5
7	9	1	-8
8	15	3	-12
9	10	1	-9
10	10	2	-8
11	15	1	-14
12	14	1	-13
13	18	2	-16
14	10	1	-9
15	20	3	-17
16	7	0	-7
17	13	1	-12
Wilcoxon Signed *Rank Test*	*Mean* 12.18	4,217	-11
	SD 4,217	1,179	
p = 0,000			

3. Discussion

3.1. Identify elderly anxiety before being the treatment of Auditory Stimulation Spiritual Emotional Freedom - Technique Care

All respondents had mild, moderate, severe, and panic anxiety. These results were identified following the initial interview with pre-test based on the GAI. Twenty-one respondents were worried, 12 found it difficult to make decisions, 10 were often nervous, 14 found it difficult to relax, 14 were unable to enjoy something because of fear, 11 felt there were some things that bothered him, 9 were often tense , 9 could not resist their worries, 13 were often nervous, sometimes his worries affected his stomach which resulted in abdominal pain and this was experienced by 5 respondents. There were 10 respondents who thought they were someone who was easily agitated, 10 felt there was something bad that would happen to him, 7 often trembled, 14 often worried and it interfered with his life, 7 sometimes missed something because he was too worried and 9 was often annoyed.

Before being given treatment, some respondents had severe anxiety, some even panicked. The

highest score was 20. This is because the elderly who have severe anxiety and panic are mostly elderly who are> 70 years old so that many of their body functions are getting weaker and causing anxiety. In accordance with the opinion of [2] that the elderly are getting older with weakening physiological functions such as alienation and worry.

[9] say several factors related to causes that affect a person's anxiety are factors in the level of education of the elderly, previous employment history, and lack of family support. In this study most of the graduates were academics and colleges, namely 10 people, others were high school graduates, and 1 junior high school graduate. The results showed that respondents who graduated from academies or tertiary institutions tended to be at a mild and moderate level of anxiety, while those for junior and senior high school graduates tended to have severe anxiety and panic. In theory, it is said that the level of education influences the ability to think, the higher the level of education of a person, the easier it is to think rationally and capture new information, including describing problems [10]. Researchers argue that the level of education is one of the factors that influence the level of anxiety because the higher the level of education, the better coping in dealing with anxiety.

The second factor is the previous job of the elderly. In this study because the elderly who previously became civil servants had mild anxiety and the elderly who previously worked as private employees or did not work tended to experience severe anxiety and panic. In this study there were 5 elderly people who previously worked as public servants or became wives of high-ranking officials, 10 self-employed people, and 2 people did not work. This is in accordance with the theory of [11] the status of current and past employment is one of the factors that influence one's anxiety.

Low / low income, precarious work or even no work causes a person to have an inadequate source of coping in the face of life stressors. [12] state that the loss of the role of social function and work causes anxiety for the elderly because friendship communication networks are reduced, resulting in declining identity and elderly self-esteem. So the researchers argue that there is a relationship between work history and anxiety of the elderly. Previous employment history is something that can affect the anxiety of the elderly who live in the institution because it relates to the condition of the disease due to their work and receipt of pensioners' money each month for those who worked as civil servants, and those who are self-employed or not, those who have money and have to wait for the visiting family to give money to the respondent.

Elderly in nursing homes experience exposure to the environment and new friends that require the elderly to adapt both positively and negatively. In this study there was no significant difference in the elderly living in homes <1 year and between 1-5 years because there were elderly people who experienced anxiety because they lived in homes <1 year and there were elderly people who panicked and had severe anxiety even though they had lived in the orphanage for 1-5 years. This is in accordance with the statement by [13], that the failure of adaptive responses is characterized by failure to interact, care less, and assets and savings that do not meet needs cause concern and decentration in the elderly. Excessive anxiety is a psychological symptom of anxiety. Anxiety is out of control and lasts a long time and disrupts daily activities. Elderly people at the home can experience seclusion from family members for various reasons and this exile is very painful for the elderly. Along with the time the elderly want to develop family ties again [14]. The loss of various things is the originator of the anxiety of the elderly who can then have an impact on physical and mental illness in old age [15].

At the time of observation based on the aspects of the most GAI questionnaire, 15 respondents

said they often felt worried, some experienced tension, were unable to relax, and often felt nervous. This was stated by [16] that a person who experiences anxiety and tension for those who live in a home will especially feel fear and anxiety for most of the time and tend to overreact with even mild anxiety, are unable to relax, experience sleep disturbances, fatigue, head or stomach pain, and other physical complaints.

When interviewing the cause of anxiety with ASC, some respondents revealed the cause of their anxiety was due to physical illnesses or complaints due to their illness, sometimes feeling dizzy because of their high rates, feeling their own pain due to osteoporosis, and feeling sore from diabetes mellitus. [7]state that anxiety is also influenced by health status, medical disorders, or drug use. The progress of the disease process threatens independence and quality of life by overloading the ability to carry out personal care and daily tasks.

Another respondent said that being anxious about separating from his family [spouse, child and grandchildren]], became increasingly anxious when a few weeks awaited the family did not visit the orphanage. This is also explained by [9] that the factors that cause anxiety to the elderly are family, which is the main support system in maintaining their lost health. The role of families in the care of the elderly includes maintaining and caring for, maintaining and improving mental status, anticipating socio-economic changes, and providing motivation and facilitating spiritual needs.

4.2. Identify elderly anxiety after being given an Auditory Stimulation Spiritual Emotional Freedom - Technique Care

After being given an auditory Stimulation Spiritual Emotional Freedom - Technique Care, technique for 10-15 minutes every day for 15 days, there was a change in anxiety level in the elderly with anxiety in Surabaya Hargo Dedali Nursing Home for all respondents. This is evidenced by all respondents who initially experienced mild, moderate, severe, even panic changes or decreased scores in the GAI questionnaire to mild anxiety and no anxiety at all. Obtained 3 (18%) respondents who did not have anxiety at all and 14 (82%) respondents who had mild anxiety. The mild anxiety that this research makes respondents more calm in facing the rules in the institution, are more tolerant with fellow elderly people in the institution, and accept all conditions that cause anxiety. According to [17] mild anxiety is related to everyday life that causes a person to be alert and improve perception. The symptoms are fatigue, high awareness, being able to learn, and behavior according to the situation.

In the post test there were no respondents who were worried at all times, 2 respondents found it difficult to make decisions, 2 could not enjoy something because, 1 considered small things everyday disturbing, 3 sometimes felt tense, 1 felt easily worried, all respondents can withstand worries, no one is often nervous, 1 respondent feels his mind makes him worry, 2 has stomach ache because when he is worried it increases his stomach tension, 2 is easily agitated, no one feels there will be anything bad, 5 respondents feel that his concern disturbs his life , no respondent often feels worried, 1 feels sometimes something is blocking his stomach, 3 respondents sometimes miss something, and 2 respondents still feel upset.

In the GAI questionnaire the most felt points before and after were statements about concerns which occurred to the respondents who were disturbed in life. Based on the posttest results table data, most of the decline was very significant so that it can be interpreted that ASSF-TC is very influential on decreasing anxiety levels in the elderly.

Respondent number 15 had a very significant difference, namely a decrease in the score of 17 points from 20 during the pre-intervention to 3 points at the time of intervention. The respondent claimed he felt comfortable and calmed down when given this ASSEF-TC technique. Anxious, anxious, and worrying complaints gradually disappear because all the problems have been divulged and passed on to Allah SWT. Respondents claimed that they were increasingly comfortable living in a home where they had been 3 years because their feelings of dislike of the system in the home and their feelings of dislike for their fellow elderly people began to disappear, because they emphasized the interests of others above their own interests, were more tolerant and did not feel irritated or revenge for anyone. Interventions given to respondents were able to have a positive impact on adaptation in the home and in eliminating anxiety. The theory that supports this change was revealed by [18], namely the elderly who have lived in orphanages for more than 1 or 2 years have the ability to adjust better than the elderly who have just entered as new residents. According to [14] anxiety in elderly people is related to the ability of the elderly to adapt to the new environment. The researcher argues that older people who live longer in homes have better coping and adaptation abilities than new residents and affect their anxiety.

The lowest decrease in score was experienced by respondents number 2 and 6, namely 5 points because previously respondents experienced mild anxiety, after this ASSEF-TC technique was conducted the respondents claimed to have no anxiety and good social attitudes and behavior as evidenced by a score of 0 in the post test. The researcher argues that the decline in anxiety levels in the elderly at Hargo Dedali Nursing Home is influenced by ASSEF-TC techniques as a way to reduce anxiety that has never existed and needs to be studied. Characteristics of respondents such as age, education history, past employment history, length of stay in the orphanage, and the habit of filling in free time did not significantly affect changes in decreased anxiety levels.

The results of the components in the GAI questionnaire that did not undergo much change both before and after the intervention were item number 16, namely that the respondents felt that the concerns in their minds disturbed their lives. Most complaints are found in point number 16 because every respondent who feels anxious must feel that these feelings interfere with daily activities in his life. This study shows that older people can decrease their anxiety level with ASSEF-TC intervention.

The old leisure time and activities which still cause anxiety comes from their own mind. Elderly people at the institution are the highest anxiety group for various reasons. Some ways that are done is to do auditory stimulation care or stimulation of verbal communication to stimulate the auditory system. [19] revealed that to overcome feelings of anxiety hearing distraction techniques can be used because it reduces emotional tension. It can also be done by the Spiritual Emotional Freedom Technique (SEFT) technique that has been proven by previous studies that SEFT can reduce anxiety. SEFT is used to streamline healing on anxiety, panic, anger, stress & disturbances of mind, anxiety, depression and sadness, self-image, fear and phobia, loss, guilt, insomnia, bad memory, pain, physical healing, performance improvement (exercise, public speaking), trauma, and sexual abuse [20].

Then the researchers combined these two techniques into one, namely Auditory Stimulation Spiritual Emotional Freedom Technique Care (ASSEF-TC) to reduce the anxiety of the elderly in order to be more optimal. ASSEF-TC provides a distracting effect that increases endorphins in the control system and makes relaxation, the vibrations of verbal communication from the source reach the ears, then spread throughout the body. Cells affected by sound vibrations respond by changing

their own vibrations. Brain cells vibrate and send magnetic and electromagnetic waves that represent brain activity. Brain cells are affected by vibrations of whatever type and source. In this central voice therapy is applied to reduce anxiety and depression also reduce pain due to increased protein in the body and reduce infection [21] . SEFT is done by tapping two fingertips to balance the energy of meridians in the body when symptoms of disturbing physical and emotional deterioration occur. Memory remains the same, but symptoms of the disease disappear and generally last a long time [20]

All respondents experienced a decrease in GAI scores and felt happier. After being given the ASSEF-TC technique the respondent looks calm and does not easily feel irritated, and can neutralize his own anxiety. Another positive impact is the reduction of the elderly who often fight because of trivial problems and small things, the elderly can relax, and also resist anxiety and their own worries. ASSEF-TC was first performed by Dr. H. Syarif Thayib, M.Sc, he is a Lecturer at the Da'wah and Communication Faculty of UIN Sunan Ampel Surabaya, Commissioner of PT. Madina Utama, Co. SEFTER SEFT Founder (Spiritual Emotional Freedom Technique) and speakers at seminars, workshops, and SEFT training, FunTastic Family in Hong Kong, Macao, China, Singapore, Malaysia, and Saudi Arabia, Doctor of Human Resource Management at Airlangga University with the title "very satisfying" . Then the researchers conducted the ASSEF-TC accompanied by him and applied to all respondents. At the next meeting the researchers conducted ASSEF-TC independently to the respondents.

4.3. Effect of Auditory Stimulation Spiritual Emotional Freedom - Technique Care on reducing anxiety in the elderly

Based on the results of the study, it was found that there was a decrease in the anxiety level of the elderly in Surabaya Dedali Hargo Nursing Home. This proves that there is an ASSEF-TC influence on reducing anxiety in the elderly. The results of the statistical test with the Wilcoxon Sign Rank Test can be seen in Table 5.3 and were obtained by decreasing the anxiety level scores of the elderly before and after the ASSEF-TC intervention with a value of $p = 0.00$.

The results of this study are in accordance with the results of previous studies by [22] regarding the influence of verbal communication on anxiety in the face of pre-retirement retirement. . However, the combination of ASC and SEFT is a new technique that needs to be studied further and in this study it has been proven that there is an effect of a combination of ASC and SEFT or can be abbreviated as ASSEF-TC for elderly anxiety in private nursing home.

This research refers to Roy's conceptual framework of adaptation theory. Starting from the input process in this study is a vocal stimulus namely ASSEF-TC. Stimulus vocal is a stimulus that directly adapts to someone and has a strong influence on individuals [5]. Then the process of adaptation continues to the regulator and cognator subsystem. Regulators are coping processes that include the body's subsystems, namely nerves, chemical processes, and endocrine. Cognator is the process of coping with someone who includes four systems, namely knowledge, processing perceptions of information, learning, consideration, and emotions [23]. Someone can have a coping mechanism to solve problems, adjust to changes, and respond to threatening situations [22]. There are two kinds of mechanisms, namely adaptive that supports growth in achieving goals, and maladaptive responses, namely mechanisms that hinder function in achieving goals [4].

Stimulus with ASSEF-TC affects the elderly with anxiety in Surabaya Dedali Hargo Nursing Home. This has an effect on the cognator which consists of processing perceptions and information

from negative to positive, then learning from the techniques provided by the researcher to the respondent, as well as considerations and emotions from respondents' anxieties. The regulator that plays a role here is inadequate GABA and eventually endorphins can be released when given ASSEF-TC interventions. The effect of the study is that the physiological aspects of the elderly are improving, the self-concept (psychic) shows that initially many experienced a decrease in self-esteem because some factors become more confident, in social terms the respondents' social functions increase because respondents become more tolerant and are not easily upset with others in the nursing homes and administrators in the orphanage. Interdependent respondents are increasing because their interpersonal relationships are getting better at the individual level in the elderly and at the group level.

All respondents in this study had an adaptive response because they were able to achieve the expected goal of decreasing anxiety levels. Adaptive response is a response where humans can achieve the goals or balance of the body system, a maladaptive response is that humans cannot control the balance of the body or cannot achieve the expected goals [4]. A maladaptive response in this study is if there are respondents whose anxiety levels remain or increase after being given ASSEF-TC techniques and this is not found in this study.

There is a significant change from the influence of ASSEF-TC on the anxiety of the elderly in Surabaya Hargo Dedali Nursing Home, based on Roy's adaptation theory which states that everyone always uses coping both positive and negative [4] ASSEF-TC changes negative suggestions to be positive with ASC auditory stimulation and positive tapping of SEFT so that anxiety decreases due to loss of negative perception.

This ASSEF-TC technique causes respondents to process perceptions and information from researchers from positive negatives and constructs, discard negative emotions and foster spiritual emotions that make sure of themselves that anxiety and resentment are lost because they are dispensed and justified. This is in accordance with Roy's theory that a person's coping process includes knowledge and emotions, processing perceptions and information, and emotions

Physiologically, the elderly will experience anxiety. Anxiety disorders experienced include physical health, loneliness, feeling useless, alienation from the environment, economic, psychological, and social problems [24]. There are 2 types of therapy to overcome anxiety, namely pharmacology or drugs and non-pharmacological. For non-pharmacology, distraction, relaxation, imagination, mental therapy, environmental modification, therapeutic communication, and the spiritual emotional freedom technique (SEFT) can be performed.

ASSEF-TC is a non-pharmacological and non-invasive therapy that can be used to reduce anxiety levels in the elderly and is a combination of ASC and SEFT. Human voice is a powerful healing instrument because human voice energizes and perfectly balances the brain in an instant. This is called Auditory Stimulating Care [19] Brain cells vibrate because stimuli from humans send magnetic and electromagnetic waves that represent brain activity [8]. SEFT is done by tapping two fingertips at several locations in the body. The beat is to balance the energy of the meridians in the body when symptoms of physical and emotional decline occur. Actual memory is the same, but symptoms of the disease disappear and last long [25] The benefits of SEFT have been felt since the first technique was carried out and activated electrical energy in the body [21]

The ASSEF-TC technique was carried out with several approaches, the method was carried out uttering positive sentences from the 10 pillars of caring from J. Watson's caring theory because the

concept of caring and researchers adopted and made positive sentences in accordance with J. Watson's concept to reduce optimal anxiety. Then tapping at several points of the body on the meridian energy. Respondents who received this intervention felt more comfortable, relaxed, and calm after being given therapy so that they felt the impact gradually. His feelings are calmer and there are rarely anxious feelings.

Scientifically ASSEF-TC works by stimulating the auditory senses of the respondent, stimulating the brain and providing calm that can release endorphins so that the respondent feels happy and relaxed. In addition, light beats at several body meridian points aim to balance the energy of meridians in the body when symptoms of physical and emotional deterioration occur. There is a relationship between the anxiety of the elderly with quality of life, namely the higher the anxiety of the elderly, the lower the quality of life [26]. With the decline in the level of anxiety of the elderly indicates that the quality of life of the elderly is getting higher and the elderly can undergo their daily activities and activities comfortably and calmly without any anxiety.

5. Conclusion and recommendations

Before the ASSEF-TC was given, most of the anxiety levels of the elderly were on a moderate, severe, and panic scale due to various factors such as physical illness, longing for family, and not adapting to the institution. After ASSEF-TC all respondents decreased their anxiety to be mild and there was no anxiety at all because respondents accepted ASSEF-TC techniques for 15 times to adapt and improve individual coping.

Auditory Stimulation Spiritual Emotional Freedom - Technique Care (ASSEF-TC) can reduce anxiety levels in the elderly because it can cause the elderly to be comfortable, relaxed, and sincere for the conditions that cause anxiety.

For nurses, nursing home staff or other health practitioners, can provide this ASSEF-TC technique to the elderly regularly to reduce anxiety. For the next researcher, it is hoped that they can carry out research with a larger number of samples and more treatment variables that can be combined, but also can conduct research by comparing the effectiveness between giving ASSEF-TC and other techniques that can be used to reduce anxiety in the elderly.

Reference

[1] WHO 2017 WHO Reference Group on Global Health Statistics (RGHS)
[2] Hendry 2013 Gangguan Depresi pada Lanjut Usia *Cermin Dunia Kedokt.* **40** 815–9
[3] Afiyah R K 2017 Dukungan Keluarga Memengaruhi Kemampuan Adaptasi 96–105
[4] Patterson S L 2016 The effect of emotional freedom technique on stress and anxiety in nursing students: A pilot study *Nurse Educ. Today* **40** 104–10
[5] Jhang F H 2019 Effects of changes in family social capital on the self-rated health and family life satisfaction of older adults in Taiwan: A longitudinal study *Geriatr. Gerontol. Int.* 1–5
[6] Ali M and Gorji H 2014 Effect of auditory stimulation on traumatic coma duration in intensive care unit of Medical Sciences University of Mazandarn , Iran **8**
[7] Vink D, Aartsen M J and Schoevers R A 2008 Risk factors for anxiety and depression in the elderly: A review *J. Affect. Disord.* **106** 29–44
[8] Van Der Leeuw G, Eggermont L H P, Shi L, Milberg W P, Gross A L, Hausdorff J M, Bean J F and Leveille S G 2016 Pain and Cognitive Function Among Older Adults Living in the Community *Journals Gerontol. - Ser. A Biol. Sci. Med. Sci.* **71** 398–405

[9] Retno Indarwati1, 3*, Nursalam3, Rachmat Hargono2, Suprajitno4, Joni Haryanto3 R 2017 Analysis of Factors Affecting Post-Power Syndrome **3** 450–61

[10] Perry P and 2010 *Fundamental of Nursing*

[11] Putri S T, Fitriana L A and Ningrum A 2015 Studi Komparatif : Kualitas Hidup Lansia Yang Tinggal Bersama Keluarga Dan Panti *J. Pendidik. Keperawatan Indones.* **1** 1

[12] Council N and Relations F 2013 The Elderly Widow and Her Family , Neighbors and Friends Author (s): Greg Arling Source : Journal of Marriage and Family , Vol . 38 , No . 4 (Nov ., 1976), pp . 757-768 Published by : National Council on Family Relations Stable URL : http://www.jstor. **38** 757–68

[13] Fuentes K and Cox B J 1997 P R E V A L E N C E OF A N X I E T Y D I S O R D E R S IN E L D E R L Y A D U L T S : A CRITICAL A N A L Y S I S KARINA FUENTES and BRIAN J. COX **7916** 269–79

[14] Johnco C, Knight A, Tadic D, Wuthrich V M, Pachana N A and Oude Voshaar R C 2015 Psychometric properties of the Geriatric Anxiety Inventory (GAI) and its short-form (GAI-SF) in a clinical and non-clinical sample of older adults *Int. Psychogeriatrics* **27** 1089–97

[15] Annisa D F and Ifdil I 2017 Konsep Kecemasan (Anxiety) pada Lanjut Usia (Lansia) *Konselor* **5** 93

[16] Kogan A C, Wilber K and Mosqueda L 2016 Person-Centered Care for Older Adults with Chronic Conditions and Functional Impairment: A Systematic Literature Review *J. Am. Geriatr. Soc.* **64** e1–7

[17] Miller J C 2017 AUDITORY STIMULATION THERAPY FOR PTSD James C . Miller , Ph . D . Consulting Scientist , Buffalo , WY Air Force Research Lab (retired), San Antonio , TX Vietnam Veteran C-130 Pilot George Lindenfeld , Ph . D . Neuropsychology , Medical Psychology Center

[18] Zainuddin A . 2009 *SEFT For Healing + Succes + Happiness + Greatness.*

[19] Lismayanti L and Pamela N 2018 Efektifitas Spiritual Emotional Freedom Therapy (SEFT) dalam menurunkan tekanan darah pada lansia diatas 65 tahun yang mengalami hipertensi 64–7

[20] 1*Mareta Akhriansyah, 2*Budi Anna Keliat 3*Feri Fernandes 2018 PENGARUH PROGRESSIVE MUSCLE RELAXATION TERHADAP PERUBAHAN ANSIETAS PADA LANSIA DI PANTI SOSIAL TRESNA WHERDA KABUPATEN

[21] Nursalam 2013 *Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan Edisi 2*

[22] Revai A 2018 PENGARUHSPIRITUAL EMOTIONAL FREEDOM TECHNIQUE(SEFT)TERHADAP KECEMASAN, SATURASI OKSIGEN DAN KUALITAS TIDUR PASIENPENYAKIT PARU OSBTRUKTIF KRONIK (PPOK)

[23] Campagne D M 2019 Stress and perceived social isolation (loneliness) *Arch. Gerontol. Geriatr.* **82** 192–9

[24] Astuti R T, Amin M K and Purborini N 2017 Efektifitas Terapi Spiritual Emotional Freedom Technique (SEFT) Untuk Menurunkan Tingkat Stress Pasca Bencana pada Warga Pasca Erupsi Merapi Tahun 2010 *Proceeding 6th Univ. Res. Colloq. 2017 Seri Pendidik.* **1** 397–400

[25] Ottu I F A, Essien E A and Lawal A M 2019 Death Anxiety From Quality of Life and Emotional Impact of Event: A Case Study of Proximate Earwitnesses of Dana Air Crash in Nigeria *Omega (United States)* **78** 421–40

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ANALYSIS FACTORS: ADHERENCE OF TAKING ANTIRETROVIRAL THERAPY IN PEOPLE LIVING WITH HIV/AIDS

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ABSTRACT

HIV / AIDS is a disease that cannot be cured yet. Maintaining the optimum quality of life is a goal treatment people living with HIV/AIDS (PLWHA). Adherence to taking anti-retroviral therapy (ART) is one of the keys to success in achieving optimal Quality of Life for PLWHA. Nationally, the prevalence Adherence to taking anti-retroviral therapy was low, as well as in Southwest Sumba. The factors that influence the low prevalence of taking ART adherence in Southwest Sumba, Indonesia are not known yet. The aim of this study was to analyse the factors that influence adherence to taking ART in people living with HIV/AIDS in Southwest Sumba. An analytical cross sectional design was used in this study. 45 out of 68 PLWHA were willing to become respondents. Snow ball sampling was performed to recruit the respondents. Data were obtained using a questionnaire that had achieved validity and reliability tests. Ordinal regression tests have been used to analyse data. The results of the analysis found that knowledge (0.010), attitudes (0.018), motivation (0.023) and characteristics of comorbidities (0.043) were factors that influenced adherence to taking ART. Whereas, health workers and health services did not affect adherence of taking ART. The AIDS prevention commission in the health department of Southwest Sumba province is expected to be able to prepare a strategy to increase the knowledge, attitudes, and motivation of PLWHA so that they can improve the adherence to taking ART. In addition, strategies for taking ART is needed to be created for PLWHA who have co-morbiditi.

Keywords: adherence, anti- retroviral therapy, people living with HIV/AIDS
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1. Introduction

HIV/AIDS is one of disease which can't cure yet. One of the treatment goal for PLWHA is maintaining their quality of life (QoL) PLWHA. Taking ARVs as accordance with the physician order is needed to achieve better QoL among PLWHA especially physical domain. However, some countries facing problem about adherence to taking medication for PLWHA which taking ARVs (WHO, Progress Report, 2016). PLWH who have good adherence in taking ARV (above 95%) will not become AIDS. While, PLWHA who have good adherence in taking ARV will experience more stable condition and a longer life span. In the other hand, PLWHA who have poor adherence of ARV (below 95%), their viral load will increase and it will have negative impact to their physical health. While people with AIDS will accelerate the progress of the disease and aggravate the situation, experience faster death (Ministry of Health, 2007).

In 2016, according to estimated data from The Joint United Nations Program on AIDS (UNAIDS) in the world of people with HIV & AIDS (PLWHA) totaling 38.8 million people, deaths caused by this disease from 2010 to 2015 have reached 35.1 million people, and in 2015 the number of deaths reached 1.1 million (UNAIDS, 2016). Among those PLWHA only 17,025,900 people (44.8%) taking ARVs. In Indonesia with the number of HIV & AIDS cases 295,689 people, with details of HIV cases totaling 208,909 and AIDS totaling 86. 780 people. sufferers who drank ARV amounted to 127,128 people (42.99%), while Nusa Tengggara Timur was ranked 19th most people with HIV with 4,206 cases (487 new cases in 2016). The number of people receiving ARV therapy is 1.851 people (Directorate General of P2P Ministry of Health RI, 2017). Sumba Barat Daya (SBD) number of people with HIV & AIDS since 2009 until December 2017 the number of cases is 277 people (Sahabat VCT Clinic SBD, 2017). PLWHA who had undergone treatment since January 2016 until December 2017 were 68 people (24, 5%) and those who were active numbered 43 - 48 people / year (63.2 - 70, 6%) and who often negligent or discontinued medication amounting to 20-25 people / year with an absent or discontinued frequency of drugs up to 40 times / year (29.4 - 36.8%). The data shows that there are still very high rates of non-compliance with taking ARV drugs for people with HIV & AIDS. (Data from January 2016 to December 2017). From the results of interviews with health workers at Health Officer of Sumba Barat Daya Regency on September 29, 2017 by telephone, said that of the 68 sufferers who were undergoing treatment, people who had missed or dropped out had taken approaches and visits as well as interviews about what were the obstacles (January to December 2017).

Djauzi (2002) found that compliance with taking medication for HIV & AIDS patients includes accuracy in time, number, dosage, as well as the individual's way of taking personal medicine. Non-adherence to therapy will reduce the effectiveness of antiretroviral drugs and even increase viral resistance in the body (Dessy in 2016). According to the Ministry of Health (2011), states that there are 5 factors that can affect adherence to ART / ARV, namely the first characteristics of patients; includes socio-demographic factors (age, gender, race / ethnicity, income, education, blind / literacy, health insurance, and the origin of groups in the community, eg transvestites or commercial sex workers) and psychosocial factors (mental health, drug use, environment and social support, knowledge and behaviour towards HIV) and its treatment. The second factor is the characteristic of comorbidities; includes the clinical stage and length of time since being diagnosed with HIV, the types of accompanying opportunistic infections and symptoms associated with HIV. The presence of opportunistic infections or other diseases causes an increase in the number of drugs that must be taken. The third factor is health care facilities; convoluted service systems, expensive, unclear and bureaucratic health financing systems are obstacles that play a very significant role in compliance, because this causes patients to be unable to access health services easily. These include comfortable rooms, guaranteed confidentiality and good scheduling, friendly and helpful officers. However, the factors that influence adherence ARVs among PLWHA di Sumba barat isn’t investigation yet (HIV/ AIDS)

2. Methods

The design used in this study is a cross sectional analytic survey. The population of all PLHIV who received ARV treatment was 68 people. The sample of some people living with HIV with ARV treatment was 45 people. The sampling is convenience sampling. Data was obtained using questionnaires and medical records in the VCT clinic of in the Sumba Barat Daya. The questionnaires used consisted of 52 statements and 6 topics, namely the database consisting of 6 items. Special data consists of 5 items, namely 1.) patient characteristics, which include knowledge consisting of 10 statements with scoring for true statements of value 2 and incorrect values of 1; attitude consists of 6 statements with scoring system positive statement strongly agree (SS) value 4, agree (S) value 3,

disagree (TS) with value 2, and strongly disagree (STS) with a value of 1; motivation consists of 10 statements with scoring strongly agree (SS) given a value of 4, Setuju (S) given a value of 3, strongly disagree (STS) given value 1 (one) 2.) Characteristics of comorbidities, with 22 types of comorbidities, with choice exists and does not exist. 3.) Combination of ARV drug therapy, consisting of 5 true and false statements. 4.) Officers who serve PLWHA, consist of 4 statements yes and no. 5.) Health services, consisting of 4 questions with choices a, b, c, or d. 6.) Compliance, consisting of 6 statements yes and no. The questionnaire model for points 1 to 5 was adopted from the research questionnaire Dessy (2016) and Sindi (2017), while compliance was adopted from the Version questionnaire model of the 8-item Morisky Medication Adherence Scale (MMAS) developed by Sakthong, et al (2014) ".

3. Results

Based on table 1.1 the results of the majority of respondents with early adulthood (26-35 years) as many as 33 respondents (73.3%), a small percentage of late teen respondents (36-45 years) as many as 3 respondents (6.7%). the results of the majority of respondents with male sex as many as 27 respondents (60.0%), and some respondents with female gender as many as 18 respondents (40.0%). it is found that almost half of the respondents with education in almost half the respondents with high school education were 17 respondents (37.8%), a small proportion of respondents with PT education were 3 respondents (6.7%). the results of the majority of respondents with the work of farmers (respondents had worked outside the area> 1 year) as many as 32 respondents (71.1%), a small proportion of respondents did not work as much as 1 respondent (2.2%). Based on table 2.1 the results of a small percentage of respondents with less knowledge as much as 11 respondents (24.4%), some respondents with enough knowledge as much as 12 respondents (26.7%), and almost half of respondents with good knowledge as many as 22 respondents (48.9 %). Based on 8 table, the results of almost half the respondents with a pretty good attitude as many as 19 respondents (42.2%), most of the respondents with a good attitude as many as 26 respondents (57.8%), and no respondent has a good attitude (0%). Based on table 9 the results of almost the majority of respondents with strong motivation were 32 respondents (71.1%), a small proportion of respondents with moderate motivation as much as 4 respondents (8.9%), and some respondents who had weak motivation as many as 9 respondents (20 , 0%).

Table 1 *regresi ordinal* Menggunakan

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[kepatuhan_minum_obat = 1,00]	-36.631	2.605	197.808	1	.000	-41.736	-31.526
	[kepatuhan_minum_obat = 2,00]	-34.796	2.857	148.321	1	.000	-40.396	-29.196
Location	pengetahuan	1.449	.769	3.549	1	.010	-.059	2.957
	sikap	1.183	1.161	1.038	1	.018	-1.092	3.458
	motivasi	1.581	.782	4.091	1	.023	.049	3.113
	penyakit_penyerta	-1.720	1.570	1.200	1	.043	-4.797	1.357
	paduan_terapi	-14.055	.000	2.348	1	.102	-14.055	-14.055
	petugas_kesehatan	2.162	.641	1.926	1	.297	.859	4.368
	layanan_kesehatan	1.931	.735	1.881	1	.286	.821	3.982

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Table 2 Characteristic of respondents

Characteristic of respondents	f	%
Ages		
Late Youth (17-25 Years Old)	3	6.7
Early Adult (26-35 Years Old)	33	73.3
Late Adults (36-45 Years Old)	9	20.0
Gender		
Man	27	60.0
Women	18	40.0
Marital Status		
Married	24	53.3
Single	21	46.7
Education Background		
Elementary	14	31.1
Junior High School	11	24.4
Senior High School	17	37.8
Bachelorette	3	6.7
Occupation		
Farming	32	71.1
Public Servant	3	6.7
entrepreneur	9	20.0
Does not work	1	2.2
Knowledge about adherence to taking antiretroviral drugs (ARVs)		
Poor	11	24.4
Moderate	12	26.7
Good	22	48.9
Attitudes with adherence to taking antiretroviral drugs (ARVs)		
Moderate	19	42.2
Good	26	57.8
Motivation with adherence to taking antiretroviral drugs (ARVs)		
Weak	9	20.0
Mild	4	8.9
Strong	32	71.1
Comorbidities with adherence to antiretroviral (ARV)		
Absent	7	15.6
Present	38	84.4

4. Discussion

Based on the results of the ordinal regression statistical test the results of the significance value of p-value 0.010 are smaller than the alpha value (0.05) so that H0 is rejected and H1 is accepted which means there is a respondent's cognitive influence on knowledge in adhering to antiretroviral drugs for people with HIV & AIDS (PLWHA) (Table 1). Good knowledge will also produce good compliance. The better knowledge of respondents, the better adherence to ARV treatment. According to researchers' observations before the commencement of ARV therapy, PLWHA were given counselling before being tested for HIV and after HIV testing. Counselling is also given to couples and families if ODHA are willing to notify their status. Counselling includes information about HIV, nutrition for PLWHA and information about ARV therapy. The purpose of these activities is to increase knowledge about ARV therapy. According to Notoatmodjo (2010) knowledge is needed by someone, so that it will facilitate the occurrence of healthy behaviour in the person. Knowledge is also intended to provide an understanding of wrong understanding and is not conducive to healthy behaviour that can make a bad effect on one's health. This study is in accordance with the research conducted by Martoni, et al. (2013) which examined the most powerful factors affecting patients with HIV & AIDS on ARV therapy. The results obtained indicate that knowledge is the most powerful factor in influencing adherence to ARV therapy

Based on the results of the ordinal regression statistical test, the significance value of p-value 0.018 is smaller than the alpha value (0.05) so that H0 is rejected and H1 is accepted, which means there is a positive influence on the attitude of adherents to taking antiretroviral drugs for people with HIV & AIDS (PLWHA) (Table 1). This study was also conducted by Rudi (2013) conducted at Padang Panjang Hospital, stating that there was a significant or significant relationship between the compliance of PLWHA and the success of taking ARV drugs with p-value (0.001). Attitude is an evaluative statement both pleasant and unpleasant towards objects, individuals, or events. This reflects how someone feels about something to do an action (Robbins, 2008). Mubarak & Chayatin (2009), attitudes are predisposing to actions or behaviours and have not been an action or activity. The results of this study are also in line with the research conducted by Surya (2014) which showed that there was a significant relationship between the attitudes of PLHIV patients and their adherence to taking antiretroviral drugs at the Serunai Polyclinic in the Regional General Hospital Dr. Achmad Mochtar Bukit tinggi in 2014 was p value 0.013 ($p < 0.05$).

Based on the results of the ordinal regression statistical test, the results of the significance value of p-value 0.023 are smaller than the alpha value (0.05) so that H0 rejected and H1 accepted, which means that there is a characteristic influence of motivational respondents by adhering to taking antiretroviral drugs (ARVs) of people with HIV & AIDS (PLWHA) (Table 1). This research was also conducted by Anggipita (2010) conducted at the NGO Graha Mitra Semarang, stating that there was a significant or significant relationship between the motivation of PLWHA and adherence to taking ARV drugs with p-value (0.007). Motivation is a human psychological characteristic that contributes to the level of one's commitment. This research is in accordance with the theory discussed by Nursalam & Ninuk (2007) in the journal Public Health, motivation is the drive to do positive things for himself and others. Motivation is the driver of behaviour toward a goal based on the existence of a need that can arise from within the individual, or can be obtained from outside and other people / families.

Based on the results of the ordinal regression statistical test the results of the significance value p-value 0.043 are smaller than the alpha value (0.05) so that H0 is rejected and H1 is accepted which means there is an influence of comorbidities with adherence to taking antiretroviral drugs (PLWHA) (Table 1). Some researchers have looked at the effect of the disease itself on adherence to treatment regimens. However, there is enough evidence to show that the condition and duration of the disease, and the severity of the symptoms, can have an influence. For example, in a study of accessibility to

treatment, it was found that low CD4 lymphocyte counts and proliferation of clinical symptoms were strongly associated with treatment utilization. They reported that CD 4 cell levels were negatively correlated with attendance when meeting health workers. Seropositive people who have no symptoms are more likely to lose appointments than people who feel sick.

Based on the theory and results of the study, the researchers argued that the characteristic factors of comorbidities with adherence to antiretroviral (ARV) medication that occurred in the Southwest Sumba VCT clinic were caused by knowledge factors indicated by the frequency of 25 elementary and junior high school respondents (55.55%) so that the introduction of PLWHA to the characteristics of the comorbidities itself is lacking, which results in the onset of symptoms of PLWHA not yet coming to the clinic, after the symptoms become more severe they make treatment to the clinic which results in more additional treatment, which can lead to burnout ODHA in undergoing ARV treatment can lead to disobedience of PLWHA in undergoing ARV therapy itself.

Based on the results of the ordinal regression statistical test the results of the p-value of 0.286 are greater than the alpha value (0.05) so that H0 is accepted and H1 is rejected, which means there is no influence of health service factors by adhering to antiretroviral drugs AIDS (PLWHA) in Southwest Sumba (Table 1).

Someone who is infected with HIV, will experience an infection for life and is at risk of transmitting the virus to other people. Therefore, a strategy is needed to prevent transmission. Since the discovery of antiretroviral drugs and combination ART, there has been a change in the reduction of HIV & AIDS morbidity and mortality from 60% to 90% and improvement in quality of life and life expectancy for PLWHA (WHO, 2003, MOH, 2006). Although ARV therapy is not able to cure disease, ARV therapy has been able to reduce new HIV infection cases, such as experience in developing countries in South Africa, Nepal, Cambodia and others (UNAIDS, 2012). Therefore, the government has sought to improve the care, support and treatment of PLWHA, through the implementation of comprehensive and sustainable HIV & AIDS services (LKB). With LKB, it is expected that ODHA services in treatment will be more optimal, along with improving quality of life and decreasing transmission to the wider community.

HIV & AIDS services in LKB are services that involve health workers and across sectors, as well as stakeholders widely, which are based on basic principles including: human rights, equality of access to services, implementation of quality HIV & AIDS services, prioritizing the needs of PLWHA and his family, paying attention to the needs of key population groups and other vulnerable populations, involvement of families and PLWHA, application of chronic care, ARV therapy services with a public health approach, reducing barriers to accessing services, creating a supportive environment to reduce stigma and discrimination, and prioritizing gender (Indonesia Ministry of Health, 2012).

Based on the results of the ordinal regression statistical test, the significance value of p-value 0.102 is greater than the alpha value (0.05) so that H0 is accepted and H1 is rejected which means there is no effect of alloying therapy with adherence to taking antiretroviral drugs (ARVs) (PLWHA) in Sumba Barat Daya (Table 1). The combination of therapies included types of drugs used in alloys, alloy forms (FDC or not FDC), number of pills to drink, complex of alloys (frequency of drinking and influence with food), drug characteristics and side effects, and easy access to ARVs (Ministry of Health, 2014).

Based on the results of interviews of researchers with officers who deal with PLWHA, it was known that before the treatment was carried out the officers had counselled the PLWHA also explained about the treatment process to be carried out and about the type and method of taking the drug. And based on the results of the study, it is known that the combination of treatment for all people living with HIV / AIDS is good and right, but there are still people who are not adherent to undergoing ARV therapy, so the researchers concluded that the combination therapy had no effect on the compliance of PLWHA in all treatment procedures by officers properly and correctly. But

returning to ODHA itself is whether they want to undergo treatment properly or not in order to get maximum results from treatment.

Based on the results of the ordinal regression statistical test, the significance value of p-value 0.297 is greater than the alpha value (0.05) so that H0 is accepted and H1 is rejected, which means there is no influence of health care workers by adhering to antiretroviral drugs for people with HIV & AIDS (PLWHA) (Table 1).

Garcia P. Ramirez (2003) one of the factors that influence adherence to taking ARV drugs for HIV & AIDS (PLWHA) is the relationship between health workers and patients. Several studies have examined the effect of relationships between health workers and seropositive individuals. In those who have, both the quality of this interaction and the client's attitude towards health workers have been cited as factors that can affect the level of compliance. This factor includes, the first is the relationship of patients and health workers. In qualitative studies, patients have recognized the influence of professional relationships on their level of acceptance and compliance. This influence was also shown in one of the early studies regarding factors that determined higher compliance with the protocol for experimental treatment. The authors note that individuals with high levels of adherence had fewer difficulties in relationships with their health care workers and that the level of positive support they considered was higher than among patients who were less diligent in their care.

The second factor is communication. Similar results were reported in a study of adherence to secondary prevention recommendations among homosexual and bisexual men. They concluded that efforts to promote this awareness should not only concentrate on the problem of risk but also on the way the message is delivered professionally and assimilated by the patient. The factors of expertise of health workers with character and individual characteristics, such as the level of experience with antiretroviral treatment or their attitude towards clients, are also influenced. This incidence is higher among doctors who are less experienced than doctors who are experienced with this situation. This is an example of the overall strength of doctors, not only in encouraging adherence to regimens but also limiting information about care and access to these drugs. The final factor in the relationship between health workers and patients is program monitoring, although no study has shown a relationship between monitoring treatment regimens and adherence to them, some authors have suggested that flexible schedules and comfortable environments will contribute to higher adherence to treatment regimens.

The results of the study show that there is no significant effect between the relationship between health workers and patients, where in West Sumba Regency health workers have made various efforts so that PLWHA can undergo ARV treatment properly such as conducting counselling, often making contact and visiting ODHA to see and monitor the development and treatment of PLWHA. But back again to the intention of people with HIV & AIDS (PLWHA) in undergoing treatment, if the sufferer has less intention because he feels that the treatment is just in vain, because ODHA feel that the disease will not be able to cease again, ODHA will not undergo treatment with good and right.

5. Conclusion

The AIDS prevention commission in the health department of Southwest Sumba province is expected to be able to prepare a strategy to increase the knowledge, attitudes, and motivation of PLWHA so that they can improve the adherence to taking ART. In addition, strategies for taking ART is needed to be created for PLWHA who have co-morbidities.

6. Reference

Attonito, Jennifer. Jessy G. Devieux. Brenda D. G. Lerner. Michelle M. Hospital. Rhonda Rosenberg. (2014). *Antiretroviral TreatmentAdherence as a Mediting Factor Between Psychosocial*

Variables and HIV Viral Load. Journal of the Association of Nurses in AIDS Care, Vol. 25, No.6, November/December 2014, 626-637. http://dx.doi.org/10.1016/j.jana.2014.08.001. Diakses Tanggal 144 Nopember 2017, Jam 18.08

Arikunto, Suharismi. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik.* Jakarta: Rineka Cipta

Arikunto, Suharismi. (2013). *Prosedur Penelitian Suatu Pendekatan Praktik Edisi Revisi VI.* Jakarta : Rineka Cipta

[1] Budiarto, Eko. (2001). *Biostatika untuk Kedokteran dan Kesehatan Masyarakat.* Jakarta: EGC

[2] Betancur, Monica Narvaez. Liliane Lins. Irismar Reis de Oliveira. Carlos Brites. (2017). *Quality of Life, Anxiety and Depression in Patients With HIV/AIDS Who Present Poor Adherence to Antiretroviral Therapy: a Cross- Sectional Study in Salvador, Brasil*. The Brazilian Journal of Infectious Diseases. www. Elsevier.com/locate/bjid. http://dx.doi.org/10.1016/j.bjid.2017.04.004. Diakses tanggal 09 Juli 2017, Jam 13.24 WIB.

[3] Budi, Anggipita. (2010). *Hubungan antara pengetahuan, motivasi, dan dukungan keluarga dengan kepatuhan terapi ARV ODHA.* https://media.neliti.com/media/publications/25351-ID. hhtp://journal.unnes.ac.id/index.php/kemas.KEMAS 5 (2) (2010) 131-137. Diakses tanggal 05 Maret 2018.

[4] Chenneville, Tiffany. M. Machacek. Audra St. John Walsh. Patricia E. Carina Rourigues. (2016). Medication Adherence in 13 - to 24 - year -old Youth Living WIth HIV. Journal of the Association of Nurses in AIDS Care. DOI: 10.1016/j.jana.2016.11.002. Diakses tanggal 14 Nopember 2017, Jam 14.14 WIB

[5] Indonesia Ministry of Health (2009). *Profil Kesehatan Indonesia.* Jakarta: Departemen Kesehatan RI.

[6] Djauzi, S. & Z. Djoerban. (2002). *Penatalaksanaan HIV/AIDS di Pelayanan Kesehatan Dasar*. Jakarta: FKUI

[7] Daili, Saiful F. et al (2014). *Infeksi Menular Seksual, Edisi 4, Cetakan ke 3*. Jakarta: Badan Penerbit FKUI.

[8] De Lima, Ivana Cristina Vieira. Marli Teresinha Gimenis Galvao. Herta de Oliveira Alexandre. Fransisca E. T. Lima. Thelma L. de Araujo. (2016) *Information and Communication Tecnologies for Adherence to Antiretroviral Treatment in Adults With HIV/AIDS*. International Journal of Medical Informaties 92 (2016) 54 - 61. Journal home page: www.ijmijournal.com. Diakses tanggal 29 Nopember 2017. Jam 13.24 WIB

[9] Dessy, E. (2017). *Skripsi analisis faktor yang mempengaruhi kepatuhan minum obat antiretroviral (ARV) pada ibu HIV berbasis information motivation bahaviioral skills (IMB) model of antiretroviral therapy (ART) adherence di poli UPIPI RSUD Dr. Soetomo Surabaya*. Universitas Airlangga. Skripsi.

[10] Garcia, P. Ramirez. (2003). *Factors Affecting Adherence to Antiretroviral Theraphy in People Living With HIV/AIDS*. Jounal of the Association of Nurses in AIDS Care, Vol. 14, No. 4, July/August 2003. 37 - 45. DOI: 10.1177/1055329003252424. Diakses tanggal 14 Nopember 2017, Jam 12.05 WIB

[11] Olowookere. S.A., A.A. Fatiregun., M,M,A. Ladipo., Abioye-Kuteyi.,I.F. Adewole. (2016). *Effects of Adherence to Antiretroviral Therapy on Body Mass Index, Immunological and Virological Status of Nigerius Living With HIV/AIDS*. Peer review under responbility of Alexanderia University Faculty of Medicine. http://dx.doi.org.1016/j.ajme.2015.03.00. Alexandria Journal of Medicine (2016) 52. 51 - 54. Diakses tanggal 29 Nopember 2017, Jam 10.51 WIB

[12] Hidayat, A. Aziz Alimul. (2017). *Metodologi Penelitian Keperawatan dan Kesehatan* . Jakarta : Salemba Medika

[13] IDI. (2011). *Panduan Layanan Terapi Antiretroviral*. Jakarta: PB IDI: 11

[14] Katiandagho, Desmon. (2015). *Epidemiologi HIV - AIDS*. Bogor: In Media

[15] Indonesia Ministry of Health. (2011). Pedoman Nasional Tata Laksana Klinis Infeksi HIV dan

Terapi Antiretroviral Pada Orang Dewasa. Jakarta: Ditjen PP dan PL: 1-4

[16] _____ (2014). *Peraturan Menteri Kesehatan Republik Indonesia n0. 87 Tahun 2014 Tentang Pengobatan Antiretroviral*. Diakses tanggal 11 Oktober 2017, jam 06.51 WIB

[17] _____ (2017). *Data dan Informasi Profil Kesehatan Indonesia 2016*. Diakses tanggal 15 September 2017, Jam 23.19 WIB

[18] Muartiastutik, Dwi. (2008). *Buku Ajar Infeksi Menular Seksual.* Surabaya: Airlanggga University Press.

[19] Menaldi, Sri Linuwih SW, dkk. (2015). *Ilmu Penyakit Kulit dan Kelamin. Edisi 7, Cetakan I. Jakarta: Badan Penerbit FKUI.*

[20] Nasronudin & Maramis, Maergarita M. (2007). *Konseling, Dukungan, Perawatan dan Pengobatan ODHA.* Surabaya: Airlanggga University Press.

[21] Nasronudin. (2007). *HIV & AIDS Pendekatan Biologi Molekuler, Klinis, dan Sosial.* Surabaya: Airlanggga University Press.

[22] Notoatmodjo, Soekidjo. (2010). *Ilmu Perilaku Kesehatan*. Jakarta: Rineka Cipta

[23] Nivel, Nein. (2000). *Psikologi Kesehatan, Pengantar Unttuk Perawat & Profesional Kesehatan Lain, Edisi 2.* Jakarta: EGC

[24] Nursalam. (2016). *Metodologi Penelitian Ilmu Keperawatan Pendekatan Praktis, Edisi 4*. Jakarta : Salemba Medika.

[25] Sakthong, Phantipa. Rossamalin Chabunthom. Rungpeteh Choroenvisuthiwongs. (2009). *Psychometric Properties of the Thai Version pf the 8 - item Morisky Medication Adherence Scale in Patientswith Tipe 2 Diabetes.* Article in Annals of Pharmacotherapt, April 2009. DOI: 10.1345/aph.1L453. Source:PubMed. https://www.researchgate.net/publication/24278017. Diakses tanggal 20 Desember 2017, Jam 22.58 WIB

[26] Sindi,p.(2016). *Skripsi Analisis pengambilan keputusan pengobatan pada pasien HIV positif di Puskesmas Dupak Surabaya*. Universitas Airlangga Surabaya.Skripsi.

[27] Sugiharti, dkk. (2014). Gambaran kepatuhan orang dengan HIV-AIDS (ODHA) dalam minum obat ARV di kota Bandung, Provinsi Jawa Barat, Tahun 2011-2012. http://ejournal.litbang.depkes.go.id/index.php/kespro/article/viewFile/3888/3733. Diakses tanggal 05 Maret 2018.

[28] Surya, Handi. (2014). Skripsi Hubungan motivasi dan sikap pasien HIV/AIDS dengan kepatuhan dalam minum obat antiretroviral (ARV) di poliklinik Serunai RSUD Dr. Acmad Mochtar Bukuit Tinggi. STIKES Prima Nusantara Bukit Tinggi. Skripsi.

[29] UNAIDS. (2016). *Global AIDS UP Date 2016*. Diakses tanggal 26 Oktober 2017, Jam 11. 14 WIB

[30] WHO. (2016). *Progres Report 2016, Prevent HIV,Test and Treat All*. Diakses tanggal 11 Oktober 2017, Jam 06. 50 WIB

[31] Widoyono. (2011). *Penyakit Tropis (Epidemiologi, Penularan, Pencegahan, dan Pemberantasannya), Edisi2.* Jakarta: Erlangga.

[] Yuniar, Yuyun, dkk. (2013). *Faktor - faktor pendukung kepatuhan orang dengan HIV/AIDS (ODHA) dalam minum obat antiretroviral di kota Bandung dan Cimahi*. *http://ejournal.litbang.kemkes.go.id/index.php/BPK/article/view/3154/3125.*Bul.Penelit.Kesehat, Vol. 41, No. 2, 2013: 72 - 83. Diakses tanggal 05 Maret 2018.

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THE EFFECT OF PROGRESSIVE MUSCLE RELAXATION INTERVENTIONS ON DEPRESSION, STRESS, ANXIETY, AND QUALITY OF LIFE: A SYSTEMATIC REVIEW

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ABSTRACT

Progressive muscle relaxation intervention is the technique including continuous and systematic stretching and relaxing of the muscles until the whole body becomes relaxed. It has effects in improving depression, stress, anxiety and quality of life via mental and physical relaxation. Literature search focused on thirty four published studies, undertaken in the past six years until now. Searches were made on seven databases, to identify relevant publications on progressive muscle relaxation. The impact of progressive muscle relaxation interventions remained in effect for between seven days and six month after the interventions. This systematic review identified progressive muscle relaxation interventions program had different called, Applied Progressive Muscle Relaxation Training (APMRT) Program, Progressive Muscle Relaxation Therapy (PMRT), Progressive Muscle Relaxation Training (PMRT), Progressive Muscle Relaxation Technique (PMRT), Progressive Muscle Relaxation (PMR), and there are studies compare Guided Imagery (GI), music therapy, and deep diaphragmatic breathing. Anxiety, depression, stress are some factors that affect patients' quality of life which can be improved by Progressive Muscle Relaxation Therapy (PMR)

Keywords: depression, stress, anxiety, quality of life, progressive muscle relaxation

1. Introduction

Cancer is one of the health problems which is growing rapidly in the world [1]. And it is the number two cause of death in the world. Cancer and its treatment are the main factors that cause anxiety and depression [2–4]. Patients with cancer experience emotional distress which are characterized by psychological symptoms such as anxiety or depression, psychological symptoms that arise and complex cancer processes have a negative impact on their quality of life [5]. A negative impact on the function and patient quality are not only caused by the cancer process but also the complications, side effects of treatment, and the duration of cancer that is suffered [6]. Some studies showed that cancer and its treatment can cause physical, emotional and social problems that lead to decreased function, impaired sexual function, and body image changes, followed by structural changes and reduced self-confidence. Family problems, emotional, economic problems, the anxiety are the impact of psychological problems due to the decrease of psychological and physical functions which can affect individuals' quality of life and their families [7]. Anxiety affects all biological, psychological, and social aspects and how human needs are met [8–11]. Depression and anxiety can cause behavioral changes and affect treatment by attacking awareness, weakness, motivation, and reducing coping abilities and quality of life [12]

Depression and anxiety are cancer symptoms that can last for several years [13], which can cause negative effects on patients' quality of life, appropriate medical care, recurrence, survival and recovery from surgery during hospital care [14–16]. The negative impact of cancer diagnosis and the sequelae of cancer treatment, 20% -30% of breast cancer patients suffered depression and anxiety,

which is significantly higher than the prevalence of appropriate depression and anxiety (6% -8%) in healthy women (Bj orneklett , HG, Lindemalm, C., Rosenblad, A., Ojutkangas, ML, Letocha & Strang, P., 2012). In China, the prevalence of anxiety, depression, or anxiety and depression in breast cancer patients were 21.1%, 34.4% and 15.6% [14]. Based on WHO predictions, the incidence of cancer in Iran will reach 85,000 cases from all populations with a mortality rate of 62,000 in 2020 [17]. Based on an increase of the elderly population in the world (with an increase from 605 million in 2000 to 2 billion in 2050), the number of cancer patients is estimated to increase [18]. In the US, there were almost 60% elderly of 11 million cancer patients. In Iran, cancer is the third cause of death, and WHO reports 12% of deaths annually [19].

Hormones such as adrenaline, glucagon, epinephrine, norepinephrine, and cortisol are correlated with stress. Particularly, cortisol is an important indicator of changing physiological conditions in stress response. Sensitivity to cortisol is greater than other hormones and seen in physical, mental and cognitive stress. There are several objective indicators of physiological responses, including blood pressure, heart rate, body temperature, and breathing [20]. According to P. J. Oh and Choi (2012), many cancer patients met stress, anxiety, depression, insomnia, and post-traumatic stress disorder. This stress can affect the nervous systems, endocrine, immune and interfere with recovery through delayed wound healing, metabolic reactions, and changes in body composition after surgery or treatment [21,22].

Several studies have confirmed that proper care and intervention in cancer patients, such as complementary therapy that can help relieve physical and psychological discomfort [23]. Relaxation has a significant psychological impact, by relaxation we can improve specific aspects of our personality, strengthen positive quality of life and change unwanted habits and attitudes [24]. Relaxation techniques have been used as effective supplementary therapies for anxiety and depression, adding the patient's ability in coping and self-care skills to reduce anxiety symptoms [25,26]. Edmund Jacobson has found Progressive Muscle Relaxation Techniques (PMRT) in the 1920s as an intervention to help patients deal with anxiety and ensure that muscle relaxation can calm the mind [27]. Progressive Muscle Relaxation (PMR) is a systematic technique used to achieve full relaxation and has been shown to improve quality of life related to health in medical and psychiatric diseases [28]. Progressive Muscle Relaxation Therapy (PMRT) is easy to learn, has no side effects, and can be done in all locations. The purpose of our systematic review was to review the evidence regarding the use of PMR intervention for cancer patients to improve depression, stress, anxiety, and quality of life via physical relaxation.

Research Methods

2.1 Research Literature

There were four researchers who participated in searching the research literature. The English literature and publications over the past six years (2013 to 2019) with data bases in Scopus, Proquest, Google Scholar, Oxford, and Science direct journals were used. Keywords used in searching the literature were "Progressive Muscle Relaxation", AND "Cancer" AND "Anxiety", AND "Depression", AND "Stress", AND "Quality of Life". The literatures found with these keywords were thirty-four literatures.

2.2 Article Selection

The selected articles criteria in this systematic review were first, they might be original articles and they were not in the form of systematic reviews. Second, the articles discussed about Progressive Muscle Relaxation interventions and their combinations. Third, participants were people who were suffering from cancer which were not specific to certain cancers or treatments. The Fourth was

interventions about progressive muscle relaxation in cancer patients. All authors on systematic review selected the appropriate article.

2.3 Data Extracted

Data taken in the found literature were themes, authors, population, intervention, combination, time needed to give intervention, results, follow-up, and the methods used (PICOT).

3. Result

There were thirty-four literatures obtained, four were systematic reviews, three had the same titles, eighteen gave Progressive Muscle Relaxation (PMR) interventions not in cancer patients. One article discussed the effect of PMR on nurse students, one article discussed the effect of PMR on retirees, and one more article discussed the effect of PMR on patient's parents, and another article discussed about instruments to evaluate the effect of PMR.

There were ten articles selected for systematic review [29–39]. Seven literatures used Randomize Control Trial (RCT) method [29,32,33,36–38,40], One literatures used quasi-experimental method[35], two literatures used pre-post design[31,39]

The total research population in all literatures was 60-222 people, after randomly selected; the final number of research respondents who were willing and qualified in all the literature was from 46 to 170 people. The intervention given in the literature is Progressive Muscle Relaxation (PMR) and several interventions combined with other interventions which are also complementary or non-medical alternative therapies. Three literatures provided PMR interventions without combination of other interventions [31,35,39], Three literatures combined PMR and Guide Image (GI) [32,36,38], two literatures combined PMR and music [29,33], one literature combined PMR and one literature used three combinations of PMR, GI, and deep breath [40]

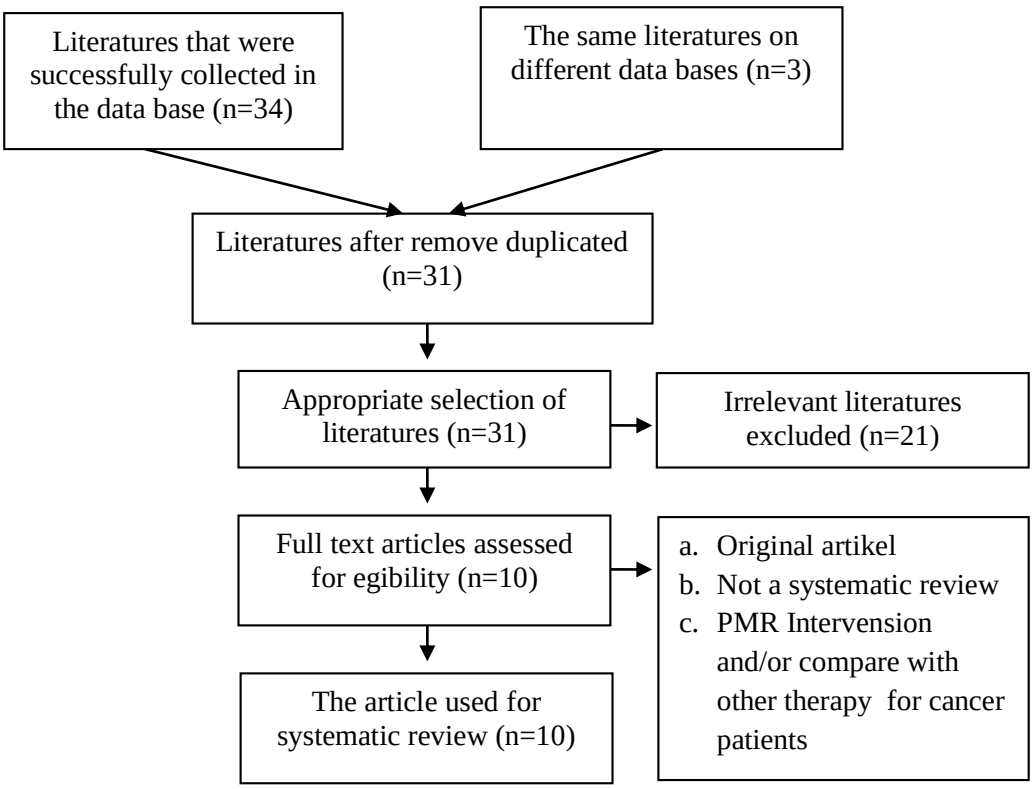

Figure. 1.Information flow chart

3.1 Summaries of Included Studies

The first study [36] combination of PMR and GI sessions for cancer patients. The intervention session was carried out in the respondent's house to minimize stress which is related to factors from the hospital medical environment. After being randomly selected, the control group received standard care (meeting weekly with a central psychologist) and the intervention group received 4 PMR and GI sessions which were monitored every day and unattended sessions for three weeks. Daily reminders (text messages) were given to the intervention group to remind them to practice PMR and GI every day at the same time.

The second study [39]PMRT program was conducted by the experimental group before and after surgery for 5 days. The researcher instructed participants to take a twice a day program (7: 00-8: 00am and 7: 00-8: 00pm) for 5 days. The experimental group practiced PMRT with the researchers, who provided MP3 players and earphones, the PMRT Program was only done by listening to MP3s. All participants were trained individually. Participants dressed loosely and were in a comfortable position and did PMRT according to MP3 recordings. The researchers instructed to lower the curtains and keep the surrounding environment calm before listening. Each participant could adjust the MP3 volume, there was also a replay button. MP3 officers remained with each participant until they were finished and MP3 was returned. Participants in the control group received standard post-operative intervention and education. In addition to care and education, the experimental group received the PMRT program.

The third study [33] patients were randomly divided into two intervention groups with 20 minutes PMRT and 20 minutes CM five elements of music and 20 minutes of peaceful rest for each treatment and control group. The intervention was given at 10 am or 3pm for 8 weeks.

The fourth study [32] initial research protocol required that patients only experienced 3 sessions of GI and PMR and be monitored. Interventions included: 2 minute breathing exercises, followed by 10 minutes progressive muscle relaxation exercises and 15 minute picture sessions with a pleasant guide. The control group only received regular care (standard) It was explained in international guidelines.

The fifth study [29] intervention group was given progressive muscle training and music therapy second day (48 hours) after mastectomy, while the control group was given standard treatment. Interventions were carried out in the morning (06.00-08.00) and evening (21.00-23.00), the exercise was carried out for 30 minutes for each session until the patient was planned to go home.

The sixth study [40] respondents were asked to come to the right place in the hospital with a nurse. The presence of nurses was required due to the old age and the fact that they needed a lot of training. Respondents were divided into 2 groups, a group consisted of 8 people, and the second group consisted of 7 people. Education and practice sessions were different in each group, groups of 8 people got 45 minutes for 4 consecutive times after a month of education and practice. This technique was carried out for 6 months under the direct supervision of the researcher. The researcher followed up on the truth of the administration and technical over the telephone and obtained information from the patient's nurses. The control group was given three usual sessions on lifestyle and life experience

The seventh study [31] all participants received guidance sessions to learn progressive muscle relaxation exercises following Bernstein and Borkovec. This technique consisted of subsequent contractions and relaxation in all groups, interventions were sequential. The initial position with eyes closed, the participants were instructed to contract and relax the muscles of the hands, arms, face, neck, shoulders, abdomen, and lower limbs. During the implementation of the technique, patients were suggested to do normal breathing.

The eighth study [34] intervention is Applied Progressive Muscle Relaxation Training Program (APMRT), two hours therapy consisting of six modules. The total of three therapies was carried out by the principal researcher for six weeks. The APMRT program involved quality of life discussion

in prostate cancer, rational, description and therapy demonstration. In addition, abdominal breathing techniques were taught to improve relaxation through demonstrations by the principal researcher. Patients were encouraged to practice their own therapy every day for a period of six months.

The ninth study [38] involved 4 phases: T0, T1, T2, and T3. T0 (patient registration): all patients admitted to the hospital at least 48 hours before screening by the research nurse for inclusion / exclusion criteria. Group A patients were scheduled for individual PMR sessions - IGI. Group B received regular care. Furthermore, to avoid losing patient control (group B) from potentially favorable interventions, they were also offered PMR individual session, an IGI Session at the end of the study. T1 (24 hours from T0): GI practitioners interviewed patients who met the requirements, told them about the purpose of the study, and explained the method. T2 (in 1 hour from T1): every PMR session - IGI had duration of 20 minutes due to the patient's weak condition and difficulty concentrating for a longer period of time. T3 (within 2 hours of intervention).

The tenth study [37], all interventions were performed in a private room with sufficient light and warmth to make the patients feel relaxed during the study. No other individuals were allowed to enter the room during the sessions. While performing exercises, the patients were asked to wear casual and comfortable clothes. Exercises, as with reflexology, were individually performed as 16 home visits for each patient twice a week as two sessions, each for 20 minutes, for 8 weeks under the supervision of the researcher. The study design and intervention techniques were explained to each patient, who then signed an informed consent. If the patients took analgesics either orally 60 minutes or intravenously 30 minutes earlier than the intervention, the intervention was delayed to distinguish between the effects of intervention and those of the analgesic. Therefore, for the home visits, the patients were called by the researcher to evaluate the condition, and the visits were then performed according to the following arrangements. A reflexology session usually lasts for 30 minutes; therefore, two sessions were performed for a total of 60 minutes at each of the 16 home visits within an 8-week period.

4. Discussion

The main purpose of this systematic review is to strengthen the evidence that Progressive Muscle Relaxation interventions (PMR) can improve cancer patients 'psychology, namely anxiety, stress, and depression to improve patients' quality of life. Two items of the literature found that there was an improvement in the patient's level of anxiety and depression as indicated by the decrease in cortisol [36,39]. Cortisol is an important indicator of changing physiological conditions in stress response [20]. Other literature result showed improvements in anxiety, stress and depression, and quality of life. Another literature showed the result of improvements in physical conditions such as decreased pain, nausea, headache and prosperity level. Five studies showed improvements in psychological and physical conditions[31,36,38,40]. Three studies showed psychological improvement and quality of life without any information related to the patient's physical improvement [29,33,41]. Progressive muscle relaxation is one of the complementary and alternative therapies (CAM) applied in quality of life (QOL) management [42]. PMR was not the only therapy that can reduce depression, stress, anxiety and increase quality of life, but also the combination of PMR with other complementary therapies can also improve depression, stress, anxiety and quality of life for patients with cancer. Intervention group receiving music therapy and progressive muscle relaxation training plus routine nursing care had significant improvement in depression and anxiety [29]. Progressive muscle relaxation, guided imagery, and deep diaphragmatic breathing significant improvement in QoL and physical functioning [40]

The weaknesses of this systematic review were the intervention of Progressive Muscle Relaxation (PMR) was done by the combination of other complementary therapies such as music, Guide Image (GI), and deep breathing. Seven literatures provided PMR therapy with combination of complementary therapies[29,33,36,38], even one of the six therapies used three therapies, ten

literatures did not show disease, and the same treatment, even though the case is cancer but different treatment can cause different physical and psychological effects. Four cancer literatures in general [31,33,36,38], a literature on colorectal cancer [39], five studies of breast cancer [29], prostate cancer [41], and combination of both [36,40]. One literatures obtained chemotherapy treatments [36], one literature obtained an operating plan [29]. This systematic review were less homogeneous literatures between treatments and interventions, so the results cannot be ensured whether PMR plays full role in reducing anxiety, depression, stress and improving patients' quality of life or it was not yet clear which therapy was more effective.

5. Conclusion

The systematic review provide empirical evidence to support the proportion that Progressive Muscle in combination or without combination other complementary therapies can reduce depression, anxiety, stress and also increase quality of life in cancer patients.

References

[1] Newoton S, Hicky M M J Oncology Nursing Advisor Comperhensive Guide to Clinical Practice *St. Louis Mosby Elsevier*

[2] A. J. Mitchell, M. Chan H B et al. 2011 "Prevalence of depression, anxiety, and adjustment disorder in oncological, haematological, and palliative-care settings: a meta-analysis of 94 interview-based studies," *Lancet Oncol.* **12** 160–174

[3] Bigliardi P L, Alsagoff S A L, El-Kafrawi H Y, Pyon J K, Wa C T C and Villa M A 2017 Povidone iodine in wound healing: A review of current concepts and practices *Int. J. Surg.* **44** 260–8

[4] C.-H. Chien, K.-L. Liu, H.-T. Chien and H-E L 2014 "The effects of psychosocial strategies on anxiety and depression of patients diagnosed with prostate cancer: a systematic review," *Int. J. Nurs. Stud.* **28**–**38** 51

[5] ParaÂs-BravoP S-F and Alonso-BlancoC, Paz-Zulueta M, SantibañezMarguÈelloM, Palacios-CeñaD E 2017 The impactofmusclerelaxationtechniquesonthe qualityoflife ofcancerpatients,asmeasuredby theFACT-Gquestionnaire *PLoSONE12*

[6] Lazovich D, Robien K, Cutler G, Virnig B S C 2009 Quality of life in a prospective cohort of elderly women with and without cance *Cancer* **18** 115

[7] Donavan KA, Thompson LM J P 2013 Pain, depression, and anxiety in cancer. In: Handbook of Pain and Palliative Care *Springer Publ.*

[8] Kashdan TB R J 2010 Psychological flexibility as a fundamental aspect of health *Clin Psychol Rev* **30(7)** 865–878

[9] Shahbazi K, Solati K H-D A 2016 Comparison of hypnotherapy and standard medical treatment alone on quality of life in patients with irritable bowel syndrome: a randomized control trial *J Clin Diagn Res.* **10(5)** OC01–OC04

[10] Gethin G, Grocott P, Probst S and Clarke E 2014 Current practice in the management of wound odour: An international survey *Int. J. Nurs. Stud.* **51** 865–74

[11] de Souza JM, Ferrari GSL F C 2017 Correlates of geriatric depression scale with perceived quality of life in an elderly population *Geriatr. Persia* **12**

[12] Medicine I of 2008 Cancer Care for the Whole Patient, Institute of Medicine *Inst. Med. Washington, DC, USA*

[13] den Oudsten, B.L., Van Heck, G.L., Van der Steeg, A.F., Roukema, J.A., De Vries J 2009 Predictors of depressive symptoms 12 months after surgical treatment of early-stage breast cancer *Psychooncology.* **18** 1230–7

[14] So, W.K., Marsh, G., Ling, W.M., Leung, F.Y., Lo, J.C., Yeung, M., et al. 2010 2010 Anxiety, depression and quality of life among Chinese breast cancer patients during adjuvant therapy *Eur. J. Oncol. Nurs.* **14** 17–22

[15] Ho, S.S., So, W.K., Leung, D.Y., Lai, E.T., Chan C W 2013 Anxiety, depression and quality of life in Chinese women with breast cancer during and after treatment: a comparative evaluation *Eur. J. Oncol. Nurs.* **17** 877–82

[16] Wang, X.L., Jia, C.X., Liu, L.Y., Zhang, Q., Li, Y.Y., Li L 2013 Obesity, diabetes mellitus, and the risk of female breast cancer in Eastern China *World J. Surg. Oncol.* **11** 71

[17] Anon 2007 Noncommunicable Disease Profile *Available from http// www.behdasht.gov.ir.pdf [Last accessed 2014 Jul]*.

[18] Larrañaga N, Galceran J, Ardanaz E, Franch P N C and Sánchez MJ et al 2010 Prostate cancer incidence trends in Spain before and during the prostate-specific antigen era: Impact on mortality *Ann. Oncol.* **21** 83

[19] Anon 2011 World Health organization. Noncommunicable Disease, Countries Profile *WHO Press. Geneva*

[20] Han, H. J., Park, A., Kim, H. S., Moon, H. K., & Park Y H 2011 The effects of laughter therapy on stress response in patients with preoperative breast cancer *J. Korean Oncol. Nurs.* **11** 93–100

[21] Broadbent, E., Kahokehr, A., Booth, R. J., Thomas, J., Windsor, J. A. . . . Buchanan and M. C 2012 A brief relaxation intervention reduces stress and improves surgical wound healing response: A randomized trial. *Brain. Behav. Immun.* **26** 212–7

[22] Choi, J. H., & Kim Y M (2013) 2013 Effects of aromatherapy on stress, sleep, nausea and vomiting during patient controlled analgesia treatment of patients with hysterectomy *Korean J. Women Heal. Nursing*, **19** 211–8

[23] Gaston-Johansson F, Fall-Dickson JM, Nanda JP S E and Browall M G N 2013 Long-term effect of the self-management comprehensive coping strategy program on quality of life in patients with breast cancer treated with high-dose chemotherapy *Psychooncology* **22(3)** 530–9

[24] Kumar S, Nayak RR D S 2015 Effectiveness Jacobson's progressive muscle relaxation technique (PMRT) to relieve anxiety among alcoholic patients MHI, SCB, Cuttack, Odisha *J Nurs Heal. Sci* **4** 1–6

[25] A.F.Jorm, H.Christensen, K.M.Griffiths, R.A.Parslow B and Rodgers and K A B 2004 Effectiveness of complementary and self-help treatments for anxiety disorders *Med. J. Aust.* **181** S29–S46

[26] S. Elsenbruch, J. Langhorst K P et al. 2005 Effects of mind-body therapy on quality of life and neuroendocrine and cellular immune functions in patients with ulcerative colitis *Psychother. Psychosom.* **74** 277–287

[27] Kisner C C L 2007 Therapeutic exercise: foundations and techniques 5th ed. *Philadelphia F.A. Davis Co.*

[28] T. Dehdari, A. Heidarnia, A. Ramezankhani, S. Sadeghian A and F. Ghofranipour 2009 Effects of progressive muscular relaxation training on quality of life in anxious patients after coronary artery bypass graft surgery," *Indian J. Med. Res.* **129** 603–608

[29] Zhou K, Li X, Li J, Liu M, Dang S, Wang D and Xin X 2015 A clinical randomized controlled trial of music therapy and progressive muscle relaxation training in female breast cancer patients after radical mastectomy: Results on depression, anxiety and length of hospital stay *Eur. J. Oncol. Nurs.* **19** 54–9

[30] Janakiraman B, Ravichandran H, Demeke S and Fasika S 2017 on postural deviation among school children : A systematic review 1–11

[31] Fernández-de-las-Peñas C, Parás-Bravo P, Salvadores-Fuentes P, Paz-Zulueta M, Boixadera-Planas E, Alonso-Blanco C, Palacios-Ceña D and Santibañez-Margüello M 2017 The impact of muscle relaxation techniques on the quality of life of cancer patients, as measured by the FACT-G questionnaire *PLoS One* **12** e0184147

[32] Paikousis L, Charalambous A, Marcou Y, Giannakopoulou M, Bozas E and Kitsios P 2016

Guided Imagery And Progressive Muscle Relaxation as a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy: A Randomized Control Trial *PLoS One* **11** e0156911

[33] J. L, Y. W, Y. Z, Y.-C. Z, X. Z, N. Z, C.-G. L and Y.-F. Y 2018 Progressive Muscle Relaxation Combined with Chinese Medicine Five-Element Music on Depression for Cancer Patients: A Randomized Controlled Trial *Chin. J. Integr. Med.* **24** 343–7

[34] Moy F M, Razack A-H A, Isa M-R, Zainal N-Z and Zainuddin Z M 2013 Impact of applied progressive deep muscle relaxation training on the health related quality of life among prostate cancer patients — A quasi experimental trial *Prev. Med. (Baltim).* **57** S37–40

[35] Razack A H A, Moy F M, Isa M R, Zainuddin Z M and Zainal N Z 2013 Impact of Applied Progressive Deep Muscle Relaxation Training on the Level of Depression, Anxiety and Stress among Prostate Cancer Patients: A Quasi-Experimental Study *Asian Pacific J. Cancer Prev.* **14** 2237–42

[36] Charalambous A, Giannakopoulou M, Bozas E and Paikousis L 2015 A Randomized Controlled Trial for the Effectiveness of Progressive Muscle Relaxation and Guided Imagery as Anxiety Reducing Interventions in Breast and Prostate Cancer Patients Undergoing Chemotherapy *Evidence-Based Complement. Altern. Med.* **2015** 1–10

[37] Dikmen H A and Terzioglu F 2018 Effects of Reflexology and Progressive Muscle Relaxation on Pain, Fatigue, and Quality of Life during Chemotherapy in Gynecologic Cancer Patients *Pain Manag. Nurs.* 1–7

[38] D'Alete A, De Paolis G, Mastroianni C, Cibelli F, Magnani C, Surdo L, Naccarato A and Casale G 2018 The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients: A multicentre randomised controlled non-pharmacological trial *Complement. Ther. Clin. Pract.* **34** 280–7

[39] Kim K J, Na Y K and Hong H S 2016 Effects of Progressive Muscle Relaxation Therapy in Colorectal Cancer Patients *West. J. Nurs. Res.* **38** 959–73

[40] Mohsen Shahriari M D, Pahlavanzadeh S and Hazini A 2017 Effects of progressive muscle relaxation, guided imagery and deep diaphragmatic breathing on quality of life in elderly with breast or prostate cancerNo Title *J Edu Heal. Promot* **6** 1

[41] Mohamad, R. I., Foong, M. M., Azad, H. A. R., Zulkifli, M. Z., & Nor Z Z 2013 Impact of applied progressive deep muscle relaxation training on the level of depression, anxiety and stress among prostate cancer patients: A quasi-experimental study *Asian Pacific J. Cancer Prev.* **14** 2237–42

[42] Bishop, F.L., Rea, A., Lewith, H. et al. 2011 Complementary medicine use by men with prostate cancer: a systematic review of prevalence studies *Prostate Cancer Prostatic Dis* **14** 1–3

Appendix

Table 1. Extracted Data PICOT

Author	Population	Intervention	Compare	Outcome	Time
[36]	N=256 n=236 104 control group and 104 intervention group	Progressive Muscle Relaxation (PMR)	Guide Imagery (GI)	Intervention group's cortisol levels before the intervention gradually decreased up to week 3 Control group's cortisol levels before the intervention gradually increased up to week 3	3 week
[39]	N=60 n=46 23 experimental and 23 control group	Progressive muscle relaxation therapy (PMRT)	No compare	Colorectal cancer patients achieve a lower stress response and provides an important basis for stress control.	before and for 5 days after the surgery
[33]	N=60 n=29 treatment group and 27 control group	Progressive muscle relaxation training (PMRT)	Five elements music therapy of Chinese medicine (CM)	The scores for the anxiety, depression, FACIT-Sp and BFS in the treatment group showed greater decrease than in the control group after 8 weeks.	8 weeks
[32]	208 patients equally assigned either in the intervention or the control group	Progressive Muscle Relaxation (PMR)	Guided Imagery (GI)	More patients in the control group were found to be moderately depressed compared to those in the intervention group Patients in the intervention group experienced lower levels of Fatigue and Pain compared to those in the control group and experienced better HRQoL	4 weeks
[29]	N=170 the intervention group (n=85) and the control group (n=85)	Intervention group receiving music therapy and progressive muscle relaxation training plus routine nursing care	Music therapy	The intervention group patients had significant improvement in depression and anxiety in the effects of group. The intervention group patients had shorter length of hospital stay than that of the control group.	48 h after radical mastectomy
[40]	50 elderly patients with breast or prostate cancer were randomized	Progressive muscle relaxation,	Guided imagery, and Deep diaphragmatic breathing	There was statistically significant improvement in QoL and physical functioning after progressive muscle	6 week

	into study and control Groups			relaxation, guided imagery and deep diaphragmatic breathing intervention	
[31]	N= 272 patients from	Progressive muscle relaxation training, following Bernstein and Borkovec	No compare	Patients in cluster 3 who practiced the technique more times a week on average, exhibited Lower level soft pre-session anxiety in all sessions	Each session Lasted approximatel y 60 minutes
[34]	A total of 77 patients from the UMMC and 78 patients from the UKMMC participated	Each patient was provided a written training manual of Applied Progressive Muscle Relaxation Training (APMRT)	No compare	There were significant improvements in anxiety partial and stress.	6 moth
[38]	the 104 patients intervention group (A; 46 patients) or the control group (B; 45 patients)	Progressive muscle relaxation (PMR)	Interactive guided imagery (IGI)	Total Symptom Distress Score declined in group A and in group B. The average difference in the emotional symptom	24 jam
[37]	N=80 patients. Each patient to one of four groups, each of which contained 20 individuals.	Progressive muscle relaxation (PMR)	Reflexology	In reflexology and reflexology PMR groups, a significant decrease in pain severity and fatigue and an increase in QoL were found In the PMR alone group, pain severity and fatigue decreased significantly, but there was no significant change identified in QOL. Reflexology and PMR exercises given to gynecologic cancer patients during chemotherapy were found to decrease pain and fatigue and Increase QoL.	8 week

PHP-934

EVALUATION OF FALL RISK ASSESSMENT INSTRUMENTS FOR ELDERLY PATIENTS IN LONG-TERM CARE SETTINGS: A SYSTEMATIC REVIEW

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ABSTRACT

The implementation of health services that prioritize the quality and sustaining patient safety by giving high caution to the risk of fall patients. To support the implementation is the fall risk assessment format or instrument that complies with the standard. This systematic review aimed to evaluate the implementation of the fall risk assessment for predicting the incidence of patients falls in the hospital. Systematic review used the main database and related websites to complete the literature. Thirteen papers were included in the criteria. The results of the review showed that fall risk assessment on elderly patients including Hendrich II Fall Risk Model Scale (HIIFRMS), Stratify, the Morse Fall Scale (MFS) and FRATs (Fall Risk Assessment Tools) had high effectiveness in preventing the occurrence patient falls. Hendrich II Fall Risk Model Scale (HIIFRMS) has the highest predictive value than other instruments. Based on the results and literature, the Hendrich II Fall Risk Model Scale (HIIFRMS) was found to be a good predictor to assess the elderly patients in the hospital. Hendrich II Fall Risk Model Scale (HIIFRMS) has high accessibility and clearly evaluation in predicting the risk of fall for the elderly.

Keyword: fall risk assessment, elderly, fall

1. Introduction

Sustaining patient safety in the hospital has become an obligation for all health workers who serve patients, from when the patient comes to the hospital to when they are discharged. The implementation of health services that prioritizes the quality and patient safety by giving high caution to the risk of fall patients. Support for this implementation is the fall risk assessment format or instrument that complies with the standard.

Falls are a serious problem for hospitalized patients. The major cause of hospital injuries are accidental falls [1]. Falls often result in psychological trauma and physical injury. Grenier-Sennelier et al. found that physical injury occur in 70% of falls and 10% of injuries cause of fractures. 4 of 5 fall patients will taking longer of stay in hospital and experience psychological effects. Some of more serious injuries were caused by fractures and head injury [2].

The effect from falls can be complications of fracture, such as restricted movement and long term of care and even death. Complications of fracture becomes the major cause of deaths from falls as these elderly are more likely to become bedfast and complication to be pneumonia. Statistics showed that more than 75% of deaths from falls occurred in elderly patients [2].

Cause of increasing aging population, the elderly has high risk in fall and almost half of the elder people have falling experience. About 5% of them after fall have fracture, about 11% of cases cause severe injury, and fall is a main cause of death in the elderly [3]. The increase in falls in this population is loss of coordination and strength, primarily due to paralysis caused by the stroke. Falls

are not attributed to age but more likely attributed to illness or other issues however age often considered in the incidence of falls.

There are several scales that used to assess the fall risk, so this review focusing on scale which are commonly used in hospital. To evaluate the implementation of the tools, in this study we use Stratify, Hendrich II Fall Risk Model, FRATs (Fall Risk Assessment Tools) and Morse Fall Scale. Support for this implementation is the fall risk assessment format or instrument that complies with the standard. The purpose of this review was to evaluate the instruments for assessing the risk of falls by hospitalized patients, and their effectiveness on preventing falls when implemented in the clinical setting.

2. Method

A literature search was conducted in some major databases such as ProQuest, Medline, Google Scholar, Science Direct, and Elsevier. Keywords used were fall risk assessment, elderly, and fall. The search languages were English and Indonesian. Year limitation used was from 2013 to 2018. From 957 articles obtained, the article's inclusion criteria were: 1) fall risk assessment tools using stratify, Henrich II fall risk, MFS and FRATs; 2) in hospital setting. Papers were critically reviewed and relevant data were extracted and synthesized using an approach based on Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

The parameters used to determine the fall risk assessment tools were Stratify, MFS, FRATs, and Hendrich II fall risk model. Stratify scale has five items. The five items including anxiety, instability, history of falls, bad vision affects life, frequent urination and defection. The patient belongs to the high risk groups of falling who minimum have two falling risk factors mentioned above.

Hendrich II fall risk model scale includes three items, such as depression, disorientation, and dizziness. The patients can be identified into the high risk group of falling if the total score of the scale is ≥ 5. MFS has six items which includes ambulatory aid, having history of falling, diseases, mental status, IV or IV heparin, and gait instability [3]. The purpose of fall risk assessment tools (FRATs) is to prevent falls and identify risk factors also the level of fall risk[4].

3. Results

The results from the study by Palumbo et.al suggest that FRAT-up is a suitable screening tool to use in populations of community-dwelling older people and FRAT-up risk score was predictive for future falls [5][6].

The evaluation of Stratify Scale for assessing the risk of falls in acute hospitalized patients was conducted by Aranda et.al. In was found to be the best tool for assessing the risk of falls by being hospitalized adult patients. However, the behavior of these instruments varies greatly depending on the population and environment, so the operation must be tested before implementation [1].

Hendrich II Fall Risk Model has been the most effective and predictive tool for the assessment of elderly falls [7]. Hendrich II Fall Risk Model has a higher sensibility in assessing the risk of falling patients by testing the elderly balance function [8][2]. The results showed that Stratify, Hendrich II Fall Risk Model and Morse Fall Scale had better consistency in the possibility of evaluating falls because the three scales were closely correlated in assessing the risk of falls in elderly patients. In addition, they have a higher sensitivity in evaluating the risk of falling patients, but their emphasis on specialization is different. Nurses in the clinic area must adopt it based on the characteristics of elderly patients [4][9].

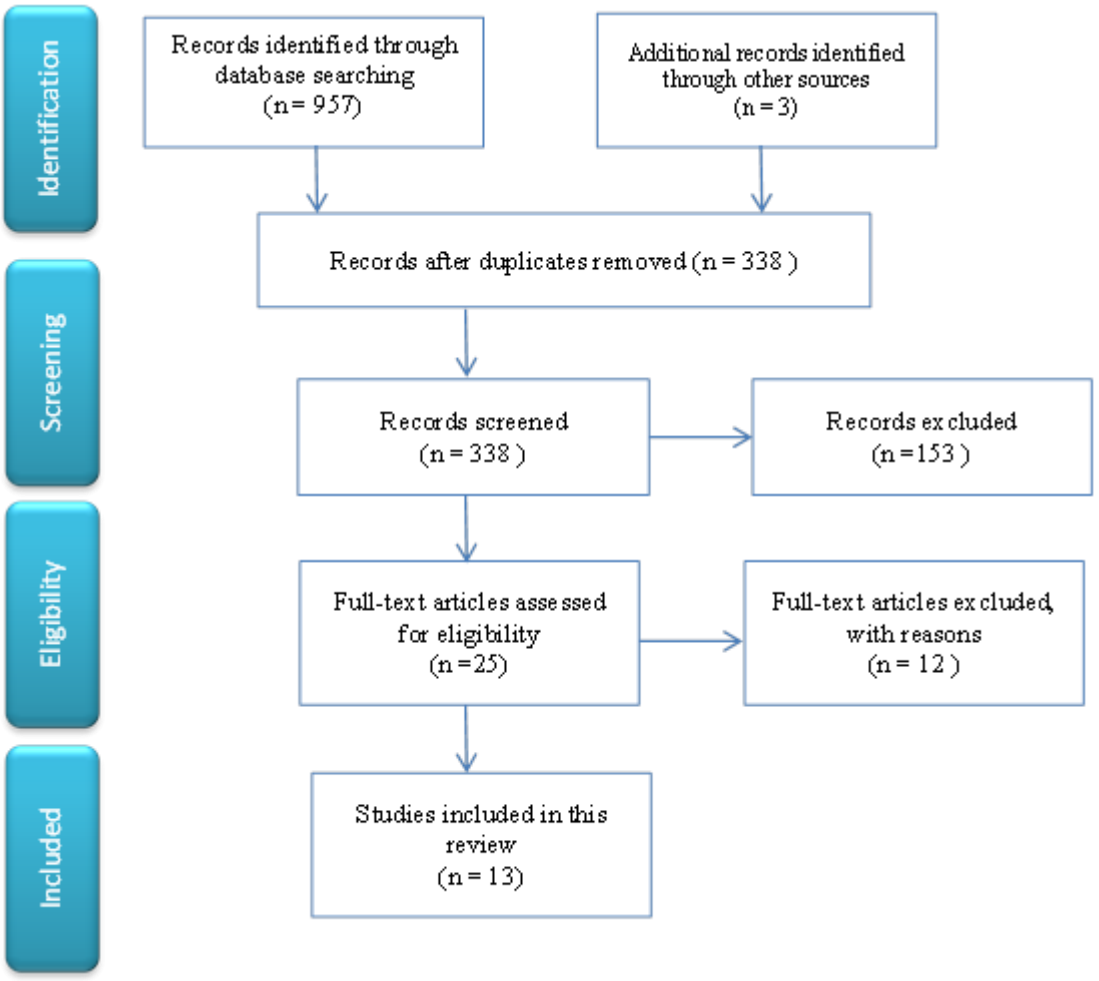

Figure1. PRISMA flow chart

4. Discussion

The evaluation for fall risk factors is important to prevent and predict the risk falls. A few of the studies in the world showed that assessing the risk factors were related and implementing the preventive steps for elderly [4]. This is particularly useful in clinical area for identifying the behavior of the instruments currently used exclusively in the hospital settings, where falls are the most frequent adverse events, and thus are directly relevant to the development and implementation of safety policies in long term care hospitals.

5. Conclusion

The Hendrich II Fall Risk Scale is the most inclusive and reliable tool surveyed from others. This tool is simple, reliable, and easily used in clinical settings to prevent the risk of falls. As long as this tool is used, it still can't control the patients who fall. Skill improvement was conducted to check whether health care givers are using this tool correctly.

Table 1. Selected study

Title /Author / Year	Study Design / Participants	Tool Name	Result
Stratify, Hendrich II fall risk model and Morse fall scale used in predicting the risk of falling for elderly in-patients [4](Han, Jialin *et.al*, 2017)	Nonrandomized studies N = elderly	• Stratify • Hendrich II Fall Risk • Model Morse Fall Scale	There was statistical significance in the score differences of the three rating scales for both groups (P<0.05). And the correlativity among the rating scales was 0.680~0.888.
Fall Risk Assessment Tools for Elderly Living in the Community: Can We Do Better?[10] (Palumbo et.al, 2015)	Nonrandomized studies N = elderly	FRATs	The proposed model and FRAT-up both attained the same discriminative ability.
Fall risk assessment tools for use among older adults in long-term care settings: A systematic review of the literature [6](Nunan, 2017)	Systematic Review N= older adult	FRATs	Several FRATs showed moderate-to-good predictive validity and reliability, with the Modified Fall Assessment Tool and the Peninsula Health Falls Risk Assessment Tool (PHFRAT) also demonstrating good feasibility.
Evaluation of Reliability and Validity of the Hendrich II Fall Risk Model in a Chinese Hospital Population [8](Zhang, 2015)	RCT N= elderly	Hendrich II Fall Risk Model	The Chinese version of the HFRM showed good reliability and validity in assessing the risk of fall in Chinese elderly inpatients.
Fall Risk Assessment for Older Adults: The Hendrich II Fall Risk Model[7] (Hendrich, 2016)	RCT N= adults at risk for falls	Hendrich II Fall Risk Model	Model has been used successfully in multiple international studies.
Falls Risk Assessment	Literature Review N= elderly	Hendrich II Fall Risk Model	The results of this literature found that the Hendrich II Fall Risk Scale is the most inclusive and reliable tool surveyed.
Feasibility and predictive performance of the Hendrich Fall Risk Model II in a rehabilitation department: a prospective study [2](Campanini, 2018)	Prospective study N= elderly	Hendrich Fall Risk Model II	The HIIFRM showed satisfactory feasibility and predictive performances in rehabilitation wards.

Baseline Prevalence Study of Hendrich II Fall-Risk Assessment Tool at a Local Community Hospital[11] (Pontual, 2017)	RCT N = elderly	Hendrich Fall Risk Model II	The HFRM II's effectiveness was in line with that of other fall tools.
Instruments for assessing the risk of falls in acute hospitalized patients: a systematic review and meta-analysis [1](Aranda-Gallardo, 2013)	Meta-analysis N= adult	• Stratify • Hendrich II Fall Risk • Model Morse Fall Scale	The STRATIFY scale was found to be the best tool for assessing the risk of falls by hospitalized acutely-ill adults.
Risk assessment and incidence of falls in adult hospitalized patients[9] (Pasa, 2017)	Cohort Study N = Adult	Morse Fall Scale	The largest group of hospitalized patients was classified as at high risk for falls according to the MFS. The incidence rate of falls corresponded to 1.68% and it was verified at a higher percentage of patients who fell were classified in the category at high risk for falls.
Development of a New Fall Risk Assessment Index for Older Adults [3](Yamada, 2012)	RCT N = Adult	• Stratify • Hendrich II Fall Risk • Model Morse Fall Scale	We have demonstrated that the new index is a reliable indicator for falls in elderly people who have higher levels of functional capacity. Our data suggest that a score of more than 1 indicated by the new index can predict falls in robust elderly people.

References

[1] Aranda-gallardo M, Morales-asencio J M, Canca-sanchez J C, Barrero-sojo S, Perez-jimenez C, Morales-fernandez A, Luna-rodriguez M E De, Moya-suarez A B and Mora-banderas A M 2013 Instruments for assessing the risk of falls in acute hospitalized patients : a systematic review and meta-analysis *BMC Health Serv. Res.* **13** 1

[2] Campanini I, Mastrangelo S, Bargellini A, Bassoli A, Bosi G, Lombardi F, Tolomelli S, Lusuardi M and Merlo A 2018 Feasibility and predictive performance of the Hendrich Fall Risk Model II in a rehabilitation department : a prospective study 4–11

[3] Yamada M, Arai H, Nagai K, Tanaka B, Uehara T and Aoyama T 2012 Development of a New Fall Risk Assessment Index for Older Adults q *Int. J. Gerontol.* **6** 160–2

[4] Han J, Xu L, Zhou C, Wang J, Li J, Hao X and Cui J 2017 Stratify , Hendrich II fall risk model and Morse fall scale used in predicting the risk of falling for elderly in-patients . 439–42

[5] Palumbo P, Klenk J, Cattelani L, Bandinelli S, Ferrucci L, Rapp K, Chiari L and Rothenbacher D 2016 Predictive Performance of a Fall Risk Assessment Tool for Community-Dwelling Older People (FRAT-up) in 4 European Cohorts *J. Am. Med. Dir. Assoc.* **17** 1106–13

[6] Nunan S and Henwood T 2018 Review Article Fall risk assessment tools for use among older adults in long-term care settings : A systematic review of the literature **37** 23–33

[7] Hendrich B A 2016 Fall Risk Assessment for Older Adults : The Hendrich II Fall Risk Model TM Patient Safety Organization (PSO); Ascension Health **64** 2011–2

[8] Zhang C, Wu X, Lin S, Jia Z and Cao J 2015 Evaluation of Reliability and Validity of the Hendrich II Fall Risk Model in a Chinese Hospital Population 1–7

[9] Pasa T S, Angela M, Baratto M, Morais B X and Carollo J B 2017 Risk assessment and incidence of falls in adult hospitalized patients 1

[10] Palumbo P, Palmerini L, Bandinelli S and Chiari L 2015 Fall Risk Assessment Tools for Elderly Living in the Community : Can We Do Better ? 1–13

[11] Falls H, Dan S, Falls M, Fall E, Assessment R, Scale E, Hendrich U, Fall F and Scale M Penilaian risiko jatuh lanjut usia (lansia) menggunakan pendekatan

THE EFFECT OF SOAKING FEET WITH WARM WATER TO INSOMNIA FOR OLDER ADULT AT NURSING HOME

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ABSTRACT

The older adult have more health problem than adult such as sleep disorders especially insomnia. One intervention to solve the problem is soaking feet with warm water. The purpose of study is to know the effect of soaking feet with warm water to insomnia for older adults at Nursing Home in Jombang, Indonesia. The design of srtudy used pre experiment with one group pre test and post test design. The independent variables of this study was a soaking feet with warm water and the dependent variable was insomnia. The population of this study were all older adult who experienced insomnia at Nursing Home at Jombang as many as 38 people. The samples were 16 people that were taken by using quota sampling. Instruments used insomnia rating scale. The analysis data used Wilcoxon statistical test. From the result of study was showed that from 10 respondents (62,5%) experienced moderate insomnia before intervention and 8 respondent (50%) experienced mild insomnia after intervention. The intervention of soaking feet with warm water was done for 7 days with 15 minutes each day. The data analyzed using Wilcoxon sign rank test with p value 0,001. It is expected that nursing service doesn't focus on pharmacological therapy, but also non pharmacological therapy such as relaxation therapy, soaking feet with warm water to overcome insomnia to older Adult.

Keywords: soaking feet with warm water, insomnia, older Adult

2. Introduction

Age is an important factor for sleep quality. It is a physiological process that occurs in every human being, in the aging process it increases.. Sleep disorders or insomnia are disorders that occur in older adults. This condition is the most common sleep problem, and can be persistent. The short period of insomnia is most often associated with challenges [1].

In Indonesia, the number of older adults reached 20.89 million at 2015, an equivalent to 8.04% of the total population in Indonesia [2]. In Indonesia, in the 40-years age group, 7% of cases were related to sleep problems. The same thing was found in 22% of cases in group 60 years and over who experienced sleep disorders at night [3].

Based on a preliminary study conducted by researchers on March 2, 2017 at the Tresna Nursing Home in Jombang used interviews of insomnia sufferers and a questionnaire rating scale of 10 respondents obtained 2 older adults without insomnia, 2 older adults with mild insomnia, 4 older adult with moderate insomnia and 2 older adults had severe insomnia.

Sleep disorders that often occur in the older adult consist of difficulty sleeping, frequent awakeness at night and difficulty starting to sleep again, reducing night time sleep, etc. The total amount of normal time for sleep requirements was 6 hours/ day. Insomnia in the older adult had a significant impact during the day, impaired attention and memory, mood, depression, high risk of falls and decreased sleep quality [4].

The right cure for insomnia was to find out the cause of insomnia first. Healing could be done by changing habits and environment or by pharmacological and non-pharmacological therapy. Often actions were generally carried out with pharmacological therapy. Pharmacological therapy was used by providing hypnotic sedatives such as Golan nan benzodiazepine. However, in the event of changes in pharmacodynamics, pharmacokinetics and also the effects of drugs in the body of older adults which caused pharmacological management which was very risky for the elderly. Thus, non-pharmacology was a safer alternative choice, namely stimulus control, doing moderate exercise, walking in the morning, gymnastics or muscle relaxation and relaxation therapy [4].

Water with a temperature of 39 °C was given for 15 minutes. Soaking feet with warm water was a cheap and easy way to relieve stress, insomnia, difficulty, overcome and muscle strain by lifting acupuncture points located at the bottom of each leg. The nerve from flexus venosus from this nervous system stimulation was passed to the posterior corn and then proceeded to the spinal cord, to the dorsal root, then to the basal ventral thalamus and into the functioning brain in the rave area [5].

From previous studies that had been conducted on disorders of insomnia namely the Effectiveness of Foot Bath with Hot Water on Fatigue Levels among Elderly Patients. in India, where could be found about feet with warm water that effective for relieving stress, insomnia, coping, and coping with older adult [6]. The study was carried out, among others, regarding feet soaked in water toward the quality of sleep in the Mangiran Trimurti village of Yogyakarta, published by, the results of sleep quality findings, significantly in both studies, was related to the older adult who did not need to consider warm water foot soak [3].

Based on these problems, researchers want to discuss about soaking the feet with warm water against insomnia in the older adult, according to the explanation above was to understand the level of insomnia before the soaking warm water process was given to older adults, knowing the level of insomnia after the process of soaking warm water, and analysis of the effect of soaking warm water in older adults.

3. Research Methods

The design of study was a Pre-experimental Design with a One Group Pre-Post Test Design approach, which was a pre-experimental design by involving one group of subjects. The subject group was observed before intervention, then observed again after intervention [7]. The independent variable of this study was warm water foot soak and the dependent variable of this study was insomnia. The population in this study were all older adult who experienced insomnia in the Nursing Home of Jombang as many as 38 people. The sample of this study was 16 older adults. This study technique used quota sampling. The inclusion criteria were: all the insomnia elderly and cooperative elderly. On the other hand, exclusion criteria were: elderly with total bed rest, elderly with infectious disease. The intervention of soaking feet warm water was done for 7 days with 15 minutes each day. This study was conducted on 12 to 28 April 2014 in the Social Services Unit of Tresna Werdha Jombang. This study used the *Wilcoxon signed Rank Test statistic*.

4. Results

Table 1. The characteristic of respondent (n=16)

Characteristic	N	%
Gender		
Female	16	100
Male	0	0
Age		
60-74 Years	5	31,3
>75 years	11	68,8
The way to reduce		
Taking sleeping pills	4	25
Not sleeping during the day	2	12,5
Rest	10	62,5
Drug therapy		
Yes	0	0
No	16	100
Total	16	100,0

T**able 2.** The level of insomnia after and before treatment

Insomnia Level	Pre-Test		Post-Test	
	Frequency	Percentage (%)	Frequency	Percentage (%)
No insomnia	0	0	4	25
Mild Insomnia	5	31,3	8	50
Moderate Insomnia	10	62,5	4	25
severe insomnia	1	6,3	0	0
Total	16	100	16	100
Wilcoxon sign test ($\alpha = 0.05$)				,001

From table 2 it is shown that most (62.5%) of the elderly respondents before warm water foot soak therapy were experiencing moderate insomnia and a half (50%) from older adult of respondent had mild insomnia. From the results of data analysis used the Wilcoxon sign test with a significant level of $\alpha = 0.05$, the calculation results obtained $p = 0.001 < \alpha = 0.05$, thus H_0 was rejected and H_1 was accepted. This means that there was the influence of warm water foot soak on insomnia in the older adult at the Nursing home, Jombang.

5. Discussion

From table 2, the results of the study showed that respondents who experienced insomnia in the older adult before warm water foot soaking was found that most (62.5%) of the respondents experienced moderate insomnia, as many as 10 people.

Among the factors that were considered to influence the incidence of insomnia in the older adult were: female sex, age, marital status, income, education level [8]. There were also several factors that can affect sleep disorder both in terms of quantity and quality, namely: health status, environment, diet, medicine and lifestyle. In one study it was shown that most events were stressful and experienced insomnia. However, women were considered more stressful than men. Increasing negative emotional reactivity in women could cause gender differences in insomnia. Feelings of women were very sensitive and sensitive to things that interfere with their thinking caused a woman

to experience more sleep disorders (insomnia) than men. The risk of depression increases in women, especially when there is a history of depression, just losing, living alone, weak social support, staying in the institution, decreasing health, and functional limitations. The high rate of depression in women was more related to the transition of reproductive and hormonal functions or menopause [9]. As humans age, there will be an aging process that was followed by various degenerative health problems, especially those that affect human changes from physical, cognitive, emotional, social and sexual changes. These changes could cause various kinds of disorders, such as disorder of insomnia [9]. By increasing age, the elderly was no longer productive, decline in physical and mental abilities, unable to carry out more strenuous work, enter retirement, left behind by partners, stress to face death, depression, increase various kinds of disease and insomnia. This is the same as when this study of the number of respondents who experienced insomnia was aged > 75 years.

Relaxation therapy with warm foot soak was the right intervention to overcome insomnia in the older adult because it had no side effects, is safe, of low cost and is a simple intervention. Soaking the feet with warm water could also relieve stress, fatigue and tired muscles that often occur in the elderly [6]. Insomnia can be overcome by non-pharmacological methods including by soaking feet in warm water that can help the older adult become relaxed and affect the elderly to want to sleep (sofaritic effects).

Based on the data obtained above, there was compatibility with the theory of relaxation therapy with warm water foot soak that can affect sleep needs because soaking feet with warm water can stimulate nerves/acupuncture points on the soles of the feet [5]. Scientifically, warm water had a physiological impact on the body such as reducing the burden on the supporting joints of the body. These effects had various effects on blood vessels where the warmth of water makes blood circulation smooth so that it can cause a relaxing effect [10]. Based on the physiology that the foot area there are skin nerves namely flexus venosus from this nerve sequence stimulation was passed to the posterior corn and then proceed from spinal cord to the dorsal root, then to the basal ventral thalamus and into the brain stem which was precisely the bottom of the pons and medulla in which the sofarific effected (want to sleep) [5]. Warm water foot soak could reduce insomnia. Soaking the feet with warm water could make blood circulation smooth so that it provided a relaxing effect and can stimulate the acupuncture points on the soles of the feet which can cause sofaritic effects (want to sleep). So this can be used for one way to reduce the level of insomnia in the elderly. The other factors which affect the insomnia could not control (anxiety, depression, the death of life partner, uncomfortable society)

6. Conclusion

Based on the study above there was an influence of warm water foot soak on insomnia in the older adult in the nursing home at Jombang, Indonesia. It is used since it is not expensive and can be implemented into daily activities. It is expected that the older adult can continue the interventions that have been carried out by themselves and cam carry them out routinely.

References

[1] Saryono and Widianti A tri 2010 *Kuliah Kebutuhan Dasar Manusia* (Yogyakarta: Nuha Medika.)
[2] BPS 2014 Statistik Penduduk Lanjut Usia Indonesia *Badan Pus. Stat.*
[3] Ningtiyas A P 2014 Pengaruh Rendam kaki dengan air hangat terhadap kualitas tidur usia lanjut di dusun Mangiran Trimuti Srandakan Bantul 1–16
[4] Permady G G 2015 *Pengaruh merendam kaki dengan air hangat terhadap kualitas tidur lansia di wilayah kerja puskesmas astanalanggar kecamatan losari cirebon jawa barat*
[5] Utami T 2015 Pengaruh Rendam Air Hangat pada Kaki Terhadap Insomnia pada Lansia di Panti Sosial Tresna Werdha Yogyakarta Unit Budi Luhur *Naskah Publ.*
[6] P.Thenmozhi S J A A 2015 Effectiveness of Hot Water Foot Bath on Level of Fatigue among Elderly Patient *Int. J. Sci. Res.* **4** 574–6
[7] Nursalam 2016 *Metodologi Penelitian Ilmu Keperawatan:Edisi 4* (Jakarta: Salemba Medika)

[8] Susanti L 2013 Faktor-faktor yang Mempengaruhi Kejadian Insomnia di Poliklnik Saraf RS. DR. M. Djamil Padang *J. Kesehat. Andalas* **4** 951–6
[9] Lilik Marifatul and Azizah 2011 *Keperawatan Lanjut Usia* (Yogyakarta: Graha Ilmu)
[10] Susana A and Hendarsih 2011 *Terapi Modalitas Keperawatan Jiwa* (Jakarta.: Salemba Medika)

PHP-943

SUPPORTIVE CARE NEEDS OF CANCER PATIENTS UNDERGOING CHEMOTHERAPY IN UMMC

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CHAPTER 1: INTRODUCTION

1.0 Introduction

This chapter will covered on background of this study about the supportive care needs for cancer patients undergoing chemotherapy and problem statement which are issues that need to be addressed in this study. Other than that, this chapter also will explain on the significance of this study to cancer patients and among nurses and healthcare provider. Objectives also will be listed in general and specific. Research questions also had been explained briefly that need to be observed had influenced patients the most. Lastly, some importance operational definition about this study also will be given.

1.1 Background of the study

Cancer is a major cause of morbidity and mortality in this entire the world, with 9 million people newly diagnosed each year and 5 million people dying from the disease. Based on American Cancer Society of Cancer 2017, nearly 13% of all cancers diagnosed in adults ages 20 and older will be cancers in year 2017, in which fewer than 6 cases per 100000 people per year.

In 2017, it is estimated that almost 1.7 million new cases of cancer will be diagnosed, in which prostate cancer will be the leading common cancer among males (19%), followed by lung cancer (14%) and colorectal cancer (9%). On the other side, breast cancer is the most common among female with the percentage of 30, followed by lung cancer (12%) and colorectal cancer (8%) (Cancer Facts & Figures, 2017).

A diagnosis of cancer can affect a person's physical, psychological, spiritual and social well-being. Some of these effect will resolve over time as some of individual had enough personal coping resources, social and professional support and some need to take a longer time in order to cope with the new health status they received. Therefore, early identification and referral of individuals with unmet supportive care needs can improved ones self-management, as this can be associated with morbidity and distress.

Thus, the aimed of this is to determine the supportive care needs of cancer patients undergoing chemotherapy in University Malaya Medical Centre (UMMC).

1.2 Problem statement

According to study done by Carlson et al. (2004) on high level of untreated distress and fatigue in cancer patient, 37.8% of 2776 representative cancer patients met criteria for general distress in the

clinical range in which results show most men has high proportion for somatisation whereas women for depression. However, both gender have no differences in anxiety or severity in distress. In addition, almost half of all patients who met distress criteria had not sought professional psychosocial support. This shows that distress is very common in cancer patients across diagnoses and disease but those who are reported having high level of distress are not taking advantage of available supportive resources. However, further exploration need to be done in order to collect more information on factors predicting distress among cancer patients and use of psychological care in order to meet their needs in surviving with the disease.

Differences in demographic characteristics and psychosocial among each cancer patients may influence supportive care needs. Therefore, the first step that should be taken part in order to provide correct supportive care is by identifying the significant relationship between demographic characteristics and level of supportive care need as this is essential in order to provide high-quality care and patients' satisfaction.

However, previous studies on supportive care needs for cancer patient shows lack of exploration in Malaysia where most studies had done in overseas such as in Australia and United Kingdom. This make the researcher to do this study in Malaysia which will be conducted in University Malaya Medical Centre (UMMC).

Thus, in response to this problem, this study is done to identify the highest needs of patients with cancer across five factors of domains which are psychological, health system and information, physical and daily living, patient care support and sexuality needs. Other than that, this study will also determine the significant relationship between demographic characteristics and level of supportive care need of cancer patient.

1.3 Significance of study

The current study is significant as it offers insight into the unmet supportive care needs of cancer patients at different stages of cancer experienced. This study is important as its findings will benefit patients, nursing practices and organizations.

1.3.1 Patient

Significance of this study to patients are they can provide information on their unmet needs that they require in surviving cancer. The survey done by using the 34- item Supportive Care Needs Survey (SCNS-SF34), patient will indicate their level of need for help that they need the most which include five factors; psychological needs, health system and information needs, physical and daily living needs, patient care and support needs and sexuality needs . This study may improves one's life in surviving cancer and undergoing treatment in supportive care that they need the most once their unmet needs had been addressed.

1.3.2 Nursing

Significance of this study to health care provider especially nurses are they can filled the gap of the treatment given to the cancer patient with the information gathered in this study. As there are different approaches in order to fully understanding survivors' cancer experiences and quantifying their outcomes which including assessment of their quality of life, satisfaction in

health care and needs assessments which is not only identifying their needs and importance, but also the extent to which the needs they are met. They can acknowledge in depth the common supportive care needed by cancer patient. Furthermore, this study also can enable the healthcare provider to be more focused on the issues that their patients expressed to be addressed in order to achieve an optimal wellbeing. With better understanding this group of patients, the health care provider can tailor their care to the specific needs identified by their patient and results in the development of a number of valid and reliable cancer- specific treatment.

1.3.3 Organisation

The findings of this study will bring benefit to organization considering the unmet needs of cancer patients had been addressed through this study as they will be guided on what should be emphasized by their healthcare worker such as doctors and nurses in their area. This can improve patients' perception on treatment provided in the hospital. As this study done, it is also hope that the information gathered may help the organization in future planning to address specific priorities and unmet needs of cancer patients in the management of healthcare.

1.4 Objectives

1.4.1 General objective

- To determine the supportive care needs of patients with cancer undergoing chemotherapy in UMMC.

1.4.2 Specific objectives

- To determine the level of supportive care needs of patients with cancer undergoing chemotherapy.
- To identify the domains of needs among patients with cancer.

- To identify the useful sources of supportive care as perceived by patient during treatment of cancer
- To determine the significant association between demographic characteristics and level of supportive care need.

1.5 Research questions

Based on the problem statement, the following research questions were identified:

- What are the type supportive care needs of patients with cancer undergoing chemotherapy?
- What are the level of supportive care needs of patients with cancer undergoing chemotherapy?
- What are the domains of needs among patients with cancer?

- What are the of usefulness sources of supportive care as perceived by patients?

- What are the significant association between demographic characteristics and level of supportive care needs?

1.6 Operational definition

The following definitions are provided to ensure uniformity and understanding of these terms throughout the study:

1.6.1 Supportive care need

According to NCI Dictionary of Cancer Terms (n.d), supportive care refers to care that are given in order to improve ones' quality of life of patients who have a serious or life-threatening disease. The aim of this care is to prevent or treat as early as possibly the symptoms of the disease, the side effects occurs that caused when undergoing treatment for the disease. Other than that, the psychological, social and spiritual problems that arouse related to a disease or its treatment. In this study, supportive care is care that focuses on relieving symptoms caused by cancer. It can be given at any

time when patients feel ill thus can help them feel more comfortable and can easier to cope with the disease and treatment received.

In this study, supportive care needs refer to the unmet needs from cancer patients that need to be addressed in order to cope with the both the physical and psychological effects of cancer and its treatment. Thus, the assessment will be done by using 34-item Supportive Care Needs Survey (SCNS-SF34) questionnaire which consist of five need domains such as physical and daily living, psychological, health system and information, patient care and support and sexuality.

1.6.2 Patient with cancer

According to Collins English Dictionary (n.d), patient with cancer refers to a person who is receiving medical treatment for a malignant growth or tumour. In this study, cancer patients are patient who had been diagnosed with all type of cancer such as breast, colorectal and prostate cancer who undergoing chemotherapy in UMMC.

1.6.3 Chemotherapy

According to National Cancer Institute (NCI) Dictionary of Cancer Terms (n.d), chemotherapy is a treatment that uses drugs to stop the growth of cancer cells. It was done either by killing the cells or by stopping them from dividing. Chemotherapy treatment may be given through mouth, injection, or infusion or on the skin depending on the type and stage of the cancer that is being treated. The treatment may be given alone or with other treatments such as surgery, radiation therapy or biology therapy.

In this study, patients in UMMC were being recruited as respondents to answer the questionnaire.

1.7 Summary

This chapter had covered background of this study about the supportive care needs for cancer patients undergoing chemotherapy and problem statement which are issues that need to be addressed in this study. Other than that, this chapter also had explain on the significance of this study to cancer patients and among nurses and healthcare provider. Objectives also had been listed in general and specific. Research questions also had been explained briefly which consists of five domain factors that need to be observed influenced patients the most. Lastly, some importance operational definition about this study also had been given.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Literature review is a key step in research process. It is a text from a scholarly paper which include current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. The reviews are secondary sources, in which need not any new report or experimental work and more often associated with academic-oriented literature which are found most in academic journals. Therefore, this should be done by reviewing previous studies and experiences that related to the proposed studies before starting any research. Hence, this literature review of past studies can contribute to new study ideas, insight and knowledge.

In order to search for literature review, a systemic way should be imply to get the most related literature which related to the current studies. Therefore, search engine for the literature review will be done. It is a systemic search of electronic bibliographic databases that was conducted during before conducting a research study. As for my study, a review of literature review in the area of supportive care needs of cancer patients that had been published over the past 10 years was conducted.

2.1 Search strategies

A systemic search of electronic bibliographic databases was conducted during the third week of September 2017. A review of literature in the area of supportive care needs of cancer patients had been published over the past 10 years was conducted.

2.1.1 Criteria

In order to search for the precise literatures, relevant keywords had been keyed to filter out articles that are irrelevant. The inclusion and exclusion criteria were establish to guide the search for related articles to the study. Some inclusion criteria that had been used were:

- Articles published within year 2000-2017
- Full-text only

- English language articles

2.1.2 Sources

The electronic search was performed on the following databases that has been subscribed by University of Malaya digital library: CiNaHL@EBSCO, PubMed, Science Direct and Medline. Other than that, the used of Google Scholar to search articles and journals related to the topic study also had been done.

2.1.3 Keywords

cancer, cancer patients, perceived needs, unmet needs, supportive care, supportive care needs.

The Boolean operators such as AND, OR and Not were also used in order to combine or exclude keywords during the literature search. These help to connect search words together to either narrow or broaden the set of results.

2.2 Results of key studies

The search on electronic databases and reference minimally covered 754530 of all articles applicable to supportive care needs of cancer patients. Of these, duplicated articles were removed, and of 369378 articles screened by title and abstract, only 342 articles had met the inclusion criteria for further critical review. Subsequently, there were a total of 36 original articles relevant to this study and 10 had been used as literature review.

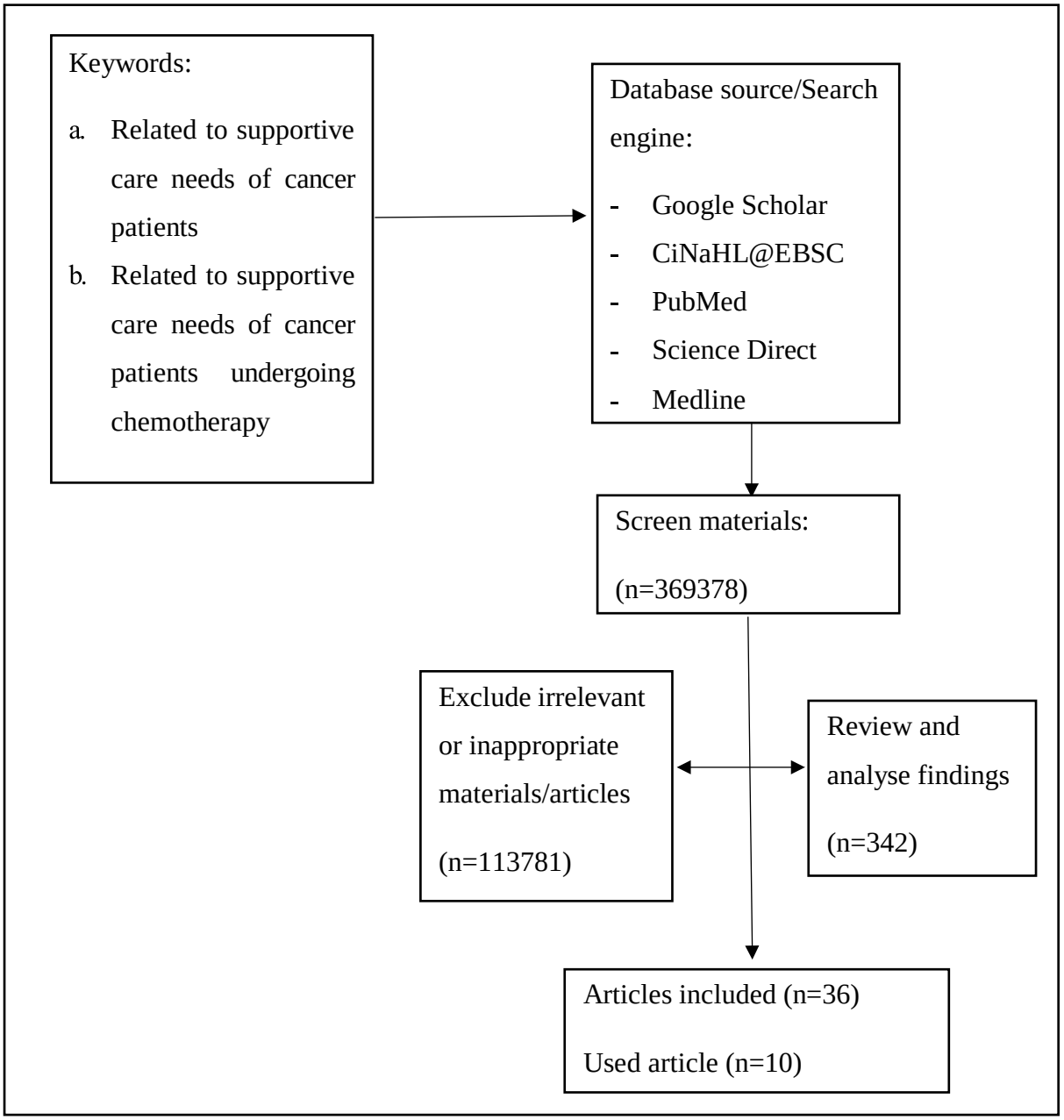

Figure 1 shows search outcomes from databases and keyword used

2.3 The supportive care needs of cancer patients

Numerous studies have been attempted to explain the effect of supportive care needs towards cancer patients.

According to studies done by Boyes et al. (2012), about one-third (37%) of survivors reported one or more items of moderate or high level unmet need, six months after a cancer had been diagnosed. Meanwhile, almost two-thirds (63%) had been reported with either no or low level of unmet needs. The most commonly reported as moderate to high level unmet needs results from the psychological and physical and daily living domains.

The prevalence of unmet need reported by the survivors in this study is clearly lower than previous reported studies that used the same validated instrument and classification of unmet need as the researcher used two largest state –based cancer registries in Australia to assemble a population-based sample of survivors in the early stages of cancer survivorship. The researchers are confident in their findings that most survivors' supportive care needs as measured by the SCNS-SF34 are relatively well met given that the study sample is generally representative of the source population.

As due to the size and composition of the study sample, the researches were also able to directly compare the prevalence of supportive care needs between seven common cancer types in Australia at that time, which consist of colorectal, breast, blood, lung, head neck, prostate and melanoma cancer. A significant variation had revealed across cancer types with 65% of whom reported no items of unmet need reported by survivors of melanoma. On the other side, 60% of survivors of lung cancer were reporting at least one item of moderate or high level need. This might be due to

high level of burden that associated with lung cancer in terms of poor prognosis, side effects of the treatment and declining in physical health.

Other than that, cancer type was found to be significantly associated with moderate to high level unmet physical and daily living and sexuality needs, after adjusting for a comprehensive range of sociodemographic status. Survivors of lung cancer had the highest odds of reporting unmet physical and daily living needs, whereas survivors of prostate cancer had extremely high odds of reporting unmet sexuality needs. Thus, these findings had suggest that type of unmet need experienced by survivors does not routinely differ between cancer types.

A number of associations had been established for the first time on account of the range of study factors that had been examined in this study. Results showed low level of social support and maladaptive coping styles were associated with multiple domains of unmet need.

Therefore, this study had directly inform health care professionals and organisation involves in providing supporting care needs to the patients. They have also suggest that coping support interventions may have the potential to contribute to the prevention or reduction of survivors' unmet needs across all domains.

A literature review on supportive care needs of cancer patients has been done by Smith et al in 2014 which result shows one major that need identified was the requirement of informational support other than emotional, spiritual and financial support. This study review of the literature

results all studies done reveal cancer patients' needs for emotional, spiritual, informational, and financial support during all phases of treatment. There are also needs for support that are not being met through current treatment programs especially in vulnerable populations. Therefore,

recognizing many aspects of patients' lives that may affected by a cancer diagnosis is an important component of adequate care. Identifying the unique stressors experienced by different populations provides insight into the supportive care needs such patients may have throughout treatment and survivorship.

There are various ways to deliver supportive care to those in need such as by religious communities or caregivers as well as providers. However, healthcare providers must first recognize the supportive care needs of their patients and incorporate effective resources and interventions into treatment plans. Therefore, by understand the support care needs and challenges experienced in relation to a cancer diagnosis can help healthcare providers to tailor treatment plans more effectively for different population. However, more research is needed on population-specific interventions and ways of connecting patients with resources.

A studies done in Nagoya City University Hospital and Saitama Medical University International Medical Centre in Japan to assess the accuracy of oncology nurses' recognition of supportive care needs and symptoms of their patients undergoing chemotherapy revealed that the nurses' recognition may not accurately reflect their patients' supportive care needs and symptoms in routine practice. In clinical practice. It may be beneficial to conduct routine screening of patients' perceived needs and symptoms comprehensively using-administered questionnaires.

The most prevalence needs of patients in this study were in the psychological domain which contributed 77.0%, followed by the health system and information domain (64.2%) and the physical domain (59.9%). The prevalence of the health system and information domain perceived by the oncology nurses is 73.8% was the highest, and the sensitivity and the specificity for this domain were the highest which is 79.2%

and the lowest is 35.8%, respectively, in the needs domain. Positive predictive value and negative predictive value for psychological needs were the greatest which 80.4% and lowest is 28.3%, respectively, among the needs of domain.

The accurate assessment of supportive care needs and the physical and psychological symptoms of cancer patients represent the first step toward appropriate intervention in relation to these problem. However, this study has reveal that nurses may not reliably recognize such needs or symptoms of their patients in routine care, particularly psychological symptoms and support needs where the result shows markedly under-recognized. Other than that, nurses' awareness of their patients' supportive care needs also were less than optimal among all domains, even though the researchers believed that needs assessment may offers an opportunity to better understand cancer patients' problems under treatment, the subjectivity of patients' supportive care needs mean that it may not be easy to recognize them simply by superficial communication.

In addition, the low negative predictive value for the psychological domain may also indicate that cancer patients often have psychological needs that are not recognized by nurses. The association between psychological and/or emotional problems and supportive care needs is slight, which emotional functioning was said in previous study by Snyder et al to be associated not only with psychological needs but also information needs and care and support needs.

Physical symptoms associated with chemotherapy, such as hair loss, appetite loss and fatigue were better be recognized than symptoms not specific to chemotherapy such as constipation, insomnia, dyspnoea and pain. As the results showed the

prevalence of physical symptoms that are not specific to chemotherapy was high in this population, nurses should pay adequate attention to these symptoms.

This study also showed that nurses have difficulty identifying both clinical depression and anxiety. According to previous study done by Hegel et al (2008) and Akizuki et al (2005) on distress thermometer for depression in cancer patients, it would be beneficial for nurses to implement distress screening among cancer patients in clinical settings.

However, there were some limitations that can be found in this study where bias in selection due to rejection of some potential subjects to participate. Other than that, the use of different assessment measures for bot patients and nurses might have influenced the results and factors relating to nurses' workload pressure and rapport with patients were not investigated comprehensively which also might have impacted on accuracy of needs or symptoms recognition. Lastly, caution should also have been exercised before applying the results to patients with other characteristics.

2.4 Associated of sociodemographic with supportive care needs

According to the studies done by the Boyes et al (2000) on the unmet supportive care needs of patients with cancer in Australia, results had suggested that cancer patients continue to experience high levels of unmet needs across a range of domain.

In this study, age had been associated with higher levels of unmet need in psychological, patient care and support, health system and information and sexuality domains. This is proven as results showed cancer patients ages between 31-60 years consistently displayed higher levels of unmet need compared to those age of 70 years and above. This finding was said to be consistent with other research in which

conclude that cancer and its treatment has a greater impact of psychosocial of younger patients than older patients. Therefore, this can be conclude that younger people might be more amenable to disclosing the psychosocial needs compared to older adults who believed that they should be able to cope and keeps their needs in private.

A significant predictor of reporting some unmet need in the psychologic, patient care and support, and physical and daily living domains. The differences in the prevalence of unmet needs that been observed compared with other studies is had been expected as the patient samples that they have obtained mainly from only one treatment centre. This had reinforcing the importance of sampling across different groups.

Furthermore, the type of treatment received in the last month also was associated with some needs in both the health system and information domain and the sexuality domain. The finding in this study had shown that patients who receiving immunotherapy, chemotherapy or hormone therapy were likely to report higher sexuality needs compared to those receiving other treatments. This may be due to the physical side effects of the treatments received.

The duration of time of cancer site currently receiving treatment from the diagnosis were also found to affect the needs in the patients care and support domain. This study shows patients with multiple cancer sites such as at lung, colon, rectal carcinoma or a brain tumour had higher levels of unmet need as compared to the breast carcinoma patients. Other than that, the duration since the last admission for treatment was also found to predict some needs in the physical and daily living domain. Finding shows patients who had last attended the clinic more than a year ago were less likely to report the needs in physical and daily living compared to patients who had attended

in the last month. This finding might had reflect a familiarity of patients with the treatment process and its side effects. Other than that, the likelihood that those who last attended to the clinic more than a year ago may not having in an intensive phase of active treatment.

According to study done by Carlson et al. (2004) on high level of untreated distress and fatigue in cancer patient, 37.8% of 2776 representative cancer patients met criteria for general distress in the clinical range in which results show most men has high proportion for somatisation whereas women for depression. However, both gender have no differences in anxiety or severity in distress. In addition, almost half of all patients who met distress criteria had not sought professional psychosocial support. This shows that distress is very common in cancer patients across diagnoses and disease but those who are reported having high level of distress are not taking advantage of available supportive resources. However, further exploration need to be done in order to collect more information on factors predicting distress among cancer patients and use of psychological care in order to meet their needs in surviving with the disease.

Differences in demographic characteristics and psychosocial among each cancer patients may influence supportive care needs. Therefore, the first step that should be taken part in order to provide correct supportive care is by identifying the significant relationship between demographic characteristics and level of supportive care need as this is essential in order to provide high-quality care and patients' satisfaction.

A systemic review study had been done by James et al in 2008 on the unmet supportive care needs of people with cancer. Of 94 articles or report that have

documented the unmet needs of patients with cancer during their illness, 57 of these had quantified unmet need. The highlight of these study were people that affected by cancer have a range of unmet needs. However, quantifications of these needs presents considerable challenges as does obtaining a clear idea of the prevalence of need within each supportive care domain.

Across all time points and varied within and between studies, the prevalence of need was highly variable in all domains which ranging from 1% to 93%, where those in the activities daily living domain shows the most frequently reported unmet needs which ranging from 1-73%. These results were followed by psychological domain which ranging from 12-85%, information domain (6-93%), psychosocial domain (1- 89%) and physical domain (7-89%). However, communications and sexuality domains were least frequently investigated which both ranging from 2-57% and 33- 63% respectively.

However, according to this study, unmet needs in all domains varied at all time points as given that needs were ascertained using a variety of different type of methods and there was only one study prospectively measured needs over time. Therefore, it is not possible to assess the degree to which needs change along the cancer illness trajectory. However, there were some trends emerged

from the data, for example, the highest levels of unmet need for most domains were identified during treatment. Other than that, the prevalence of unmet need for each domain had the largest variation during treatment phase as compared to any other time point of cancer illness. For most domains, however, the lowest prevalence of unmet need was found to be the highest for patient that had complete the treatment. This results had proven that unmet needs are more likely to be found in a larger proportion of people at this time point. However, these trends are likely due to the fact a greater number of studies have been conducted

at bot treatment and post-treatment for people at that time points compared to other stages of cancer illness. Therefore, a lack of evidence had been highlighted in this study review regarding the unmet needs of people newly diagnosed with cancer with only three studies identified.

Anxiety and fears about the cancer spreading or returning were identified as the most commonly psychosocial issues among patients, which particularly during the treatment and post-treatment phases. They were concerned about how those closest to them were coping with their disease. Adequate information about managing the side effects of treatment were also one of the important areas where information provision was found to be inadequate where practical assistance within the home were also regularly noted as areas where improvements could be made at the treatment and post- treatment stage. This suggest that ongoing support when patients are not in direct contact with health system or living in the community, receiving treatment or post- treatment are currently areas where supportive care needs is lack. There is also evidence to suggest people with more advanced stages of disease or with poor health status are more likely to have unmet needs.

This study had also proves that heterogeneous samples in terms of cancer patients' site and stages used within most studies had causes difficulty in making interpretation since broad and heterogeneous sample often utilised for pragmatic reason which provide a valuable picture of the challenges facing cancer patients in general but may overlook disease and stage specific issues. In facts, studies that investigated cancer specific site unmet needs during the treatment and post-treatment phase generally reported higher levels of unmet need compared to studies that used mixed cohort of patients. Therefore, these results had suggests that assessment should be conducted

with a homogenous sample of patients and could provide a more detailed analysis of tumour-specific unmet needs.

In conclusion, this systemic review study had proved that prevalence of unmet need, their trends and predictors are highly variable in all domains at all time points of the cancer illness which suggests that relying on data from elsewhere to plan cancer services or interventions in order to reduce unmet need may not appropriate. The results of highest unmet needs appeared during treatment and post-treatment phase however is likely due to the fact that this is where current efforts to identify unmet needs have been directed. The focus of studies at a single time point during illness trajectory also does not take into account on how unmet needs may change over time. Other than that, methodological inconsistencies had further compound the issues.

Therefore, in order to improve understanding of the unmet needs, context- specific, well-designed, prospective studies are needed as such studies can investigate the impact of early assessment and management of the unmet needs on subsequent patient outcomes. Other than that, standardisation of measures and reporting methods used would also benefit future interventional

research in order to identify on how best to address the unmet supportive care needs of people with cancer.

A qualitative study done by Salarvand et al in 2016 on priorities in supportive care needs for non-metastatic cancer patients undergoing chemotherapy in Iran according to oncologist' perception shows that it is essential to have education and consultation for cancer patients undergoing chemotherapy. This is due to the necessity for increased self-management capabilities of patients in controlling chemotherapy side effects, increasing their compliance with the disease and increasing their adherence to the treatment. Moreover, education empowers families to care for their

patients. This results is similar with previous studies done in 2004 by Epping-Jordan JE on improving the quality of health care for chronic conditions which also confirmed that issues that included the provision of information, patient support and empowering patients and their families to take better care of their diseases and self-management supports are important for improving care and outcome.

In addition, oncologists in this study also noted the need to provide social and treatment supports for the patients in the form of support groups and importance of support from families, friends and health care provider in addition to the consideration of family support. This study has emphasized the importance of support provided by family caregivers, which is consistent with other study which also reveals that each family members, friends and health care providers play an important role in supporting the newly diagnosed cancer patients undergoing chemotherapy as this can encourages patients to cope with their disease and its treatment (McCarthy et al, 2015).

This study also have shown that it is necessary to address cultural conditions for these patients is areas that include cultural change, attempts to reduce cultural cancer-related stigma in the society and taking into account cancer-related stigma of cancer. Other than that, this study also emphasized the importance of psychological support for patients as this factors have been reported as major determinants that specify supportive care needs of cancer patients, has been revealed by previous study done by Armes et al in 2009 on patients' supportive care needs beyond the end of cancer treatment.

In term of financial support, participants have noted that the role of financial support by charitable organizations and donors is undeniable in patient support and can reducing the financial burden of the treatment. Regarding the need for

multidisciplinary care teams, there is no such approach in Iran's health care culture, as revealed in this study. Oncologists noted the need for development and improvement of the physical environment of health care settings in order to provide services to those undergoing chemotherapy. However, this study did not find any other study that addressed this issue.

The limitation of this study was none of the oncologist had explained sexual care for patients which should be necessitated a multidisciplinary team in caring for these patients. They also did not consider spiritual care for these patients to be a priority since most likely because the Iranian community is predominantly an Islamic, a religious society and they have spiritual care available.

According to studies done by Whye et al (2016), on the supportive care needs of prostate cancer patients in Sarawak, the findings indicated that no significant difference between older and

younger age groups in all five domains of supportive care needs except for psychology and sexuality needs, younger patients had higher needs in sexuality compared to older patients.

In terms of psychological needs, those who were in the older age experienced lower distress level as compared to younger age group. This may be because of less work and families responsible as they grew older.

Higher educational level patients also had showed that they have the highest needs in all domain except physical and daily living. They are more likely to employ active information in order to satisfy their information needs. As they knew about their cancer stages, patients showed greater level of needs in the health and information as compared to those who did not know what stage of cancer they are having. This finding could be due to the nature of patients' information needs that associated with their

stage in the cancer journey as different information needed during different period of stages.

Thus, in response to previous studies, this study will be conducted using homogenous sample of patients which only take those who are treated as outpatient in order to address a more detailed analysis of tumour-specific unmet needs. This include those with advanced stages of disease and poor health status that currently undergoing chemotherapy in UMMC which are more likely to have unmet needs other than those who had newly been diagnosed with cancer.

2.5 Summary

This chapter had explained the search strategies and discussion of relevant literature review as this literature review is to guide the researcher to have better understanding on the current research topic that will be conducted. Other than that, by literature review also will helps to plans future study methodology by referring the previous studies that had been done.

CHAPTER 3: METHODOLOGY

3.0 Introduction

Research methodology is the process used to collect information and data for the purpose of making decisions. It deals with a range of ways to make the most out solving key research problems which composite of philosophies, ideas, and foundations that drive the actions, the methods that will be used. Therefore, this chapter describes the study design and provides a rationale for the selection of population and sampling setting, instrumentation, and method of data collection. Other than that, the formulation of a research design and methodology also will be described and explained.

3.1 Study design

This is a cross sectional design study to collect data on supportive care needs on patient undergoing chemotherapy in UMMC. Quantitative research is a present- oriented research that seeks to accurately describe what is and to analyse the facts obtained in relation to the problem

under study. This type of research may lead to theories or hypotheses to be tested experimentally.

3.2 Study setting

The study was conducted in University Malaya Medical Centre (UMMC). UMMC is a renowned premier teaching hospital with 980 beds under the Ministry of Education in Malaysia (University Malaya Medical Centre, 2013)

The study setting was restricted to clinic that consist of cancer patients who undergoing chemotherapy at Infusion Room, Day-Care Medical in University Malaya Medical Centre (UMMC). This is done in order to obtain a homogenous sample.

3.3 Population and sampling

3.3.1 Target population

Target population which are accessible were all cancer patients undergoing chemotherapy in UMMC. UMMC is a referral centres recorded an average of 1250 new cancer cases in 2016.

A number of 150 cancer patients a day, have been diagnosed with cancer, being physically and mentally willing and able to complete the questionnaire and currently undergoing chemotherapy for the following cancers were recruited; respiratory, haematology, gynaecology, orthopaedic, breast, prostate and colorectal. This included only out-patients who are undergoing chemotherapy in UMMC.

3.3.2 Sampling method

Sampling is the process of selecting a number of individuals for a study in such a way that the individuals represent the larger group from which they were selected. The purpose is to gather data about the population in order to make an inference that can be generalized to the population. Therefore, a sample, then, is a subject of population elements. A representative sample is one whose key characteristics closely approximate those of the population. In this study, researcher used simple random sampling method, a type of probability sampling that ensures that each element of the population has an equal and independent chance of being chosen as the population is small, homogenous and readily available in the setting area, which consists of only out-patients cancer who are undergoing chemotherapy in Infusion Room, Day-Care Medical in UMMC.

3.3.3 Sample calculation

The sample size was calculated using Raosoft Sample Size Calculator (2004) calculator. The calculation was based on an estimated total average population size of 1250 new cancer cases treated at the UMMC annually in 2016, with margin for error of 5% confident interval of 95%, respondent distribution of 50% and the minimum recommended sample size was 295. From the sample size calculation, to avoid drop outs and missing data, 20% was added. Thus, total sample size is 354 of cancer patients will be recruited.

3.3.4 Inclusion and exclusion criteria

Participant selection was based on the following criteria:

1. More than 18 years old
2. Undergoing chemotherapy at outpatient chemotherapy day care in UMMC
3. Able to read and understand English and Bahasa Malaysia
4. Being physically and mentally willing and able to complete the questionnaire

3.4 Research instrument

Research instrument is device used in order to collect data. In this study, the research instrument used to collect data is by using questionnaire. The questionnaire consisted of two main parts. Part I comprised questions that solicited the demographic characteristics of the patients. Part II consisted of questions related to Supportive Care Needs Survey Short Form 34 (SCNS-SF34) that has been modified and validated by 3 experts. Part III consisted of self-construct questions on usefulness of sources supportive care.

3.4.1 Questionnaire

The questionnaire were developed with permission from the previous study of Allison Boyes in 2012 and from the Short-form Supportive Care Needs Survey (SCNS-SF34) designed by Centre for Health Research and Psycho-oncology (CHeRP), Cancer Council, New South Wal. The language used in this questionnaire is English and Bahasa Malaysia.

Part A Sociodemographic Background

Part A consisted of 10 open and closed-ended format items. The items include questions that were design to determine basic sociodemographic and clinical characteristic related to disease such as age, gender, ethnicity, religions, educational level, marital status, employment status, household income, diagnosis, cancer stage at time of diagnosis, and staging of cancer. Each questions were using nominal scale.

Part B Short-form Supportive Care Needs Survey (SCNS-SF34)

Part B encompassed a modified and validated questionnaire (34 items) adopted from Short-form Supportive Care Needs Survey (SCNS-SF34). It is a valid instrument for measuring cancer patients' perceived needs across a range of five domains which are psychological needs (10 items), health system and information needs (11 items), physical and daily living needs (5 items), patient care and support needs (5 items)and sexuality needs (3 items).

- The psychological domain assesses needs related to emotions and coping.

This domain consists of 10 items.

- The health system and information domain assesses needs related to the treatment centre and for information about the disease, diagnosis, treatment and follow-up. This domain will be presented by 11 items.
- The physical and daily living domain assesses needs related to coping with physical symptoms, side effects of treatment and performing usual tasks and activities. In this domain, 5 items will be presented.
- The patient care and support domain assesses need related to health care providers showing sensitivity to physical and emotional needs, privacy and choice. This domain will be represented with 8 items.
- The sexuality domain assesses needs related to sexual relationships. This domain is represented by only three items in which will be questioned about the changes in sexual feelings and relationship other than in need to be given information on sexual relationship while undergoing treatment on cancer.

Participants were presented with a 5-point Likert-type response format (1 - not applicable; 2 - satisfied; 3 - low need; 4 – moderate need; 5 – high need). Separate analyses using SPSS software were done for each of the five domain.

Section C Usefulness of Source Supportive Care Needs

Section C consists of 14 items that assessed participants' sources of supportive care needs presented with a 5-point Likert-type response format (1 - not useful at all; 2 – not useful; 3 – not sure; 4 – useful; 5 – very useful).

3.4.2 Reliability and validity

Validation studies have shown that the Cronbach's alpha of the English version was 0.86-0.96 (Boyes et al, 2009). The factor structure of this short-form survey explained more than 70% of the variance with the internal reliability of items within each factor was assessed with the coefficient criteria set of 0.7 and exceeded 0.8 in all domains. This demonstrating good construct of validity to be used as an instrument for this research. It provides brief and valid information about cancers' patient needs in which enable the health care professionals to improve their care to specific needs identified by their patients. In addition, this 34-item SCNS questionnaires will takes up approximately 10 minutes for the respondents to complete.

In order to makes sure that the study is warranted and feasible to the cancer patients in UMMC, a pilot study was conducted. This was done once the researcher has get the ethic approval from UMMC and validation by experts done which consist of a lecturer from Department of Nursing Science, one sister from Department of Clinical

Oncology who is specialised and in charged in Chemotherapy Day-Care clinic UMMC and a lecturer from Department of Oncology.

3.5 Data collection method

On the date of the data collection, the researcher asked the patient if they were keen to participate in the study. Not all patients were compulsory to participate in this study. They may refuse if they do not want to. Those who were agree to take part in the study were thanked. Each respondents were given clear and detail information regarding the purpose and benefits of the study. Time estimated to complete the questionnaire are within 20 minutes. Respondent had right to withdraw from the study any time without any reasons and punishment from the researcher.

Other than that, all the respondents were assured that all data that has been collected will be kept as confidential and will be only for academic purpose. The researcher then distributed the questionnaire to the patients who are agree to participate and they were asked to sign the consent form which will be attached to the questionnaire. Since most of the respondents were undergoing chemotherapy during this study was held, therefore, they were having difficulty in answering by themselves. For that, an interview were done as to make things easier. Furthermore, the researcher encouraged the respondents for any unclear statement. The researcher was available throughout the data collection time.

After the data has been collected, the researcher checked the returned questionnaire one by one. This was to make sure that all items has been answered and to avoid any missing data. The returned questionnaire then were numbered to make sure the amount of sample achieved. All the patients will be thanked for the participation in the study.

3.6 Data analysis

The questionnaire was processed and numbered. All the response were filled up according to variables and analyse by using SPSS. Sociodemographic data in Part A will be analyse and presented with frequency and percentage in Chapter 4 later. For part B, for each item, respondents were asked to indicate their level of need for help over the last month as a result of having cancer by using the five point Likert Scale. The five response options are described as follows: **1=No need, Not applicable** (This was not a problem for me as a result of having cancer.), **2=No need, Satisfied** (I did need help with this, but my need for help was satisfied at the time.), **3=Some need, Low need for help (**This item caused me little concern or discomfort, I had little need for additional help.), **4=Some need, Moderate need for help (**This item caused me some concern or discomfort. I had some need for additional help.), and **5=Some need, High need for help (**This item caused me a lot of concern or discomfort. I had a strong need for additional help.)

In the Supportive Care Needs Survey Short For 34 (SCN-SF34), separate analyses using SPSS software were done for each of the five domain. The domain score, the average score for all items in the domain was calculated for those respondents who answered all items within domain. Domain scores were calculated by summing up the responses to each of the needs items within each domain and dividing the total by the number of items in the domain. The domain score was the dichotomized, with a score one correspond to “no need” and a score two correspond to “some need”.

The data was being analysed by using Pearson Chi Square test and Cross tabulation in order to identify the significance relationship between demographic characteristics and level of supportive care need of cancer patients undergoing chemotherapy in UMMC.

For part C, for each item, respondents were asked to indicate the usefulness of source supportive care from sources as listed using the five point Likert Scale. The five response options are described as follows: 1= Not useful at all, 2=Not useful, 3= Not sure, 4= Useful and 5= very useful.

3.7 Ethical consideration

The researcher had looked into all ethical issues for this study. Before starting the survey, an approval letter with ethic consideration was sent to the UMMC in order to get permission to do this survey to the patients undergoing treatments there. Once the permission had been approved, only then the survey will be conducted.

The respondents were given assurance of confidentiality of this research. A brief and well-explained instruction was given to the respondents before they started answering the survey. This was done by stating the information on the cover letter of the questionnaire. Not to mention, the cover letter that include the researcher's identification and purpose of the study will enclosed the questionnaire. This wasdone in order to instruct and inform the respondents on how to answer the questionnaire correctly. Consent also had been given before answering the questionnaire. Moreover, target samples have their right to not participate in the research or withdraw any time. In order to ensure that the feedback received from the questionnaire remains confidential, at the same time protecting all respondents' identity, all the answered questionnaire that has been returned back will be kept properly in a covered box and be kept.

3.8 Pilot study

According to Collins English Dictionary, pilot study is a small-scale experiment or set of observations undertaken to decide how and whether to launch a full-scale project. To simplify, it is a trial run before the actual research study is done. The study will be done to a group of people that have similar condition to the subjects that should be tested. This pilot study is conducted whenever a new instrument is being develop or when a pre-existing instrument is being used with people that have different characteristics from those for which the instrument was originally developed. The purpose is to help the researcher to determine whether a more substantial study is warranted and the researcher will be able to take a pragmatic view on the main study's potentialities and feasibility.

As the instruments was being modified from Australia, thus, in order to make sure the reliability and validity of the instruments to cancer patients in Malaysia especially in UMMC, pilot study was done from June to September 2018. 36 cancer patients who undergoing chemotherapy in UMMC were chosen to participate in this pilot study. They were identified in order to prevent any repetition of sample answering the same questionnaire during the actual survey later.

The results from the pilot study were analysed by using reliability test Cronbach's alpha in IBM SPSS Statistics 23. The Cronbach's alpha of the overall questionnaire was 0.906, Section B was

0.863 and Section C was 0.899. Participants who had answered the questionnaire were not be taken into consideration again for the actual survey participation. Since the questionnaire was reliable, there was no major changes made on questionnaire before collecting data for actual study. Only that a dropped out of an item (no. 13) in section C; the usefulness of source supportive care (mobile apps for cancer patients) were since the item were not exposed to the patients yet as proved by during the pilot study.

3.9 Summary

This chapter had been organized to include introduction, study design, study setting, population and sampling, research instrument, data collection method, data analysis, ethical consideration, pilot study and summary. It explains the study design which answer the objective that has been constructed. Furthermore, the purpose of planning methodology is as to make sure this study is in the proper track. Therefore, correct methodology will enhances the data collection in which will later be interpreted in the chapter 4.

Population and sampling enables the researcher to study the population based on the subset that has been choose as targeted sample. Online software named Raosoft has been used to calculate the sample size. Furthermore, it is important to make sure research instrument to be reliable and valid. Thus, pilot study and validation from experts had been explained. Data collection was done systematically in order to make sure all items in the questionnaire will be answered truthfully along with the consent for the participants.

Chapter 4 DATA ANALYSIS

4.1 Introduction

This chapter describes the analysis of data that had been collected. The researcher entered the data and performed analysis by using Statistical Package Social Science (SPSS) version 23.0. The findings relate to research objectives that guided this study. The descriptive statistics and inferential statistics were included according to specific objectives as stated in Chapter 1. Data were analysed to determine supportive care needs of patients with cancer undergoing chemotherapy in UMMC. Researcher had used the descriptive statistics in analysing the demographic data of the respondents, as well as the supportive care needs and usefulness of source supportive care among the cancer patients undergoing chemotherapy in UMMC. Other than that, Pearson Chi- Square test also was used in order to analyse the association between respondents' demographic characteristics data and knowledge. All the results that has been analysed were written in narrative explanation and displayed in form of table. Several aspects has been included in this chapter:

- Data screening and data management
- Response rate during data collection
- Description of demographic data, supportive care needs and usefulness of source supportive care among respondents
- Description of association between supportive care needs of cancer patients and demographic variables of the patients with cancer undergoing chemotherapy in UMMC.

4.2 Data screening and data management

Data were collected and screened in order to be processed for the data analysis. Data were screened for any missing data, 2 responses when only 1 was represented and mark between 2 answers. Any of these data would be discarded. This is in order to produce better quality of data. Thus, in the initial stage of data analysis, all the data collected were entered based on the identification numbers tagged to the questionnaire with accordance to the respondents' identification to avoid double entry. All the data were then screened and no missing values detected. Next, all the screened data was entered into SPSS to be analysed as well back up for documentation. All the hardcopy of the data that has been collected was stored in a bag for storage purpose.

Data was managed and checked for distribution by using normality tests in order to determine the type of analysis test used to analyse data. In this study, the dependent variables were supportive care needs and usefulness sources of supportive care. Normality tests show normality distributed for supportive care needs scores as both kurtosis and skewness were less than ±1.96 (.816 for skewness and 1.319 for kurtosis). Kolmogorov-Smirnov test of normality for supportive care needs results also show normally distributed as the p value shows $p<.05$. For usefulness sources of supportive care, the results shows normally distributed as evidenced by skewness .368 and kurtosis -1.097 with Kolmogorov- Smirnov test shows $p<.05$. All the results can be refer in table 4.1. Therefore, non-parametric test: Pearson Chi-square will be used to analyse the data as it is unaffected by distribution of data.

Table 4.1 Normality test

	Kolmogorov-Smirnov		**Skewness**		**Kurtosis**	
	Statistic	**p-value**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Supportive care needs	.153	.001	.816	.141	1.319	.281
Usefulness of source supportive care	.146	.001	.368	.141	-1.097	.281

4.3 Respond rate

A total of 354 questionnaire were distributed by researcher through face to face with the respondents and collected back on the same day. However, out of 354 patients, only 300 patients completed and returned the questionnaires (n=354), whereas the remaining were discarded as some of the respondents were not able to complete the questionnaire. This represented a response rate of 84.75%. Researcher's personal approach to the respondents had ensured the 84.75% respond rate. The flow of distributed questionnaire was displayed as shown on figure 4.3.1 below:

Calculation for response rate:

$$\text{Response rate} = \frac{\text{Total completed questionnaire}}{\text{Total distributed questionnaire}} \times 100\%$$

$$= \frac{300}{354} \times 100\%$$

$$= 100\%$$

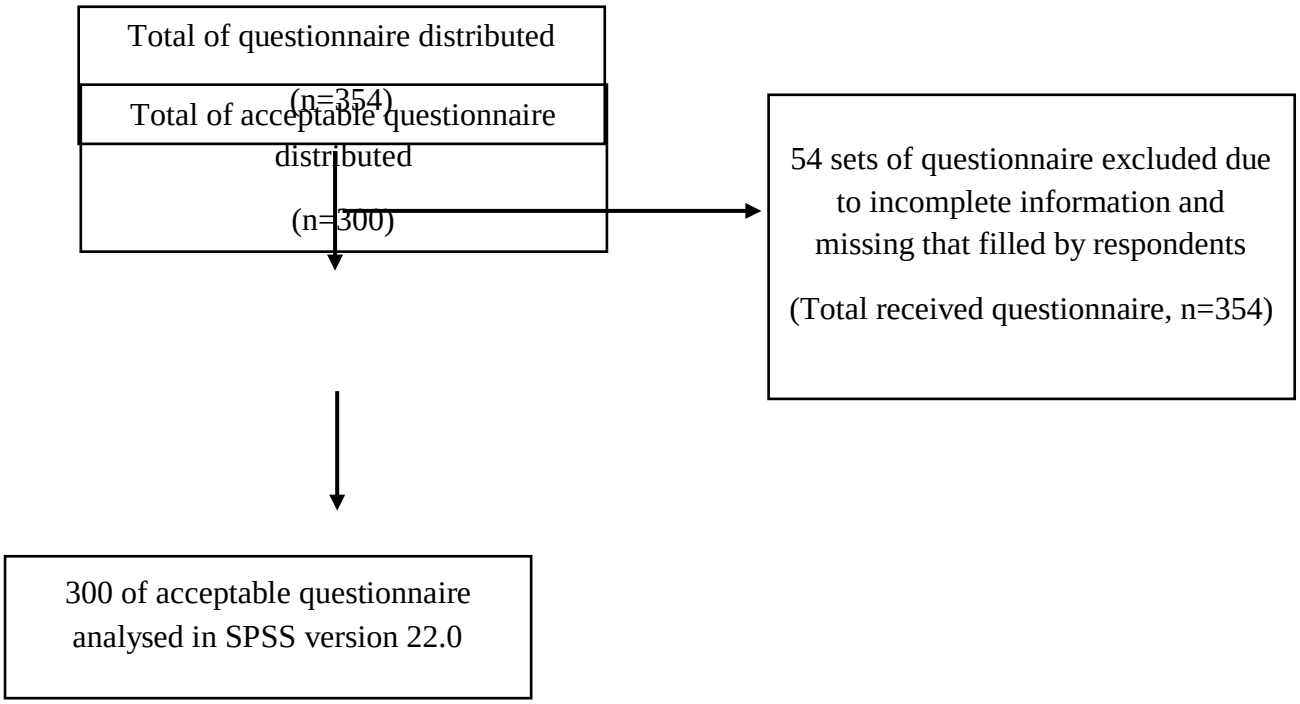

Figure 2 Flow of selected distributed questionnaire

4.4 Description of demographic of the respondents

In this study, the demographic characteristics data included age group, gender, ethnicity, religion, marital status, formal education, employment status, household income, type of cancer and cancer stage at time of diagnosis. Table 4.2 displays the details of demographic characteristics of the respondents. This study recruited a total of 300 respondents. From the table, it shows that age group of more than 56 occupied highest percentage that is 40.7% (n=122) while age group of 18 to 36 had the lowest percentage in this study that is 23.3% (n=70). In term of gender, female contributed a total of 163 out of 300 in this study which accounts about 54.3% compared to male which was only 137 that accounts about 45.7%.

In term of ethnicity, there were four ethnicity that were put in to account, which were Malays, Chinese, Indians and others. From the table, it shows that 125 of respondents from Malays ethnicity contributed the highest percentage (41.7%) in this study, whereas 5 of respondents from other ethnicity contributed the lowest percentage (1.7%). Besides that, for religion aspect, there were 128 (42.7%) of respondents from Islam which contributed the highest percentage, while there were only 38 (12.7%) respondents from Christianity which contributed the lowest percentage of the respondents. This result shows that the majority of the respondents were from Islam religion.

There were 46.3% (n=139) respondents were married which has contributed the highest percentage among respondents, while only 17.3% (n=52) respondents were widowed, which contributed the lowest percentage of the respondents. Other than that, in term of employment status, there were 153 respondents who are employed which contributed highest percentage (51.0%), whereas 59 respondents were unemployed which contributed the lowest percentage (19.7%). There were 208 (69.3%) respondents had average monthly income above RM3000 which contributed the highest percentage among the respondents, while only 9 (3.0%) had average monthly income above RM5000 which contributed the lowest percentage of the respondents. This shows that the majority of the respondents were having monthly income above RM3000.

In term of type of cancer, there were four type of cancer that were put in to account, which were breast, colorectal, haematological and other. As shown in table 4.2, it shows that 96 of respondents from breast cancer type contributed the highest percentage (32.0%) in this study, whereas 55 of the respondents from haematological cancer type contributed the lowest percentage (18.3%). Besides that, there were 125 (41.7%) of respondents were at late stage (III and IV) of cancer at time of diagnosis from which contributed the highest percentage, while there were 66 (22.0%) respondents do not know their cancer stage at time of diagnosis which contributed the lowest percentage of the respondents. This result shows that the majority of the respondents were at their late stage of cancer at time of diagnosis.

Table 4.2 Sociodemographic and medical characteristics of respondents (N=300)

Sociodemographic and medical characteristics	**n**	**%**	**Mean (SD)**
Age (years)			48.82 (13.17)
18-36	70	23.3	
37-55	108	36.0	
56 and above	122	40.7	
Gender			
Female Male	163	54.3	
	137	45.7	
Ethnicity Malay Chinese Indian			
Others	125	41.7	
	116	38.7	
	54	18.0	
	5	1.7	
Religion Islam Buddhism Hindu			
Christianity	128	42.7	
	80	26.7	
	54	18.0	
	38	12.7	
Marital status Single Married			
Widowed	109	36.3	
	139	46.3	
	52	17.3	
Formal education Primary Secondary			
Tertiary	43	14.3	
	171	57.0	
	86	28.7	
Employment status Employed Unemployed			
Retired	153	51.0	
	59	19.7	
	88	29.3	
Household income Less than RM3001 RM3001-RM5000			
More than RM5000	208	69.3	
	83	27.7	
	9	3.0	
Type of cancer Breast Colorectal Haematological			
Others	96	32.0	
	68	22.7	
	55	18.3	
	81	27.0	
Cancer stage at time of diagnosis			
Early stage (I and II) Late stage (III and IV) Do not know	10	36.3	
	125	41.7	
	66	22.0	

4.5 Level of supportive care needs of patients with cancer undergoing chemotherapy

In the Supportive Care Needs Survey Short For 34 (SCN-SF34), separate analyses using SPSS software were done for each of the five domain. As been mentioned before, the domain score, the average score for all items in the domain was calculated for those respondents who answered all items within domain. Domain scores were calculated by summing up the responses to each of the needs items within each domain and dividing the total by the number of items in the domain. The domain score was the dichotomized, with a score one correspond to "no need" and a score two correspond to "some need". In this study, the minimum and maximum score were 34 and 121. Table 4.3 shows the list items of patients' level of supportive care and information and patient care and support. The highest mean score for the item of needs and its representative mean score and standard deviation (SD). The items were grouped into five domains which are psychological, physical and daily living, sexuality, and health system and information domain. The highest level of supportive care needs is item in psychological domain, "Uncertainty about the future" where the mean score is 1.84 with standard deviation of .37. Meanwhile, the lowest mean score for the item on patient's level of supportive care needs is item in health system and information domain, "Being given information (written, diagrams, drawings) about aspects of managing illness and side-effects at home" where the mean score is 1.07 with standard deviation of .25.

As shown in the table, in psychological domain, for the item "Anxiety", there are 76% of the respondents chose no need and 24.0% of the respondents chose some need. More than half of the respondents chose no need for the item "Feeling down or depressed" which are 88.3% whereas another 11.7% respondents chose some need.

Next, there are 235 of them response no need for the item "Feelings of sadness" whereas another 65 of them chose some need. For the item "Fears about cancer spreading", all of the respondents response no need of supportive care needs. There are only 95 respondent out of 300 respondents response no need for the item "Worry about the results of treatment are beyond your control", whereas 205 of the respondents chose some need. Next, for the item "Uncertainty about the future", only 16.0% of the respondents' response no need whereas most of them chose some need where the results shows 84.0% of respondents. For the item "Learning to feel in control of your situation", more than half of the respondents chose no need (65.7%) and 34.3% of the respondents chose some need. Out of 300 respondents, 222 of them chose no need for the item "Keeping a positive outlook" and only 78 respondents chose some need. There are only 91 out of 300 respondents had response no some need whereas most of the respondents (n=209) chose some need for the item "Feelings about death and dying". For the last item in this domain, 185 of respondents chose no need for the item "Concerns about the worries of those close to you" and 115 respondents chose some need.

In physical and daily living domain, for item "Pain", 205 out of 300 respondents chose no need and the other 95 respondents chose some need. For the item "Lack of energy/tiredness", half of the respondents chose no need (n=153) and 147 of respondents chose some need. Next, among 300 respondents, there are 237 respondents chose no need for the item "Feeling unwell a lot of time" whereas 63 of the respondents chose some need. For the item "Work around home", more than half of the respondents chose no need (82.0%) whereas 18.0% of the respondents chose some need on this item. Lastly, 84.0% of the respondents chose no need and 16.0 %

of the respondents chose some need for the item "Not being able to do things that used to be".

In sexuality domain, among 300 respondents, more than half of the respondents had choose no need for the item "Changes in sexual feelings" whereas another 61 respondents chose some need for the item. For the item "Changes in sexual relationship", there are 243 of the respondents chose no need for the item and 57 respondents chose some need. Lastly, most of the respondents chose no need for the item "Being given information about sexual relationship" which contributed 85.0% of the results whereas 15.0% of them chose some need.

In health system and information domain, majority of the respondents had chosen no need for the item "Being given written information about important aspects of care" which results in a total of 270 of respondents whereas another 30 respondents chose some need for the item. Majority of the respondents also had chosen no need for the item "Being given information (written, diagrams, drawings) about aspects of managing illness and side-effects at home" which results in a total 93.3% of respondents whereas another 6.7% of the respondents chose some need. Other than that, out of 300 respondents, a total 275 of the respondents chose no need for the item "Being given explanations of those tests for which you would like explanations" and another 25 respondents chose some need. Only 27 of the respondents had choose some need for the item "Being adequately informed about the benefits and side effects of treatments before choosing to have them" whereas 273 of the respondents chose no need. There are 87.0% of respondents had response no need and 13.0% of the respondents had response some need for the item "Being informed about test results as soon as possible". Of 300 respondents, 80.0% of respondents had choose no need for the item "Being informed about cancer which is under control or diminishing (that is, remission)' whereas another 20.0% chose some need for this item. There are 76.7% of the respondents chose no need for the item "Being informed about things you can do to help yourself to get well and 23.3% of the respondents chose some need. Next, Out of 300 respondents, there are 254 of the respondents chose no need for the item "Having access to professional counselling (eg; psychologist, social worker, counsellor, nurse specialist) if you, family or friends need it" and 46 of them chose some need. There are 277 of the respondents chose no need for the item "Being treated like a person not just another case" and another 23 respondents chose some need for this item. For item "Being treated in a hospital or clinic that is as physically pleasant as possible", majority of the respondents chose no need and only 8 respondents chose some need. Lastly, for the item "Having one member of hospital staff with whom you can talk to about all aspects of condition, treatment and follow-up", there are 271 of the respondents had response no need whereas only 29 respondents chose some need for this item.

For the last domain which is patient care and support domain, out of 300 respondents, there are 192 of respondents chose no need for the item "More choice about which cancer specialists to see" whereas 108 of the respondents chose some need for this item. For the item "More choice about which hospital to attend", more than half of the respondents had response no need which results in a total of 266 of the respondents and another 34 of the respondents response some need for this item. Majority of the respondents had chosen no need for the item "Reassurance by medical staff that the way you feel is normal" which results in a total of 91.0% whereas another 9.0% respondents chose some need. Next, 87.3% of respondents had choose no need for the item "Hospital staff attending promptly to your physical needs" whereas another 12.7% of them chose some need on this item. Lastly, more than half of the

respondents had response no need for the item “Hospital staff acknowledging and showing sensitivity to your feelings and emotional needs” which is 69.3% and 30.7% of the respondents had response some need on this item.

Table 4.3 Patients’ response for level of supportive care needs (n=300)

Total domain level	**No need n(%)**	**Some need n(%)**	**Mean**	**SD**
Psychological			2.39	.60
Anxiety	228 (76.0)	72 (24.0)	1.24	.43
Feeling down or depressed	265 (88.3)	35 (11.7)	1.12	.32
Feelings of sadness	235 (78.3)	65 (21.7)	1.22	.41
Fears about cancer spreading	98 (32.7)	202 (67.3)	1.67	.47
Worry about the results of treatment are beyond control	95 (31.7)	205 (68.3)	1.68	.47
Uncertainty about the future	48 (16.0)	252 (84.0)	1.84	.37
Learning to feel in control of your situation	197 (65.7)	103 (34.3)	1.34	.48
Keeping a positive outlook	222 (74.0)	78 (26.0)	1.26	.44
Feelings about death and dying	91 (30.3)	209 (69.7)	1.70	.46
Concerns about the worries of those close to you	185 (61.7)	115 (38.3)	1.38	.49
Physical and daily living			1.95	.48
Pain	205 (68.3)	95 (31.7)	1.32	.47
Lack of energy/tiredness	153 (51.0)	147 (49.7)	1.49	.50
Feeling unwell a lot of time	237 (79.0)	63 (21.0)	1.21	.41
Work around home	246 (82.0)	54 (18.0)	1.18	.39.
Not being able to do things that used to be	252 (84.0)	48 (16.0)	1.16	.37
Sexuality			1.60	.73
Changes in sexual feelings	239 (79.7)	61 (20.3)	1.20	.40
Changes in sexual relationship	243 (81.0)	57 (19.0)	1.19	.39
Being given information about sexual relationship	255 (85.0)	45 (15.0)	1.15	.36

Table 4.3 continued

Total domain level	**No need n(%)**	**Some need n(%)**	**Mean**	**SD**
Health system and information			1.95	.47
Important aspects of care	270 (90.0)	30 (10.0)	1.10	.30
Information about aspects of managing illness and side-effects at home	280 (93.3)	20 (6.7)	1.07	.25
Explanations of those tests need explanations	275 (91.7)	25 (8.3)	1.08	.28
Informed about the benefits and side effects of treatments before choosing to have them	273 (91.0)	27 (9.0)	1.09	.29
Test results as soon as possible	261 (87.0)	39 (13.0)	1.13	.34
Cancer which is under control or diminishing	240 (80.0)	60 (20.0)	1.20	.40
Things can do to help to get well	230 (76.7)	70 (23.3)	1.23	.42
Having access to professional if needed	254 (84.7)	46 (15.3)	1.15	.36
Treated like a person not just another case	277 (92.3)	23 (7.7)	1.08	.27
Treated in a hospital or clinic that is as physically pleasant as possible	292 (97.3)	8 (2.7)	1.03	.16
Having one member of hospital staff whom can talk to about all aspects	271 (90.3)	29 (9.7)	1.10	.30
Patient care and support			2.01	.58
More choice about which cancer specialists to see	192 (64.0)	108 (36.0)	1.36	.48
More choice about which hospital to attend	266 (88.7)	34 (11.3)	1.11	.32
Reassurance by medical staff that the way you feel is normal	273 (91.0)	27 (9.0)	1.09	.29
Hospital staff attending promptly to your physical needs	262 (87.3)	38 (12.7)	1.13	.33
Hospital staff acknowledging and showing sensitivity to your feelings and emotional needs	208 (69.3)	92 (30.7)	1.31	.46

4.6 Domains of needs among patients with cancer

Table 4.4 shows domain mean score that were identified by summing up responses of each items within domain and dividing the sum by the number of item in the domain. A higher score (maximum 4, minimum 1) would indicate higher level of needs in the domain. As shown in the table 4.3, psychological domain was found to have highest mean score which is 2.39 with standard deviation of .60, followed by patient care and support which is 2.01 with standard deviation of .58, physical and daily living which is 1.95 with standard deviation of .48 and health system and information which is also shows mean of 1.95 with standard deviation of .47. Meanwhile, the sexuality domain has the lowest mean score which is 1.60 with standard deviation of .73.

Table 4.5 Top ten highest need reported in the last month among respondents

Rank	Item	% of sample reporting some need	Domain
1	Uncertainty about the future	84.0	Psychological
2	Feelings about death and dying	69.7	Psychological
3	Worry about the results of treatment are beyond your control	68.3	Psychological
4	Fears about cancer spreading	67.3	Psychological
5	Lack of energy/tiredness	49.7	Physical and daily living
6	Concerns about the worries of those close to you	38.3	Psychological
7	More choice about which cancer specialists to see	36.0	Patient care and support
8	Learning to feel in control of your situation	34.4	Psychological
9	Pain	31.7	Physical and daily living
10	Hospital staff acknowledging and showing sensitivity to your feelings and emotional needs	30.7	Patient care and support

Table 4.5 shows the top 10 items that respondents have indicated some need for help. Overall, 6 out of 10 items of supportive care needs were from psychological domain, 2 items from physical and daily living domain and one item from patient care and support domain.

The highest ranked item were "Uncertainty about the future" (84.0%), followed by "Feelings about death and dying" (69.7%) , "Worry about the results of treatment are beyond your control" (68.3%), "Fears about cancer spreading" (67.3%), "Lack of energy/tiredness" (49.7%), "Concerns about the worries of those close to you" (38.3%), "More choice about which cancer specialists to see" (36.0%), "Learning to feel in control of your situation" (34.4%), "Pain" (31.7%) and "Hospital staff acknowledging and showing sensitivity to your feelings and emotional needs" (30.7%).

4.7 Usefulness of source supportive care

Table 4.6 also shows the details of item analysis of patients' level of usefulness of supportive care. For item "Doctor", none of the respondents had choose not useful at all, not useful and not sure. However, 93 out of 300 respondents had choose useful and 207 of the respondents had choose very useful.

For the item "Nurses", none of the respondents had choose not useful at all and not useful. However, 16 of them chose not sure, 164 of them chose useful and 120 of the respondents chose very useful.

Next, among 300 respondents, there are 12 respondents chose not useful at all for the item "Family member" whereas 5 of the respondents chose not useful. Other

than that, there are 60 of the respondents chose not sure, 190 of them chose useful and 33 of the respondents chose very useful.

For the item "Friend", 17.7% of the respondents chose not useful at all, 12.3% of them chose not useful and 31.7% of respondents chose not sure. Meanwhile, 30.7% of the respondents chose useful and 7.7% of them chose very useful for this item.

There are 98 of the respondents had response not useful at all, 35 of them response not useful, 46 of them had response not sure, 111 of them had response useful and about 10 of the respondents had response very useful for the item "Religion body".

There are only 141 respondent out of 300 respondents' response not useful at all for the item "Website/Internet", whereas 54 of them chose not useful, 26 of them chose not sure, 74 of them chose useful and 5 of them chose very useful.

Out of 300, 164 respondents chose not useful at all for the item "Patient's guide book/ leaflet", 40 of the respondents chose not useful and 19 of the respondents chose not sure. Meanwhile, 75 of the respondents chose useful and only 2 of the respondents very useful.

Of 300 respondents, 167 respondents had choose not useful at all for the item "YouTube", 59 of them had choose not useful, 29 of the respondents had choose not sure, 40 of them chose useful and 5 of the respondents chose very useful for the item.

There are half of the respondents chose not useful at all and 11.0 % of the respondents chose not useful for the item "Social worker". Other than that, 29.0% of the respondents chose not sure, 4.3% of the respondents chose useful and none of the respondents very useful for this item.

Table 4.6 Respondents' response for level of usefulness of source supportive care (n=300)

	Not useful at all n (%)	**Not useful n (%)**	**Not sure n (%)**	**Useful n (%)**	**Very useful n (%)**	**Mean**	**SD**
Doctor	0 (0.0)	0 (0.0)	0 (0.0)	93 (31.0)	207 (69.0)	4.69	.46
Nurses	0 (0.0)	0 (0.0)	16 (5.3)	164 (54.7)	120 (40.0)	4.35	.58
Family member	12 (4.0)	5 (1.7)	60 (20.0)	190 (63.3)	33 (11.0)	3.76	.82
Friend	53 (17.7)	37 (12.3)	95 (31.7)	92 (30.7)	23 (7.7)	2.98	1.20
Religion body	98 (32.7)	35 (11,7)	46 (15.3)	111 (37.0)	10 (3.3)	2.67	1.35
Website/Internet	141 (47.0)	54 (18.0)	26 (8.7)	74 (24.7)	5 (1.7)	2.16	1.30
Patient's guide book/ leaflet	164 (54.7)	40 (13.3)	19 (6.3)	75 (25.0)	2 (0.7)	2.04	1.30
YouTube	167 (56.7)	59 (19.7)	29 (9.7)	40 (13.3)	5 (1.7)	1.86	1.15
Social worker	167 (55.7)	33 (11.0)	87 (29.0)	13 (4.3)	0 (0.0)	1.82	1.00
Medical book and journal	172 (57.3)	59 (19.7)	24 (8.0)	43 (14.3)	2 (0.7)	1.81	1.12
Cancer support group/volunteer	171 (57.0)	39 (13.0)	69 (23.0)	21 (7.0)	0 (0.0)	1.80	1.02
Newspaper or magazine	173 (57.7)	53 (17.7)	44 (14.7)	28 (9.3)	2 (0.7)	1.78	1.05
Television/Radio	168 (56.0)	67 (22.3)	41 (13.7)	24 (8.0)	0 (0.0)	1.74	.98

For the item "Medical book and journal", 172 respondents out of 300 respondents response not useful at all, 59 of them chose not useful, 24 of them chose not sure, 43 of them chose useful and only 2 of the respondents chose very useful.

For the item "Cancer support group/volunteer", there are 57.0% of the respondents chose not useful at all, 13.0% of the respondents chose not useful and

23.0% chose not sure. However, none of the respondents chose very useful for this item.

Next, among 300 respondents, there are 173 respondents chose not useful at all for the item "Newspaper or magazine", 53 of the respondents chose not useful and 44 of the respondents chose not sure. Meanwhile, 28 of the respondents chose useful and only 2 of the respondents very useful.

Lastly, for the item "Television/Radio", 56% of the respondents response not useful at all, 22.3% of them response not useful and 13.7% of them chose not sure. Other than that, 8.7% of the respondents chose useful and none of them chose very useful.

4.8 Association between levels of supportive care needs with demographic characteristics

In determining the association between demographic characteristics data and level of supportive care needs, researcher used Pearson Chi-Square test to evaluate the likely it is that any observed difference between the data sets arouse by chance. The demographic data included were age, gender, ethnicity, religion, marital status, formal education, employment status, household income, cancer type and cancer stage at time of diagnosis. The association between demographic data and level of supportive care needs were displayed in table below.

Table 4.7 shows the summary results of Chi-square test of independence between demographic characteristics and level of supportive care needs. The Pearson's Chi-square test independence suggests that level of supportive care needs was found to have statistically significant association with all demographic characteristic accept religion and formal education of respondents.

None (0.0%) from the age group 18-36, 19 (17.6%) from age group 37 to 55 and 17 (13.9%) from age group 56 and above had no need of supportive care needs. This is indicates that the respondents from age group 37-55 has lowest level of supportive care needs among respondents. The chi-square analyses reveal a significant association between levels of supportive care needs and age group, $X^2(2, N=300) = 13.18$, $p<.05$. Meanwhile, 70 (100.0%) from the age group 18-36, 89
(82.4%) from age group 37 to 55 and 105 (86.1%) from age group 56 and above had some need of supportive care needs. This is indicates respondents from age group 56 and above has highest level of supportive care needs among respondents.
6 (3.7%) from female respondents and 30 (21.9%) from male respondents had no need of supportive care needs. This is indicates that the male respondents hadlowest level of supportive care needs among respondents. The chi-square analyses reveal a significantly association between satisfaction level and gender, $X^2(1, N=300) = 23.39$, $p<.05$. Meanwhile, 157 (96.3%) from female respondents and 107 (78.1%) from male respondents had some need of supportive care needs. This indicates that respondents from female gender has highest level of supportive care needs among respondents.
19 (15.2%) from Malay respondents, 7 (6.0%) from Chinese respondents, 5 (9.3%) from Indian respondents and 5 (100.0%) from other ethnicity had no need of supportive care needs. This is indicates that respondents from Malay ethnicity had lowest level of supportive care needs among respondents. The chi-square analyses reveal a significantly association between satisfaction level and ethnicity, $X^2(3, N=300) = 42.17$, $p<.05$. Meanwhile, 106 (84.8%) from Malay respondents,

109 (94.0%) from Chinese respondents, 49 (90.7%) from Indian respondents and none from other ethnicity had some need of supportive care needs. This indicates respondents from Chinese ethnicity has highest level of supportive care needs among respondents.

19 (14.8%) from Islam religion, 5 (6.3%) from Buddhism religion, 5 (9.3%) from Hindu religion and 7 (18.4%) from Christianity religion had no need of supportive care needs. This is indicates that respondents from Islam religion had lowest level of supportive care needs among respondents. The chi-square analyses reveal not significantly association between satisfaction level and religion, X^2 (3, N=300) = 5.35, p>.05. Meanwhile, 109 (85.2%) from Islam religion, 75 (93.8%) from

Buddhism religion, 49 (90.7%) from Hindu religion and 31 (81.6%) from Christianity religion had some need of supportive care needs. This is indicates that respondents from Malay religion had highest level of supportive care needs among respondents. 5 (4.6%) of single respondents, 23 (16.5%) of married respondents and 8 (15.4%) of widowed respondents had no need of supportive care needs. This is indicates that respondents from married respondents had lowest level of supportive care needs among respondents. The chi-square analyses reveal a significantly association between satisfaction level and marital status, X^2 (2, N=300) = 8.96, p<.05. Meanwhile, 104 (95.4%) of single respondents, 116 (83.5%) of married respondents and 44 (84.6%) of widowed respondents had some need of supportive care needs. This is indicates that respondents from married respondents had highest level of supportive care needs among respondents.

4 (9.3%) from primary education respondents, 27 (15.8%) from secondary education respondents and 5 (5.8%) of tertiary education respondents had no need of supportive care needs. This is indicates that respondents from secondary education respondents had lowest level of supportive care needs among respondents. The chi- square analyses reveal not significantly association between satisfaction level and formal education, X^2 (2, N=300) = 5.74, p>.05. Meanwhile, 39 (90.7%) from primary education respondents, 144 (84.2%) from secondary education respondents and 81 (94.2%) of tertiary education respondents had some need of supportive care needs. This is indicates that respondents from secondary education respondents had highest level of supportive care needs among respondents.

23 (15.0%) from employed respondents, none from unemployed respondents and 13 (14.8%) from retired respondents had no need of supportive care needs. This is indicates that respondents from employed respondents had lowest level of supportive care needs among respondents. The chi-square analyses reveal a significantly association between satisfaction level and formal education, X^2 (2, N=300) = 10.02, p<.05. Meanwhile, 130 (85.0%) from employed respondents, 59 (100.0%) from unemployed respondents and 75 (85.2%) from retired respondents had some need of supportive care needs. This is indicates that respondents from employed respondents had highest level of supportive care needs among respondents.

17 (8.2%) from income less than RM3001, 19 (22.9%) from income between RM3001-RM5000 and none from income more than RM5000 had no need of supportive care needs. This is indicates that respondents from income between RM3001-RM5000 had lowest level of supportive care needs among respondents. The chi-square analyses reveal a significantly association between satisfaction level and household income, X^2 (2, N=300) = 13.44, p<.05. Meanwhile, 191 (91.8%) from income less than RM3000, 64 (77.1%) from income between RM3001-RM5000 and 9 (100.0%) from had some need of supportive care needs. This is indicates that

respondents from income less than RM3000 had highest level of supportive care needs among respondents.

(8.3%) from breast type cancer, 21 (30.9%) from colorectal type cancer, 2 (3.6%) from haematological type cancer and 5 (6.2%) from other type cancer had no need of supportive care needs. This is indicates that respondents from colorectal type cancer had lowest level of supportive care needs among respondents. The chi-square analyses reveal a significantly association between satisfaction level and type of cancer, X^2 (3, N=300) = 30.43, p<.05. Meanwhile, 88 (91.7%) from breast type

cancer, 47 (69.1%) from colorectal type cancer, 53 (96.4%) from haematological type cancer and 76 (93.8%) from other type cancer had some need of supportive care needs. This is indicates that respondents from breast type cancer had highest level of supportive care needs among respondents.

4(3.7%) from early stage, 25 (20.0%) from late stage and 7 (10.6%) from do not know cancer stage had no need of supportive care needs. This is indicates that respondents from late stage had lowest level of supportive care needs among respondents. The chi- square analyses reveal a significantly association between satisfaction level and cancer stage at time of diagnosis, X^2 (2, N=300) = 14.86, p<.05. Meanwhile, 105 (96.3%) from early stage, 100 (80.0%) from late stage and 59 (89.4%) from do not know cancer stage had some need of supportive care needs. This is indicates that respondents from early stage had highest level of supportive care needs among respondents. Table 4.7 Association between levels of supportive care needs with demographic characteristics

	Level of supportive care needs		**X^2**	**d*f***	**p- value**
Characteristics	**No need n(%)**	**Some need n(%)**	**Total n(%)**		
Age (years)			13.18	2	.001
18-36	0 (0.0)	70 (100.0)	70 (100.0)		
37-55	19 (17.6)	89 (82.4)	108 (100.0)		
More than 55	17 (13.9)	105 (86.1)	122 (100.0)		
Gender			23.39	1	.001
Female	6 (3.7)	157 (96.3)	163 (100.0)		
Male	30 (21.9)	107 (78.1)	137 (100.0)		
Ethnicity			42.17	3	.001
Malay	19 (15.2)	106 (84.8)	125 (100.0)		
Chinese	7 (6.0)	109 (94.0)	116 (100.0)		
Indian	5 (9.3)	49 (90.7)	54 (100.0)		
Others	5 (100.0)	0 (0.0)	5 (100.0)		
Religion			5.35	3	.15
Islam	19	109	128		

	(14.8)	(85.2)	(100.0)		
Buddhism	5	75	80		
	(6.3)	(93.8)	(100.0)		
Hindu	5	49	54		
	(9.3)	(90.7)	(100.0)		
Christianity	7	31	38		
	(18.4)	(81.6)	(100.0)		
Marital status			8.96	2	.01
Single	5	104	109		
	(4.6)	(95.4)	(100.0)		
Married	23	116	139		
	(16.5)	(83.5)	(100.0)		
Widowed	8	44	52		
	(15.4)	(84.6)	(100.0)		
Formal education			5.74	2	.06
Primary	4	39	43		
	(9.3)	(90.7)	(100.0)		
Secondary	27	144	171		
	(15.8)	(84.2)	1(00.0)		
Tertiary	5	81	86		
	(5.8)	(94.2)	(100.0)		

Table 4.7 continued

Characteristics	**Level of supportive care needs**		**X²**	**d*f***	**p- value**
	No need n(%)	**Some need n(%)**	**Total n(%)**		
Employment status			10.02	2	.01
Employed Unemployed	23	130	153		
Retired	(15.0)	(85.0)	(100.0)		
	0	59	59		
	(0.0)	(100.0)	(100.0)		
	13	75	88		
	(14.8)	(85.2)	(100.0)		
Household income			13.44	2	.001
<RM3001 RM3001-	17	191	208		
RM5000	(8.2)	(91.8)	(100.0)		
>RM5000	19	64	83		
	(22.9)	(77.1)	(100.0)		
	0	9	9		
	(0.0)	(100.0)	(100.0)		
Type of cancer			30.43	3	.001
Breast Colorectal	8	88	96		
Haematological	(8.3)	(91.7)	(100.0)		
Others	21	47	68		
	(30.9)	(69.1)	(100.0)		
	2	53	55		
	(3.6)	(96.4)	(100.0)		
	5	76	81		
	(6.2)	(93.8)	(100.0)		
Cancer stage at time of			14.86	2	.001

diagnosis			
Early stage (I and II)	4 (3.7)	105 (96.3)	109 (100.0)
Late stage (III and IV)	25 (20.0)	100 (80.0)	125 (100.0)
Do not know	7 (10.6)	59 (89.4)	66 (100.0)

4.9 Summary

There were a total of 300 data used in this data analysis. SPSS version 23.0 was used to analyse the result. The results were tabulated in the table as shown above. Psychological domain was found to have highest mean score which is 2.39 with standard deviation of .60. The chi square test and descriptive statistic were used. . There had been proved to have significantly associated between level of supportive care needs and demographic characteristics. There was not significantly associated between level of supportive care needs and religion and formal education.

Chapter 5

DISCUSSION, RECOMMENDATION AND CONCLUSION

5.0 Introduction

This chapter reviews the research that has been carried out. A brief review of the research is presented. In this part, all issues such as the research objectives, framework and research methodology will be briefly discussed. Then, the major findings of this study will later be discussed. Other than that, in this section, the findings from the test derived from data analysis in previous chapter also will be discussed. The implications of current study also are discussed. Next, the contributions of this study also will be presented. Finally, discussion on the limitation and direction for future research also are presented.

5.1 Discussion

The present study is a cross-sectional analysis of the supportive care needs of cancer patient undergoing chemotherapy in UMMC. The respondents recruited were generally more than 60 years old, mainly Malay, Islam, were married, received at least secondary level education, were employed and with household income less than RM3001 (Table 4.2).

As mentioned in Chapter 1, the main objective of the present study is to determine the supportive care needs of patients with cancer undergoing chemotherapy in UMMC. The descriptive method is used in this study and random sampling method was used for gathering data. The questionnaire served as the instrument for collecting data. All out-patients cancer that undergoing chemotherapy in Infusion Room, Day-

Care Medical in UMMC were the respondents. This study was conducted from June 2018 to September 2018.

Discussion of the following were based on the objective of the study as below:

- To determine the level of supportive care needs of patients with cancer undergoing chemotherapy.
- To identify the domains of needs among patients with cancer.
- To identify the useful sources of supportive care as perceived by patient during treatment of cancer
- To determine the significant association between demographic characteristics and level of supportive care need.

5.1.1 Supportive care needs level of patients with cancer undergoing chemotherapy

The first objective of this study is to determine the level of supportive care needs of patients with cancer undergoing chemotherapy. The supportive care needs level were grouped into five main domains. Domain scores were calculated by summing up the responses to each of the needs items within each domain and dividing the total by the number of items in the domain. The domain score was the dichotomized, with a score one correspond to "no need" and a score two correspond to "some need". In psychological domain, most respondents reports on needs for the item "fears about cancer spreading", " worry about the results of treatment are beyond your control", " uncertainty about future" and " feeling about death and dying".

In physical and daily living, respondents were reported to have low level of needs in this domain as most of the respondents chose "no need" for the items in this domain.

In sexuality domain, the findings of this study reported that most respondents have low level of needs for this domain most of them chose "no need" for the items in these domain.

In health system and information, the finding of this study proved that the respondents have low needs in this domain as most of the respondents chose "no need" for each item in this domain.

In patient care and support domain, this findings of this study reported that most of the respondents has low level of need for this domain as majority of them chose "no need" for the items in this domain.

The highest level of supportive care needs is item in psychological domain, "Uncertainty about the future" where the mean score is 1.84 with standard deviation of .37. Meanwhile, the lowest mean score for the item on patient's level of supportive care needs is item in health system and information domain, "Being given information (written, diagrams, drawings) about aspects of managing illness and side-effects at home" where the mean score is 1.07 with standard deviation of .25.

5.1.2 Domains of needs among patients with cancer

The second objective of the study aimed to identify domains of needs among patients with cancer.

From the results of the current study (Table 4.6) revealed that respondents indicated a higher mean score (by means representing a higher level of supportive care

needs in the domain, range 1-4) in the *psychological* domain with mean score is 2.39 and standard deviation of .60, followed by *patient care and support* domain which is
2.01 with standard deviation of .58, *physical and daily living* domain which is 1.95 with standard deviation of .48, *health system and information* domain which is also shows mean of 1.95 with standard deviation of .47 and the *sexuality* domain which has the lowest mean score which is 1.60 with standard deviation of .73. However, this findings is in contrast with previous research among breast cancer survivors done in Kuching, Sarawak (W. L. Cheah, 2016) which ranked the *health system and information* domain with the highest mean score.

Based on the individual item ranking (Table 4.7), there is a greater need expressed within *psychological* domain compared to other domains such as *health system and information* domain. This finding is consistent with previous study in Australia (Sanson-Fisher et al, 2001) which ranked *psychological* domain with the highest mean score. However, these findings were in contrast with previous research among breast cancer survivors done in Kuching, Sarawak (W. L. Cheah, 2016) which ranked *health system and information* domain as a greater need expressed. This difference may be due to underlying cross-continental cultural difference between respondents of in Sarawak and compared to respondents in Kuala Lumpur.

5.1.3 Useful sources of supportive care as perceived by patient during treatment of cancer

The third objective aimed to identify the useful sources of supportive care as perceived by patient during treatment of cancer. From the results of the current study, a total of 207 respondents reported to choose "doctor" as the most useful source of supportive

care perceived which are the highest source of supportive care perceived by respondents with mean shows 4.69 with standard deviation of .46 , followed by "nurses" (4.35, SD: .58), "family member" (3.76, SD: .82), "friends" (2.98, SD: 1.20),
"religion body" (2.67, SD: 1.35), "website/internet" (2.16, SD: 1.30), "patient's guide

book/leaflet" (2.04, SD: 1.30), "YouTube" (1.86, SD: 1.15), "social worker" (1.82, SD: 1.00), "medical book and journal" (1.81, SD: 1.12), "cancer support group/volunteer" (1.80, SD: 1.02), "newspaper/ magazine" (1.78, SD: 1.05) and lastly
"television/ radio" (1.74, SD: .98).

5.1.4 Supportive care needs level with demographic characteristics

The forth objective aimed to determine the significant association between demographic characteristics and level of supportive care need. In this study, age has been associated with higher levels of supportive care needs among cancer patients. This is proven as results had shown that cancer patients more than 56 years old displayed higher levels of supportive care needs compared to those who is aged below than 56 years old. This finding was said to be in contrast with research from Australia in which results showed cancer patients' ages between 31-60 years consistently displayed higher levels of supportive care needs compared to those aged 70 years and above.

Gender was associated with reporting needs with female gender has highest level of supportive care needs among respondents as compared to male respondents. This findings is said to be similar with previous research from Australia (Sanson- Fisher et al, 2000). Even though the results may be influenced by the number of female

respondents which were larger sample than male respondents (54.3%), it is consistence with other research.

Marital status was associated with reporting needs with respondents who were married has highest level of supportive care needs among respondents as compared to single and widowed respondents. This was consistent with previous research from Australia (Sanson-Fisher et al, 2000) whereby married patients ($p<0.001$) were significantly more likely to indicate the need of help. Moreover, this finding make intuitive sense in which given that married respondents have spouse whom they need to confront their needs especially sexuality needs more frequently, therefore increase the needs.

Formal education was not associated with level of supportive care needs among respondents with mean being not significant ($p>.05$). This finding was found consistent with previous study from Australia (Sanson-Fisher et al, 2001). This can be said that respondents with higher level of education are more likely to be aware of their condition, leading them to actively seek ways to improve their state of health and barriers they would face.

Current study had reported that respondents who are employed had highest level of supportive care needs among respondents. This findings proved that employment status was associated with level of supportive care needs among respondents as compared to unemployed and retired respondents. This finding was found in contrast with previous research from Australia (Sanson-Fisher et al, 2001) in which resulted in unemployed respondents to report a higher domain mean score compared to those who were unemployed. There may be underlying factors which

influence this outcome such as due to complications from treatment of chemotherapy they undergoing resulted reduce in ability to work.

Household income level show significant associated with level of supportive care needs among respondents. This study proved that respondents from income less than RM3000 had highest level of supportive care needs among respondents. This findings was found in contrast with previous study done in Kuching, Sarawak (W. L. Cheah, 2016) in which the results did not show any significant difference in any of the domain scores. It was suggested that having less income can leads to financial barriers in terms of ability to satisfy one's daily care and needs.

Cancer stage at time of diagnosis show significant associated with level of supportive care needs among respondents in this current study where it proved that respondents from early stage had highest level of supportive care needs among respondents. However, this findings was found to be in contrast with previous research done in Kuching, Sarawak (W. L. Cheah, 2016) which resulted not significance different in mean scores across all domain in relation to cancer stage at time of diagnosis. However, this study suggests that there are still supportive care needs that needed to be addressed, despite of any of cancer staging at time of diagnosis.

5.2 Limitation of the study

The first limitation of the study is that the random sampling method had contributed to a higher chance of biases which can lead to not reliable data. Every study may have biases in approaching sample during data collection. As for this study, the researcher may tend to approach Malay respondents compared to other ethnicity as it was much easier to give cooperation to the same ethnicity compared to difference ethnicity.

Besides that, the study setting is also one of the limitation of this study as the data was collected at Infusion Room, Day-Care Medical UMMC only. Other than that, respondents who were not proficient in English, unable to read and too ill were excluded to take part in this study which may have resulted in an underestimate of the prevalence of supportive care needs given that language barriers have been associated with poorer access to health care services. Lastly, the limitation of being a cross- sectional study means that cause-effect relationship could not be assessed and any changes in the supportive care needs cannot be evaluate over time.

5.3 Recommendation

Based on the findings presented, the following recommendations are suggested:

1. The researcher recommend to change the sampling method as to avoid bias in sampling.
2. The researcher recommend that to expand the collection setting to few area such including inpatient cancer so that the more data can be analyse on supportive care needs of cancer patients
3. The researcher recommend to include health care provider especially nurses' perspective on supportive care needs given to patients so that the unmet needs and any lack of supportive care given during treatment can be addressed.

5.4 Summary

In summary, this study had provided valuable insights into demographic characteristics of cancer patients undergoing chemotherapy in UMMC and their associated supportive care needs with gaps of physical domain is emphasized. There should be effort including the delivery of supportive care needs in psychological domain that should be targeted, culturally sensitive, with appropriate linguistically, especially to mid-age cancer patients, had secondary education attainment, and were employed with low household income and those in early stage of diagnosis.

REFERENCES

Akizuki, N., Yamawaki, S., Akechi, T., Nakano, T., & Uchitomi, Y. (2005). Development of an Impact Thermometer for use in combination with the Distress Thermometer as a brief screening tool for adjustment disorders and/or major depression in cancer patients. *Journal of Pain and Symptom Management*,*29*(1), 91-99. doi:10.1016/j.jpainsymman.2004.04.016

Armes, J., Crowe, M., Colbourne, L., Morgan, H., Murrells, T., Oakley, C., . . . Richardson, A. (2009). Patients Supportive Care Needs Beyond the End of Cancer Treatment: A Prospective, Longitudinal Survey. *Journal of Clinical Oncology*,*27*(36), 6172-6179. doi:10.1200/jco.2009.22.5151

Boyes, A., Girgis, A., & Lecathelinais, C. (2009). Brief assessment of adult cancer patients perceived needs: Development and validation of the 34-item Supportive Care Needs Survey (SCNS-SF34). *Journal of Evaluation in Clinical Practice*,*15*(4), 602-606. doi:10.1111/j.1365-2753.2008.01057.x

Boyes, A. W., Girgis, A., D'Este, C., & Zucca, A. C. (2012, April 18). Prevalence and correlates of cancer survivors' supportive care needs 6 months after diagnosis: a population based cros-sectional study. Retrieved January 03, 2018, from https://bmccancer.biomedcentral.com/articles/10.1186/1471-2407-12-150

Cancer Facts & Figures 2017. (n.d.). Retrieved November 20, 2017, from https://www.cancer.org/research/cancer-facts-statistics/all-cancer-factsfigures/cancer-facts-figures-2017.html

Cheah, W. L., Ling, N. C., & Chang, K. H. (2016, February). The supportive care needs for Prostate cancer patients in Sarawak. Retrieved January 03, 2018, from http://www.ncbi.nlm.nih.gov/pubmed/26932431

Definition of cancer patient. (n.d.). Retrieved from https://www.collinsdictionary.com/dictionary/english/cancer-patient

Definition of 'pilot study'. (n.d.). Retrieved November 20, 2017, from https://www.collinsdictionary.com/dictionary/english/pilot-study

Epping-Jordan, J. E. (2004). Improving the quality of health care for chronic conditions. *Quality and Safety in Health Care*,*13*(4), 299-305. doi:10.1136/qhc.13.4.299

Fong, E. J., & Cheah, W. L. (2016). Unmet Supportive Care Needs among Breast Cancer Survivors of Community-Based Support Group in Kuching, Sarawak. Retrieved November 20, 2017, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4863116/

Harrison, J. D., Young, J. M., Price, M. A., Butow, P. N., & Solomon, M. J. (2009, March 25). What are the unmet supportive care needs of people with cancer? A systematic

review. Retrieved January 03, 2018, from https://link.springer.com/article/10.1007/s00520-0090615-5

Hegel, M. T., Collins, E. D., Kearing, S., Gillock, K. L., Moore, C. P., & Ahles, T. A. (2008). Sensitivity and specificity of the Distress Thermometer for depression in newly diagnosed breast cancer patients. *Psycho-Oncology,17*(6), 556-560. doi:10.1002/pon.1289

Mccarthy, Bridie & Andrews, Tom & Hegarty, Josephine. (2014). Emotional Resistance Building: How family members of loved ones undergoing chemotherapy treatment process their fear of emotional collapse. Journal of Advanced Nursing. 71. 10.1111/jan.12549.

Nakaguchi, T., Okuyama, T., Uchida, M., Ito, Y., Komatsu, H., Wada, M., & Akechi,

T. (2013). Oncology Nurses Recognition of Supportive Care Needs and Symptoms of their Patients Undergoing Chemotherapy. *Japanese Journal of Clinical Oncology,43*(4), 369-376. doi:10.1093/jjco/hyt003

NCI Dictionary of Cancer Terms. (n.d.). Retrieved from https://www.cancer.gov/publications/dictionaries/cancer-terms/def/chemotherapy

NCI Dictionary of Cancer Terms. (n.d.). Retrieved from https://www.cancer.gov/publications/dictionaries/cancer-terms/def/supportive-care

Pilot study. (n.d.). Retrieved from Collins English Dictionary: https://www.collindoctionary.com/dictionary/english/pilot-study

Sample size calculator. (2004). Retrieved from http://www.raosoft.com/samplesize.html

Salarvand, Shahin & Hemati, Simin & Adibi, Peyman & Taleghani, Fariba. (2017). Priorities in Supportive Care Needs for Non-metastatic Cancer Patients Undergoing Chemotherapy in Iran: The Oncologists' Perceptions. Middle East Journal of Cancer. 8. 195-205.

Sanson-Fisher, R., Girgis, A., Boyes, A., Bonevski, B., Burton, L., & Cook, P. (2000, November 20). The unmet supportive care needs of patients with cancer. Retrieved November 20, 2017, from http://onlinelibrary.wiley.com/doi/10.1002/(SICI)10970142(20000101)88:1%3C226::AID-CNCR30%3E3.0.CO;2-P/full

Smith, A., Hyde, Y. M., & Stanford, D. (2014). Supportive care needs of cancer patients: A

literature review. *Palliative and Supportive Care,13*(04), 1013- 1017. doi:10.1017/s1478951514000959

Official Portal University Malaya Medical Centre. (2013). Retrieved from https://www.ummc.edu.my/

What Is Cancer? (n.d.). Retrieved November 20, 2017, from https://www.cancer.gov/aboutcancer/understanding/what-is-cancer

PHP-945

THE CORRELATION OF MOTHER'S ROLE WITH TOILET TRAINING ABILITY FOR CHILDREN AS OLD AS 18-36 MONTHS AT BARENG VILLAGE, BARENG SUB DISTRICT, IN JOMBANG DISTRICT

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ABSTRACT

Toilet Training for children is an effort to train children in order to be able to control in urinating and defecating .Parents who are less to play an active role and they are less to understand the readiness of children because they have activities with their work or they are lazy to do toilet training will affect many children as old as 18-36 months to get bed wetting. Defecating (BAB) and urinating (BAK) at everywhere, even until school age were caused because of toilet training failure. This research aimed to determine the correlation of mother's role with toilet training ability for children as old as 18 – 36 months at Bareng Village, Bareng Sub District, in Jombang District. The design of research used correlation analytic with cross sectional approach . Population in this research was all mothers who had children as old as 18 – 36 months at Bareng Village, Bareng Sub District, In Jombang District as many as 325 people. The total of samples was 65 respondents. Sampling technique used cluster random sampling. Research variable consisted of Independent variable was mother's role by using questionnaire. and toilet training ability for children as old as 18 – 36 months by using questionnaire, furthermore it was analyzed by using the statistical test of chi square with $\alpha = 0,05$. The result of this research showed that the most mother's role were positive as many as 39 respondents (60 %) , the most of toilet training capability for children as old as 19 – 36 months were capable as many as 44 respondents { I 67, 7 }. The result of Chi square test was obtained 0'000 , 005. This research concluded that there were the correlation of mother's role with toilet training ability for children as old as 18 – 36 months at Bareng Village, Bareng Sub District, in Jombang District. it is expected that mothers had better practice toilet training to children and avoid using the practical way such as wearing diapers frequently.

Keywords: mother's role, toilet training, children as old as 36 months

1. Introduction

Family in relation to children is identified as a place or institution of care that can give love. Meeting emotional and loving needs can be started as early as possible. Emotional bonding and close affection between parents and children will be useful to determine children's behavior in the future. Families have duties in child development, such as giving examples of good behavior, upholding discipline, giving affection, fulfilling educational needs and maintaining children [1]. When children are 18-36 months old parents must begin to exercise their children's ability to urinate and defecate into the toilet. Parents must be patient and understand the child's readiness to start teaching toilet use. Parents also have to have positive support, one example is parents must be ready to take children to the toilet when they want to defecate or urinate [2].

Parents do not play an active role and do not understand children's readiness, because some parents are busy with their work or are lazy in doing toilet training. This busyness makes parents not want to bother in taking care of their children. Parents use more practical methods with the use of diapers so that the mother does not have difficulties when the child wants to defecate. Busy parents

also do not pay attention to the environment in their house that looks dirty, so children are less comfortable with facilities for defecation as well as parents who do not provide bathroom facilities that are easily accessible to children [3].

A survey conducted in Indonesia by the Nakita tabloid (2014) states that half a million children aged 6-16 years still bed wet. It consisted of: 17% of children aged 5 years, 14% of children aged 7 years, 9% of children aged 9 year, and 1-2% of children aged 15 years, while about 30% of children are 4 years old, 10% of children are 6 years old, 3% of children are 12 years old and 1% of children are 18 years old still wet their bed. There are also around 20% of children under five not doing toilet training and 75% of parents do not view such conditions as a problem.

Based on preliminary studies conducted by researchers on March 9, 2017 using a questionnaire in Bareng Village, Bareng District, Jombang Regency of 10 respondents who had children aged 18-36 months, it was found that 6 children were still wet because their role in toilet training was lacking, 2 children have enough toilet training and 2 children can do toilet training or are already good.

Toilet training in children is an attempt to train children to be able to control urination and defecation. This toilet training can take place at the stage of a child's life at the age of 18 - 36 months. The problem arising from the above incident is that many children aged 18-36 months who wet their bed, defecation and bladder were banned, even to school age due to the failure of toilet training. This will adversely affect the future development of children. The impact caused by parents who do not implement toilet training among children is that children become stubborn and unruly. In addition, children are not independent and still carry the habit of wetting the bed. Toilet training that is not taught early will make it more difficult for parents to teach children when children get older (Firdaus, 2014).

Children generally have not learned to use the toilet until they are 3 years old. Boys usually learn to use the toilet for 6 months and take longer than girls. Most health experts suggest that toilet training should be done when children begin to show interest in learning toilet training (Karen, 2010). Children who use diapers will usually experience delays in toilet training. The delay is due to the child feeling that there is no need to go to the toilet because when using a diaper they still feel comfortable despite having done BAK. Generally, children who use diapers are starting to be interested in toilet training at the age of 4 years, even in some cases children begin learning toilet training at the age of 7 years. (Frank & Theresa, 2010). Many things that cause toilet training failures include the use of diapers, starting toilet training at the wrong time, forcing children and punishing children. The use of diapers should be stopped when the child is 2 years old because with the use of diapers the child will not be trained to control when it is time to defecate and bladder. In children aged 18-36 months, if toilet training is carried out properly, children should not wet their bed during the day. Parents should not punish and scold children in applying toilet training because almost no child does remember to wet his bed (Hendi, 2010).

The benefit of applying children's training toilets is to train children to live in discipline, be responsible, foster self-confidence and shape children to master themselves. All the benefits of applying toilet training are conducted simultaneously to train motor skills and sharpen independence (Rahadiasih, 2010). Parents should play a more active role in seeking information through the media. The media include books and the internet that contain the importance of toilet training education in children aged 18-36 months. Parents can train toilet training as early as possible for their children, so that they will not increase their bedwetting and defecation and defecation.

Based on the background above, the researcher was interested in conducting research on the relationship of the role of mothers with toilet training abilities in children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency.

2. Methods

The design of the research in this study is analytic correlation with across sectional approach. The population in this study were all mothers who had children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency, amounting to 325 people. The sample used was 65 respondents with cluster random sampling.

3. Measure

The variable of this study consisted of independent variables, namely the role of the mother using a questionnaire and the ability of toilet training in children aged 18-36 months using a questionnaire and which were then analyzed using the chi square test.

4. Results

The results of the research obtained in the study of the Relationship between the Role of Mothers and Toilet Training Ability in Children 18-36 Months in Bareng Village, Bareng District, Jombang Regency on April 13-21 2018 are as follows: Table 1 shows that the majority of respondents aged 20-35 years were 40 respondents (61.5%). Most of the respondents had basic education (elementary, junior high), which was 41 respondents (63.1%). Most of the respondents did not work namely 44 respondents (67.7%). Almost all respondents had received information about toilet training, namely 54 respondents (83.1%). Most of them get information from health workers, namely 31 respondents (57.4%). Most of the children aged 18-24 months were 35 respondents (53.8%). And most of the sex of boys is 33 respondents (50.8%). Table 2 shows that the majority of maternal roles are positive, namely 39 respondents (60%). Table 3 shows that the majority of toilet training capabilities in children aged 18-36 months are capable of a number of 44 respondents (67.7%). Table 4 that of the 39 respondents the role of positive mothers was almost entirely the ability of toilet training in the category of capable of 34 people (87.2%)

5. Discussion

From the results of the chi square statistical test obtained significant numbers or probability values (0,000) far lower significant standard 0.05 or (r <a), due to r <a, which means there is a relationship of the role of mothers with toilet training abilities in children aged 18- 36 months in Bareng Village, Bareng District, Jombang Regency. From the results of the Contingency Coefficient statistical test, it obtained significant numbers with a value of 0.455 which means it is in the medium category. The role is a behavior associated with someone who holds a certain position, a position identifying a person's status or place in a social system [4]. According to Rahayu [3] affection and mother's role influence the implementation of early toilet training, where the attention of the mother will monitor the development of children aged 18-36 months, it will have a faster effect in training children aged 18-36 months to do toilet training early. With the role of mother, the child will be more courageous or motivated to try because they get attention and guidance. According to the researchers, this study has a conformity with the facts above where mothers who have a positive role in implementing toilet training almost all have children who are able to do toilet training. Through training toilets, children will be taught by parents to be responsible for doing BAB or BAK activities in their place and avoid defecating or urinating in places. But the results of the study also found a slight gap where there were still mothers who had a negative role but their children were able to do toilet training at 10 respondents (38.5%). This could be because parents do not wear diapers on their children so that children are not used to defecating and smacking their pants. In addition, physical, mental and cognitive readiness in children aged 18-36 months so naturally children are able to not wet their bed for 2 hours, imitate parents while in the bathroom and curiosity about the toilet habits of their older siblings or parents. That way even though the role of parents is not optimal or has a negative role, the child is able to do toilet training.

6. Conclusion

The role of mothers in Bareng Village, Bareng Sub-District, Jombang Regency is mostly 39 respondents (60%). The ability of toilet training in children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency is mostly capable of 44 respondents (67.7%). There is a relationship between mother's role and toilet training ability in children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency in the medium category (0.455).

References

[1] Nursalam 2010 Keluarga Mempunyai Tugas Dalam Perkembangan Anak *J. Heal. Sci.* **3**
[2] Nuhayati 2011 Pengajaran toilet training pada anak *J. Heal. Sci.* **2**
[3] Rahayu D M and Firdaus F 2015 Hubungan Peran Orang Tua Dengan Kemampuan Toilet Training Pada Anak Usia Toddler Di Paud Permata Bunda Rw 01 Desa Jati Selatan 1 Sidoarjo *J. Heal. Sci.* **8**
[4] Friedman M M, Bowden V R and Jones E 2003 *Family nursing: research, theory & practice* (Prentice Hall)

PHP-970

THE RELATION BETWEEN FAMILY SUPPORT AND PATIENTS' SELF-ESTEEM IN LEPROSY HOSPITAL AT KEDIRI

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ABSTRACT

The high incidence of leprosy will give a great impact on the lifes of leprosy patients, families and communities. As a result, the leporsy patients lose their role in society. it makes them feel no self-esteem. The purpose of this research is therefore to find out the relation between family support and self-esteem of leprosy patients in the Leprosy Hospital at Kediri. This research method used was descriptive analytic with cross sectional approach. The research population was 48 respondents, taken by purposive sampling, there were 43 respondents and the data collection technique used was questioner. Data were analyzed with Spearman's rho.The results of this research indicate that family support of leprosy patients in the Leprosy Hospital at Kediri is mostly "good" (79.07%) and self-esteem of leprosy patients at the Leporsy Hospital at Kediri is mostly "fair" (67.44%). From Spearman's rho test, the results obtained was value of p = 0.000, because the p-value less than 0.05, it means that there is a significant relation between family support and self-esteem of leprosy patients at the leporsy Hospital at Kediri The researcher concludes that the support of family is found closely related to leprosy patients in Leporsy Hospital at Kediri..

Keywords: family support, self-esteem

1. Introduction

Family in relation to children is identified as a place or institution of care that can give love. Meeting emotional and loving needs can be started as early as possible. Emotional bonding and close affection between parents and children will be useful to determine children's behavior in the future. Families have duties in child development, such as giving examples of good behavior, upholding discipline, giving affection, fulfilling educational needs and maintaining children [1]. When children are 18-36 months old parents must begin to exercise their children's ability to urinate and defecate into the toilet. Parents must be patient and understand the child's readiness to start teaching toilet use. Parents also have to have positive support, one example is parents must be ready to take children to the toilet when they want to defecate or urinate [2].

Parents do not play an active role and do not understand children's readiness, because some parents are busy with their work or are lazy in doing toilet training. This busyness makes parents not want to bother in taking care of their children. Parents use more practical methods with the use of diapers so that the mother does not have difficulties when the child wants to defecate. Busy parents also do not pay attention to the environment in their house that looks dirty, so children are less comfortable with facilities for defecation as well as parents who do not provide bathroom facilities that are easily accessible to children [3].

A survey conducted in Indonesia by the Nakita tabloid (2014) states that half a million children aged 6-16 years still bed wet. It consisted of: 17% of children aged 5 years, 14% of children aged 7 years, 9% of children aged 9 year, and 1-2% of children aged 15 years, while about 30% of children are 4 years old, 10% of children are 6 years old, 3% of children are 12 years old and 1% of children

are 18 years old still wet their bed. There are also around 20% of children under five not doing toilet training and 75% of parents do not view such conditions as a problem.

Based on preliminary studies conducted by researchers on March 9, 2017 using a questionnaire in Bareng Village, Bareng District, Jombang Regency of 10 respondents who had children aged 18-36 months, it was found that 6 children were still wet because their role in toilet training was lacking, 2 children have enough toilet training and 2 children can do toilet training or are already good.

Toilet training in children is an attempt to train children to be able to control urination and defecation. This toilet training can take place at the stage of a child's life at the age of 18 - 36 months. The problem arising from the above incident is that many children aged 18-36 months who wet their bed, defecation and bladder were banned, even to school age due to the failure of toilet training. This will adversely affect the future development of children. The impact caused by parents who do not implement toilet training among children is that children become stubborn and unruly. In addition, children are not independent and still carry the habit of wetting the bed. Toilet training that is not taught early will make it more difficult for parents to teach children when children get older (Firdaus, 2014).

Children generally have not learned to use the toilet until they are 3 years old. Boys usually learn to use the toilet for 6 months and take longer than girls. Most health experts suggest that toilet training should be done when children begin to show interest in learning toilet training (Karen, 2010). Children who use diapers will usually experience delays in toilet training. The delay is due to the child feeling that there is no need to go to the toilet because when using a diaper they still feel comfortable despite having done BAK. Generally, children who use diapers are starting to be interested in toilet training at the age of 4 years, even in some cases children begin learning toilet training at the age of 7 years. (Frank & Theresa, 2010). Many things that cause toilet training failures include the use of diapers, starting toilet training at the wrong time, forcing children and punishing children. The use of diapers should be stopped when the child is 2 years old because with the use of diapers the child will not be trained to control when it is time to defecate and bladder. In children aged 18-36 months, if toilet training is carried out properly, children should not wet their bed during the day. Parents should not punish and scold children in applying toilet training because almost no child does remember to wet his bed (Hendi, 2010).

The benefit of applying children's training toilets is to train children to live in discipline, be responsible, foster self-confidence and shape children to master themselves. All the benefits of applying toilet training are conducted simultaneously to train motor skills and sharpen independence (Rahadiasih, 2010). Parents should play a more active role in seeking information through the media. The media include books and the internet that contain the importance of toilet training education in children aged 18-36 months. Parents can train toilet training as early as possible for their children, so that they will not increase their bedwetting and defecation and defecation.

Based on the background above, the researcher was interested in conducting research on the relationship of the role of mothers with toilet training abilities in children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency.

2. Methods

The design of the research in this study is analytic correlation with across sectional approach. The population in this study were all mothers who had children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency, amounting to 325 people. The sample used was 65 respondents with cluster random sampling.

3. Measure

The variable of this study consisted of independent variables, namely the role of the mother using a questionnaire and the ability of toilet training in children aged 18-36 months using a questionnaire and which were then analyzed using the chi square test.

4. Results

The results of the research obtained in the study of the Relationship between the Role of Mothers and Toilet Training Ability in Children 18-36 Months in Bareng Village, Bareng District, Jombang Regency on April 13-21 2018 are as follows: Table 1 shows that the majority of respondents aged 20-35 years were 40 respondents (61.5%). Most of the respondents had basic education (elementary, junior high), which was 41 respondents (63.1%). Most of the respondents did not work namely 44 respondents (67.7%). Almost all respondents had received information about toilet training, namely 54 respondents (83.1%). Most of them get information from health workers, namely 31 respondents (57.4%). Most of the children aged 18-24 months were 35 respondents (53.8%). And most of the sex of boys is 33 respondents (50.8%). Table 2 shows that the majority of maternal roles are positive, namely 39 respondents (60%). Table 3 shows that the majority of toilet training capabilities in children aged 18-36 months are capable of a number of 44 respondents (67.7%). Table 4 that of the 39 respondents the role of positive mothers was almost entirely the ability of toilet training in the category of capable of 34 people (87.2%)

5. Discussion

From the results of the chi square statistical test obtained significant numbers or probability values (0,000) far lower significant standard 0.05 or (r <a), due to r <a, which means there is a relationship of the role of mothers with toilet training abilities in children aged 18- 36 months in Bareng Village, Bareng District, Jombang Regency. From the results of the Contingency Coefficient statistical test, it obtained significant numbers with a value of 0.455 which means it is in the medium category. The role is a behavior associated with someone who holds a certain position, a position identifying a person's status or place in a social system [4]. According to Rahayu [3] affection and mother's role influence the implementation of early toilet training, where the attention of the mother will monitor the development of children aged 18-36 months, it will have a faster effect in training children aged 18-36 months to do toilet training early. With the role of mother, the child will be more courageous or motivated to try because they get attention and guidance. According to the researchers, this study has a conformity with the facts above where mothers who have a positive role in implementing toilet training almost all have children who are able to do toilet training. Through training toilets, children will be taught by parents to be responsible for doing BAB or BAK activities in their place and avoid defecating or urinating in places. But the results of the study also found a slight gap where there were still mothers who had a negative role but their children were able to do toilet training at 10 respondents (38.5%). This could be because parents do not wear diapers on their children so that children are not used to defecating and smacking their pants. In addition, physical, mental and cognitive readiness in children aged 18-36 months so naturally children are able to not wet their bed for 2 hours, imitate parents while in the bathroom and curiosity about the toilet habits of their older siblings or parents. That way even though the role of parents is not optimal or has a negative role, the child is able to do toilet training.

6. Conclusion

The role of mothers in Bareng Village, Bareng Sub-District, Jombang Regency is mostly 39 respondents (60%). The ability of toilet training in children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency is mostly capable of 44 respondents (67.7%). There is a

relationship between mother's role and toilet training ability in children aged 18-36 months in Bareng Village, Bareng District, Jombang Regency in the medium category (0.455).

References

[1] Nursalam 2010 Keluarga Mempunyai Tugas Dalam Perkembangan Anak *J. Heal. Sci.* **3**

[2] Nuhayati 2011 Pengajaran toilet training pada anak *J. Heal. Sci.* **2**

[3] Rahayu D M and Firdaus F 2015 Hubungan Peran Orang Tua Dengan Kemampuan Toilet Training Pada Anak Usia Toddler Di Paud Permata Bunda Rw 01 Desa Jati Selatan 1 Sidoarjo *J. Heal. Sci.* **8**

[4] Friedman M M, Bowden V R and Jones E 2003 *Family nursing: research, theory & practice* (Prentice Hall)

Appendix

Table 8. Relationship between Emotional Support of Families and Self-Esteem of Lepers in Kediri Infection Hospital

Family Emotional Support	Self-Esteem		
	High	Medium	low
Well	5 (11.63)	24 (55.81)	3 (6.98)
Enough	0 (0.00)	5 (11.63)	4 (9.30)
Less	0 (0.00)	0 (0.00)	2 (4.65)
Test Results Spearman's rho : p = 0.000; Correlation coefficient = 0.669			

Table 9. Relationship between the Support of Family Award and Self-Esteem of Persons Affected by Leprosy at Kediri Infection Hospital

Family Award Support	Self-Esteem		
	High	Medium	low
Well	5 (11,63)	27 (62,79)	5 (11,63)
Enough	0 (0,00)	1 (2,33)	2 (4,65)
Less	0 (0,00)	1 (2,33)	2 (4,65)
Test Results Spearman's rho : p = 0,000; Correlation coefficient = 0,731			

Table 10. Relationship between Instrumental Family Support and Self-Esteem of Lepers in Kediri Infection Hospital

Family Instrumental Support	Self-Esteem		
	High	Medium	low
Well	4 (9.30)	26 (60.47)	2 (4.65)
Enough	1	2	6

	(2.33)	(4.65)	(13.95)
Less	0 (0.00)	1 (2.33)	1 (2.33)

Test Results Spearman's rho : p = 0.000; Correlation coefficient = 0.636

Table 11. Relationship between Family Informational Support and Self-Esteem of Lepers in Kediri Infection Hospital

Informational Family Support	Self-Esteem		
	High	Medium	low
Well	5 (11.63)	25 (58.14)	2 (4.65)
Enough	0 (0.00)	3 (6.98)	4 (9.30)
Less	0 (0.00)	1 (2.33)	3 (6.98)

Test Results Spearman's rho : p = 0.000; Correlation coefficient = 0.698

Table 12. Relationship between Family Support and Self-Esteem of Lepers in Kediri Infection Hospital

Family Support	Self-Esteem		
	High	Medium	low
Well	5 (11.63)	26 (60.47)	3 (6.98)
Enough	0 (0.00)	3 (6.98)	4 (9.30)
Less	0 (0.00)	0 (0.00)	2 (4.65)

Test Results Spearman's rho : p = 0.000; Correlation coefficient = 0.764

PHP-975

ADJUSMENT DURING THE TRANSITION TO RETIREMENT: A SYSTEMATIC REVIEW

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ABSTRACT

The transition to retirement is a simple event that happens to those who work, this can be a fun thing for some people, but it can cause problems for others. The purpose of this review is to find out how retirement experiences during the transition to retirement, especially changes and difficulties in adjusting for retirement. A systematic search was performed via Scopus, Google Scholar, and Pubmed, and a reference list of retrieved longitudinal study and cohort studies in English that studied adaptation in the transition to retirement and the factors that influenced it. A total of 10 studies, the study explained psychosocial factors, 2 others added socioeconomic aspects that influence retirement adjustments. The findings show that retirement perceptions, retirement self-efficacy, mental resources, psychosocial factors can help retirees adapt during the transition period. Adaptation during retirement transition is strongly influenced by individual psychosocial factors. Every individual who is in a transition period needs to be given training to improve psychosocial skills in order to maintain their health in general.

Keywords: adjusment, trantition to retirement

1. Introduction

Transition from work to retirement is a major life event in most people's lives [1] which may influence health behaviors and use of time [2], and is a source of major changes in the organization of daily life and societal status [3]. About 70% of retirees experienced minimum psychological well-being changes; about 25% of retirees experienced negative changes in psychological wellbeing during the initial transition stage, but showed improvements afterwards; and about 5% of retirees experienced positive changes in psychological well-being [4].

Retirement is a key moment in the existence of each individual, and its impact on an individual's lifestyle changes is consequential [3]. The quality of retirement adjustment varies by the amount of retirement resources and overall changes in total resources during the retirement transition [5], quality of retirement adjustment is strongly dependent on the amount of total resources possessed by the retired person, upon experiences earlier in life [6], who experience loneliness, the transition to retirement could result in depression and health problems earlier in life might experience more difficulties adjusting to the social dimensions of the retirement transition as well [6]. Therefore, the purpose of this systematic review to find out how retirement experiences during the transition to retirement, especially changes and difficulties in adjusting for retirement.

2. Material and methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews) Statement.

2.1 Data Sources, searches, and data selection

A systematic literature search was performed from December 2013 to April 2018 of Scopus, Proquest, Science Direct, and Google Scholar. The literature review was conducted using adaptation or adjustment, transition to retirement keywords. The selection of articles is determined by the following inclusion criteria: (1) full text published; (2) articles published between to 2013-2018; (3) articles published in English; (4) articles focusing on factors that influence adaptation in the transition to retirement

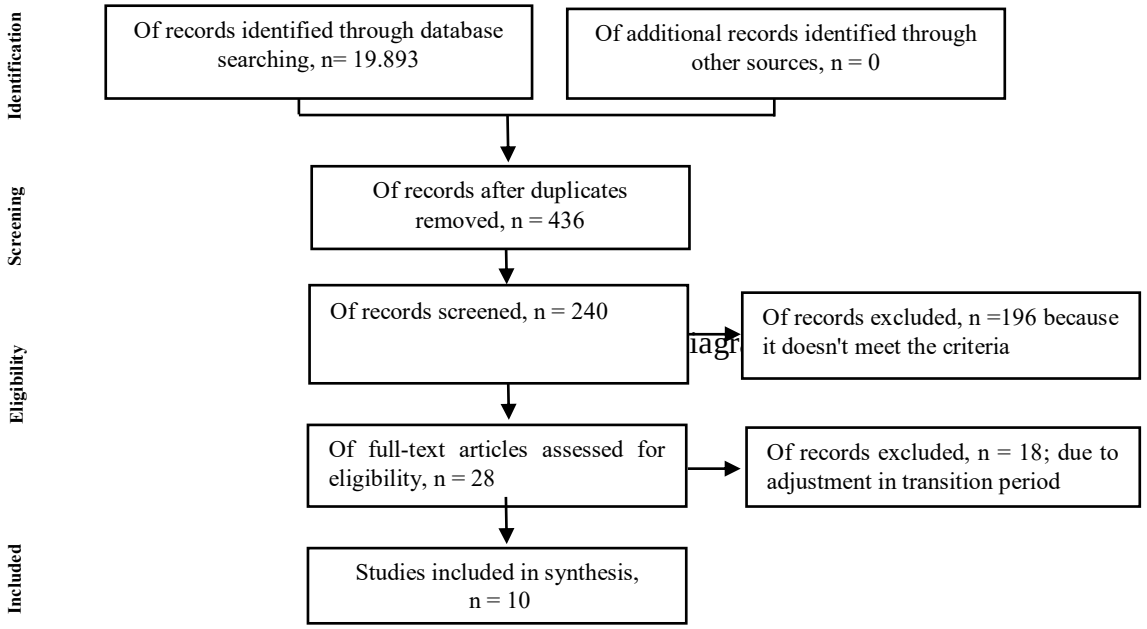
2.2 Data extraction and quality assessment

All quotes taken from electronic databases are imported into the Mendeley Program. Analysis of the title and abstract of each study taken from the literature search to identify studies that have the potential to meet the requirements of the first reviewer. The full text of the remaining research is obtained for further examination. The last review was conducted by reviewers of two reviewer. Data of included studies were independently extracted by the same two reviewers by including first author's name, year of publication, study design, general characteristics of participants, research measurement tool and the main outcome of interest. Descriptive analysis was carried out on data obtained from papers reviewed to analyze adjustments during the pension and life transition period after retirement. Our hypothesis is that retirement adjustments are influenced by the resources possessed by employees

3. Results

3.1 Study Design

As many as articles were found, the results came from four database: 713 articles in Scopus, 1.012 articles in Science Direct, 768 articles in ProQuest, and 17.400 articles in Google Scholar. The result of article selection according to the inclusion criteria of 10 articles, then given the serial number and done article analysis to facilitate the review process. There are several kinds of inclusion criteria in this study namely adjusting leisure time usage, resource use, satisfaction after retirement, symptoms of depression in the transition period. This study used Prospective cohort study or longitudinal study.



3.2 Characteristics of Participant

In this systematic review of 10 studies all the population are retirees, with a varied sample of ages 50-80, research carried out in various parts of the world including Asia, Europe, Australia, and the Americas.

3.3 Findings

The incidence of difficulty adjustments varies between dimensions. Some studies suggest difficulties in adjustment are less in financial terms but more difficulty adjusting to loss of status [6]. Another study related the dimensions of work conditions with an understanding of the retirement process, found that strong job identification was associated with more difficulties in the transition to retirement. Some longitudinal studies report heterogeneity in retirement effects and show that many older workers may have problems adjusting to retirement [7]. In line with other studies that state that older workers who are lonely are at increased risk for adaptability [8]. This is supported by other findings about pensions that show an increase in symptoms of depression among older Japanese adults, especially men from lower occupational class backgrounds [1].

4. Discussion

Adjustments to retirement can be determined by the type of transition and individual resources, capability influences changes in life satisfaction variously depending on each other [7]. Changing life course experiences might have important implications for retirement quality. [6] With sufficient retirement planning and adequate retirement resources, the retirees can experience a smooth adjustment to this important life event [5].

The heterogeneity as working conditions, timing of retirement, social participation influence on individual emotions in the transition to retirement [3]. Resources such as self-esteem, autonomy, social support, self-rated physical health, self-rated cognitive ability, basic finances are related to changes in life satisfaction, that is self-esteem, social support, and self-rated physical health, while autonomy, self-rated cognitive ability, or basic financial not significant effects [7]. This is different from other research that shows that among various types of personal resources, cognitive resources, such as perceived autonomy and cognitive functioning abilities, could reliably predict the quality of adjustment to retirement, which were reflected in the changes in physical functioning, life satisfaction, psychological well-being, and psychological distress before and after retirement [5]. Resources predicted retirement adjustment and retirement satisfaction in the following order: finances and health, followed by social resources, and lastly emotional, cognitive, and motivational resources [9].

The transition to retirement entails many lifestyle changes [8], this is due to some changes in income, activity, social status, etc., but, retirees who are still working are more likely to engage in social activities such as recreation, because they still have greater financial resources [10]. During the pension transition period, also found the use of leisure time with increased sedentary behavior such as non-occupational sitting time and watching television, computer use and other sitting times [2]. The more retirees consider retirement as a positive event, the better they adapt to the new temporality of their retirement life and the more they feel satisfied with their current life, healthy and less depressed [11].

5. Conclusion

In this review, Individual resources before retirement have a stronger influence on changes in life satisfaction. Every individual who is in a transition period needs to be given training to improve psychosocial skills in order to maintain their health in general. important to keep up the level of

available resources for retirees in order to maintain their well-being in late life. Further research is recommended to identify the role of policy makers towards retirees.

References

[1] Shiba K, Kondo N, Kondo K and Kawachi I 2017 Retirement and mental health : does social participation mitigate the association ? A fixed-effects longitudinal analysis 1–10
[2] Leskinen T, Pulakka A, Heinonen O J, Pentti J, Kivimäki M, Vahtera J and Stenholm S 2018 Changes in non-occupational sedentary behaviours across the retirement transition : the Finnish Retirement and Aging (FIREA) study 1–7
[3] Ryser V-A and Wernli B 2017 How does transitioning into retirement impact the individual emotional system? Evidence from the Swiss context *Adv. Life Course Res.* **32** 42–54
[4] Wang M and Shi J 2015 *Work, Retirement and Aging* (Elsevier Inc.)
[5] Yeung D Y 2018 Adjustment to retirement : effects of resource change on physical and psychological well-being *Eur. J. Ageing* **15** 301–9
[6] Damman M, Henkens K and Kalmijn M 2015 Missing Work After Retirement : The Role of Life Histories in the Retirement Adjustment Process **55** 802–13
[7] Hansson I, Buratti S, Thorvaldsson V, Johansson B and Berg A I 2018 Changes in Life Satisfaction in the Retirement Transition : Interaction Effects of Transition Type and Individual Resources **4** 352–66
[8] Segel-karpas D, Ayalon L and Lachman M E 2016 Loneliness and depressive symptoms : the moderating role of the transition into retirement **7863**
[9] Collins C G 2014 Understanding Heterogeneity In Adaptation To Retirement : A Growth Mixture Modeling Approach **79** 131–56
[10] Lee Y, Min J and Chi I Life transitions and leisure activity engagement in later life : fi ndings from the Consumption and Activities Mail Survey (CAMS)
[11] Laberon S, Grotz C, Amieva H, Pérès K and Vonthron A 2018 Psycho-social transition to retirement and adjustment to retired life : influence on wellbeing and mental health in retired farmers 1–27

6. Appendix

Author	Data base (survey or project)	Design	Resource/ factor retirement to transition	Measure	Outcome retirement to transition
Tuija Leskinen et a. 2018	FIREA	Longitudinal cohort study	Preretirement characteristic	Sedentary behavior was inquired at each study wave with a question: 'On average, how many hours on a non-weekend day you spend on sitting Sex, date of birth and occupational status were obtained from the pension insurance institute for the municipal sector in Finland (Keva). Other covariates were based on the responses in the last questionnaire prior to retirement Physical activity was assessed with a question on average weekly duration and intensity of leisure and commuting physical activity during the past year.	Sedentary behavior increased during the retirement transition
Laberon, 2018	Psychosocial transition to retirement and adjustment to retired	Prospective study	Motivation, experience of retirement transition, perception of control over the departure	Short scales questioner	Satisfaction, perceived health, depression
Lee, et all 2017	HRS	Longitudinal study	Engagement	CAMS	Leisure activity
Yeung, 2017	Adjustment to retirement: Resource change and psychological well-being	Longitudinal study	Financial, physical, and social resources	RRI	Retirees report losing financial and other resources after retirement. In addition to financial, physical, and social resources, which have often been emphasized in the previous literature on retirement adjustments, increasing the retention of cognitive resources must also be promoted to facilitate positive adjustments to important life events.
Valerie-Anne Ryser, 2016	SHP	Longitudinal study	Working conditions, social participation (replacement role), sociodemographic, health outcomes, social interactions, retirement timing	The two dependent variables—positive and negative affects—were both measured at each wave on 11-point scales that range from 0 to 10 with 5 as a neutral position	
Isabelle hansson, 2017	HEARTS	Longitudinal study	self-esteem, autonomy, social support, self-rated physical health, self-rated cognitive ability, and basic financial assets	Satisfaction with Life Scale; Measures of self-esteem, autonomy, social support, sulfated physical health, self-rated cognitive ability, and basic financial resources were included.	In the retirement adjustment process, the types of retirement transitions and individual differences in resource capacity affect changes in life satisfaction that vary depending on each other.

Author	Data base (survey or project)	Design	Resource/ factor retirement to transition	Measure	Outcome retirement to transition
Dikla segel-karpas, 2016	HRS	Longitudinal study	-	CES-D Loneliness was measured using an 11-item scale drawn from the Revised UCLA Loneliness Scale	Experience loneliness, the transition to retirement could result in depression
Shiba, 2017	JAGES	Cohort study	started work, recreational social participation	GDS	Retirement may increase depressive symptoms among Japanese older adults, particularly men from lower occupational class backgrounds
Alexa M Muratore, 2014	NSA data base	Longitudinal analysis	finances, lifestyle, and other changes	Retirement adjustment was measured using the 13-item scale from the Healthy Retirement Project	Money perception was a dichotomous measure, and health and relationship were measured by five ordered categories.
Marleen damman, 2013	NIDI work panel data	Longitudinal study	Financial, status	To measure adjustment to the loss of the work role across dimensions, fully retired respondents were asked during Waves 2 and 3 to report to what extent they miss various aspects of work since they stopped working. To measure continuity of the work career, respondents were asked to indicate the age at which they started working and for how many years in total they have been out of the labor market after that (if applicable).	The incidence of adjustment difficulties varies across dimensions. Predictors differ as well. A steep upward career path is associated with fewer financial adjustment difficulties but with more difficulties adjusting to the loss of status.

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THE EFFECT FAMILY SUPPORT FOR HYPERTENSION: A SYSTEMATIC REVIEW

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ABSTRACT

Cases of hypertension include disease with a high incidence rate. Hypertensive sufferers need to do a blood pressure check regularly at least once a month, then trying to reduce salt consumption, fat and do regular exercise, family support is needed to prevent and control hypertension. The purpose of this article is review evidence of an intervention on the family support for hypertension. In this article, the authors conducted a relevant literature review in various data using the keywords hypertension, family support, and social support. This review conducted database in Scopus, Science Direct, and Sage Journal with inclusions are randomized trial study determined from 2014 to 2019 and related to hypertension that assessed using the PRISMA (Preferred Reporting Items for Systematic reviews and Meta- Analyses) Statement. There are studies included inclusion criteria, consist of seven studies. Seven eligible studies were included with outcome was the blood pressure measurement. A main theme which often appear from each study identified as: Understanding of hypertension, family support, and social support. The result introduction of timely family support is has shown that can be stabilize blood pressure, positively associated with medication adherence and blood pressure monitoring.

Keywords: intervention, family support, hypertension

1. Introduction

Hypertension is one of the key risk factors for cardiovascular disease leading to heart attacks and strokes. Researchers have estimated that hypertension affects about 40% of the population and is the cause of about 9 million deaths every year worldwide [1]. Currently, one-quarter of the world's adult population has hypertension, and modelled projections indicate an increase to 1.15 billion hypertensive patients by 2025 in developing countries [2]. In spite of progress in the prevention and treatment of elevated blood pressure, hypertension remains a major health challenge worldwide. Most hypertensive patients need two or more drugs to control their blood pressure and concomitant statin treatment to reduce cardiovascular risk factors. Despite the availability of various effective and safe antihypertensive drugs, hypertension and its concomitant risk factors remain uncontrolled in most patient [3].

Social support, which is the assistance and protection provided to an individual has been conceptualized in both cognitive and behavioral terms. The cognitive aspect refers to perceived support, whereas the behavioral aspect refers to received support [4]. Several studies have examined the factors influencing compliance behaviors with hypertensive treatment. Among these studies, Marin-Reyes and Rodriguez-Moran found that compliance with hypertensive treatment was directly linked to the support of family members [5]. The aim this study for knowing effectiveness support system for hypertension.

2. Methods

This systematic review was reported in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement. Of records identified through database searching, n = 654, then Exclusion Literature review, editorial, critical synthesis, paper discussions, comment, mini-review, and study protocol fond 210 articles. Which corresponds the topic there are 8 articles.

2.15Data Sources and Searches

Databased searched from Scopus, PubMed and Science Direct provide studies related to family support for hypertension determined from 2014 to 2019.

2.16Study Selection

A systematic search of electronic databases begin on December 23, 2018. The first step: we search the electronic database Scopus, PubMed, and Science Direct to identify key articles and identify keywords by adjusting the main concepts: 1. Hypertension, 2. Family support 3. Social support. Our keywords search for both quotes and full articles, including title, abstract, text, and references information. The second step, translating keywords in English to search relevant articles in electronic databases.

2.17Data extraction and quality assessment

All citations retrieves from electronic databases were imported to Mendeley Program. Two reviewers (JH, PA) independently analyzed the titles and abstracts of every studies retrieved from the literature search to identify potentially eligible studies. The full text of the remaining studies was obtained for further examination. The last review conducted by a first reviewer (IPA).

Data of included studies were independently extracted by the same two reviewers by including first author's name, year of publication, sample size, study design, duration of trial, and general characteristics of participants (age, hypertension or high blood pressure, gender)

The reviewed data are continued to see family support for hypertension. Each study has been read at least 3 times before data extraction ensure a thorough understanding of the content. The following steps:

1) Identify studies using relevant databases by using additional characteristics of keyword studies: authors, publication year, study design, study types and sample characteristics
2) Use the terms of inclusion and exclusion criteria to filter the study and narrow the focus
3) Independently extract data on research characteristics (reference details, population, determination, objectives or study objectives, methodologies, methods of data collection and analysis)
4) The reported findings include major themes and subthemes, including author descriptions and labels, and all illustrated excerpts

Data extraction protocol in the final stages by collecting data extraction results from 2 reviewers (JH and PA) to compare data extraction and discuss if there is a difference. The differences appear in the review together by using the full article.

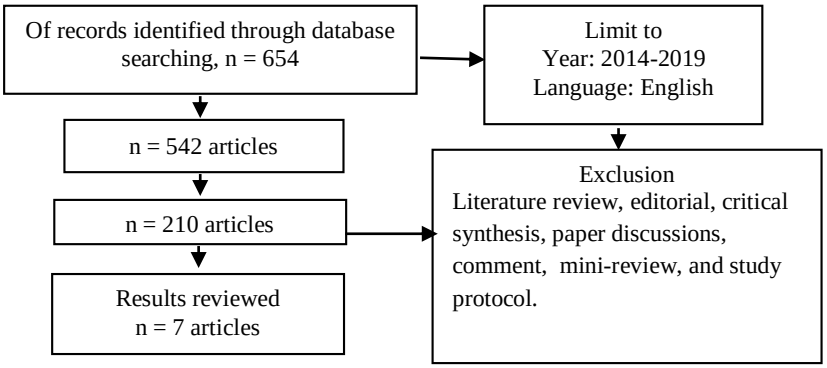
3. Results

3.13Literature Search

The year of this research has started from 2014 to 2019. These reviews come from various countries; China, Nigeria, Turkey, and USA. Sources of this review used Scopus, PubMed, and Science Direct. Inclusion criteria were 5 year publication (2014-2019), respondents with hypertension either home nursing or hospitalization. Exclusion criteria were literature review, editorial, critical synthesis, paper discussions, comment, mini-review, and study protocol. Articles selection started on January 9st, 2019.

The title of article there are family member-based supervision of patients with hypertension: a cluster randomized trial, blood pressure control and perceived family support in patients with essential hypertension seen at a primary care clinic, social support and management of hypertension in south west Nigeria, the association of family social support, depression, anxiety and self-efficacy with specific hypertension self-care behaviors in Chinese local community, effect of social support on the treatment adherence of hypertension patients, social and community factors associated with hypertension awareness and control among older adults in Tirana, Albania, self-care behavior and related factors in older patients with uncontrolled hypertension.

Figure 6. Flow diagram of the literature search to identify randomized trial evaluating interventions that successfully lowering blood pressure of hypertensive Asian elderly.



3.14Study Characteristics

Research by Shen et.,al. revealed that the family member-based supervised therapy have positive effects on patients' adherence to blood monitoring and hypertensive medications. The role of a patient's family members on the management of hypertension. Findings from this study suggest that family member based supervision can be a way to promote medication adherence and better outcomes [3].

Research by Olowaseun et.,al showed positive association between BP control and perceived family support emphasizes the need for medical workers to reflect on the available family support when managing hypertensive patients. Other research, strong perceived family support will improve their self-worth and motivation. Social support from friends can also control blood pressure [4]. Research in Nigeria, support from friends or family members (concerned about their illness, giving reminders about medication) showed better treatment compliance than those who did not [5]. It is essential that health care providers carry families of patients with hypertension along in their management to improve hypertensive patients' function and treatment outcome [4].

Research from Chinese aimed to examine the relationships of family social support, depression, anxiety and self-efficacy with a wide variety of self-care behaviors in sample of hypertensive patients. In all three adjusted models, family social support was positively associated with taking medication and monitoring BP, and self-efficacy was positively associated with performing physical exercise[6]. Study at Turkey too have the same result, treatment adherence and social support from family, friends

or both levels of the patients were found to be substantially good; besides, adherence to drug treatment was found to increase positively as the social support of patients with hypertension increase [7]. Besides that family support, social and community factors influence stabilize blood pressure too [8]. Family support can affected self-care behavior hypertensive patients [9].

4. Discussion

This systematic review study shows family support for hypertensive patients can improve their daily lives with controlled blood pressure. All based on studies and research are included in the review. This research is needed to improve the quality of services offered by health professionals to promote the importance of family roles. The critical assessment applied in this study was published by the limitations of the existing literature, specifically referring to the saturation of theory and detailed details about the small themes of each study. This research provides clear and important data from the analysis and the results obtained are important in a small theme (code). The life experience of individuals with hypertension provides a different perspective, requiring a different method with family support. It needs a more thorough and deep assessment, then in understanding needs a good understanding between health professionals, family and hypertensive clients. Therefore, not only physical complaints but are also able to answer other problems. The synthesis of evidence can identify all the objectives of the review identifying the importance of individual understanding of hypertension, what happens from physical aspects, fulfillment of health, psychological dynamics experienced, stigma dynamics that occur, relationships and social roles, economic recovery, and daily activities that is lived. Social family support is strongly associated with hypertension treatment compliance in patient [6]. Systolic or diastolic blood pressure was significantly decreased with A family member-based supervision [3]. Family social support was positively associated with medication adherence and regular BP measurement. Strategies to improve family social support should be developed for hypertension control, yet further prospective studies are needed to understand the effects of family social support, depression, anxiety and self-efficacy on self-care behaviors [6].

5. Conclusion

Family support has an important role in controlling blood pressure. The family provides motivation support for taking medication, controls blood pressure regularly and regulates the lifestyle of hypertensive patients. Besides family support, friend and community social support is also needed so that motivation to control blood pressure is strongly. Social support provided by the family influences the patient's motivation to control blood pressure.

References

[1] WHO. A global brief on Hyper - tension World Health Day 2013. Am J Kidney Dis. 2013;55(3):590–8.
[2] Mittal B V, Singh AK. Hypertension in the developing world: challenges and opportunities. Am J Kidney Dis. 2010 Mar;55(3):590–8.
[3] Shen Y, Peng X, Wang M, Zheng X, Xu G, Lü L, et al. Family member-based supervision of patients with hypertension : a cluster randomized trial in rural China. J Hum Hypertens. 2016;(January):1–8.
[4] Ojo OS, Malomo SO, Sogunle PT. Blood pressure (BP) control and perceived family support in patients with essential hypertension seen at a primary care clinic in Western Nigeria. J Fam Med Prim Care. 2016;5:569–75.
[5] Osamor PE. Social support and management of hypertension in south-west Nigeria. Cardiovasc J Afr. 2015;26(1):29–33.
[6] Hu HH, Li G, Arao T. The association of family social support , depression , anxiety and self-efficacy with specific hypertension self-care behaviours in Chinese local community. J Hum

Hypertens. 2014;(March):1–6.

[7] Aksoy M. Effect of social support on the treatment adherence of hypertension patients. J Vasc Nurs. 2017;1–6.

[8] Pirkle CM, Ylli A, Burazeri G, Sentell TL. Social and community factors associated with hypertension awareness and control among older adults in Tirana , Albania. Eur J Public Health. 2018;(March):1–6.

[9] Lee E, Park E. Self-care behavior and related factors in older patients with uncontrolled hypertension. Contemp Nurse [Internet]. 2017;0(0):1–15. Available from: https://doi.org/10.1080/10376178.2017.1368401

Author/ year of publication	Study design	Population	Intervention	Comparison	Outcome	Time
Y Shen, X Peng, M Wang, X Zheng, G Xu, L Lu, K Xu, B Burstorm, K Burstorm, and J. Wang (2016)	Cluster randomized trial	Intervention group: 266 Control group: 288	A family member-based supervision. Patients were followed for 12 months and completed face-to-face interviews at the end of 6 and 12 months	A family member-based supervision package was applied to the intervention group, while the usual service was applied to the controls	Systolic or diastolic blood pressure was significantly decreased in the intervention group. Findings from this study revealed that the family member-based supervised therapy may have positive effects on patients' adherence to blood monitoring and hypertensive medications	12 months
HH Hu, G Li, and T Arao	Logistics regression models	318 participant were aged ≥ 35 years with physician-diagnosed hypertension for at least 12 months	Answer questionnaire	Pilot study for a hypertension self-care behavior monitoring program and family social support	Family social support was positively associated with medication adherence and BP monitoring but was not significantly associated with other self-care behaviors. Strategies to improve family social support should be developed to improve hypertension control	12 months
Pauline E Osamor (2015)	Cross sectional and descriptive study	440 respondents	Answer questionnaire	Some evidence that illness-specific support is more predictive of health outcomes than general support	Social support is strongly associated with hypertension treatment compliance in this community in southwest Nigeria. These findings suggest a need for exploring the promotion of social support as a useful tool in chronic disease treatment programs	

Author/ year of publication	Study design	Population	Intervention	Comparison	Outcome	Time
Gulcan Bahcec ioglu Turan, Meyreme Aksoy, and	Correlation analysis	259 respondents	Answer questionnaire	Medication Adherence Self-Efficacy Scale and Multidimensional	Social support can be used to improve the adherence in hypertension treatment	5 months

Bahar Ciftci (2017)				Perceived Social Support Scale		
Catherine M. Pirkle, Alban Ylli, Genc Burazeri,, and Tetine L. Sentel (2018)	Multinomial regression models	393 respondents	Answer questionnaire	Compared hypertension diagnosis/awareness and control across factors from the socioecological model	the importance of community-level factors (safety) and interpersonal factors (family and friend ties) to hypertension diagnosis/ awareness and control, which may provide novel intervention opportunities for hypertension programs.	2012
Eunju Lee and Euna Park (2017)	Cross sectional survey	255 elderly with diagnosis hypertension for >6 months	Answer questionnaire	Controlled hypertension group and uncontrolled hypertension group	The uncontrolled hypertension group showed lower scores for self-care behavior and self-efficacy than the controlled hypertension group. Only self-efficacy significantly affected self-care behavior in the latter group, whereas self-efficacy, education level, and family support affected self-care behavior in the former group	2015

Author/ year of publication	**Study design**	**Population**	**Intervention**	**Comparison**	**Outcome**	**Time**
Oluwaseun S. Ojo, Sunday O. Malomo, andPeter T. Sogunle	Cross sectional	360 respondents	Answer questionnaire	Nonadherence to therapeutic plans has been reported among hypertensive patients. Researchers have also shown that adherence to therapeutic plans improves if motivation in the form of social support is provided. There is a dearth of local studies that explore the influence of family support on treatment outcomes of hypertensive patients.	The positive association between BP control and perceived family support	4 months

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CORRELATION OF PHYSICAL ACTIVITIES WITH BLOOD PRESSURE STABILITY AND QUALITY OF LIFE HYPERTENSION PATIENTS IN REJOAGUNG VILLAGE, PLOSO, JOMBANG

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ABSTRACT

Physical activity that is less able to cause obesity and increases the risk of hypertension, decreases motivation and creativity and can subsequently affect the quality of life. This study aims to determine the correlation of physical activity with stability in blood pressure and quality of life in patients with hypertension. The population of this study was hypertensive patients in the Rejoagung Village. The sample was 30 respondents with hypertension and still abel to activity. The sampling technique used purposive sampling. The Data on physical activity and quality of life were obtained through interview used questionnaire, while blood pressure data was obtained through documentation in Posyandu cadres in last three months. Most of the samples were 45- 80 years old, 76.7% women, 43.3% had elementary education, 73.3% were farmers. Chi square statistical test of physical activity and blood pressure stability showed a significant value (p) = 0.035, while physical activity and quality of life were obtained (p) = 0.001. Daily physical activity which was classified as moderate activity and carried out routinely could get a positive impact on the stability in blood pressure and quality of life.

Keywords: physical activity, blood pressure, quality of life

1. Introduction

Hypertension is one of the chronic diseases that until now remained a concern of health workers. Hypertension sufferers in Indonesia are estimated to number 15 million people, but only 4% are have their hypertension controlled. The prevalence of hypertension tends to be higher in the low education group and the group does not work [1].

Work is physical activity, mild, moderate and severe, depending on the type of work. A lack of activity can increase the risk of being overweight which can increase the risk of hypertension. Poor physical activity can also cause fat buildup, decreased interest, people tend to be more lazy, but not everyone can do regular physical activity to maintain health.

Physical activity that is less able to reduce physical health in general, can further reduce motivation, and creativity which in turn will affect a person's quality of life. Physical activity is very beneficial [2], to improve quality of life in general and physical health [3].

One effort to control hypertension can be done by doing physical activity. Doing physical activity from moderate activities can prevent hypertension [4]. Regular physical activity is also useful to regulate body weight and strengthen the heart and blood vessel system [1]. Based on this, the researchers were interested in seeing how the relationship between physical activity and blood pressure stability and quality of life in hypertensive patients.

2. Methods

The population of this study was hypertensive patients in Rejoagung Village, Ploso District, Jombang Regency. The samples used in the study were 30 people with the criteria of hypertensive patients without complications and were still able to carry out physical activity.

The data collection tool used in this study was a questionnaire and a posyandu documentation book. Physical activity questionnaire using the Elderly Physical Activity questionnaire Physical Activities Scale for the Elderly (PASE) which has been modified and translated into Indonesian. The quality of life questionnaire uses a standard questionnaire made by the World Health Organization (WHO). Blood pressure measurement by looking at the documentation on the Posyandu book in the last 1 month. To prove the hypothesis of this study using the chi square test with alpha 0.001.

3. Results

Table 1. Characteristics of respondents in Posyandu Lansia RW 5 Rejoagung Village Ploso District, Jombang Regency in September 2018

Characteristic of respondents	Frequency	Percentage (%)
Age 45-59 years	16	53,3
60-74 years	11	36,7
>74 years	3	10
total	30	100
gender		
male	7	23,3
female	23	76,7
total	30	100
education		
primary school	13	43,3
junior high school	11	36,7
senior high school	6	20
total	30	100
work		
farmer	22	73,3
housewife	5	16,7
private	3	10
total	30	100

Table 2. Relation of Physical Activity to Stability of Blood Pressure

		Blood pressure		Total
		Stable	unstable	
Physical activity	less	0	3	3
	enough	13	7	20
	well	6	1	7
Asymp sig 0,035				

Table 3. Relationship between Physical Activity and Quality of Life

		Kualitas hidup		
		less	enough	well
Physical activity	less	0	3	0
	enough	0	19	1
	well	0	2	5
		0	24	6
Asymp. Sig 0,001				

Chi square statistical test results of physical activity and quality of life showed a significant value (p) = 0.001 <0.05 which means that H1 was accepted. Thus, there is a relationship between physical activity and the quality of life of patients with hypertension in Rejoagung Village, Ploso District.

4. Discussion

According to the results of the modified PASE questionnaire, the activities most often carried out by respondents were at home activities such as cooking, sweeping, mopping, while questions about sports activities found that many did not do it routinely. Based on the characteristics of respondents about work, most of the respondents work as farmers. Despite the age characteristics of many who are elderly, respondents are still quite active in carrying out home and rice field activities.

Respondents with stable blood pressure on average were found in respondents who did enough physical activity.

Research shows a low value in the environmental domain, where this domain examines the quality of life of respondents regarding the satisfaction felt by respondents about spatial governance in the surrounding environment, comfort, ease of access to transportation, and opportunities for recreation. Characteristics of respondents based on age were mostly in the age range of 45-59 years. This age is an age with a relatively high level of work, so it is most likely that at this age they do not have time to do recreation and this is supported by environmental management that is less supportive.

Analysis of the relationship between physical activity and blood pressure stability p <0.05 (0.035) shows that there is a relationship between physical activity and blood pressure stability. Regular physical exercise prevents and treats hypertension and dyslipidemia. Physical activity greatly influences the stability of blood pressure [5]. Carrying out moderate intensity physical activities for at least 30 minutes 5 days a week or high intensity for a minimum of 20 minutes 3 days a week increases functional capacity and is associated with a reduction in the incidence of cardiovascular disease and mortality. Physical exercise induces physiological cardiovascular adaptations that improve physical performance. By doing physical activity regularly can increase the work of the heart so that it can control the stability of blood pressure in a person.

The results of the analysis of the relationship between physical activity and quality of life in patients with hypertension in Rejoagung Village, Ploso Subdistrict, Jombang Regency obtained p value <0.05 (0.001) which means that there is a relationship between physical activity and quality of life in hypertensive patients.

Physical activity carried out routinely and happily will improve general physical health, and reduce psychological problems. As we know that physical and psychological health are aspects of quality of life.

5. Conclusion

There is a relationship between physical activity and the quality of life of patients with hypertension in Rejoagung Village, Ploso District.

References

[1] Penelitian B and Pengembangan D A N 2013 RISET KESEHATAN DASAR

[2] Eddolls W T B, McNarry M A, Lester L, Winn C O N, Stratton G and Mackintosh K A 2018 The association between physical activity, fitness and body mass index on mental well-being and quality of life in adolescents *Qual. Life Res.* **27** 2313–20

[3] Costa R, Bastos T, Probst M, Seabra A, Abreu S, Vilhena E, Rosenbaum S, Ward P B and Corredeira R 2018 Association of lifestyle-related factors and psychological factors on quality of life in people with schizophrenia *Psychiatry Res.* **267** 382–93

[4] Pitanga F J G, de Almeida L A B, Freitas M M, Pitanga C P S and Beck C C 2014 Atividade f{í}sica como discriminador da aus{ê}ncia de hipertens{ã}o arterial em homens adultos *Rev. Bras. Med. do Esporte* **20** 456–60

[5] Harahap R A, Rochadi R K and Sarumpaet S 2017 Hipertensi pada Laki-laki Dewasa Awal (18-40 Tahun) Di Wilayah Puskesmas Bromo Medan Tahun 2017 68–7

THE EFFECT OF EMPOWERMENT FOR WOMEN LIVING WITH HIV/AIDS: A SYSTEMATIC REVIEW

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ABSTRACT

Women living with HIV/AIDS have complex problems in living by a stigma from the community and reducing motivation to live. This causes helplessness that occurs in women with HIV. They need an effort that can evoke a better spirit of life. They are need empowerment with the benefits of giving hope, dreams, courage and encouraging them to be filled with the power to continue a better life. The purpose study literature review is to identify the empowerment needs in the women living with HIV/AIDS. The authors found article accordance with the conduct that relevant literature review in various data using the keywords "empowerment, women, HIV/AIDS". Data based on SCOPUS, SAGE, Science Direct, Proquest and Pubmed. The criteria consisted as 4.106 articles found, five years limit journal (2013-2018) and selected 17 article that suitable with criteria. In the process of the analysis of the articles showed that women living with HIV/AIDS need empowerment to consists of family, financial, community and life style. The functions of empowerment to increase ability and motivation in life. It has an important role to continue a better life in women living with HIV/AIDS.

Keywords: empowerment, women, HIV/AIDS

1. Introduction

Empowerment is a key approach for addressing HIV-related issues that focuses on addressing the broader context [1]. Empowered people have freedom to make their own choices and the ability to act. The level of empowerment consists of the empowerment of an individual, group and society. This, in turn, enables them to better influence the course of their lives and the decisions that affect them [2]. This is one of the most important steps for the empowerment of women. Women living with HIV, by living a longer life and with the occurrence of HIV, can have an impact on reducing the health system and changing transitions across broad sectors including psychology, society and economy [3]. There are concrete problems with the emergence of women living with HIV / AIDS, namely social and structural factors such as financial discomfort, stigma, and discrimination, violence, and comfort in the form of a legal and policy environment that is associated with an increased risk of HIV transmission especially for female sex workers [4]. This is what underlies self-health assessment as a reference and what is used to assess the role of non-biomedical conditions in mediating HIV status that have an impact on improving health [3]. Economic empowerment programs are often heralded as a key means to addressing gender inequality and poverty to mollify the impact of AIDS-related stigma [5]. All of the women reported that HIV had devastated their household finances and that their family finances decreased as the couple became too weak to work. The fact is that the households ended up facing extreme poverty and hunger as the parents had to spend everything on treatment [6]. The efforts are made in the form of empowerment, where

empowerment is one way to improve the ability and independence of the community to allow them to improve their standard of living. This process is carried out in order to allow them to have a better life fought for with their own strength [7]. Empowerment can be done by providing interventions in the form of empowering counseling, which makes it an important step in carrying out life guidance to improve the health of mothers living with HIV and their children [8]. The methods include empowerment in terms of economic independence, and physical, mental and social health by changing the lifestyle better [9]. The purpose of this systematic review is to summarize some of the empowerment needed by the women living with HIV. This is done as a measure of the empowerment needed by the women living with HIV as they continue to struggle to continue on to reach the point of having a better life. The results obtained can be passed on to the AIDS watchdog and researchers.

2. Methods

2.1. Design

The design of this study was a systematic review of a mixed method study approach (qualitative and quantitative) formulated to review the relevant research studies and the correlated comprehensive analysis. The systematic reporting structure used PRISMA *(Preferred Reporting Items for Systematic Reviews and Meta-Analysis)[1]*.

2.2. Inclusion and Exclusion Criteria

This systematic review established both inclusion and exclusion criteria that focused on quantitative, mixed method studies. Some of the research designs used an RCT (*Randomize Control Trial*). Feasibility studies to describe the experiences and needs for empowerment were needed by the mothers living with HIV with language eligibility criteria, with minimal abstracts using English. The year of publication was limited to the last 5 years (2013 – 2018). Further inclusion criteria are studies with female respondents living with HIV.

2.3. Search Strategy

The first step is that we searched on electronic databases - SCOPUS, SAGE, Science Direct, Proquest and Pubmed - to identify the key articles and to identify the keywords by adjusting the main concepts. The main concepts were empowerment, women and HIV. Our keywords were used to look for quotes and articles done in full; this included the titles, abstracts, texts, and references. The second step was to translate the keywords into English to find the relevant articles accordingly in the electronic databases. Next, for the third step, a filter was used – PRISMA - to determine which articles passed to be further reviewed according to the research topic. The search strategy had a search limit, which was the last 5 years between 2013 – 2018.

3. Result

The total articles collected consisted of 17 articles. The population that the respondents' research used was women living with HIV. From the results of the systematic review carried out, there is empowerment, which can benefit the women living with HIV in the form of education empowerment, and by combining empowerment, intervention empowerment and community empowerment. A total of 17 studies reviewed in 2013 - 2018 were conducted in several major countries, namely Iran, the USA, and Kazakhstan. Most of the literature founds was focused on empowering women living with HIV in the USA.

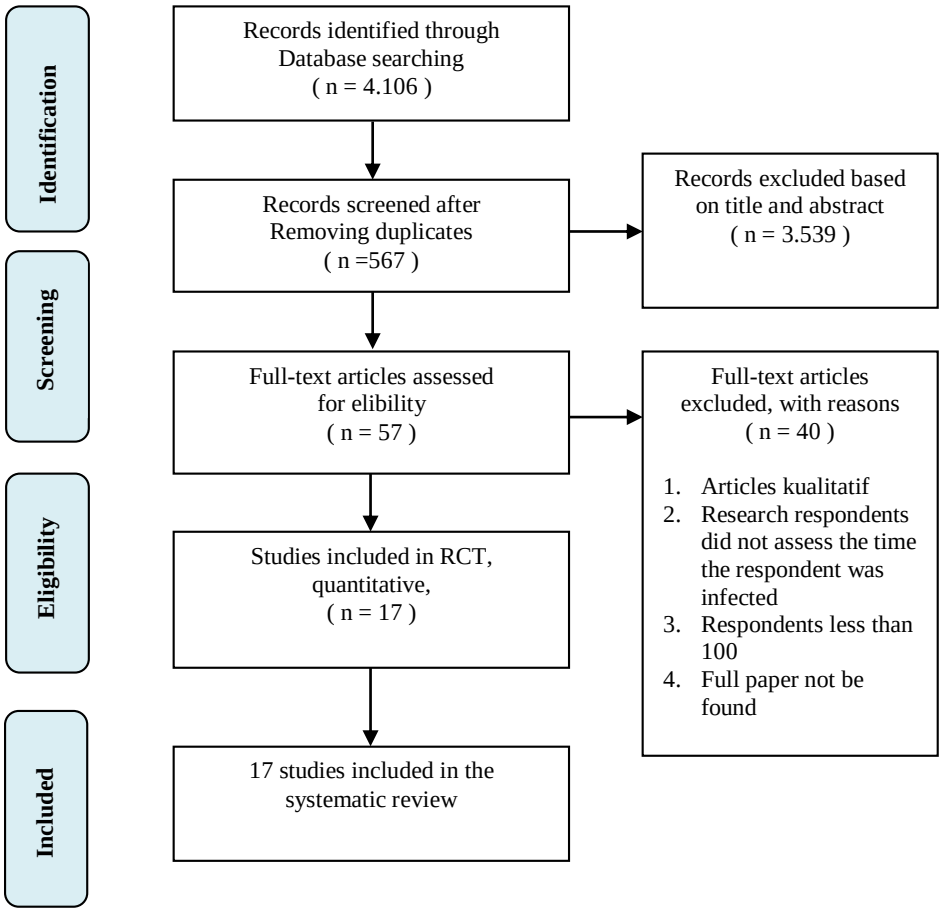

Figure 1. PRISMA flow diagram

3.1. Education Empowerment

Empowerment education includes several factors, namely the provision of education in psychology, spirituality and the quality of life. Economic empowerment programs actively counter women's vulnerability by directly addressing the mutual influences of the axes of inequality within which the women were embedded [5]. In empowerment counseling interventions, this benefits the respondents in reducing partner violence and the secondary outcomes include improvements in women's mental health, safety and self-efficacy [8]. Through the policies and programs that build women's capabilities, improving their general access to social and political opportunity, and guaranteeing their safety is the goal [11]

3.2. Combining empowerment

Combining empowerment, family communication and positive cultural identity can increase the knowledge of HIV prevention, ESSA and the ability to discuss HIV [2]. The empowerment combination is used to combine more than one empowerment type needed by women living with HIV. For example, in training the independence and knowledge of women living with HIV, the goal

is for the respondents to carry out activities that improve in terms of independence that is both knowledge and financial.

3.3. Intervention empowerment

The healthcare empowerment model posits that to maintain patient engagement in care, the patient should feel involved, committed, collaborative and engaged in health care, as well as tolerant of uncertainty regarding the outcomes and complications associated with disease management [3]. The interventions provided varied, among others, including the provision of the Emotional Empowerment Technique (EET). This provides benefits and manifestations in the development of the psychotherapy experienced by the respondents [4].

3.4. Community empowerment

A community empowerment approach to HIV prevention and access to universal ART for female sex workers is a promising human rights-based solution to overcome the persistent burden of HIV among female sex workers across epidemic settings [15]. Community empowerment has an expending comprehensive impact on the HIV epidemic. In community empowerment, the families play an important role in the program's implementation because they are the closest person to the respondent [12]

4. Discussion

The aim of this is a systematic review to explore the empowerment needed by women living with HIV AIDS. The review revealed the limited available research in this field of study, identifying only 17 relevant studies.

Empowerment, as mentioned above, is the capability to make choices and to transform the choices into desired actions. There is a need to enable the women to access the means of empowerment. One of the primary ways in which this access can be guaranteed is through education. Education here is not just about literacy, but it is also about the awareness of the social injustices and discriminations that women face. It is about a critical understanding of the links between the women's own lives and the larger socio-political structures that they are a part of [2]. Education is regarded at the national level as an important catalyst for the development of the country. Several initiatives have been undertaken by the GOI for girls' education in order to empower women and girls alike.

Women living with HIV who received the individual intervention had lower scores for decision-making ability, concealment self-efficacy and perceived psychological health. They also had a higher weight of secrecy. Thus, these women were more in need of an intervention regarding disclosure issues. This can be explained in different ways. First, for these women, the social and family environment might have been more difficult, and finding the time and excuses to come to the collective sessions every week may have been hard for them. Second, discussing disclosure issues implies being ready to talk about it. If these women experienced traumatic experiences in relation to their HIV infection and/or specific disclosure events, then it might have been too frightening for them to share this with other WLHIV during the intervention[5]. The victims blaming themselves for the violence perpetrated against them only encourages the abuser and this continues a vicious circle of violence. Therefore, it may be advisable to initiate counseling and training programs along with women's empowerment initiatives to change the belief systems of the victims.

One way to improve the women's empowerment when it came to living with HIV/AIDS is to microfinance her training to have an impact in terms of fixing the knowledge economy [16]. One of the primary ways in which women can be citizens is through education. Education here is not just about literacy but it is about an awareness of the social injustices and discriminations that women face [2]. We also learned how economic empowerment programs have impacted on the women's role within their husband's household, which directly addresses the intersection of these axes of inequality. Consequently, economic empowerment programs allowed the women to (re)gain a sense of legitimacy within their households and communities, thereby reducing their marginalization and ultimately alleviating their own experiences with AIDS-related stigma. [6].

Life Skills is a peer-led and peer-delivered intervention, which may be a key characteristic for success in this population. We believe that the intervention was effective because of this combination of characteristics. It was grounded in the participant's social realities, focused on empowerment and practical needs, delivered by their peers. The high level of participant-rated satisfaction with the intervention reflects the salience of this approach [7].

While we found support among our study participants, as previously mentioned, it is necessary to conduct follow-up research with the mothers who left the program. It is also imperative to explore further complexities of the threshold of women's empowerment [6].

This systematic review has provided evidence, based on the effectiveness of empowerment for women living with HIV, that such methods can increase motivation to allow them to continue their lives better; education empowerment combines an intervention and the community, and seems to work best. This can provide a better life expectancy for women living with HIV.

5. Limitation

There are several potential limitations associated with this systematic review. The majority of the woman living with HIV AIDS in this research did not work so an effort should be made to fix empowerment in the education sector. Some had skills that were inclined to making them unable to provide a good response.

6. Conclusion

The intervention from empowerment resulted in a wide range of impacts epidemiologically, politically and socially across the heterogeneous countries. Around the world, the United Nations Program gives HIV/AIDS support to organizations that provide health-care services to patients with HIV to ensure that all have equal access to these services. For instance, there are adherence clubs where patients are given medicines and where basic medical check-ups are performed. There are also self-formed community antiretroviral therapy groups in which the members distribute medicine to their neighbors and appointment visits where medical visits take place less often and where the medicines are dispensed for a longer period of time. The provision of education by health-care professionals to people with HIV can be effective at improving the quality of life of women living with HIV in society.

References

Liberati A, Altman D G, Tetzlaff J, Mulrow C, Peter C, Ioannidis J P A, Clarke M, Devereaux P J and Kleijnen J 2009 The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration

OF PUBLIC HEALTH The PRISMA statement for reporting systematic reviews and meta-analyses of studies th

Nelson A, Cordova D, Walters A S and Szecsy E 2016 Storytelling for Empowerment for Latino Teens : Increasing HIV Prevention Knowledge and Attitudes

Wilson T E, Kay E S, Turan B, Johnson M O, Kempf M C, Turan J M, Cohen M H, Adimora A A, Pereyra M, Golub E T, Goparaju L, Murchison L, Wingood G M and Metsch L R 2018 Healthcare Empowerment and HIV Viral Control: Mediating Roles of Adherence and Retention in Care *Am. J. Prev. Med.* **54** 756–64

Bala, Neetu; Sharma N 2013 Role of emotional empowerment technique (EET) in overcoming shame and guilt in people living with HIV/AIDS . *Indian J. Heal. Wellbeing; Hisar* **Vol. 4** 495–7

Bernier A, Yattassaye A, Beaulieu-Prévost D, Otis J, Henry E, Flores-Aranda J, Massie L, Préau M and Keita B D 2018 Empowering Malian women living with HIV regarding serostatus disclosure management: Short-term effects of a community-based intervention *Patient Educ. Couns.* **101** 248–55

Kellett N C and Gnauck K 2017 AIDS, Stigma, Marriage, and Economic Empowerment: Exploring Intersections of Women's Marginalization in West Nile Uganda *Hum. Organ.* **76** 315–25

Garofalo R, Kuhns L M, Reisner S L, Biello K and Mimiaga M J 2018 Efficacy of an Empowerment-Based, Group-Delivered HIV Prevention Intervention for Young Transgender Women: The Project LifeSkills Randomized Clinical Trial *JAMA Pediatr.* **172** 916–23

Moghadam Z B, Rezaei E, Sharifi B, Nejat S and Saeieh S E 2018 The Effect of Empowerment and Educational Programs on the Quality of Life in Iranian Women with HIV **17**

Dale S K and Safren S A 2018 Striving Towards Empowerment and Medication Adherence (STEP-AD): A Tailored Cognitive Behavioral Treatment Approach for Black Women Living With HIV *Cogn. Behav. Pract.* **25** 361–76

Mccrimmon T, Witte S, Mergenova G, Terlikbayeva A, Primbetova S, Kuskulov A, Bellamy S L and El-bassel N 2018 Microfinance for women at high risk for HIV in Kazakhstan : study protocol for a cluster- randomized controlled trial 1–14

Kuhns L M, Mimiaga M J, Reisner S L, Biello K and Garofalo R 2017 Project LifeSkills - a randomized controlled efficacy trial of a culturally tailored , HIV prevention intervention for young transgender women : study protocol 1–7

Préau M, Bernier A, Yattassaye A, Keita B D, Massie L, Flores-Aranda J, Otis J, Henry E and Beaulieu-Prévost D 2017 Empowering Malian women living with HIV regarding serostatus disclosure management: Short-term effects of a community-based intervention *Patient Educ. Couns.* **101** 248–55

Wilson T E and Kay et\ 2018 Healthcare Empowerment and HIV Viral Control: Mediating Roles of Adherence and Retention in CareWilson, T.E., Kay, E.S., Turan, B., Johnson, M.O., Kempf, M.C., Turan, J.M., Cohen, M.H., Adimora, A.A., Pereyra, M., Golub, E.T., Goparaju, L., Murchison, L., *Am. J. Prev. Med.* **54** 756–64

Bhatta D N and Liabsuetrakul T 2016 Social self-value intervention for empowerment of HIV infected people using antiretroviral treatment: A randomized controlled trial *BMC Infect. Dis.* **16** 1–11

Kerrigan D, Kennedy C E, Morgan-Thomas R, Reza-Paul S, Mwangi P, Win K T, McFall A, Fonner V A and Butler J 2015 A community empowerment approach to the HIV response among sex workers: Effectiveness, challenges, and considerations for implementation and scale-up *Lancet* **385** 172–85

Mengo C, Okumu M, Ombayo B, Nahar S and Small E 2019 Marital Rape and HIV Risk in Uganda: The Impact of Women's Empowerment Factors *Violence Against Women*

Prakash R, Blanchard A K, Shahmanesh M, Ramesh B M, Gurnani V, Mohan H L, Moses S, Isac S, Blanchard J F and Bhattacharjee P 2013 Community mobilization, empowerment and HIV prevention among female sex workers in south India *BMC Public Health* **13**

Oelrichs R, Decker M R, Baral S, Wirtz A L, Beyrer C, Semini I, Poteat T, Pretorius C, Butler J, Sherman S G, Sweat M and Kerrigan D 2014 Epidemic Impacts of a Community Empowerment Intervention for HIV Prevention among Female Sex Workers in Generalized and Concentrated Epidemics *PLoS One* **9** e88047

Albarracin J, Chancay J, Hinrichs D and Sanchez L 2014 Empowerment and condom use among Mexican and Mexican American women in Illinois *Hisp. J. Behav. Sci.* **36** 211–23

Solanke B L 2015 Marriage Age, Fertility Behavior, and Women's Empowerment in Nigeria *SAGE Open* **5**

Khalid J and Choudhry M T 2018 Violence and Economic Empowerment of Women in Pakistan: An Empirical Investigation *J. Interpers. Violence*

Appendix

Table 1. Journal analysis table

No	Title, Authors, & Time	Design	Main Result
1.	*The Effect of Empowerment and Educational Programs on the Quality of Life in Iranian Women with HIV* [8]	Randomized clinical trial	Empowerment and the education provided effective increased in the field of psychology, spiritual and quality of life
2.	Storytelling for Empowerment for Latino Teens: Increasing HIV Prevention Knowledge and Attitudes [2]	Mixed method design used both a randomized control and grounded theory	The storytelling for empowerment (SFE) HIV storybook was designed with an innovative approach combining empowerment, eco development family communication, and positive cultural identity. It increased the knowledge on the prevention of HIV, ESSA and the ability to talk about HIV.
3.	*Striving Towards Empowerment and Medication Adherence (STEP-AD): A Tailored Cognitive Behavioral Treatment Approach for Black Women Living With HIV* [9]	Randomized controlled trial	Intervention counseling as a form of empowerment has been undertaken to reduce nurse-focused violence, and poor mental health, including the improvements in the security and efficacy of women. The intervention will be been well received and could be an important step in during pregnancy to improve the health of themselves and their children.
4.	Microfinances for women at high risk of HIV in Kazakhstan:	Cluster-randomized controlled	The Metode empowerment intervention combines HIV-Risk Reduction (HIVRR) education with financial skill-

No	Title, Authors, & Time	Design	Main Result
	study protocol for a cluster randomized controlled trial [10]	trial (c-RCT) design	building and asset-building to promote reduced reliance within sex trading for income.
5.	Efficacy of an Empowerment-Based Group-Delivered HIV Prevention Intervention for Young Transgender Women: The LifeSkills Randomized Clinical Trial [7]	Randomized Clinical Trial	Among young transgender women (YTW) at sexual risk of HIV acquisition or transmission, the Life Skills intervention resulted in a 39.8% greater mean reduction in condomless sex acts during the 12-month follow-up in comparison to the standard of the control group. This trial is the first to date to demonstrate evidence of the efficacy of a behavioral intervention to reduce the sexual risk in young transgender women (YTW).
6.	*Project LifeSkills - a randomized controlled efficacy trial of a culturally tailored, empowerment-based, and group-delivered HIV prevention intervention for young transgender women: study protocol* [11]	Randomized controlled trial	An intervention with empowerment undertaken by young women (transgender) with a change in lifestyle can reduce the risk of HIV.
7.	Empowering Malian women living with HIV regarding serostatus disclosure management: Short-term effects of a community-based intervention [12]	Quantitative	To assess the short-term effects of the Gundo So, a program was created aimed at empowering Malian women living with HIV (WLHIV) regarding serostatus disclosure management.
8.	Healthcare Empowerment and HIV Viral Control: Mediating Roles of Adherence and Retention in Care (Wilson & Kay et 2018)	Quantitative	The Informed Collaboration Committed Engagement healthcare empowerment component is a promising pathway through which to promote engagement in care among women living with HIV.
9.	AIDS, Stigma, Marriage, and Economic Empowerment: Exploring Intersections of	Quantitative	We also discovered that economic empowerment programs actively

No	Title, Authors, & Time	Design	Main Result
	Women's Marginalization in West Nile Uganda [6]		countered women's vulnerability by directly addressing the mutual influences of the axes of inequality within which women were embedded. Consequently, HIV-positive women were able to (re)gain a sense of legitimacy in their households and communities, ultimately mitigating their experiences with AIDS-related stigma.
10.	Social self-value intervention for the empowerment of HIV infected people using antiretroviral treatment: a randomized controlled trial [14]	Randomized controlled trial	Social self-value interventions provided to HIV infected people during ART increased their empowerment. This intervention can be expanded to be utilized in routine services.
11.	A community empowerment approach to the HIV response among sex workers: effectiveness, challenges, and considerations for implementation and scale-up [15]	Quantitative	Community empowerment-based approaches to addressing HIV among sex workers were significantly associated with reductions in HIV and other sexually transmitted infections, and with increases in consistent condom use with all clients.
12.	Marital Rape and HIV Risk in Uganda: The Impact of Women's Empowerment Factors [16]	Quantitative	Significant differences were revealed for marital rape, women's empowerment variables and reducing the HIV risk according to their socio-demographic characteristics.
13.	Community mobilization, empowerment and HIV prevention among female sex workers in south India [17]	Quantitative	Community mobilization has benefits related to empowering women living with HIV both individually and collectively
14.	Epidemic Impacts of a Community Empowerment Intervention for HIV Prevention among Female Sex Workers in	Quantitative	A community empowerment approach to HIV prevention and access to universal ART for female sex workers is a promising human rights-based solution

No	Title, Authors, & Time	Design	Main Result
	Generalized and Concentrated Epidemics [18]		to overcoming the persistent burden of HIV among female sex workers across epidemic settings.
15.	Empowerment and Condom Use Among Mexican and Mexican American Women in Illinois [19]	Quantitative	Sociocultural and political forms of empowerment were significantly correlated with condom use.
16.	Marriage Age, Fertility Behavior, and Women's Empowerment in Nigeria [20]	Quantitative	Age at first marriage has a significant relationship with women's fertility behavior and empowerment. The enactment and enforcement of legislation to eliminate early marriage will impact positively on fertility reduction and women's empowerment in the country.
17.	Violence and Economic Empowerment of Women in Pakistan: An Empirical Investigation [21]	Quantitative	The women who earn cash and/or in-kind face greater violence. Education can reduce the violence against women and a family history of violence contributes positively toward greater violence. The results also confirm the existence of a regional disparity in this regard. Based on findings of this study, we have provided policy suggestions to mitigate the issue of spousal violence against women.

TDS-568

THE INCIDENCE OF SCABIES IN CHILDREN AND ADOLESCENTS IN SCHOOLS: A SYSTEMATIC REVIEW

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ABSTRACT

Scabies is a skin disease due to mite investment Sarcoptes scabiei and is one of the neglected skin disease. Scabies can easily spread to children and adolescents with poor hygiene and dense environment. The purpose of this article is to identify the incidence of scabies at schools in children and adolescents. The authors conducted of a relevant literature review in various data using the keywords "scabies, children, adolescents and schools". Data based on SCOPUS, Science Direct, Proquest and Pubmed. The criteria consisted of full text published in criteria were five years limit journal (2013-2018) and article using English. The results as much as 1.149 articles found, and selected 15 articles that suitable with criteria. Children and adolescents in schools can easily experience scabies and transmit to other friends because of poor personal hygiene and dense environment at the school.

Keywords: scabies, children, adolescents and school

6. Introduction

Scabies is a common contagious parasitic skin disease and a public health problem, mainly in tropical and subtropical countries. Scabies is a common parasitic infection caused by the mite *sarcoptes scabiei*. Scabies affects about 300 million people worldwide yearly[1]. Epidemiological studies have indicated that the prevalence rate of scabies is not affected by sex, race, or age, and that the primary contributing factors in contracting scabies seem to be poverty and overcrowded living conditions. Infectious skin diseases and infestations like pediculosis and scabies are a common problem in schoolchildren owing to the close contact between classmates [2].

Scabies transmission occurs through direct and prolonged contact, and possibly through sharing contaminated clothing or bedding. Infestation causes intense pruritus, particularly at night, often causing sleep disruption. The excoriation of lesions can lead to secondary bacterial superinfections, therefore treating an infestation early during the disease process may prevent bacterial superinfection and scabies transmission to close contacts. Treating scabies in a community leads to a concurrent reduction in rates or pyoderma [3].

Scabies has recently been adopted as a Category A World Health Organisation (WHO) Neglected Tropical Disease (NTD), highlighting the priority of this condition in developing countries. Scabies is a skin infestation caused by the parasite (*sarcoptes scabiei*). Scabies presents

with an intensely pruritic rash with a characteristic distribution pattern. Clinical manifestations include papules, burrows and pruritus. Distribution varies with age and often includes the involvement of the webs of the fingers, the flexor aspect of the wrist, feet and torso. Transmission is predominantly through direct contact with infected skin, but fomites including bedding and clothing can also play a role. Secondary infection by group A Streptococcus (GAS) and/or Staphylococcus aureus causing impetigo is common and may lead to complications including cellulitis, abscess, septic arthritis, osteomyelitis and septicaemia [4]. Scabies is endemic in tropical regions globally, with prevalence rates between 5–10% commonly reported in children [4]). The purpose of this review was to make sure that the children had good personal hygiene and a good environment, and to decrease the incidence rate of scabies in the children and adolescents.

7. Material and methods

This systematic review reporting was in accordance with the PRISMA (Preferred Reporting Items for Systematic reviews) Statement.

2.18Data Sources and Searches

The databases searched were Scopus, Science Direct, Proquest and Pubmed, which provided the studies related to scabies, children, adolescents and schools from 2013 through to 2019.

2.19Study Selection

The literature review was conducted using scabies, children, adolescents and school as the keywords. The selection of the articles was determined by the following inclusion criteria: the full text was published, the articles were published between 2013-2019, the articles were published in English, they looked at the incidence rate of scabies, and the articles focused on scabies, children, adolescents and schools.

2.20Data extraction and quality assessment

All citations retrieved from the electronic databases were imported into the Mendeley Program. Two reviewers independently analyzed the titles and abstracts of every study retrieved from the literature search to identify potentially eligible studies. The full text of the remaining studies was obtained for further examination. The last review was conducted by the first reviewer. The data of the included studies were independently extracted by the same two reviewers by including the first author's name, the year of publication, the study design, the sample size, the general characteristics of the participants, the research measurement tool used and the main outcome of interest. A descriptive analysis was conducted of the data obtained from the reviewed papers to include and focus on the incidence rate of scabies in the children and adolescents.

8. Results

3.1 Study Design

As many as 1,185 articles were found, and the results came from four databases: 154 articles in Scopus, 150 articles in Science Direct, 284 articles in Proquest and 597 articles in Pubmed. The results of the article selection were according to the inclusion criteria of 15 articles. They were then given a serial number and article analysis was conducted to facilitate the review process.

There were a set of inclusion criteria, such that the articles used were cross-sectional, prospective, epidemiological and cohort in nature.

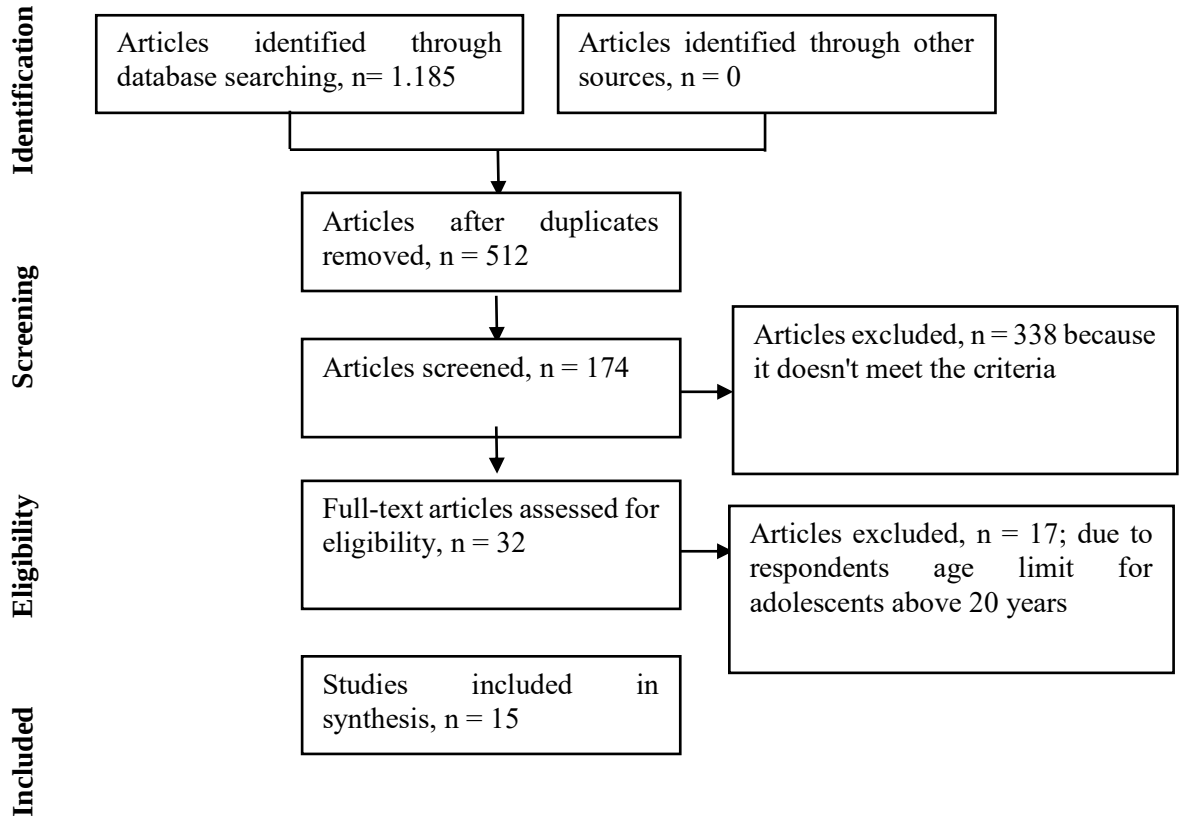

Figure 1: PRISMA flow diagram

3.2 Characteristics of Participant

In this systematic review from 15 articles, the population was made up of children and adolescents in school with a sample variant 2-4.532 participants ranging from 1-20 years old. The studies included were in East Asia, the Arabic region, Europe, Australia and America.

3.3 Incidence scabies in the children and adolescents

The present study determined the frequency of SSD in a sample of 1894 schoolchildren with skin disorders from Kisenso semi-rural county in Kinshasa, DRC [5]. The majority of the affected children were boys. The most affected schoolchildren were of a younger age (5–7 years). The interdigital spaces were found to be the location with the higher proportion of SSD skin lesions (93.8%) and vesicles were the most frequent form of skin lesion (95.3%) [5]. Personal hygiene was defective in 80% of schoolchildren, and more than half of SSD schoolchildren were not on any anti-scabies medication at the time of this study. Skin sores were recorded at least once for 307 (84%) out of the 365 children and scabies was recorded for 260 (71%) of the children. Of these, 251 (69%) child health records reported at least one episode of scabies and at least one episode of skin sores previous [5]. The most frequent

age at the point of first infection for the skin sores and scabies was similar at 3–4 months with no new first infections reported after the age of 32 months. The male sex was a risk factor for scabies infestation, which is a finding differing from Hegab et al's report in Egypt where there was no difference between males and females [6] . Sleeping with others had already been identified as a risk factor for scabies infestation [2], as well as the sharing of clothes with others. In fact, the high contagiousness of human scabies is transmitted by contact with an infected skin[7]. If the students are infected and they have no access to the infirmary to consult and/or to be treated, then they can spread the disease to others. Moreover and unsurprisingly, students complaining of pruritus had a 93.4-fold increased risk of being diagnosed with scabies. The itching can become very intense and uncomfortable, so that may affect the quality of life of the individual[8]. The epidemiological data about scabies infestation in students has provided valuable information about the risk factors and this suggests a basis for prevention and therapy methods. In the current study, the difference in the prevalence of scabies between males and females was not statistically significant[9]. This result corresponds with the results of other studies in Nigeria and Turkey. However, male predominance was observed in other Indian studies and this might be related to the social factors in society and in the country [10].

9. Discussion

The present study showed that the prevalence of scabies was higher among children from rural schools than among those from urban schools. Many studies from other countries also support this finding in a population of children aged 13-15 years old. This finding could be explained by a larger family size in rural areas, leading to overcrowding, in addition to a decreased level of health education, poverty and bad behavioral habits such as sharing clothes and bed linen with others, and dealing with animals [17]. The prevalence of scabies in the present study was higher among children whose fathers were illiterate or who were only primary level educated. Among those were fathers who were unemployed or manual workers. These results are in line with those of the previous studies, which have also demonstrated that the illiteracy of the adult household members were a very good predictor of the presence of scabies in developing and industrialized countries. In the present study, it was found that sleeping with others, having animals in the house, dealing with animals outside the house, living in houses made of soft brick, having a family history of itchy skin lesions and sharing clothes with others were all significant risk factors for scabies infestation. Many studies in our country and in other countries also support these findings [6]. This is supported by the previous prevalence studies, which have reported a high prevalence of scabies in hot, tropical areas where overcrowding facilitates the rapid spread of the scabies mite. The burden of scabies over the human lifespan has differing patterns in regions with a high or low scabies burden. Scabies and impetigo contribute to a significant burden of disease for children and adults in low resource countries [10]. Scabies infection can predispose an individual to secondary bacterial infection with GAS and *S. aureus*. GAS is also implicated in the etiology of glomerulonephritis, ARF and RHD, which can develop in the context of mild infections or carriage. High rates of skin infection in school students are suggestive of high rates community wide, including among vulnerable groups such as infants, preschool children and the elderly. Whilst improving access to clinical treatment is important, consideration should also be given to implementing programs targeted at limiting or eradicating endemic scabies and impetigo. Possible strategies can include community education, water, sanitation and hygiene programs and community treatment with mass drug administration [2].

10. Conclusion

In conclusion, the findings of the current study confirm that scabies is still an important health problem affecting schoolchildren in our community, especially in rural areas. Poor living conditions (inadequate housing, sleeping with others, illiteracy, having animals in the house, dealing with animals outside the house, and sharing clothes with others) are important risk factors involved in the transmission of scabies.

References

[69] Arisandi Y, Anwar C and Purnama D H 2018 The Dominant Factors of Scabies Incidence in Two Islamic Boarding School Students , South Sumatera , Indonesia **18** 1–6

Kabbash I A 2015 Scabies among primary schoolchildren in Egypt : sociomedical environmental study in Kafr El-Sheikh administrative area 105–11

Edison L, Beaudoin A, Goh L, Introcaso C E, Martin D, Dubray C, Marrone J and Beneden C Van 2015 Scabies and Bacterial Superinfection among American Samoan Children , 2011 – 2012 2011–2

Korte L M, Bowen A C, Draper A D K, Davis K, Steel A, Teodora I, Mascarenhas I, Dingle B and Francis R 2018 Scabies and impetigo in Timor-Leste : A school screening study in two districts **1** 9–15

Roger W and Ngatu N R 2018 Frequency and Clinical Features of Sarcoptic Skin Disease (Scabies) in Congolese Schoolchildren

Yeoh D K, Anderson A, Cleland G and Bowen A C 2017 Are scabies and impetigo " normalised "? A cross-sectional comparative study of hospitalised children in northern Australia assessing clinical recognition and treatment of skin infections **0** 1–16

Kiprono S K, Muchunu J W and Masenga J E 2015 Skin diseases in pediatric patients attending a tertiary dermatology hospital in Northern Tanzania : a cross-sectional study 10–3

Sara J, Haji Y and Gebretsadik A 2018 Scabies Outbreak Investigation and Risk Factors in East Badewacho District , Southern Ethiopia : Unmatched Case Control Study **2018**

Sunderkötter C, Aebischer A, Neufeld M, Löser C, Kreuter A, Bialek R, Hamm H and Feldmeier H 2018 Increase of scabies in Germany and development of resistant mites ? Evidence and consequences 15–23

Kouotou E A, Nansseu J R N, Kouawa M K and Bissek A Z 2016 Prevalence and drivers of human scabies among children and adolescents living and studying in Cameroonian boarding schools *Parasit. Vectors* 4–9

Karimkhani C, Colombara D V, Drucker A M, Norton S A, Hay R, Engelman D, Steer A, Whitfeld M, Bill F and Foundation M G 2015 Article The global burden of scabies : a cross-sectional analysis from the Global Burden of Disease Study 2015 *Lancet Infect. Dis.* **17** 1247–54

Walker S L, Lebas E, Sario V De, Deyasso Z, Doni N, Marks M, Roberts C H and Lambert S M 2017 The prevalence and association with health- related quality of life of tungiasis and scabies in schoolchildren in southern Ethiopia 1–11

Luo Z, Zeng M, Gao Q, Zhao Y, Sarkar R, Liao S and Luo D 2017 Case Report : Bullous Scabies in Two Children below 10 Years **97** 1746–8

Thornley S, Marshall R, Jarrett P, Sundborn G, Reynolds E and Scho G 2018 Scabies is strongly associated with acute rheumatic fever in a cohort study of Auckland children 1–8

Mounsey K E, Murray H C and King M 2017 Retrospective analysis of institutional scabies

outbreaks from 1984 to 2013 : lessons learned and moving forward 2462–71

Lydeamore M J, Campbell P T, Cuningham W, Andrews R M, Mccaw J M and Mcvernon J 2019 Calculation of the age of the first infection for skin sores and scabies in five remote communities in northern Australia

Vagamon B, Konan N, Yotsu R R, Abbet R, Agbor B T, Akpa J, Yao A, Ake J, Bedimo R, Ishii N, Fuller L C, Hay R, Mitj O, Drechsler H and Asiedu K 2018 Skin disease prevalence study in ˆte d ' Ivoire : schoolchildren in rural Co Implications for integration of neglected skin diseases (skin NTDs) 1–18

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
[12] Southern Ethiopia	Cross sectional study	All students at the school were invited to participate with the exception of those in Grade 8 who had finished their final examinations, Sample are 343 students from 14 classes	Over three says all participants had a complete skin examination performed, examinations were conducted in a systematic way of the skin (with the exception of the genital area), hair, nails and oral cavity	Questionnaire about the Children's Dermatology Life Quality Index	There was a high burden of skin disease amongst this cohort with more than 40% having an ectodermal parasitic skin disease, scabies and tungiasis appeared to have significant negative effect on quality of life.
[13]	Case report	Four case were found to be below than 10 years 2–5 and added another two cases with this rare condition who were younger than 10 years.	Children below than 10 years	Clinical diagnosis	7-year-old boy presented with 2 months history of generalized and pruritic papules with nocturnal exacerbation over his whole body except the face and scalp and with multiple tense blisters on both hands 6-month-old boy was referred because of increasing numbers of papules and nodules over the whole body with predominance on trunk and hands.
[14]	Cohort study	Hospital records were	Individuals aged 3–12 years at the date of	Database from 14 May 2007	Children diagnosed with scabies during follow-up

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
		checked for diagnoses of ARF or CRHD that occurred before the date of the first dental examination. If such a record was found, the child was excluded.	their first dental examination were included. Children who were otherwise eligible but who had a missing NHI were eliminated.	to 24 October 2014	were 23 times more likely to develop ARF or CRHD, compared with children who had no scabies diagnosis
[15]	Cross sectional study	Schools were choosen randomly from each stratum to represent female and male students. A total of 862 students were chosen randomly from 5 urban schools, and 1,242 students were chosen randomly from 8 rural schools.	All the schoolchildren chosen were from grades 4 to 9 primary because younger children (grades 1–3) were not able to understand and answer the questionnaire. None of the selected children declined to participate in the study (response rate 100%).	Predesigned questionnaire was used, which included: sociodemographic and environmental data: the level of education and the occupations of their parents, number of members of their families, number of rooms in their houses, number of persons who sleep with them in the same bed, presence of animals in their houses, manner of dealing with	The results showed significant variations in the risk of scabies infestation by factors such as residence, paternal education and occupation, maternal education, sleeping with others, having animals at home, dealing with animals outside the house, type of building for living, family history of itchy rash, and sharing clothes with others.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
				animals outside their houses, and the type of building of their houses. Family history of itchy rash, and sharing clothes witho thers. Clinical data used for diagnosis: students were asked about the presence of rash in their bodies, its site, and time of appearance.	
[8], Southern Ethiopia	Case control study	Total of 4.532 suspected scabies cases line listed from 9 kebeles of the district with a prevalence of 11% (4532/41287) .	*Cases*. Any resident of the kebeles, East Badewacho District, with sign and symptoms (specifcally itching and rash) of scabies was selected for investigation and agreed to participate in the study during investigation period. Diagnosis of a scabies infestation usually is clinical, made based upon presence of the typical rash and symptoms of unrelenting and worsening itch, particularly at night. *Controls*. Any resident of community of kebeles without any	Using a structured questionnaire including sociodemographic characteristics, clinical features and management of the cases, and the possible risk factors, the data were collected through face to face interview with individual participants, or their families in case of children.	Total of 4,532 scabies cases line listed with overall attack rate of 110/1,000 population. The mean age was 12 years, and most afected age group was 5–14 years. Independent risk factors found to be statistically associated with scabies infestation were age less than 15 years, family size greater than 5 members, bed sharing with scabies cases, and home being afected by fooding.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
			signs and symptom of scabies was selected during the investigation period and agreed to participate in the study.		
[7] Tanzania	Cross sectional study	Conducting prospective hospital-based cross-sectional study between September 2012 and August 2013 at a tertiary referral dermatology clinic. Children younger than 14 years presenting with new skin conditions were recruited.	All children younger than 14 years who came to the clinic with new skin disorders between September 2012 and August 2013 were randomly recruited by selecting every third patient that was registered in the clinic until the desired calculated sample size of 340 was obtained.	The diagnosis was mainly done clinically, but relevant laboratory investigations or histopathology was done in cases with unclear diagnosis.	Total of 340 patients were recruited of which 56 (16.5 %) had more than one skin condition. Both genders were equally affected
[5] Demorcatic Republic of Congo (DRC)	Cross sectional study	Participants randomly sselected four schools in the semi-urban in Kisenso area, a list off all schools of the Kisenso country.	Participants randomly selected are Saint Achille school (781 students), Genious of Kisenso school (629 students), Kayila School (588 students) and Rehoboth school (206 students) with total 2.204 students, and inclusion criteria were being a student at one of the selected	A patient form was used for each participant to anonymously collect information on sociodemographics and on which data from the clinical examination	The majority of affected children were boys (56% vs. 44% for girls). Personal hygiene was defective in 80% of participants. The younger children (5–7 years) were the most affected (61.5%); interdigital spaces were found to be the most affected body parts (93.8%), and vesicle was the most frequent skin

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
			schools and being present at the time of enrollments	were recorded. The clinical examination consisted of the description of the types and locations of skin lesions on the body (interdigital, hand, face, elbow, axillary, abdominal folds, inguinal folds, genital area). In addition, information on bodily and dressing hygiene, as well as current treatment, was also recorded.	lesion (95.3%).
[10] Cameroon	Cross sectional study	Participants are students in 4 boarding schools in Cameron, of the 2.235 students regularly registered in four study sites, 152 were absent when the investigators visited and 181 refused to	Before recruitment, sensitization sessions were organized by the investigators in each study site to inform the authorities and students of the aspect of the study, data were collected during an interview conducted by an investigator using a standardized and pretested questionnaire.	Questionnaire about socio-demographic characteristics (age, sex, class attended and family size), history of pruritus (witnessed by the student or his/her entourage and the prevailing period) and frequency of	Overall 338 participants (17,8%) were diagnosed with scabies age $\leq$ 15 years, male sex, no access to the school infirmary, sleeping with others, sharing beddings, clothes or toilet stuffs, pruritus in the close entourage.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
		take part in the study.		baths and laundries.	
[4], Timor Leste	Cross sectional study	School students were recruited from schools in Dili (urban) and Ermera (rural) in Timor Leste	Students from schools in the municipalities of Dili (urban) and Ermera (rural) were enrolled in a school screening project that included echocardiography screening for RHD and limited skin examination for scabies and impetigo. The primary outcomes in the skin arm of the study, were presence or absence of scabies, and/or active impetigo, based on limited clinical examination. Students who attended school on the days of screening were eligible to participate in the study. Children aged less than 5 years and people aged 25 years or older were excluded.	A standard questionnaire was used to record demographics, anthropometry and skin examination results. Baseline demographics including date of birth, age, sex, name, school, address, number of people and number of rooms in the home were collected for all participants. Weight, height and previous known allergy to penicillin were also recorded.	The study enrolled 1396 students; median age 11 years (interquartile range (IQR) 9–15). The prevalence of scabies was 22.4% (95% CI 20.2–24.7%) and active impetigo 9.7% (95% CI 8.3–11.4%); 68.2% of students had evidence of either active or healed impetigo. Students in Ermera were more likely than those in Dili to have scabies (prevalence 32.0% vs 5.2%, aOR 8.1 (95% CI 5.2–12.4), p<0.01). There was no difference in the prevalence of active impetigo between urban and rural sites.
[3] United State of America	Retrospective study	Scabies diagnosis in AS is based on clinical presentation and distribution of lesions, presence of symptoms (particularly	Defined a case of scabies as physician-diagnosed infection with Sarcoptes scabiei variant hominus in a patient aged 14 years, during January 1, 2011–December 31, 2012.	Data collected included demographics, date of all scabies diagnoses, and presence of bacterial super infection.	Among the AS population of 19,425 children aged 14 years, we identified 613 children with scabies during 2011 and 526 during 2012. The annual average was 570 cases, or 29.3 cases/1,000 children.

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
		intense itching that is worse at night or irritability and sleep disturbances among infants), and often a history of close contact with a person with a pruritic rash.			
[1] Indonesia	Cross sectional study	The population of the research was all students boarding schools with a selected sample of 93 respondents using the proportional random sampling.	This research was conducted to analyze the relationship between residential density and personal characteristics towards the incidences of scabies among students of boarding school Raudatul Ulum and Mustaqimus Sunnah, South Sumatra.	Primary data was collected through interviews, observation, physical examinations, and of residential density by using a questionnaire, checklist and measuring instrument. Secondary data taken was a figure in the region of scabies in district health and clinic reports of boarding school	The result of scabies prevalence was 59,6% and 56,5% respectively, the free variable bearing the most dominant influence towards scabies incidence, which was the residential density (OR: 5.850 95% CI: 2.369-14.445).
[16]	Observational study	Active surveillance of skin	This synthesis resulted in a total of 365 unique children. For	estimated the age of the first infection using	For scabies, the mean age of the first infection was approximately 9 months

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
		infections was conducted over the 3-year period, with an aim to reduce the prevalence of skin infections including scabies and skin sores.	each child, the earliest recorded date of infection for skin sores and scabies was identified. For children not experiencing infection, the date of the last primary health care presentation in the pooled dataset was used as the censoring date.	the Kaplan–Meier estimator; parametric exponential mixture model; and Cox proportional hazards.	and the median was 8 months, with significant heterogeneity by the community and an enhanced risk for children born between October and December. The young age of the first infection with skin sores and scabies reflects the high disease burden in these communities.
(Yotsu *et al.*, 2018) [17]	Survey screening	Children aged 5 to 15 in Coˆte d'Ivoire, West Africa. took place in 49 schools from 16 villages in the Adzope ´ health district.	The first phase involved a rapid visual examination of the skin by local community healthcare workers (village nurses) to identify any skin abnormality. In a second phase, a specialized medical team including dermatologists performed a total skin examination of all screened students with any skin lesion and provided treatment where necessary.	Skin survey for selected NTDs and the spectrum of skin diseases, among primary school This 2-phase survey took place in 49 schools from 16 villages in the Adzope ´ health district from November 2015 to January 2016.	Total of 13,019 children, 3,504 screened positive for skin lesions and were listed for the next stage examination. The medical team examined 1,138 of these children. The overall prevalence of skin diseases was 25.6%. Skin diseases were more common in boys and in children living along the main road with heavy traffic
(Yeoh *et al.*, 2017) [6]	Cross sectional study	Participation in this study was voluntary and verbal and written informed consent was	Conducted a prospective to assess the burden of scabies, impetigo, tinea and pediculosis in children admitted to two regional Australian	Study documents of prevalence skin infection was compared in the prospective and	158 patients with median age 3.6 years, 74% Aboriginal, were prospectively recruited. 77 patient records were retrospectively reviewed. Scabies (8.2% vs 0.0%, OR

Name, Country, and Years	Design	Population	Research Criteria	Research Measurement Tool	Outcomes
		sought from each participant's parent or appropriate guardian and where appropriate, (i.e. in children >7yo) assent was obtained.	hospitals from October 2015 to January 2016. A retrospective chart review of patients admitted in November 2014 (mid-point of the prospective data collection in the preceding year) was performed.	retrospective population to assess clinician recognition and treatment of skin infections.	N/A, p = 0.006) and impetigo (49.4% vs 19.5%, OR 4.0 (95% confidence interval [CI 2.1–7.7) were more prevalent in the prospective analysis.
(Karimkhani *et al.*, 2015)[11]	Cross sectional study	Identified scabies epidemiological data sources from an extensive literature search and hospital insurance data and analysed data sources	Scabies was responsible for 0·21% of DALYs from all conditions studied by GBD 2015 worldwide. The world regions of east Asia The largest standard deviations of age-standardised DALYs between the 20 age groups were observed with the greatest DALY burdens in children, adolescents, and the elderly.	Epidemiological data sources from an extensive literature search and hospital insurance data and analysed data sources	The burden of scabies is greater in tropical regions, especially in children, adolescents, and elderly people. As a worldwide epidemiological assessment, GBD 2015 provides broad and frequently updated measures of scabies burden in terms of skin effects. These global data might help guide research protocols and prioritisation efforts and focus scabies treatment and control measures.

TDS-582

EDUCATION AND SELF MANAGEMENT INTERVENTION PROGRAMS FOR PATIENTS WITH COPD : A SYSTEMATIC REVIEW

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ABSTRACT

Self management is very important to increase patients skills and confidence, empowering the individual to take an active part in their disease management and increase the quality of life of patients with Chronic Obstructive Pulmonary Disease (COPD). The increasing incidence of COPD because of most patients fail to engage in adequate self management. This systematic review is to identify effectiveness education and self management intervention programs for patients with COPD. A randomized control trial (RCT) study using the PRISMA approach from: Scopus, SageJournal, Proquest, and Pubmed limited to the last 6 years; from 2014 to 2019 and obtained 12 articles that selected from 168 articles was found. This systematic review found five programs, they are self-management education programs and behavior modivication, Self-Management Programme of Activity Coping and Education (SPACE), individual self management plan and support intervention, the health coaching Programme, and self management supported by telehealth. The results of studies was collected mostly for 6 months. The most of the result from the studies show the impact of self management intervention programs to improve HRQoL and physical exercise capacity, self efficacy, self-care behaviours, self management skills and reduce the incidence of exacerbation.

Keywords: education, self management, intervention program, COPD

1. Introduction

This systematic review aimed to identify self management intervention programs for patients with COPD. Chronic Obstructive Pulmonary Disease (COPD) is a chronic lung disease that is common in the community, which cannot be cured but it can be controlled with long-term treatment. An increase in the prevalence and mortality of COPD occurs because most patients fail to carry out self-management properly. About 90% of deaths from COPD occur in countries with a middle or low income, where strategies for treatment, prevention, and the control of the disease do not go well. The WHO estimates an increase in mortality from COPD of more than 30% in 10 years, if the intervention to control risk factors is not done well[1].

COPD is a major cause of chronic morbidity and mortality throughout the world. More than 3 million people died because of COPD in 2012, which accounted for 6% of all deaths globally and currently, COPD is the number fourth most common cause of death in the world [2]. The WHO data globally shows that the prevalence of COPD in the world is 251 million cases and that an estimated 3.17 million have died. The WHO also estimates that in 2030, COPD will be the third cause of death in the world [1]. Basic Health Research records that 3.7% of the total population of Indonesia suffers from COPD, where the prevalence is higher for men [3].

The treatment of COPD requires a long process, so the patients need a good self management strategy for managing the disease. COPD self-management is the active participation of the patients in the treatment of the diseases based on adequate coping behavior, compliance with drug use,

attention to changes in severity and breathing techniques. Patients who have good self management can reduce their respiratory-related and all-cause hospital admissions and improve their health-related quality of life (HRQOL)[4]. Poor self management can cause many COPD patients to be repeatedly hospitalized because of the complaint of the recurrence of shortness of breath or the occurrence of exacerbations [5].

Many interventions can be done to improve the self management of patients with COPD. A COPD self-management intervention program is an educational program for patients with COPD with the goal of motivating, engaging, and supporting the patients to positively adapt their health behaviors and to develop skills to better manage the disease[6]. Self-management interventions exert positive effects in patients with COPD on respiratory-related and all-cause hospitalizations and they have a modest effect on 12-month health-related quality of life, thus supporting the implementation of self-management strategies in clinical practice [7]. Self management interventions in patients with COPD were associated with a better quality of life, fewer hospital admissions and improved symptoms [4]. Self management intervention programs are very important to improve the skills and confidence of the patients, to empower the individuals to take an active part in their disease management and to improve the quality of life of patients with COPD. This systematic review has identified the importance of self management programs for patients with COPD.

2. Methods

2.1. Search strategy and study selection

This systematic review only gathered RCT articles using the PRISMA[Figure 1]. A literature search was carried out in four databases - Scopus, SageJournal, Proquest and Pubmed - with the results limited to the last five years from 2014 to 2018. The keywords used in the literature search were education, self management program, telehealth and Chronic Obstructive Pulmonary Disease (COPD).

2.2. Type of study

This systematic review aimed to identify self management intervention programs for patients with COPD. A randomized controlled trial study (RCTs), which is in the top position of the evidence hierarchy, is qualified and suitable to answer this kind of question. Therefore, only RCTs were included in this review.

2.3. Inclusion and exclusion criteria

The inclusion criteria of the articles were that they all had to contain a self management intervention program for patients with COPD. All articles using the English language were included. Articles were excluded if the study did not utilize a randomized control trial (RCTs).

2.4. Participants, Interventions, Comparators, Outcomes and Study design (PICOS)

The feasibility of the study was assessed using the PICOT approach: the participants were patients with COPD, interventions were the type of self management education, there was no comparison and the outcomes were to improve HRQoL, physical exercise capacity, self efficacy, self-care behaviors, self management skills and knowledge. The intention was to reduce the incidence of exacerbation. The study design was a randomized controlled trial study (RCTs).

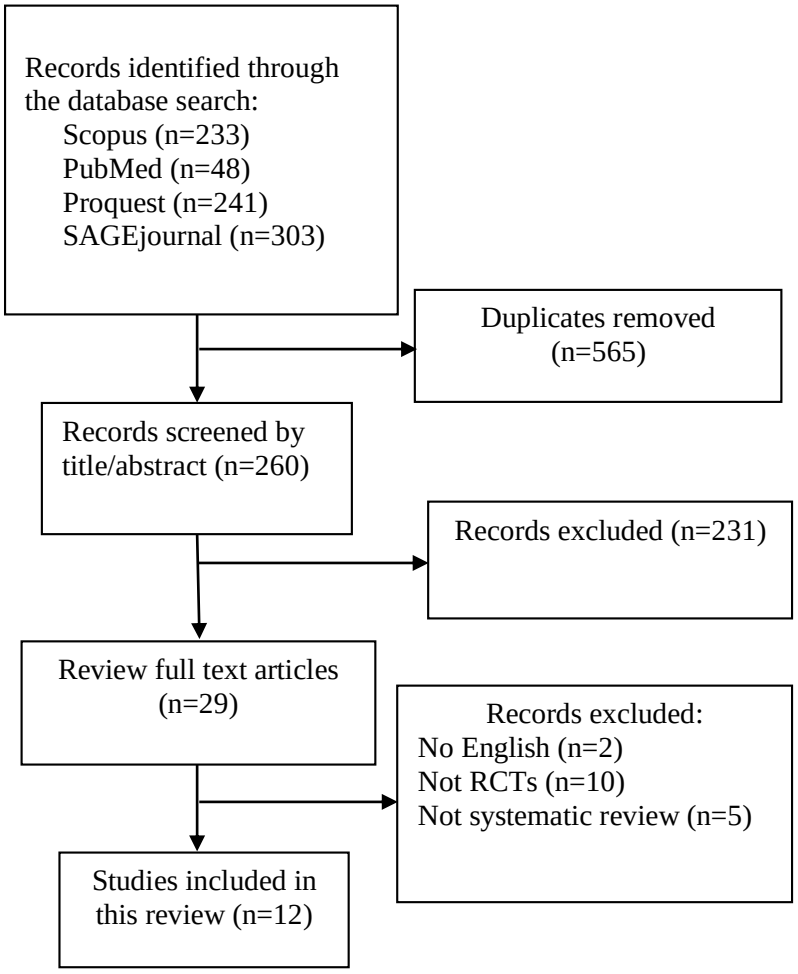

Figure 1. PRISMA flow diagram

Table 1. Summary of the studies included in the review

Author	Type of study	Participants and country	Interventions and Times	Outcomes
[13]	RCTs (Qualitative)	36 patients of adults with COPD. UK	SPACE program (Self-management Program of Activity, Coping and Education): Time: intervention in 6 weeks, follow up in 6 months.	1) Perceptions of the program (participants were very satisfied with the breadth of the content and the education that it provided). 2) Lifestyle changes (increased physical activity and exercise behavior as well as altered medication use and the use of breathing control and chest clearance techniques, decreased breathlessness, increased participation in valued activities, increased knowledge and understanding of COPD, improved energy levels and improvement in walking times).
[5]	RCTs (Quantitative)	250 patients with COPD. Spain	Self-management education program. Time: 1 year.	The rate of COPD exacerbations with visits to A&E or hospitalization had decreased (reduced exacerbations).
[14]	RCTs (Qualitative)	20 COPD patients. China	The health coaching program. Time: 6 months.	Improved lung function, physical activity, quality of life, and self management skills, as well psychological status in short and long-term.
[9]	RCTs (Quantitative)	51 COPD patients (25 control group, 26 intervention group). China	Self-management education programs (SMEPs) Time: 6 months.	Significant improvement in self-efficacy.
[11]	RCTs (Quantitative)	184 people with COPD (92 people in control group, and 92 people	The Self-Management Program of Activity, Coping and Education	At 6 weeks, there were significant differences between the groups in the CRQ-SR dyspnoea, fatigue and emotion scores, exercise performance, anxiety, and for disease knowledge.

		in interventions group). Europe.	(SPACE) for COPD. Duration: 6 weeks and a follow up in 6 months.	At 6 months, there was no between-group difference in relation to changes in CRQ-SR dyspnoea. Exercise performance, anxiety and smoking status were significantly different between the groups at 6 months.
[16]	RCTs (Quantitative)	577 patients COPD (289 patients intervention group, 288 patients control group) in England.	Telephone health coaching intervention delivered by nurses. Time: intervention 6 months, follow up in 12 months.	Changes in self management activities, but this did not improve health related quality of life (no difference in SGRQ-C total score at 12 months). At six months, there was an improvement in physical activity, and they had received a care plan, rescue packs of antibiotics, and an inhaler use technique check.
[8]	RCTs (Quantitative)	131 COPD patients in primary and secondary care. UK	Clinician-led Self Management Education Program. Time: 6 months.	Improvements in important outcomes such as activation, mastery and self-management abilities.
[10]	RCTs (Quantitative)	54 patients diagnosed with COPD. Canada	Self management education program with the coaching of a case manager. Time: 6 months	Improved the patients' quality of life, self management skills and knowledge.
[12]	RCTs (Quantitative)	78 patients (39 patients in both groups). UK	Self-management Program of Activity, Coping, and Education for COPD (SPACE for COPD). Time: 3 months	No reduction in the readmission rates at 3 months, but SPACE worked for COPD when it came to preventing readmission within 30 days.
[17]	RCTs	29 COPD patients.	Telehealth program.	No significant results on the number of hospitalizations, length

	(Quantitative)	The Netherlands	Time: 9 months	of stay, and emergency department visits, but significant clinical measures (decreased dyspnea level).
[18]	RCTs (Quantitative)	1,325 participants. The Netherlands	A web-based, computer-tailored COPD self-management intervention. Time: 6 months	No significant results regarding physical activity and smoking cessation.
[15]	RCTs (Quantitative)	215 participants. USA	Health coaching plus a written action plan for exacerbations and brief exercise advice. Time: 12 months	Improved quality of life and reduced COPD readmissions.

3. Results

In total, 2950 patients were involved in 12 different studies. There were four articles in 2014 (33,3%), one article in 2015 (8,3%), three articles in 2016 (25%), one article in 2017 (8,3%), and three articles in 2018 (25%). After reviewing the results, the self management intervention programs were classified as education programs (58,3%), coaching programs (33,3%) and web-based programs (8,3%). There were four types of intervention program, namely the self-management education program (SMEP), the Self-Management Program of Activity Coping and Education (SPACE), the health coaching program and telehealth coaching intervention, and web-based computer-tailored self-management intervention [Table 1]. The duration of the follow-up to the self-management intervention programs in this review were 3 months in one study (8,3%), 6 months in seven studies (58,3%), 9 months in one study (8,3%), and 12 months in three studies (25%). The media of the self management intervention programs used in this review consisted of slides using Powerpoint, modules, video, telephone calls, an app and a website.

3.1 Self management education programs

There were four articles that used a self management education program (SMEP) in this review. The research conducted by Sanchez et al (2016) used a self management program for 1 year in two pre-post-test groups. The intervention group accepted the SMP-COPD program individually[5]. Comparative groups, or control groups, received routine care and had regular visits. The interventions were conducted in 3 sessions. The first session was where they received educational material consisting of a PowerPoint presentation with 20 slides about the main characteristics of the disease, the symptoms of exacerbation and inhaled medicines. In the second session, there was an opportunity for questions and a physiotherapist showed them how to do a series of basic physical exercises. The

third session used sheet paper education and instructions for the patients that consisted of four sheet types: the first sheet contained instructions about physical care and exercise for a stable period (green), the second sheet consisted of care sheets for exacerbation (orange), the third sheet contained instructions to follow in case their condition became serious or emergency (red sheets), and the fourth sheet contained instructions for the technique of inhalation that contained a systematic and protocol-based process to train all of the patients in intervention group on the correct administration technique for each prescribed inhaler, with a particular emphasis on both avoiding critical errors and compliance[5]. After the 1 year follow up, the results showed that a reduction of exacerbation incidences.

Research conducted by Turner et al (2014) used SMEP for seven weekly sessions that were three hours each. The SMEP included weekly COPD-specific content including managing breathlessness, COPD medication and managing COPD exacerbations[8]. After the 6-month follow up, the results of the study showed that there were improvements in patient activation, improvements in COPD mastery, a range of self-management abilities (self-monitoring and insight), a constructive attitude shift, and new skills and technique acquisition.

SMEP was used in study by Ng Wai I & Smith GD (2017) conducted on a group basis with five to eight participants in each section[9]. The SMEP workshops in this study comprised of an overview of the definition of COPD, the natural course of the disease, information on how to manage a stable condition, advice on how to prevent complications and a self-treatment guideline (or action plan) for managing exacerbations. They were delivered to the experimental group by the principal researcher over three 1.5-hour nurse-led sections that ran over 3 consecutive weeks at a demonstration room in the clinical setting. After 6 months, the study evaluated the self efficacy of the patients with the CSES tools from Bandura's Self-Efficacy theoretical framework that consist of 34 items exploring the five dimensions of self-efficacy[9]. The results of the study showed that there was an improvement of general self-efficacy in the intervention group, especially for physical exertion, weather/environment effects, and intense emotions. Three themes that emerged from the focus groups were greater disease control, improved psychosocial well-being and perceived incapability and individuality.

The research conducted by Bourbeau et al (2018) used a self management education program with the coaching of a case manager who focused on treatment adherence, inhaler technique, smoking cessation, and the use of an action plan for exacerbations[10]. The intervention program consisted of an initial visit and three follow-ups at 4–6 weeks, 4–6months and 1 year. The initial visit lasted for around 90 minutes and consisted of an assessment of their educational needs, a spirometry and a 1-hour encounter with the educator (respiratory therapist). During the encounter, the following topics were covered: COPD etiology and pathophysiology, COPD control, smoking cessation, the use of a written action plans for acute exacerbations, adequate inhaler technique, and medication adherence. The follow-up visits lasted for around 60 minutes in which pre-bronchodilator spirometries were performed and their educational needs were assessed. Based on the individual patient needs, specific self-management skills were addressed (exacerbation recognition, action plan use, inhaler technique among others). The results of the study showed that there were improvements in HRQoL, treatment adherence, adequate inhaler technique, and COPD knowledge, that they increased their prescription for long-acting bronchodilators with/without inhaled corticosteroid, kept up with their flu immunizations, and had COPD action plans in the event that the patient had an exacerbation.

3.2 Self Management Program of Activity Coping and Education (SPACE)

There were three articles that used the Self-management Program of Activity, Coping, and Education (SPACE). The article by Mitchell et al (2014) used the SPACE for COPD manual for at least 6

months, which is a 176-page workbook that individuals can follow independently at home[11]. The manual, divided into four discreet sections, contains educational material and a home exercise program. The intervention was carried out by a physiotherapist during a 30–45-min consultation. The participants needs were discussed and goal setting strategies were introduced. The participants were advised on how to use the manual at home and the exercise regime was described by the physiotherapist in detail. It was anticipated that the participants would work through the manual in approximately 6 weeks. However, the participants were advised the manual was theirs to keep, as it could be used as a resource for the future and that the lifestyle changes it suggested should be lifelong. The participants then received two telephone calls from the physiotherapist 2 and 4 weeks into the program to reinforce their skills and providing them with the encouragement to progress. There was no further contact between the physiotherapist and the participant after the telephone call at 4 weeks[11]. The result of the study was evaluated at 6 weeks and 6 months. The results of the 6 weeks evaluation showed that there were significant differences between the groups in the CRQ-SR dyspnoea, fatigue and emotion scores, and for the exercise performance, anxiety, and disease knowledge. The results of the 6 month evaluation showed that that there no difference in the changes of CRQ-SR dyspnoea between the groups. Exercise performance, anxiety and smoking status were significantly different in the intervention group.

The research conducted by Johnson et al (2016) was the intervention of SPACE introduced to the manual exercises conducted by a trained physiotherapist (VJ-W) in a one-to-one session lasting 30–45 minutes using motivational interviewing techniques to facilitate behavior change, goal setting, and problem solving[12]. The participants were advised how to progress and they were informed that the manual could be valuable for the future to reinforce any life-long lifestyle changes. They then received structured phone calls within 72 hours and at 2 weeks, 4 weeks, 6 weeks, 8 weeks, and 10 weeks post-hospital discharge with the aim of reinforcing their skills, helping them to identify and manage exacerbations, promoting an active lifestyle, and providing encouragement, while tailoring them to the patient's needs. After the 3 month follow up, SPACE for COPD did not reduce the readmission rate above that of usual care, but it did help prevent readmission within 30 days. The results of the study explained that the patients receiving the intervention reported feeling better able to arrange their life to cope with COPD, that they knew when to seek help about feeling unwell, and that they more often took their medications as prescribed.

The research conducted by Apps et al (2017) used SPACE with an interview according to the following four themes: perceptions of the program, lifestyle changes, social support and disrupting the factors and barriers to maintaining routine. The intervention followed a 6-week assessment and it was then followed up after 6 months[13]. After the follow up after 6 months, the results of the study showed that there were lifestyle changes, increased physical activity and exercise behavior as well as altered medication use and the use of breathing control and chest clearance techniques, decreased breathlessness, increased participation in valued activities, increased knowledge and an understanding of COPD, improved energy levels and an improvement in walking times.

3.3 The health coaching program and telehealth coaching intervention.

There were four articles that used the health coaching program and telehealth coaching intervention The research conducted by L Wang et al (2018) used a combination of 1 face-to-face coaching session (in the hospital) and monthly telephone coaching (after discharge). The intervention used a 3-step nurse led program[14]. Step 1: an individual face-to-face health coaching session at the hospital provided by the coach assessing the patients' self-management level, exercise capacity, medical adherence, and psychological status. A face-to-face consultation between the patient and nurse-coach

was conducted focusing on patients needs with an interviewing experience that lasted 25–71 minutes. Step 2: making a plan to improve the patient's self-management skills based on the baseline subjective and objective findings as in Step 1. A self-management booklet and a health diary to record their health behaviors were given to the patients and they were also encouraged to use a pedometer. Step 3: monthly telephone support to provide the patients with the resources to reduce the barriers in the implementation of the plan. There was an evaluation of their improvements by the coach and the patient in the telephone follow-up. Monthly telephone coaching was performed to support and motivate the patient implementing the plan, to evaluate improvements in the program, to adapt the contents of the program, and to make changes according to the patient's symptoms and individual needs. After 6 months of follow up, the results of the study showed that there were improvements lung function, physical activity, quality of life, and self management skills, as well as ther psychological status in both the short and long-term.

The research conducted by Benzo et al (2016) used the health coaching program[15]. The program included providing the patient with a written Emergency Plan to be activated in the event of an exacerbation, discussing the concept of self management, goal setting, action planning, and the mechanics of the telephone session to come. The result of study showed that it improved their quality of life and reduced COPD readmission.

The research conducted by Jolly et al (2014) used a telephone health coaching intervention delivered by the nurses. The intervention promoted accessing smoking cessation services, increasing physical activity, medication management and action planning (4 sessions over 11weeks; postal information at weeks 16 and 24). The nurses received two days of training[16]. The results included changes in the self management activities, but it did not improve health related quality of life. There was no difference in the SGRQ-C total score after 12 months. After the six month follow-up, the results showed that the intervention group reported greater physical activity, more had received a care plan, they had rescue packs of antibiotics, and an improved inhaler use technique

Another research conducted by Tabak et al (2014) used a telehealth program called "The Condition Coach"[17]. The program consisted of four modules: an activity coach (for ambulant activity monitoring and for the real-time coaching of daily activity behavior), a web-based exercise program (for home exercising), the self-management of COPD exacerbations via a triage diary on the web portal (including the self-treatment of exacerbations) and a teleconsultation (for comments and asking questions of the patient's primary care physiotherapist and vice versa via the web portal). After the 9 months follow-up period, no significant results were found in the number of hospitalizations, the length of stay, and emergency department visits but there was a significant clinical measure in terms of the decreased dyspnea level.

3.4 Web-based computer-tailored self-management intervention

The research conducted byVoncken-Brewster (2015) used the "MasterYourBreath" application. The intervention was designed to change the participants' health behavior through a web-based application providing computer-generated tailored feedback[18]. The application had a modular design, including two behavior-change modules, smoking cessation and physical activity, divided into six intervention components. The participants assigned to the experimental group were asked by email to access the application with a personalized account and to use the application for 6 months. The computer-tailored application was embedded in a website.

The website contained general information about the MasterYourBreath project, COPD/being at risk of COPD, smoking, and physical activity. Online self-management resources, such as videos

with home exercises (seven exercises focusing on strength and balance) and hyperlinks to other informative websites, were also included. The tailored feedback and prompts referred the participants to the home exercises and other resources. Application use was monitored by the research team and email prompts were sent to encourage application use, mostly within a 2-week time interval addressing new content on the website, as this could increase the number of follow-up visits. The results of the study showed that there was no significant impact on the primary outcome measures (physical activity and smoking) or on the secondary outcome measures (intention to change behavior and dyspnea).The only significant effect found was on clinical disease control, but the improvement was too small to have clinical relevance and it was not significant after correcting for the relevant baseline characteristics.

4. Discussion

This systematic review aimed to identify the self management intervention programs for patients with COPD. The reason for conducting this systematic review is related to COPD as a major cause of chronic morbidity and mortality throughout the world. The treatment of COPD is long term, so the patients need a good self management strategy to manage the disease. Self-management interventions are defined as structured interventions for individuals aimed at an improvement in self-health behaviors and self-management skills[19]. We need to know what kind of self management intervention programs we can use to manage the disease. From reviewing the results of the twelve RCT articles, all of them showed that self management intervention programs had a positive impact on the COPD patients. Most of the results from the study showed that the impact of self-management intervention programs was related to improving their lifestyle changes (increased physical activity and exercise performance), bolstering their quality of life, self-efficacy, self-management skills and knowledge, thus reducing the incidence of exacerbations and re-admission. Four articles related to improving quality of life. There were three articles that explained that improving self management skills and knowledge. There were two articles that explained the impact on changes in lifestyle (increased physical activity and sports performance). Three articles were related to the decrease in the publication of exacerbations and readmission to the hospital. One article showed that it increased self efficacy. Two articles showed that no significance in the results related to readmission and hospitalization, length of stay, emergency department visits, and regarding physical activity and evaluating smoking cessation. The follow up duration that the self management intervention program used was 6 months which had a positive effect on COPD. The main effect from all of the articles in this review was an improved quality of life. This improvements of the quality of life of COPD was found in the studies conducted by L Wang et al (2014), Benzo et al (2016), Jolly et al (2018) and Bourbeau et al (2018).

This systematic review showed that there are four types of intervention programs used, namely the Self Management Education Program (SMEP), the Self Coping and Activity Education (SPACE) Program, the health coaching program and telehealth coaching intervention, and a web-based computer-tailored self-management intervention. The Self Management Education Programs (SMEP) was more widely used in this review (four articles). SMEP can reduce exacerbation[5], increase self efficacy[9], improve the patient's self management skill and abilities[8], and improve their quality of life[10]. Education is centre stage but while COPD self management interventions programs often include education and action plans, the intervention is considered to be more than just the sum of these two components[6]. Improvements in the activity levels, energy and overall quality of life represent important clinical outcomes for chronic illness populations, especially for patients with COPD[20]. The self management intervention programs are very important for patients with COPD to improve their lifestyle changes (increased physical activity and exercise performance), quality of life, self efficacy, self management skills and knowledge, thus reducing the incidence rate of exacerbation and readmission.

This systematic review had several limitations. First, the systematic review only gathered RCT articles using the PRISMA approach, and we did not use a meta-analysis approach to analyze the studies. Second, the authors limited the language of the articles to English. Third, most of the studies in the review came from Europe (consisting of eight studies); only two studies came from Asia and only two studies came from America.

5. Conclusion

Self management intervention programs can be used as an effort to improve the self management skills and quality of life of patients with COPD. SMEP is the intervention that was mostly used in this review with a duration of 6 months. The self management intervention program was effective for patients with COPD, with the main effect of improving their quality of life. The role of the nurses in the self management intervention program was as educators and facilitators in implementing the self management interventions. Nurses are expected to be able to provide good education about self management in COPD patients including the treatment of the disease based on adequate coping behavior, compliance with drug use, attention to changes in severity and breathing techniques. This is so then the patients actively participate in implementing self management of the disease.

References

[70] WHO 2017 Chronic obstructive pulmonary disease (COPD) 2017–20

GOLD 2018 GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE

Riskesdas 2013 *Hasil Riset Kesehatan Dasar Tahun 2013* (Jakarta: Badan Penelitian dan Pengembanagan Kementrian Kesehatan RI)

Zwerink M, Pdlpm V D V, Ga Z, Em M, Palen J, Pa F and Effing T 2014 Self management for patients with chronic obstructive pulmonary disease (Review) SUMMARY OF FINDINGS FOR THE MAIN COMPARISON

Sánchez- J M, Andújar-espinosa R, Hu C, Carrillo-alcaraz A, Álvarez- C F, Meca-birlanga O and Abad-corpa E 2016 Efficacy of a self-management plan in exacerbations for patients with advanced COPD 1939–47

Effing T W, Vercoulen J H, Bourbeau J, Trappenburg J, Lenferink A, Cafarella P, Coultas D, Meek P, Valk P Van Der, Bischoff E W M A, Bucknall C, Dewan N A, Early F, Fan V, Frith P, Janssen D J A, Mitchell K, Morgan M, Nici L and Patel I 2016 Definition of a COPD self-management intervention : International Expert Group consensus *Eur. Respir. J.***10**

Trappenburg J C A, Groenwold R H H, Wma E, Bourbeau J, Bucknall C E, Effing T W, Michael J, Rice K L, Troosters T and Nicholas A 2016 Do self-management interventions in COPD patients work and which patients benefit most ? An individual patient data meta-analysis 2063–74

Turner A P, Anderson J K and Wallace L M 2014 Evaluation of a self-management programme for patients with chronic obstructive pulmonary disease

Ng Wai I and Smith G D 2017 Effects of a self-management education program on self-efficacy in patients with COPD : a mixed- methods sequential explanatory designed study *Int. J. COPD* 2129–39

Bourbeau J, Farias R, Li P Z, Gauthier G, Battisti L, Beauchesne M and Villeneuve D 2018 The Quebec Respiratory Health Education Network : Integrating a model of self-management education in COPD primary care *Chron. Respir. Dis.***15**

Apps L D, Harrison S L, Mitchell K E, Williams J E A, Hudson N and Singh S J 2017 COPD A qualitative study of patients ' experiences of participating in SPACE for COPD : a Self-management Programme of Activity , Coping and Education *Eur. Respir. J.***3**

Mitchell K E, Johnson-warrington V, Apps L D, Bankart J, Sewell L, Williams J E, Rees K, Jolly K, Steiner M, Morgan M and Singh S J 2014 IN PRESS | CORRECTED PROOF A self-

management programme for COPD : a randomised controlled trial 1–10

L, Wang A, Mårtensson J, Zhao Y, A and Nygårdh N 2018 Experiences of a health coaching self-management program in patients with COPD : a qualitative content analysis 1527–36

Benzo R, Vickers K, Tucker S, Hoult J and Neuenfeldt P 2016 Health Coaching and COPD Re-hospitalization : a randomized study *Am. J. Respir. Crit. Care Med.***10**

Jolly K, Sidhu M S, Hewitt C A, Coventry P A, Daley A, Jordan R, Heneghan C, Singh S, Ives N, Adab P, Jowett S, Varghese J, Nunan D, Ahmed K, Dowson L and Fitzmaurice D 2018 Self management of patients with mild COPD in primary care : randomised controlled trial

Tabak M, Brusse-Keizer3 M, Valk P van der, H, Hermens E and Vollenbroek-Hutten M 2014 A telehealth program for self-management of COPD exacerbations and promotion of an active lifestyle : a pilot randomized controlled trial *Int. J. COPD* 935–44

Voncken-Brewster V, H, Tange U, H, Vries2 ein de, Nagykaldi Z, Winkens B and Weijden T van der 2015 A randomized controlled trial evaluating the effectiveness of a web-based , computer-tailored self-management intervention for people with or at risk for COPD *Int. J. Chron. Obstruct. Pulmon. Dis.* 1061–73

Lorig K R, Ritter P L and González V M 2003 Hispanic Chronic Disease Self-Management *Nurs. Res.* 361–9

Hevey D, Raghallaigh J W O, Doherty V O, Lonergan K, Heffernan M, Lunt V, Lowry D, Larkin N, Mcsharry K, Evans D, Morris J, Kelly M, Pardoe P, Ward H and Kinsella S 2018 Pre-post effectiveness evaluation of Chronic Disease Self-Management Program (CDSMP) participation on health , well-being and health service utilization *Chronic Illn. J.***13**

TDS-602

INTERVENTIONS TO IMPROVE MEDICATION ADHERENCE IN PULMONARY TUBERCULOSIS PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Non-compliance with treatment for tuberculosis (TB) clients is a serious problem that must be addressed immediately. Treatment failure, disease transmission, and drug resistance are problems that occur due to non-compliance with treatment. Intervention strategies have been developed to improve adherence and treatment success rates. The purpose of this systematic review is to describe various intervention strategies that can be used to improve TB client medication adherence. Literature search uses pre-determined keywords through several electronic databases such as SCOPUS, PROQUEST, Springer Link, SAGE JOURNAL and Science Direct from 2008 to 2018. Qualitative and quantitative studies are included. There are 19 studies reviewed. The results showed that there were various categories of interventions that could be used to improve medication adherence to TB clients, namely the Directly Observed Treatment Short Course (DOTS) which is a government program, health education, psychological counseling, Use of science and information technology, incentives and support (family, peers and professionals). The results of this systematic review showed that various intervention strategies are needed to improve treatment compliance for TB clients. The intervention strategy will be more effective and provide benefits if applied with a combination system, not a single intervention.

Keywords: intervention, medication adherence, patients pulmonary tuberculosis

1. Introduction

Tuberculosis (TB) is a significant health threat that causes around two million deaths per year[1]. The government has implemented the Directly Observe Treatment Short Course (DOTS) strategy that has been observed globally since 1995. However, dissatisfaction is still a difficult problem to overcome in the management of TB patient treatment[2]. The factors affecting the non-compliance of TB patients in treatment includes the knowledge of TB and treatment, the distance to the nearest health facility, stigma, the perceptions of disease and malady, psychological stress, changes in residence and economic status[3]. Inadvertence in treatment is an important thing to observe because inappropriate treatment can cause the transmission of disease, the prevention of treatment and the immunity of the TB bacteria against Anti-Tuberculosis (OAT) drugs called MDR-TB[4].

TB has a huge impact on the lives of the sufferers, physically, mentally and socially. Physically, TB that is not treated properly will lead to increasingly long-term treatment and complications, such as the spread of infections to other organs, malnutrition, severe coughing up of blood, drug resistance

and even death[5]. Mentally and socially, the problems that are often experienced by the TB patients include stigma, shame, worry, disbelief, and fear of death[6]. Prolonged psychological problems and not getting serious treatment are one of the factors that cause non-compliance which in turn will lead to failure in terms of the treatment[7]. Intervention strategies to reduce patient non-compliance have been developed by the international community, government, community, health workers and fellow sufferers community (peer group support) [8].

The purpose of this systematic review was to summarize the various intervention strategies that can be used to improve the TB patients' compliance with treatment by synthesizing the previous studies. We hope that this systematic review can be used as information for TB program facilitators and clinical research.

2. Methods

A systematic goal was developed based on the PICO (Patient, Intervention, Comparison, and Outcome) framework model[9]. This systematic review was performed in line with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) statement and checklist[10,11]

Search strategy data sources

The systematic search of the PICO base electronic data framework was carried out according to the PICO framework[9]. For the first step, the researchers searched the SCOPUS, PROQUEST and Springer Link electronic database, with SAGE JOURNAL and Science Direct also being used to identify the key articles and to identify the keywords by adjusting the key concepts: Patient TB "AND" intervention "AND" Improve "OR" increase "AND" Compliance "OR" adherence. Our keywords were used to search for quotes and full articles including the title, abstract, text and reference information. The second step was translating keywords in English to find the relevant articles in the electronic databases. The third step was to filter using the PICO framework to determine which articles passed for further review according to the topic. The complete search strategies were limited to the last 10 years between 2008 – 2018.

Inclusion criteria

This systematic review establishes the inclusion criteria with a focus on quantitative studies, qualitative studies and mixed method studies. This is a feasibility study to describe the various types of intervention strategies that can be used to improve the compliance of TB patients in line with treatment according to a language eligibility criteria where a minimal number of abstracts using English. The year of publication was limited to the last 10 years from 2008 - 2018. Further criteria for the inclusion group were studies with adult TB patients (>18 years).

Exclusion criteria

Non-English, reviews and non-research articles.

Screening

The protocol standard for selecting the research studies was suggested in the PRISMA method for the systematic review followed by screening by removing duplicates. Three reviewers then selected the titles, abstracts, and keywords before deleting any irrelevant quotes according to the selection criteria. The reviewers noted the reasons for choosing the research studies including the selection of the inclusion data. The selection of the research studies was recorded by two reviewers and then they were compared to one another to adjust the feasibility according to the criteria set. Secondly, to minimize the risk of an incorrect study entry in the selection, there were several research studies that were applicable or that could be applied in a review by one or two reviewers to allow it to be

potentially included in the next review stage. The full text of the articles was obtained if the title and abstract met the inclusion criteria or if the feasibility study was clearly resolved by a joint discussion between the reviewers.

Data extraction
The following data was extracted: author, year, journal, country, the setting of the study, the aim of the study, the research questions, the type of study, the sampling method, the key findings and if there were any relevant secondary outcomes. Two authors (ADA and RI) were involved in the data extraction and after organizing the results in a table, the findings were discussed and reviewed again.

Quality assessment
The assessment of the quality of the articles to be reviewed used the quantitative study tool known as the Critical Appraisal Skills Program (CASP). There were 10 different questions that considered the results of the quantitative studies, the validity of the studies, and their uses[12]. CASP is a tool used for evaluating the quality and utility of the research reports[13]. The 10 questions in CASP were answered by selecting "yes", "no" or "not now" for each question. The allocation of the scores was on a scale of 10 for each article reviewed based on how many "yes" answers there were. A score of yes that was above 7 or more refers to a quality of article that is very good. The purpose of this quality assessment was not to distinguish between the articles in terms of quality but in a systematic process and standard process, we can use this to provide high-quality reviews based on the existing topics.

Analysis
Due to the methodological diversity of the studies included and the limited number of studies that specifically addressing the objectives set for this review, descriptive synthesis is considered to be the most appropriate analytical method[14].

3. Result

Study result
The search strategy was carried out by generating a total of 12,118 citations; 11,996 items of the existing literature were deleted during the first screening because the title and / or abstract did not match the specified eligibility criteria, which included the year published being < 2008, it not being an item of original research or where the TB was in children. In total, 122 full articles came from the second stage of the screening and the final 13 articles obtained were retained for review. In addition to this, 6 additional articles were obtained from the reference screening stage and thus the last session included 19 articles on the interventions used to improve treatment compliance for TB patients (see Figure 1).

Study Characteristics

Types of study. A total of 19 studies reviewed in 2008-2018 were conducted in 9 countries: Nepal, South Africa, Vietnam, Bangladesh, Ethiopia, South Korea, China, Pakistan and Spain. Quantitative, qualitative and mix methodology research methods include Randomized Control Trial (RCT), prospective observational study, cross-sectional survey, prospective cohort study, retrospective study, qualitative research with grounded theory approach and research using mix methods (see Table 1).

Types of participant. The number of samples in this study varied. For quantitative research, the number of patients ranged from 68 – 46581. For the qualitative research, the number of patients was between 20-110 and for research with a quantitative and qualitative mixed methodology, the number of patients was between 10-49. The studies in Indonesia show that the prevalence of tuberculosis in men was 3 times higher than the prevalence in women[15]. Around 49% (almost half of the sample) experienced mild to severe psychological disorders and this will ultimately be a factor causing the client's non-compliance in treatment[3].

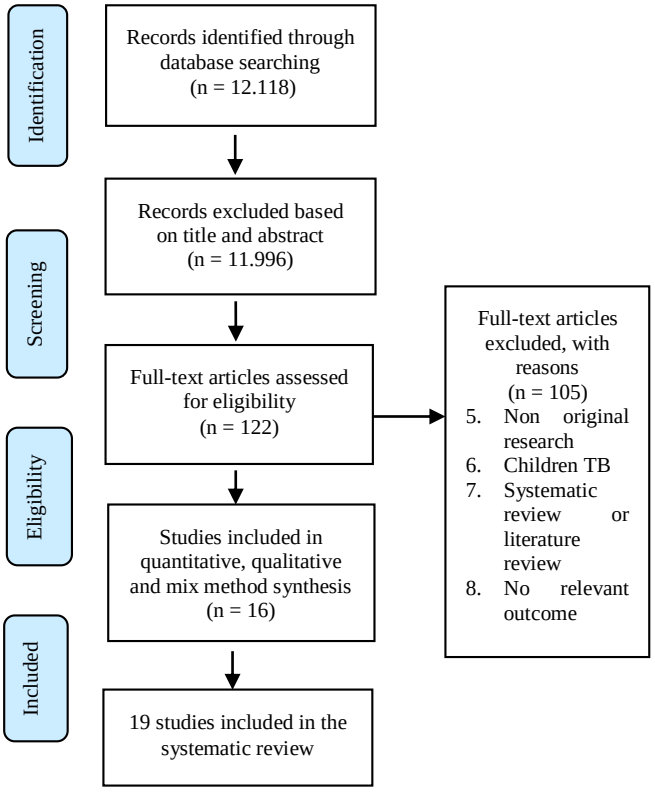

Figure 1. Flow Diagram

Summary of studies

The literature search identified 19 journals that describe the interventions that can be used to improve medication adherence in TB patients. From the articles found, five categories of intervention were obtained and found to improve the treatment compliance of TB patients, namely the Directly Observed Treatment Short Course (DOTS) which is a government program, health education,

psychological counseling, the utilization of science and technology, and giving incentives and support (family, peers and professional).

Directly Observed Treatment Short Course (DOTS). The World Health Organization (WHO) and the International Union Against Tuberculosis and Lung Disease (IUATLD) developed a TB control strategy known as the DOTS strategy since the early 1990s. It has been proven to be a cost-effective control strategy. The main focus of DOTS is the discovery and healing of patients, especially those with infectious type TB. This strategy breaks the chain of TB transmission and reduces TB incidence in the community. The finding and healing of TB patients is the best way to prevent TB transmission. The DOTS strategy was recommended as a global strategy in TB control since 1995[16].

Nineteen articles reviewed as DOTS were the main programs intended to regulate TB. In its implementation, DOT must be supported or combined with other support to improve patient support in the treatment[17,18]. Interventions that can be done to support the DOTS program include financial support[19,20], support for psychological counseling[20,21], DOTS combined with mobile phone reminders/ Short Messages Sent (SMS)[22,23], the combination of DOTS with various support around the patient such as family support, peer group support, surrounding community support, community cadres and support from health workers[24,25], combination DOTS with structured education to improve on the knowledge, attitudes and actions that can support patient support in medicine[26], arranged in regional languages[27] or based on existing theories[3]. The DOTS implementation program was also conducted through home visits to provide direct education to the patients and their families about clean and healthy lifestyles[28]. With the development of science and technology, the implementation of the DOTS program in developed countries such as the United States and Vietnam used a method called the Shortly Observed Treatment Short Course (VDOT). This method proved to be effective, easy to understand and accepted as increasing TB patient compliance with costs that were more efficient and limited resources[29].

Health education. The articles reviewed mentioned that health education for TB patients undergoing treatment is very important in order to increase the knowledge, attitudes and practice of patients in medication compliance [26] and to increase the psychosocial support of the patients [7,8]. They should also increase the family participation to support the patients to complete the treatment[27]. Health education about the disease, treatment, nutrition, the prevention of transmission and other supporting factors needs to be conveyed to the patient diagnosed with TB until the final treatment[24]. Patients who do not receive information and who cannot argue incorrectly can be one of the factors that cause non-compliance in treatment which ultimately leads to treatment failure, the transmission of disease and drug resistance[30]. Health education designed using the local language can improve the patients' understanding of the TB disease. The good understanding of the patients and their families can improve patient compliance to treatment and increase the role and family support of the patients in completing their treatment[31]. Health education guided by behavioral theories such as HBM can be more effective and significant when it comes to improving the medication adherence to TB patients. This is because the theory can predict and explain a person's beliefs about patient health including the adherence to treatment [3].

Psychological counseling. The articles reviewed illustrated that psychological counseling is needed for the TB patients [3,21], especially for those newly diagnosed with TB[7]. The diagnosis of TB is generally seen of as something surprising, demoralizing and able to cause various social and psychological problems. The psychological responses experienced by the TB patients at the time of the initial diagnosis of TB include worry, disbelief, shame, fear of death, fate and relief[6]. Patients at a high risk of noncompliance must be identified at the beginning of the treatment and offered services by a psychologist[32]. The health workers must be specially trained in competent psychological communication with patients to improve their compliance[7]. TB is associated with serious emotional and social consequences. When the coherence of the disease increases, the negative emotional and social consequences of the disease can be reduced. A preparation and development program is needed to identify and overcome the emotional responses, including stigma, related to TB[1]. Psychological counseling, when given to the TB patients and well understood, can improve the quality of life of the patients[28]. Patient confidence can improve medication adherence and improve the cure rate[20].

Use of science and information technology. The articles reviewed show that the use of science and technology can support the success of the DOTS program because it can produce high levels of compliance with limited resources[33]. The goal of sustainable development and the global drive for universal health coverage is to explore new ways to improve medication adherence. Health information delivered through Mobile Health (mHealth) is very promising when it comes to improving the quality and efficiency of health care / treatment. In addition, mHealth can discuss important aspects of treatment noncompliance in terms of the patients by facilitating new and sophisticated ways of providing financial and non-financial incentives. The types of mHealth that can increase compliance in the TB patients come in 5 categories, namely Video Observation of Therapy (VOT); Indirect technology monitoring - Patient facilitated (IP); Indirect monitoring technology - Device facilitated (ID); Direct monitoring technology -Embedded sensors (DE) and Direct monitoring technology - Metabolite testing (DM)[34].

The DOTS strategy with an audio-visual method is known as the Video Directly Observed Treatment Short Course (VDOT). This method has been proven to be effective, easy to understand and accepted to improve TB patient compliance with more efficient costs and limited resources[29]. The management of pulmonary TB patients through Short Message Service (SMS) reminders can effectively strengthen the complete level of treatment of pulmonary TB patients[23], reduce missed dose levels and discontinued treatment levels, and further increase the patient's awareness of performing phlegm re-examination [22]. Besides that, SMS reminders help them to overcome obstacles such as stigma, loss of privacy, limited transportation and the burdens associated with traditional interventions. This makes the participants feel "cared for" and the patients feel that the health workers are "responsible for their care". Compared with the participants without cellphone-based interventions, SMS interventions have significantly improved the adherence to TB treatment[35]. SMS reminders compiled based on the behavior theory of Information Motivation Behavioral Skills (IMB) with a collaborative approach can produce interventions that are more responsive, culturally appropriate, and comprehensive, but its preparation requires a relatively longer time. The development steps include 1. building intervention components, including justification, consideration, time and frequency of components; 2. developing message education, including cultural adaptation, text formatting or short message services (SMS) and prioritizing message delivery orders; and 3. determining the implementation protocol[33].

Incentives and social support (family, peers, health workers and society). The articles reviewed said that the provision of support for TB patients in treatment is very useful to support the compliance to successful treatment[7]. TB patients need support from various parties, especially family support (economic / financial, emotional, information and instrumental), social support to avoid stigma and support from professional health workers (about TB disease, medication and drug side effects and treatments)[25]. Social support and incentive programs must be universally available for all patients from the start of treatment (intensive phase) through to the advanced phase of treatment, especially for patients who are considered to be at risk of failing to complete the treatment programs[19]. Providing incentives can also reduce the default rate[17]. Professional support can be realized by home visits. Face to face education is very useful and recommended[20]. TB control programs must maintain close monitoring and provide greater socio-economic support to patients at high risk of being disobedient and failing treatment[18]. Family and peer support (fellow TB patients) is very instrumental at improving patient compliance to treatment[24]. Funding for treatment or drug provision must be established to eliminate the lack of access to treatment as a potential reason for the failure of the intervention. Continuous efforts in the field of TB control are needed to achieve the key unmet targets, especially for low-income populations in disadvantaged areas[36].

4. Discussion

The results of the review indicate that treatment non-compliance is a problem that is a challenge that must be addressed in the management of TB patients. DOTS has been a world-recommended strategy in TB control since 1995, where the main focus was finding and healing patients, especially infectious-type TB, breaking the chain of TB transmission and reducing the TB incidence rate in the community. Finding and treating TB patients is the best way to prevent transmission TB[16]. In the management of treatment for TB patients, DOTS will be more effective if done together or in combination with other interventions such as health education, psychological counseling, the use / utilization of science and technology and the provision of incentives and support (family, peer and professional)[8].

Health education about the disease, treatment, nutrition, prevention of transmission and other supporting factors needs to be conveyed to the patient diagnosed with TB until the end of their treatment. Patients who do not receive information and who do not understand it well can be one of the factors that cause non-compliance in treatment, which ultimately leads to treatment failure, the transmission of disease and drug resistance[18,28]. Psychological counseling and educational interventions, guided by HBM, significantly decrease the rate of medication non-compliance among the intervention group. The provision of psychological counseling and health education for TB patients who undergo routine treatment is recommended. This can be achieved if the interventions are guided by theoretical behavior and incorporated into routine TB treatment strategies[3].

MDR-TB patients are very vulnerable to extreme stigma and financial difficulties. Providing counseling and financial support may not only reduce their vulnerability but it may also increase their cure rate. The National Tuberculosis Program should consider including financial support and counseling in the treatment of MDR-TB: low costs and high benefits are mainly because of the incomplete medical costs for the community and the high potential for non-curable TB. Studies show that psychological interventions are effective at increasing the adherence to anti-TB treatment and that this can reduce the incidence of treatment failure, relapse and drug resistance[30].

Health information delivered through Mobile Health (mHealth) is very promising to improve quality and efficiency in health care / treatment. In addition, mHealth can discuss important aspects of treatment noncompliance in terms of patients by facilitating new and sophisticated ways of providing financial and non-financial incentives. The types of mHealth needed to increase the compliance of the TB patients come in 5 categories, namely Video Observation of Therapy (VOT), Indirect technology monitoring - Patient facilitated (IP), Indirect monitoring technology - Device

facilitated (ID), Direct monitoring technology - Embedded sensors (DE) and Direct monitoring technology- Metabolite testing (DM)[34].

This review is limited, considering that the studies related to the initial searches with broad search strategies can be implemented. The findings of this systematic review are based on the secondary findings from the studies that have been included. The studies taken were not explored thematically, so there might still be untouched aspects. This study focuses on the context of interventions that can be used to improve the treatment compliance of TB patients who might limit the data taken. However, this systematic review was designed to obtain data specifically in the context of interventions that can be used to improve the treatment compliance of TB patients.

There are many limitations associated with this systematic review. The journals used in this systematic review were journals related to interventions used to improve tuberculosis patient adherence to treatment, while not being directly related to the success of the treatment itself. The sample in this study consisted of patients aged > 18 years or adult TB patients. The interventions discussed were for TB patients in general and not based on strict categories (category 1, category 2 or MDR TB). Therefore, specific interventions for each category and a discussion of the interventions that increase adherence that are directly related to treatment success are important areas for further study.

5. Conclusion

The results showed that there were various categories of interventions that can be used to improve the medication adherence of TB clients, namely the Short Course of Direct Observed Medicine (DOTS). This is a government program, health education program and psychological counseling, and a utilization of information technology, incentives and support (family, peers and professionals). The intervention strategy will be more effective and provide more benefits if they are applied as part of a combination system, and not just as a single intervention.

References

[71] Woith WM, Rappleyea ML. Emotional representation of tuberculosis with stigma, treatment delay, and medication adherence in Russia. J Health Psychol. 2016;21(5):770–80.

Kementerian Kesehatan RI. Peraturan Menteri Kesehatan Republik Indonesia Nomor 67 tahun 2016. 2016.

Tola HH, Shojaeizadeh D, Tol A, Garmaroudi G, Yekaninejad MS, Kebede A, et al. Psychological and educational intervention to improve tuberculosis treatment adherence in Ethiopia based on health belief model: A cluster randomized control trial. PLoS One. 2016;11(5):1–15.

World Health Organization. Global Tuberculosis Report 2018 [Internet]. 2018. Available from: http://www.who.int/iris/handle/10665/274453

Smeltzer SC, Bare BG. Buku Ajar Keperawatan medikal-Bedah Brunner & suddarth. 8th ed. jakarta: Penerbit Buku kedokteran: EGC; 2001.

Venkatraju B, Prasad S. Psychosocial Trauma of Diagnosis: A Qualitative Study on Rural Tb Patients' Experiences in Nalgonda District, Andhra Pradesh. Indian J Tuberc. 2013;6(1):162–7.

Jakubowiak WM, Bogorodskaya EM, Borisov SE, Danilova ID, Lomakina OB, Kourbatova E V. Impact of socio-psychological factors on treatment adherence of TB patients in Russia. Tuberculosis. 2008;88(5):495–502.

Li X, Wang B, Tan D, Li M, Zhang D, Tang C, et al. Effectiveness of comprehensive social support interventions among elderly patients with tuberculosis in communities in China: a community-based trial. J Epidemiol Community Health. 2018;72(5):369–75.

Xiaoli Huang., Jimmy Lin. DD-F. Evaluation of PICO as a Knowledge Representation for Clinical

Questions. In: AMIA 2006 Symposium Proceedings. 2006. p. 359–63.

Moher D, Tetzlaff J, Altman DG, Liberati A, Group P. Preferred reporting items for systematic reviews and meta-analyses : the PRISMA statement. 2009;339(august).

Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies That Evaluate Health Care Interventions : Explanation and Elaboration. 2009;6(7).

Critical Appraisal Skills Programme. CASP Qualitative Checklist. 2018.

Persis Katrak., Andrea E Bialocerkowsk.i, Nicola Massy-Westropp. VSK and KAG. A systematic review of the content of critical appraisal tools. BMC Med Res Methodol. 2004;11:1–11.

Shuster JJ. Review: Cochrane handbook for systematic reviews for interventions, Version 5.1.0, published 3/2011. Julian P.T. Higgins and Sally Green, Editors. Res Synth Methods. 2011;2(2):126–30.

RI KK. Pusat Data dan Informasi Kementrian kesehatan RI. 2018. 4 p.

Pusat Kedokteran dan Kesehatan POLRI. Panduan Pengendalian Tuberkulosis (TB) Dengan Strategi Directly Observed Treatment Shortcourse (DOTS) di Fasilitas Kesehatan POLRI. 2015;5–6.

Yin J, Wang X, Zhou L, Wei X. The relationship between social support, treatment interruption and treatment outcome in patients with multidrug-resistant tuberculosis in China: a mixed-methods study. Trop Med Int Heal. 2018;23(6):668–77.

Mok J, An D, Kim S, Lee M, Kim C, Son H. Treatment outcomes and factors affecting treatment outcomes of new patients with tuberculosis in Busan , South Korea : a retrospective study of a citywide registry , 2014 – 2015. BMC Infectious Diseases; 2018;1–10.

Jakubowiak W, Bogorodskaya E, Borisov S, Danilova I, Kourbatova E. Treatment interruptions and duration associated with default among new patients with tuberculosis in six regions of Russia. Int J Infect Dis. 2009;13(3):362–8.

Baral SC, Aryal Y, Bhattrai R, King R, Newell JN. The importance of providing counselling and financial support to patients receiving treatment for multi-drug resistant TB : mixed method qualitative and pilot intervention studies. 2014;

Hussain S, Malik AA, Hussain Z. A Randomized Controlled Intervention Trial : Effect of Counselling on Treatment Adherence and Self-Esteem of Women Patients Receiving Abstract : 2016;27–33.

Wang J, Wang Q. Effect of Short Message Service on Management of Pulmonary Tuberculosis Patients in Anhui Province , China : A Prospective , Randomized , Controlled Study. 2017;2465–9.

Dai H, Mao D, Volpp KG, Pearce HE, Relish MJ, Lawnicki VF, et al. The effect of interactive reminders on medication adherence : A randomized trial. Prev Med (Baltim). Elsevier Inc.; 2017;103:98–102.

Deshmukh RD, Dhande DJ, Sachdeva KS, Sreenivas AN, Kumar AMV, Parmar M. Social support a key factor for adherence to multidrug-resistant tuberculosis treatment. Indian J Tuberc. Tuberculosis Association of India; 2018;65(1):41–7.

Khanal S, Elsey H, King R, Baral SC, Bhatta BR, Newell JN. Development of a Patient-Centred , Psychosocial Support Intervention for Multi- Drug-Resistant Tuberculosis (MDR-TB) Care in Nepal. 2017;1–17.

Kigozi NG, Heunis JC, Engelbrecht MC, Rensburg APJ Van, Rensburg HCJD Van. Tuberculosis knowledge , attitudes and practices of patients at primary health care facilities in a South African metropolitan : research towards improved health education. BMC Public Health; 2017;1–8.

Guix-comellas EM, Rozas-quesada L, Morín-fraile V, Estrada-masllorens M, Galimany-masclans J, Sancho-agredano R. Educational measure for promoting adherence to treatment for tuberculosis. Procedia - Soc Behav Sci. The Author(s); 2017;237(June 2016):705–9.

Kastien-Hilka T, Rosenkranz B, Schwenkglenks M, Bennett BM, Sinanovic E. Association between health-related quality of life and medication adherence in pulmonary tuberculosis in South Africa. Front Pharmacol. 2017;8(DEC).

Anh T, Tam M, Loi T, Nhung V. International Journal of Infectious Diseases Video Directly Observed Therapy to support adherence with treatment for tuberculosis in Vietnam : A prospective cohort study. Int J Infect Dis. International Society for Infectious Diseases; 2017;65:85–9.

Müller AM, Osório CS, Silva DR, Sbruzzi G, de Tarso P, Dalcin R. Interventions to improve adherence to tuberculosis treatment: systematic review and meta-analysis. Int J Tuberc Lung Dis [Internet]. 2018;22(7):731–40. Available from: http://www.ingentaconnect.com/content/10.5588/ijtld.17.0596

Imunya M, Kredo T, Volmink J, Imunya JMM, Kredo T, Volmink J. Patient education and counselling for promoting adherence to treatment for tuberculosis (Review) Patient education and counselling for promoting adherence to treatment for tuberculosis. Cochrane Database Syst Rev. 2012;(5):2–4.

Walker IF, Khanal S, Hicks JP, Lamichhane B, Thapa A, Elsey H, et al. Implementation of a psychosocial support package for people receiving treatment for multidrug-resistant tuberculosis in Nepal: A feasibility and acceptability study. PLoS One. 2018;13(7):1–15.

Iribarren SJ, Beck SL, Pearce PF, Chirico C, Etchevarria M, Rubinstein F. mHealth intervention development to support patients with active tuberculosis. J Mob Technol Med [Internet]. Taylor & Francis; 2014 Jul 28;3(2):16–27. Available from: http://www.journalmtm.com/2014/mhealth-intervention-development-to-support-patients-with-active-tuberculosis/

DiStefano MJ, Schmidt H. mHealth for Tuberculosis Treatment Adherence: A Framework to Guide Ethical Planning, Implementation, and Evaluation. 2016;4(2):211–21.

Chen S, Mph YP, Qu Y, Liu Z, Yao L, Xiang L. Mobile phone based interventions for promoting adherence to tuberculosis treatment : a systematic review and meta-analysis. Lancet. Elsevier Ltd; 2015;386:S29.

Hovell MF, Schmitz KE, Blumberg EJ, Hill L, Sipan C, Friedman L. Lessons learned from two interventions designed to increase adherence to LTBI treatment in Latino youth. Contemp Clin Trials Commun. Elsevier; 2018;12(August):129–36.

Table 1. Summary of the findings

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
1	The relationship between social support, treatment interruption and treatment outcome in patients with multidrug-resistant tuberculosis in China: a mixed-methods study[17]	218 & 10	Mixed methods (quantitative and qualitative)	• Structured questionnaire validated • In-depth interviews	DOT and financial support are effective strategies for increasing treatment success in MDR-TB patients, but this is done without considering the patient's perspective. There is an urgent need for consistent and specific psychological support for MDR-TB in their communities
2	Video Directly Observed Therapy to support adherence with treatment for tuberculosis in Vietnam: A prospective cohort study[29]	78	Prospective cohort study	Structured questionnaire Likert scale 1-10	VDOT is feasible and results in a high level of medication adherence in limited resource settings
3	Development of a Patient Centred, Psychosocial Support Intervention for Multi Drug Resistant Tuberculosis (MDR-TB) Care in Nepal [25]	15	Mixed methods (quantitative and qualitative)	Michie et al (2011) Framework Interviews, focus group discussions and field notes	The results of the study state that MDR TB patients need support from various parties, especially family support (economic/ financial, emotional, information and instrumental), social support to

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					avoid stigma and support from professional calm health (about MDR-TB disease, treatment and side effects medicine and treatment)
4	Treatment outcomes and factors affecting treatment outcomes of new patients with tuberculosis in Busan, South Korea: a retrospective study of a citywide registry, 2014–2015[18]	4732	Retrospective study	Korea National TB surveillance data system	TB control programs must maintain close monitoring and provide greater socio-economic support to patients at high risk of poor treatment outcomes
5	Effectiveness of comprehensive social support interventions among elderly patients with tuberculosis in communities in China: a community-based trial[8]	201	Community-based, repeated measurement trial was conducted	Social Support Rating Scale (SSRS)	Intervention programs in combination with health education, psychotherapy and family and community support interventions can increase the social support for elderly patients. This intervention program is more effective when implemented in combination compared to a single health education.

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
6	Effect of Short Message Service on Management of Pulmonary Tuberculosis Patients in Anhui Province, China: A Prospective, Randomized, Controlled Study[22]	350	Prospective, Randomized, Controlled Study	SMS sent every day to TB patients	Management of pulmonary TB patients via SMS can effectively strengthen the complete treatment level of pulmonary TB patients and reduce missed dose levels and discontinued treatment rates, and increase their re-examination awareness. Therefore, texting about patient management can be a promising new therapy strategy for pulmonary TB
7	The effect of interactive reminders on medication adherence: A randomized trial[23]	46.581	Randomized trial	SMS reminder that contains basic reminder conditions, prediction conditions And condition of commitment	The results of the study show that, as long as the reminder increases compliance by 0.95 percentage points ($p < 0.05$), and this effect is driven by conditions of prediction and commitment. During the three month postal period, reminders increased compliance by 0.98 percentage points ($p < 0.05$), and this effect was driven by

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					basic reminders and the conditions of commitment.
8	Association between Health-Related Quality of Life and Medication Adherence in Pulmonary Tuberculosis in South Africa [28]	131		1. Generic Short-Form12 (SF-12) 2. Life quality 5 dimensions 5 levels (EQ-5D-5L) 3. St George's Respiratory Disease Questionnaire (SGRQ) 4. Hospital Anxiety and Special Depression Scale (HADS) for HRQOL 5. Compliance is measured by Morisky Scale 8 item Compliance (MMAS-8)	1.A positive relationship exists between adherence and HRQOL, but this relationship is very weak, most likely because HRQOL is influenced by a number of different factors and is not limited to the effect of compliance. Therefore, management of TB Clients in addition to adequate medication treatment must also meet specific mental and psychosocial needs 2.HRQOL improved during 6 months of TB treatment, while adherence meant the score remained constant with participants reaching a

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					moderate level. About 76% of clients have high compliance and 24% report low compliance
9	Social support a key factor for adherence to multidrug-resistant Tuberculosis treatment [24]	20	Qualitative with grounded theory	In-depth interview	To improve compliance with MDR TB treatment, a Client-centered approach must be considered at the programmatic level. There is a need to formulate strategies that include motivational counseling, nutritional supplementation and mobilization of social support for medication adherence. The participants suggested that the "PSG" Patient Support Group be a model of care for better levels of adherence and treatment in MDRTB treatment
10	Implementation of a psychosocial support package for people receiving	135	Mixed methods (quantitative and qualitative)	Quantitative: Screening tools (HSCL, MSPSS and PHQ-9) Qualitative: Semi-structured format of researcher diaries	The psychosocial support package consisting of eight health education sessions can be received by the

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
	treatment for multidrug-resistant tuberculosis in Nepal: A feasibility and acceptability study [32]				Client. All aspects of the intervention package are given to the Client, including screening, information, group work and counseling. Clients need someone to talk to about their concerns and problems. Information material developed is feasible to be delivered in the form of structured psychological counseling
11	Impact of socio-psychological factors on treatment adherence of TB patients in Russia[7]	1387	Cross-sectional	Cross-sectional questionnaires were modified by the researchers	1.Research shows that certain social, psychological, and behavioral characteristics of Russian TB Clients contribute to non-compliance with TB treatment. Clients who are at high risk for non-compliance must be identified at the start of treatment, and offer services

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					from a psychologist. 2. Better health education must be given to clients, especially in the field of social-psychological
12	Psychological and Educational Intervention to Improve Tuberculosis Treatment Adherence in Ethiopia Based on Health Belief Model: A Cluster Randomized Control Trial [3]	698	Cluster Randomized Control Trial	1. A structured questionnaire to assess knowledge about TB 2. Perception questionnaire based on six HBM domains 3. VAS questionnaire to measure non-compliance	Psychological counseling and educational interventions, guided by HBM theory, significantly reduced the rate of medication non-compliance among the intervention group. Provision of psychological counseling and health education for TB Clients who undergo routine treatment is recommended. This can be achieved well if this intervention is guided by theoretical behavior and incorporated into TB treatment strategies
13	Treatment interruptions and duration associated with default among new patients	1771	Retrospective Study	Questionnaire for collecting demographic data, social history information, and microbiology laboratory results obtained from medical records.	1. Social support and incentive programs must be universally available to all

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
	with tuberculosis in six regions of Russia [19]			Information about treatment outcomes is obtained from the TB list 13	Clients from the beginning of the advanced treatment phase, during the intensive phase for Clients who are considered at risk of failing to complete treatment programs, and for Clients who have lost at least 2-3 days of treatment during the intensive phase. 2.Therapy that is observed directly at home (home visit) can be a recommendation for some clients.
14	Emotional representation of tuberculosis with stigma, treatment delay, and medication adherence in Russia [1]	105	Cross-sectional descriptive	Revised Illness Perception Questionnaire (IPQ-R) (Moss-Morris et al., 2002) The Social Impact Scale (SIS)	TB is associated with serious emotional and social consequences. When the coherence of the disease increases, negative emotional and social consequences of the disease can be reduced. This is the role of Russian health

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					care professionals to provide clients with adequate education / understanding and psychological support, and this role requires preparation.
15	Psychosocial trauma of diagnosis: A qualitative study on rural TB patients' experiences in Nalgonda district, Andhra Pradesh[6]	110	Qualitative	semi structured interview	1.TB diagnosis is generally seen as a shocking and demoralizing experience, and raises a number of social and psychological problems among Clients. Six prominent themes emerged from in-depth interviews with respondents: 1) worried, 2) did not believe, 3) shame, 4) fear of death, 5) fate, and 6) relief. 2.Effective treatment for TB requires a much broader approach than focusing on anti-TB drugs and technical diagnostics. Knowledge of the nature of psychosocial

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					problems is very important for new design approaches and methods to improve the quality of life of TB clients.
16	Tuberculosis knowledge, attitudes and practices of patients at primary health care facilities in a South African metropolitan: research towards improved health education [26][26]	13.458	Cross-sectional survey	The questionnaire consisted of four parts: socio-demography, knowledge about TB, attitudes toward TB, and infection control practices	The results of this study indicate that health education in TB patients is very necessary to strengthen accurate information to improve the knowledge and attitudes of TB patients in treatment. Accurate dissemination of information from health workers through health education can improve the actions of TB patients in infection control and adherence to treatment
17	Educational measure for promoting adherence to treatment for tuberculosis[27]	68	Prospective observational study	The questionnaire was compiled with native languages from each country about TB disease	This study shows that health education designed using "mother" language can improve patients' understanding of TB disease. A good understanding of

No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					patients and families can improve patient compliance in treatment and increase participation and family support for patients in completing treatment.
18	A Randomized Controlled Intervention Trial: Effect of Counseling on Treatment Adherence and Self-Esteem of Women Patients Receiving Tuberculosis Treatment [21]	100	randomized control trial	Demographic form and RSES (Rosenberg Self Esteem Scale)	The results of this study provide results that patients with higher self-esteem tend to be more adherent to TB treatment, compared with patients with low self-esteem. Therefore, counseling must be an important component of TB treatment to increase patient self-esteem which ultimately increases treatment success
19	The importance of providing counseling and financial support to patients receiving treatment for multi-drug resistant TB: mixed method qualitative and pilot intervention studies[20]	49	Mixed method qualitative and pilot intervention studies	Interview	MDR-TB patients are very vulnerable to extreme stigma and financial difficulties. Providing counseling and financial support may not only reduce their vulnerability, but also increase the cure rate. The National TB

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No	Title, Authors, & Time	N	Design	Data Collection	Main Result
					Program should consider incorporating financial support and counseling into MDR-TB care: low costs, and high benefits, especially because the costs of incomplete treatment for the community and the potential for non-curable TB are very high.

TDS-613

THE POTENTIAL RISK FACTOR OF PULMONARY TUBERCULOSIS: A SYSTEMATIC REVIEW

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ABSTRACT

Tuberculosis (TB), the leading cause of death due to a single infectious disease worldwide, is difficult to diagnose, difficult to treat and prone to the development of drug resistance. Every day approximately six thousand people die of Tuberculosis (TB). This study aimed to analyze the risk factors of pulmonary tuberculosis in the most dominant risk factor. To identified the most potential risk factor of pulmonary tuberculosis. A systematic search was performed in Scopus, Proquest, and SAGE databases with the last 5 years (2013-2018). According to findings, risk factors can be categorized as agent (mycobacterium tuberculosis) 40%, host 75% (age ≥45 years, gender where men more dominant, social economy, education, cooking fuel, tobacco smoke play a significant role and drink alcohol 40g per day) and environment 20% (condition room, occupancy density). There are various risk factors that cause Pulmonary tuberculosis and the dominant potential risk factor is host such as age, social economy, education, cooking fuel, tobacco smoke and drink alcohol.

Keywords: tuberculosis, potential, risk factor

1. Background

Tuberculosis (TB) is a pulmonary infectious disease caused by *Mycobacterium tuberculosis* (Mtb) infection. It is the ninth leading cause of mortality worldwide. It remains the most deadly infectious disease, ranked above HIV/AIDS [1]. The disease causes illness for 10 million people each year and it is one of top ten causes of mortality worldwide [2]. The 5 countries that have the largest incidence rate in the world are India, Indonesia, China and the Philippines [2]. It is crucial to understand the risk of acquiring tuberculosis infection and its risk of progression from infection to the disease in order to adopt a strategic plan for TB control [3]. In high density settings such as prisons and hospitals where people are socially closer and there is overcrowding, people will be frequently be more exposed to pathogens. Endogenous factors lead to the development of the disease and increase the severity from infection to active disease [4].

The largest spread of TB disease is in the Asian region (59%), followed by Africa (26%) [2]. A small number of cases occur in the Mediterranean area (7.7%), Europe (4.3%) and America (3%). The five countries with the highest number of cases in 2011 were India (2 million-2.5 million), China (0.9 million-1.1 million), South Africa (0.4 million-0.6 million), Indonesia (0.4 million -0.5 million), and Pakistan (0.3 million-0.5 million)[4]. But little is known about the amount of ongoing transmission between the different subgroups in the population, particularly in high incidence areas. Understanding transmission patterns and "who infects whom" is important for improving control, as it can help direct contact tracing to the most likely sources of infection[5].

Many factors influence the occurrence of pulmonary TB disease. However, knowledge of what makes some persons develop TB and others not (risk factors) has the potential of helping to further

refocus the search for novel public health TB control strategies [6]. The reported TB risk factors include HIV infection, male sex, co-morbidities such as diabetes, a family history of TB, the absence of a Bacillus Calmette–Guérin (BCG) scar, smoking, alcohol use, single marital status, overcrowding, and poor socioeconomic status [7].

Thus, conducting a systematic review will provide us with a comprehensive assessment of the TB that might be useful for stakeholders, such as policy makers, health experts and researchers to allow them to implement appropriate strategies for high-risk populations. This study aims to analyze the risk factors of pulmonary tuberculosis in the search for the most dominant risk factor.

2. Method

2.1 . Data sources and search

The journal search strategy began with asking the research question "What are the potential risk factors of pulmonary tuberculosis?" The databases used for the journal searches were Scopus, PubMed, Science Direct, and Proquest. The keywords used were "tuberculosis, potential, risk factor". The journals were limited (2013-2018) according to their publication year, focused on the areas of nursing, medicine and English-language journals.

2.2 . Article selection criteria

The feasibility of the study was assessed using the PICOT approach. The study population consisted of Tb patients. The study inclusion criterion was the dominant risk factor of pulmonary tuberculosis in Tb patients. As a comparison to the occurrence and management of tuberculosis cases that occur in developed countries, we referred to articles from several developed countries. The outcome was to analyze the risk factors of pulmonary tuberculosis in the most dominant risk factor with no time selection criteria.

The inclusion criteria being applied were as follows: 1) demographic, socio-economic, and behavioral risk factors of the TB cases; 2) tuberculosis infection and/or TB disease diagnoses as confirmed by laboratory diagnosis and 3) the epidemiological study of primary or secondary data analysis.

2.3 . Exclusion data

There were no exclusions based on the study setting or on the anatomical site of the disease.

2.4 . Research design

Of the 10 selected articles, they originated from 3 continents, namely: the Americas, the European continent and the Asian continent. Articles from the Americas came from the USA and Argentina. The articles from the Asian continent came from China, Korea, Pakistan and Malaysia. Articles from the Asian continent are expected to reflect the profile and characteristics of the cases of tuberculosis that occur in both the young and old in the communities. As a comparison of the occurrence and management of tuberculosis cases that occur in developed countries, we refer to the articles from several developed countries and the study design was a randomized controlled trial study (RCTs).

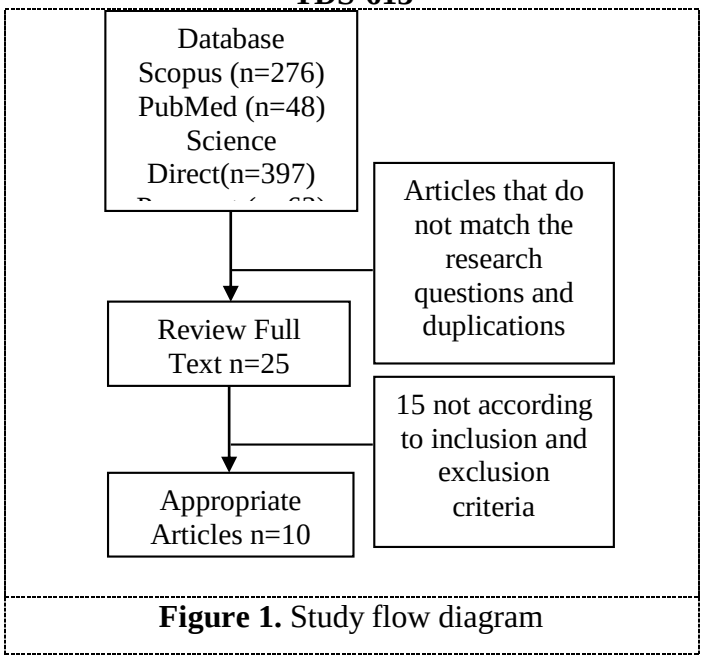

Figure 1. Study flow diagram

3. Results

3.2. Respondent's Characteristics

The number of respondents in the selected articles varied between 109 respondents and 257179 respondents, with variations in age between 0 to>40 years. All of the respondents were individuals who experienced tuberculosis outside of the hospital, both in public areas and in private areas (e.g. the house). The Asian continent is expected to reflect the profile and characteristics of the cases of tuberculosis that occur in both the young and adult members of communities. After reviewing the results, there are 3 types of risk factor that can be categorized as agent (*Mycobacterium tuberculosis*), host (age, gender, social economy, education, cooking fuel, tobacco smoke and drink alcohol) and environment (condition room, occupancy density).

3.3. *Agent (Mycobacterium tuberculosis)*

Research by Shaweno *et al.*, 2018 of *Mycobacterium tuberculosis* as an agent of tuberculosis have identified a relationship and increased risk of *Mycobacterium tuberculosis* causing exacerbations in the approximately 2–3 billion people in the world who are latently infected with *Mycobacterium tuberculosis* (Mtb); 5%–15% of these people will suffer from a reactivation of TB during their lifetime [6][5]

3.4. Host (age, gender, social economy, education, cooking fuel, tobacco smoke and drink alcohol)

Age seems to be associated with TB infection. However, the exact age range is unclear. Different behaviors may be the factor. Young people are more likely to be exposed to TB because they are more likely to work and are more mobile, thus they have less time for treatment [8][6] A higher smoking rate among younger people weakens the immune system, putting them at risk of developing TB diseases and related conditions caused by the Mycobacterium TB [9]. However, several studies considered the differential cases of TB with an association of demographic risk factors and their

potential reasons. Most of the studies found that the TB cases were statistically significantly higher among men compared to women. Tobacco smoking can alter the lung's immune response to Mtb and can therefore contribute to a higher susceptibility to individual TB infection. The relative risk of TB infection in tobacco smokers compared to non-smokers ranges from 2 to 3.4, and the TB reactivation and mortality rates are also higher in the tobacco group. People with a low socio-economic status also tend to have a higher infection rate compared to those of high socio-economic status. A high family income can provide the opportunity to buy medicine and undergo treatment. All of the selected studies showed an increase in TB infection among the patients with a lower education level. Drug consumption is another behavioral risk factor associated with TB infection, Drug abuse is an independent predictor for death among drug-resistant TB patients[6]. Those who have a history of intravenous or subcutaneous drug use were more likely to become infected with MDR-TB disease. Alcohol consumption also influences TB infection. As shown by Ai et al, (2016), the results at the initial diagnosis of a previous occurrence of TB (aHR: 4.09, 95% CI: 1.52–11.02) were more likely show there to be recurrent TB among alcoholics. People who drink more than 40 g alcohol per day, and/or who have alcohol use disorder fall into this category. Alcohol may assert a direct toxic effect on the immune system, thus rendering the host more susceptible to TB disease.

3.5. Environment (condition room, occupancy density).

Our study indicates the association between the patients' housing area and TB infection. Unpleasant environments can make a person more vulnerable to infection [6].

Table 1. Respondent's characteristics

Author	Number of Sample	Mean Age	Man	Woman
[4]	1000	>12 yrs	620	380
[3]	100,000	1-25 yrs	-	-
[15]	200.000 bacterial	over 27	-	-
[16]	9160	≥45yrs	-	9160
[6]	109	<40> yrs	-	-
[1]	64452	>17 yrs	60121	4331
[13]	257179	1-25 yrs	-	-
[17]	7004 cases	0–14 and≥65yrs	-	-
[9]	14000	-	-	-
[12]	387	>30≥50	128	359
[11]	169721	>19≥60 yrs	-	-
[7]	365	28-30	158	207
[8]	123,546	>30 yrs	38,801	71,969
[14]	215,337	40 to 60 yrs	-	-

Table 2. List of the dominant risk factors that indicate tuberculosis

Dominant factors That Show Tuberculosis	Author
Tobacco	[4][6] [9][7]
Alcohol	[1][6]
Mycobacterium tuberculosis	[3][5]
Gender	[6][8]
Age	[6][8]
Social economy	[6][7][9][8]
Education	[6][8]
Cooking fuel	[1]
Condition room	[6][9]
Occupancy density	[9]
Drug consumption	[6][9]

4. Discussion

This systematic review aimed to identify the articles around the dominant risk factors of tuberculosis in the community. Several studies considered differential cases of TB with an association between the dominant risk factors and their potential reasons. In this review, we found that host have 75% statistically significant as categorized are a more at risk to be infected with TB[10][3]. One possible reason for this is that men predominantly drink alcohol, smoke, consume drug and are more like to be incarcerated than women. These behavioral factors put the person more at risk of being infected with TB. Age seems to be associated with TB infection. However, the exact age range is unclear. Different behaviors may be the factor[7]. Young people are more likely to be exposed to TB because they are more likely to work and are more mobile. A higher smoking rate among younger people weakens the immune system, putting them at risk of developing TB and related conditions caused by the Mycobacterium TB. Although younger TB patients spend more time on social activities such as drinking alcohol, taking drugs and smoking, the infection can still occur among older people as well [6][11][12]. The majority of the studies proved that TB affects the younger age group (below 40 years). In contrast, Ai et al (2016) found that the older age group was more vulnerable to TB (40 above) with a mean age of 42.36 ± 17.77 years. Smokers were observed to more susceptible to TB infection. This was proven when it was found that passive smokers have less than a 76% chance of developing active disease upon infection compared to non-passive smokers. On the other hand, a longer duration of drug use and substance misuse also increased the vulnerability to TB infection [6][13]. An imbalanced immune system, both natural and cell mediated, seems to be one of the causes of drug use being a risk factor, especially in latent TB cases [6].

Another study assessed whether TB infection occurred among low income families, regarding the findings for previously treated MDR-TB cases and with newly diagnosed MDR-TB cases. This suggests that people in the lower income group have a higher tendency to develop TB. However, the studies prove that the environment has a 20% statistically significant association between education level and occupation density. Cooking fuel seems to be one of the causes of TB cases[14].

The limitation in this study was the limited time available of 3 weeks. The other limitations of this review included the bias in reporting the results of the thresholds between studies concerning the significant and non-significant findings.

5. Conclusion

Based on the chosen 10 articles, the authors found there to be various risk factors that influence the occurrence of tuberculosis. These were identified and classified after reviewing the results. There are 3 types of risk factor that can be categorized as agent (*Mycobacterium tuberculosis*), host (age, gender, social economy, education, cooking fuel, tobacco smoke and drink alcohol) and environment (condition room, occupancy density). There are various risk factors that cause pulmonary tuberculosis and the dominant potential risk factor is the host, with sub-factors such as age, the social economy, education, cooking fuel, tobacco smoke and drink alcohol.

The results of the review of various studies can be implicated when giving help to find the most dominant risk factor of pulmonary tuberculosis. Nurses can provide structured education to ordinary people about health education on how to reduce the risk factors of tuberculosis with the self management related to adequate coping behavior. The compliance of the changing behavior of the TB patients included quitting smoking that reduced over the time when they were being treated and after the course of treatment, they lessened how much they drank alcohol, used drugs and how to manage the condition room. The patients actively participated in implementing the self management of the disease.

References

[72] Lönnroth K, Williams B G, Stadlin S, Jaramillo E and Dye C 2008 Alcohol use as a risk factor for tuberculosis – a systematic review **12**

World Health Organization 2017 *END TB Global Tuberculosis Report 2017*

Shaweno D, Karmakar M, Alene K A, Ragonnet R, Clements A C A, Trauer J M, Denholm J T and Mcbryde E S 2018 Methods used in the spatial analysis of tuberculosis epidemiology : a systematic review 1–18

Diaye D S N, Nsengiyumva N P, Uppal A, Oxlade O, Alvarez G G and Schwartzman K 2019 The potential impact and cost-effectiveness of tobacco reduction strategies for tuberculosis prevention in Canadian Inuit communities 1–11

Vynnycky E, Keen A R, Evans J T, Khanom S, Hawkey P M, White R G and Abubakar I 2019 Mycobacterium tuberculosis transmission in an ethnically-diverse high incidence region in England, 2007 – 11 *BMC Infect. Dis.* 1–14

Mohidem N A, Hashim Z, Osman M and Shaharudin R 2018 Demographic , socio-economic and behavior as risk factors of tuberculosis in Malaysia : a systematic review of the literature

Kirenga B J, Ssengooba W, Muwonge C, Nakiyingi L, Kyaligonza S, Kasozi S, Mugabe F, Boeree M, Joloba M and Okwera A 2015 Tuberculosis risk factors among tuberculosis patients in Kampala, Uganda : implications for tuberculosis control 1–7

Lee P, Fu H, Lai T, Chiang C, Chan C and Lin H 2016 Glycemic Control and the Risk of Tuberculosis : A Cohort Study 1–15

Ai J, Ruan Q, Liu Q and Zhang W 2016 Updates on the risk factors for latent tuberculosis reactivation and their managements 1–8

Kontrol T and Asma P 2008 FAKTOR RISIKO ASMA DAN PERILAKU PENCEGAHAN BERHUBUNGAN DENGAN TINGKAT KONTROL PENYAKIT ASMA (Asthma Risk Factors and Prevention Behaviour Relate to Asthma Level of Control) Nursalam*, Laily Hidayati*, Ni Putu Wulan Purnama Sari* 9–18

Imtiaz S, Shield K D, Roerecke M, Samokhvalov A V, Lönnroth K and Rehm J Alcohol consumption as a risk factor for tuberculosis : meta-analyses and burden of disease

Chen B, Gu H, Wang X, Wang F, Peng Y, Ge E, Upshur R, Dai R, Wei X and Jiang J 2019 International Journal of Infectious Diseases Prevalence and determinants of latent tuberculosis infection among frontline tuberculosis healthcare workers in southeastern

China : A multilevel analysis by individuals and health facilities *Int. J. Infect. Dis.***79** 26–33

Narasimhan P, Wood J, Macintyre C R and Mathai D 2013 Risk Factors for Tuberculosis **2013**

Popovic I, Soares R J, Ge E, Marks G B, Dong G, Wei X and Knibbs L D 2019 Review article A systematic literature review and critical appraisal of epidemiological studies on outdoor air pollution and tuberculosis outcomes *Environ. Res.***170** 33–45

Wiens K E, Woyczynski L P, Ledesma J R, Ross J M, Zenteno-cuevas R, Goodridge A, Ullah I, Mathema B, Fleury J, Siawaya D, Biehl M H, Ray S E, Bhattacharjee N V, Henry N J, Jr R C R, Kyu H H, Murray C J L and Hay S I 2018 Global variation in bacterial strains that cause tuberculosis disease : a systematic review and meta-analysis 1–13

Qian X, Nguyen D T, Lyu J, Albers A E, Bi X and Graviss E A 2018 Risk factors for extrapulmonary dissemination of tuberculosis and associated mortality during treatment for extrapulmonary tuberculosis *Emerg. Microbes Infect.* 1–14

Chandrashekara V S S, Kumar S, Ashwin M, Yogesh D, Uma S and Nagaraj K S 2018 Biologics and risk of tuberculosis in autoimmune rheumatic diseases : A real - world clinical experience from India

TDS-619

EXPERIENCE OF TREATMENT MULTIDRUG RESISTANT TUBERCULOSIS (MDR-TB) PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Multidrug tuberculosis (MDR-TB) is a global threat for the control of tuberculosis. Increased MDR-TB cases are caused by a history of non-adherent treatment or transmission of mycobacterium tuberculosis which is resistant to anti-Tuberculosis drugs. The purpose of this systematic review is to explore the experience of treating multidrug tuberculosis patients. Searching the database for Scopus, Proquest, Science Direct and Sage Journal using the keywords "multidrug resistant tuberculosis AND experience AND patient AND treatment AND qualitative study" with the period research of 2014 until 2018. Implementation of the PRISMA guidelines using qualitative research there were 16 articles included, because considered relevant to the purpose of this review. The results of this study are several problems faced by MDR-TB patients during treatment such as drug side effects, stigma, financial problems, lack of self efficacy towards treatment, lack of health care support, lack of social support from family or those closest to them. Future research that will enhance current knowledge for treatment outcomes and can be the basis of alternative interventions to increase the comfort of MDR-TB patients while undergoing treatment and improving health services.

Keywords: multidrug resistant tuberculosis, treatment, experience, qualitative

1. Introduction

Tuberculosis (TB) is one of the deadliest infectious diseases in the world. The WHO reported that between 2013 and 2016, there was an increase in cases of pulmonary TB from 9 million cases to 10.4 million cases. The number of new TB cases in 2016 was by 10.4 million and this resulted in 1.8 million deaths [1]. The WHO in 2018 reported that there are seven countries with the highest number of TB cases, namely India, Indonesia, China, the Philippines, Pakistan, Nigeria and South Africa.

The progress of TB control in the world has succeeded in identifying Mycobacterium tuberculosis and the discovery of the BCG vaccine and anti-Tuberculosis drugs that are effective for TB control. However, the progress of TB treatment has been challenged by the emergence of a type of Mycobacterium Tuberculosis that is resistant to anti-tuberculosis drug. The HIV AIDS epidemic has worsened the TB epidemic.

Multidrug Resistant Tuberculosis (MDR-TB) is caused by bacteria that do not respond to isoniazid and rifampicin, which are the two most effective anti-tuberculosis drugs in use regarding TB control. The WHO, in 2017, implemented 5 priority actions to overcome the MDR-TB crisis globally including (1) preventing the occurrence of MDR-TB / RR-TB, (2) improving rapid testing and the detection of MDR-TB / RR-TB cases, (3) providing access to effective MDR-TB services including adequate quality and supply of medicines, (4) preventing transmission through infection

control and (5) increasing the political commitment in terms of financing. However, the number of MDR-TB cases is still a problem. The WHO, in 2017, reported 600,000 cases of MDR-TB and 240,000 deaths. The number of new cases of MDR-TB is 4.1% while in older cases or in TB patients who have received treatment, 19% are resistant to anti-tuberculosis drugs.

The increase in MDR-TB cases is a global threat to controlling tuberculosis (TB). MDR-TB can be caused by a history of irregular treatment or the transmission of anti-tuberculosis drug resistant Mycobacterium tuberculosis. Contact transmission of Mycobacterium tuberculosis that has experienced drug resistance will create new cases of MDR-TB patients who experience primary resistance [2].

Multidrug treatment for tuberculosis resistance takes a very long time, with a minimum duration of 18-24 months. MDR-TB treatment provides many experiences including negative ones that can hinder treatment. Positive experiences can come in the form of support for the patients so then they can complete the treatment up until they recover. Several studies have shown that several factors that prevent MDR-TB patients from undergoing treatment such as the physical side effects of the MDR-TB drugs, financial burden, apprehension about the efficacy of the long-term treatment, and stigma [3–7]. The incidence of MDR-TB cannot be separated from a history of previous TB treatment non-compliance. Non-adherence to treatment is a major predictor of MDR-TB because it can cause gene mutations in Mtb so then it is resistant to treatment[1]. There are several factors that influence client disobedience in terms of TB treatment, including a lack of knowledge, low awareness, inadequate health facilities, stigma, the economy [8]and the anti-tuberculosis drug side effects. These are the main causes of noncompliance in the previous treatment regimes. Increasing MDR-TB cases are a global health threat because it can cause the transmission of MDR-TB that is resistant and that requires a very long treatment plan. Increasing MDR-TB can be a barrier to achieving the TB elimination target in 2030.The aim of this systematic review was to explore TB patients who were undergoing treatment. The impact of MDR-TB treatment in the long term requires attention, so this data is expected to inform the policy makers and health workers to allow them to be able to develop appropriate interventions.

2. Methods

A systematic search was conducted of the Scopus, Proquest, Science Direct, and Sage Journal electronic databases using the keywords "multi-drug resistant tuberculosis" AND experience AND patients AND treatment AND qualitatively with all studies. The inclusion criteria consisted of original research articles about MDR-TB, publications from 2014 to 2019 and articles published in English. Articles in other languages, incomplete articles (abstract), research not on humans, and those not in accordance with the research objectives issued were not included.

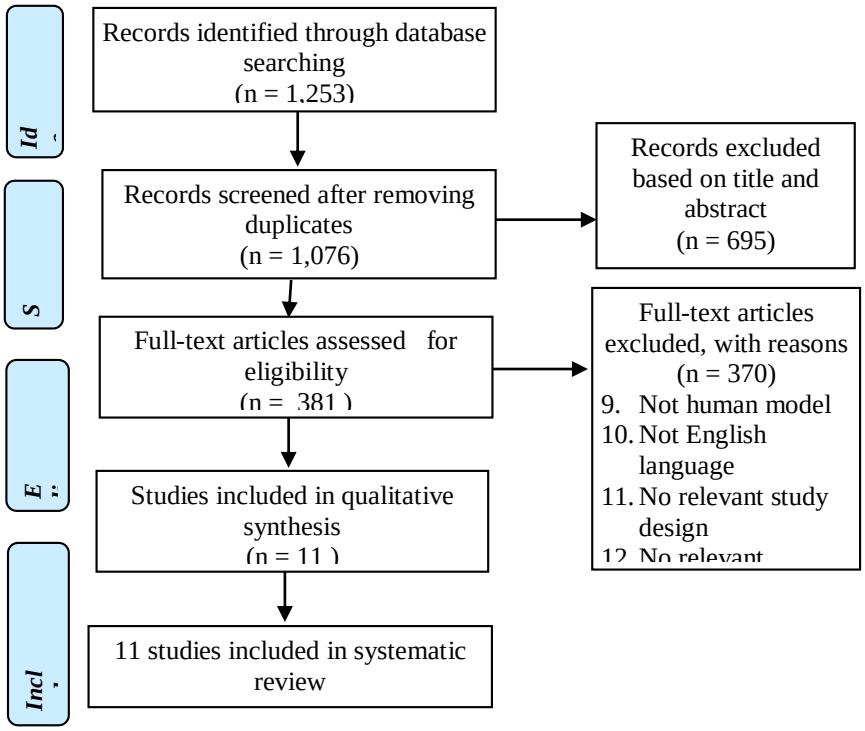

Figure 1. Flow Diagram

3. Results

The four electronic databases used in this review were searched using keywords that were set to identify 1253 abstracts. An extensive review of the article titles and abstracts facilitated the elimination of duplicate articles and any articles without relevance to the current reviews; 11 articles were identified for a full text review. Following the application of PRISMA, the articles were chosen to be included in the review because they were to be considered relevant for the purpose of the study (Figure 1). The total respondents in the literature selected were 618 participants in the range of 6 - 381 participants. The participants were aged between 18 and 60 years old.

1076 articles were found after duplication screening; 695 articles were eliminated due to irrelevant studies based on the titles and abstracts. A total of 381 articles with full text were taken with 370 studies excluded because they did not meet the inclusion criteria such as being an intervention research, not using English, having irrelevant goals, and where the results that were not in accordance with the objectives of the systematic review. As a result, 11 articles were used to carry out systematic review.

Table 1. Characteristics of the included studies

No	Title, Author & Time	Design	Result
1	The battle continues: An interpretative phenomenological analysis of the experiences of Multidrug-Resistant Tuberculosis (MDR-TB) patients. [3]	Qualitative study	1.Fear of being diagnosed with MDR-TB 2.Feeling isolated as an effort to prevent transmission 3.An infection alongside the anti tuberculosis drug side effects, finances, and doubts about long-term treatment success 4.Negative stigma 5.Trying to accept the condition and to continue to fight for family and self.
2	Social support: a key factor for adherence to multi-drug resistant tuberculosis treatment. [9]	Qualitative study	Motivation, awareness of illness and treatment, counseling support, family support, nutritional support and social support are important drivers for successful treatment.
3	Proposed guidelines to minimize multi-drug resistant tuberculosis treatment default in a multi-drug resistant unit of Limpopo province, south Africa. [10]	Qualitative study	The factors that contribute to the failure of the patients regarding the MDR-TB treatment were identified and organized into four themes. A guide was developed to address each factor and to provide recommendations about the solutions that outline collaboration between the Health department, health practitioners, patients, and their family members to help prevent treatment failure.
4	Resilience and extensively drug-resistant tuberculosis: the unlikely ally. [6]	Qualitative study	Slow diagnosis, lack of care capacity, the availability of drugs and a lack of psychosocial support during long-term treatment are the main obstacles experienced when undergoing MDR-TB treatment.
5	Development of a Patient Centered, Psychosocial Support Intervention for Multi Drug-Resistant Tuberculosis (MDR-TB) Care in Nepal. [11]	Qualitative study	Our findings highlight the negative effects of MDR TB treatment on mental health and the greater impact felt by the patients with limited social and financial support, especially married women.
6	Where there is hope: a qualitative study examining patients' adherence to multi-drug resistant tuberculosis	Qualitative study	Expectations, knowledge and perception of the importance of treatment are very supportive of adherence so there is a need for an individual to utilize a holistic approach. Compliance is supported by

No	Title, Author & Time	Design	Result
	treatment in Karakalpakstan, Uzbekistan. [12]		involving the patients as active participants in their care so then they have a sense of responsibility for their care.
7	Reasons for defaulting from drug-resistant tuberculosis treatment in Armenia: a quantitative and qualitative study. [4]	Mixed Method: Quantitative and qualitative study	Poor treatment tolerance, perceptions of inefficient treatment, lack of information, wrong perceptions of healing, work factors, economics, and behavioral problems are the factors associated with treatment failure.
8	Patient and Provider Reported Reasons for Lost to Follow Up in MDRTB Treatment: A qualitative study from a Drug Resistant TB Centre in India. [7]	Qualitative study	Drug side effects, lack of service, financial support, conflict with treatment service times, alcoholism and social stigma can influence compliance with MDR TB treatment. It requires health care efforts to solve medical problems such as the effects of drugs, developing short-term treatment regimens, reducing the pill burden, counseling, flexible times for the DOT services, and social support
9	The importance of providing counseling and financial support to the patients receiving treatment for multi-drug resistant TB: mixed method qualitative and pilot intervention studies. [13]	Mixed Method: Qualitative and quantitative study	The healing rate of the patients receiving counseling was 85%, those receiving combined support (counseling and financial support) had a healing rate of 76% and those without support had a healing rate of 67%.
10	"Home is where the patient is": a qualitative analysis of a patient-centered model of care for multi-drug resistant tuberculosis. [14]	Qualitative study	Home-based care is accepted by the patients, families, communities and cadres because it is safe, conducive to recovery, facilitates psychosocial support and allows for more free time and earning potential for both the patients and nurses.
11	Are We Doing Enough to Stem the Tide of Acquired MDR-TB in Countries with High TB Burden? Results of a Mixed Method	Mixed Method: Qualitative & Quantitative study	Poor implementation of the DOTs program, where for the treatment, 34.3% of patients were never monitored by the health workers. Only 31.8% of patients

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No	**Title, Author & Time**	**Design**	**Result**
	Study in Chongqing, China. [15]		had accessed TB health education before TB diagnosis.

4. Discussion

Treatment history

A history of noncompliance with treatment is the main predictor of multidrug-resistant tuberculosis. [1]. Non-compliance in TB treatment is influenced by several factors, namely a lack of knowledge, or a low awareness of TB treatment, the wrong perceptions of recovery, poor response to treatment, stigma, poverty, a lack of access to transportation, especially in remote areas, the need to continue working, and the facilities where the treatment is ongoing is functioning poorly and the staff attitude is negative[4,8,16].

Obstacles

MDR-TB drugs are given free of charge but many patients cannot comply with their medication because of one or a combination of factors such as economic barriers, drug side effects, mental health etc. The results of the study [11] show that a greater negative impact is felt among those with limited social and financial support, especially married women.

The treatment of MDR-TB over a long period of time - between 18 and 24 months - is an obstacle. The side effects of the MDR-TB drugs include nausea, vomiting, rash, a loss of appetite, ringing in the ears, bodily weakness, a feeling of warmth, sensitivity to light, excessive saliva, and insomnia [3]. There are side effects in terms of weight when there are comorbidities such as diabetes mellitus. The severity of the side effects of the drugs that are felt by the patients every day for a long period of time is a challenge for the MDR-TB patients [7].

Shame and stigma are also obstacles for the patients undergoing treatment. Shyness and stigma causes the patients to hide their condition by resorting to alternative treatment options[2]. A lack of information is also a problem in medicine because knowledge is the basis that must be owned by the patients with the aim of the patients knowing the benefits of the treatment. They are expected to be able to comply with the treatment. The results of the study [15]showed that 34.3% of patients were never monitored by the health workers during their treatment and that only 31.8% of patients had access to health education before their diagnosis. Providing education is one of the tasks of the health workers that is needed to support compliance. There is a need for an individual and holistic approach to compliance support with the involvement of the patients as active participants in the care of those who feel that they are responsible for their care [14]. The obstacles experienced by the patients during long-term treatment with a minimum duration of 18 months included the severe side effects of the drugs, which can make the MDR-TB patients have doubts about the success of the treatment.

Support

There are many obstacles that are felt by the patients that require psychological and socio-economic support etc. Various factors influence a patient's decision to adhere to the MDR-TB treatment. Self-motivation, awareness of the illness and treatment, counseling support, family support, nutritional support and social support are the important drivers of successful treatment. To improve compliance

with the MDR-TB treatment, the patient approach must be considered at the program level. Based on the research[7], it is suggested that peer group support has better levels of adherence and treatment for MDR-TB.

Support can be formed with cooperation between the patients, their families and the health workers who provide information and support. They act to normalize TB, to reduce stigma and to prevent the abuse of the anti-tuberculosis drugs [10]. They are in a situation to improve the social, knowledge and support aspects of their family and friends in order to influence compliance.

Adverse drug side effects require health care efforts to resolve medical problems such as adverse drug effects, developing short-term treatment regimens, reducing the pill burden, motivational counseling and flexible timing for the DOT services [7]. Increasing TB health seeking behavior, reducing patient delays and detection, improving DOT quality, overcoming financial and systemic barriers and increasing the access to TB health promotions is urgently needed to address the growing prevalence of MDR-TB in China[15].

Home-based care is accepted by the patients, families, communities and cadres because it is safe, conducive to recovery, facilitates psychosocial support and allows for more free time and income potential for both the patients and nurses[12].

5. Conclusion

The incidence of multidrug tuberculosis (MDR-TB) is increasing worldwide. A broad database search has identified the limited research that examines the experience of MDR-TB patients. The results of this study showed that the barriers felt by the patients undergoing the MDR-TB treatment should be the main focus of the health workers, and in particular that the patients need an explanation of the treatment and prevention as well as things that need to be done to reduce the drug side effects. For the community, the patients need psychological support and motivation, especially from the closest people to them.Furthermore, future qualitative studies covering the results reported by the patients will play an important role in guiding the strategies aimed at minimizing the burden of treatment, improving the treatment procedures and ultimately increasing the level of comfort and well-being of MDR-TB patients.

References

[1] Jimma W, Ghazisaeedi M, Shahmoradi L, Abdurahman A A, Kalhori S R N, Nasehi M, Yazdi S and Safdari R 2017 Prevalence of and risk factors for multidrug-resistant tuberculosis in Iran and its neighboring countries: Systematic review and meta-analysis Rev. Soc. Bras. Med. Trop. 50 287–95

[2] Stringer B, Lowton K, Tillashaikhov M, Parpieva N, Ulmasova D, du Cros P, Hasker E and Sergeeva N 2016 ‘They prefer hidden treatment’’: anti-tuberculosis drug-taking practices and drug regulation in Karakalpakstan’ Int. J. Tuberc. Lung Dis. 20 1084–90

[3] Brigaste M B T and Teh L A 2018 The Battle Continues: An Interpretative Phenomenological Analysis of the Experiences of Multidrug-Resistant Tuberculosis (MDR-TB) Patients Psychol. Stud. (Mysore). 63 9–18

[4] Sanchez-Padilla E, Marquer C, Kalon S, Qayyum S, Hayrapetyan A, Varaine F, Bastard M and Bonnet M 2014 Reasons for defaulting from drug-resistant tuberculosis treatment in Armenia: A quantitative and qualitative study Int. J. Tuberc. Lung Dis. 18 160–7

[5] Indarwati D, Rusmariana A, Dwi Hartanti Prodi R S and STIKES Pekajangan Pekalongan K 2012 Hubungan Motivasi dengan Kepatuhan Diet Diabetes Mellitus pada Pasien Diabetes Melitus di Desa Tangkil Wilayah Kerja Puskesmas Kedungwuni II Kabupaten Pekalongan (STIKES

Pekajangan Pekalongan)
[6] E. D and I. M 2017 Resilience and extensively drug-resistant tuberculosis: The unlikely ally Int J Tuberc Lung Dis 21 713–6
[7] Deshmukh R D, Dhande D J, Sachdeva K S, Sreenivas A, Kumar A M V, Satyanarayana S, Parmar M, Moonan P K and Lo T Q 2015 Patient and provider reported reasons for lost to follow up in MDRTB treatment: A qualitative study from a drug resistant TB Centre in India PLoS One 10 1–11
[8] Skinner D and Claassens M 2016 It ' s complicated : why do tuberculosis patients not initiate or stay adherent to treatment ? A qualitative study from South Africa BMC Infect. Dis. 1–9
[9] Deshmukh R D, Dhande D J, Sachdeva K S, Sreenivas A N, Kumar A M V and Parmar M 2018 Social support a key factor for adherence to multidrug-resistant tuberculosis treatment Indian J. Tuberc. 65 41–7
[10] Chauke T, Netshikweta L, Vo N, Nyathi L, Tg T and Fc O 2018 Proposed Guidelines To Minimise Multi-Drug Resistant Tuberculosis Treatment Default in a Multi-Drug Resistant Unit of Limpopo Province , South Africa 12 55–65
[11] Khanal S, Elsey H, King R, Baral S C, Bhatta B R and Newell J N 2017 Development of a patient-centred, psychosocial support intervention for multi-drug-resistant tuberculosis (MDR-TB) care in Nepal PLoS One 12 1–16
[12] Horter S, Stringer B, Greig J, Amangeldiev A, Tillashaikhov M N, Parpieva N, Tigay Z and du Cros P 2016 Where there is hope: A qualitative study examining patients' adherence to multi-drug resistant tuberculosis treatment in Karakalpakstan, Uzbekistan BMC Infect. Dis. 16 1–15
[13] Baral S C, Aryal Y, Bhattrai R, King R and Newell J N 2014 The importance of providing counselling and financial support to patients receiving treatment for multi-drug resistant TB: Mixed method qualitative and pilot intervention studies BMC Public Health 14
[14] Horter S, Stringer B, Reynolds L, Shoaib M, Kasozi S, Casas E C, Verputten M and Du Cros P 2014 "home is where the patient is": A qualitative analysis of a patient-centred model of care for multi-drug resistant tuberculosis BMC Health Serv. Res. 14 1–8
[15] Li Y, Ehiri J, Oren E, Hu D, Luo X, Liu Y, Li D and Wang Q 2014 Are we doing enough to stem the tide of acquired MDR-TB in countries with high TB burden? Results of a mixed method study in chongqing, china PLoS One 9
[16] Gugssa Boru C, Shimels T and Bilal A I 2017 Factors contributing to non-adherence with treatment among TB patients in Sodo Woreda, Gurage Zone, Southern Ethiopia: A qualitative study J. Infect. Public Health 10 527–33

TDS-628

EMPOWERMENT PROGRAMS FOR HEALTH BEHAVIOR IN TUBERCULOSIS: A SYSTEMATIC REVIEW

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ABSTRACT

Tuberculosis is one of the top 10 diseases that cause death in the world. Therefore, until now TB is still a top priority in the world and is one of the goals in the Sustainability Development Goals (SDGs). The systematic review aims to identify and synthesize studies that use empowerment approaches in the field of treatment and care of TB patients. Studies were identified from searches with keywords: "models of empowerment, tuberculosis, family support dan health behavior" on the database (Scopus, ProQuest, ScienceDirect, PubMed, SageJournals, SpringerLink and JSTOR) from 2014 to 2019. Search, selection and reporting in accordance with PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyzes). Five eligible studies were included with outcome was health behavior in TB. These studies conclude the number of studies on empowerment in TB is very low. The empowerment approach is actually implemented but it seems that the term empowerment is still unfamiliar in the management of TB treatment programs.

Keywords: empowerment program, health behaviour, tuberculosis, systematic review

1. Introduction

Empowerment is a process through which people, organizations and communities gain mastery over their situation [1]. It is postulated that individual or psychological empowerment has a positive impact on people's health and that empowered people engage in creating healthier environments ('community empowerment')[2]. In order to implement empowerment in practice, a wide range of approaches are used: participatory strategies, the provision of social support to strengthen people's self-esteem and self-efficacy, the raising of critical consciousness etc. However, 'authentic' empowerment is considered to be more than simply a technique or a strategic approach in health promotion. It is a value-based attitude that underpins professional practice[3].

Initially, the empowerment approach was used predominantly among marginalized communities in programs in developing countries, particularly when dealing with poverty, suppression and powerlessness which necessitates empowering strategies. Today, the main focus of empowerment in health promotion in developing countries remains focused on vital issues such as access to drinking-water, health care and housing conditions. In industrialized countries, health promotion programs are meant to engage people to encourage them to live healthy (healthier) lives or to create healthy (healthier) environments in their communities[4].

Therefore, applying the concept of empowerment to complete a TB program seems to be promising. However, the empowerment related to the TB program has not yet been evaluated. Whereas the challenge of control (or even power) is obvious when working with disadvantaged communities who are struggling with basic needs, little is known about applying empowerment theory as well as empowering the TB program. Thus, the starting point for the current systematic

review was the question: “How can the empowerment approach be applied to the subject of patient TB?”

In the health-care sector, ‘empowerment’ is often used in a different way than in health promotion, i.e. in terms of ‘patient empowerment’ or self-management regarding a certain disease[5]. Considering that the empowerment concept has been used by a growing number of scientific disciplines, a substantial though very heterogeneous body of literature on empowerment and empowerment projects is now available. In recent years, systematic reviews on the different aspects of empowerment have been conducted. The most comprehensive review was compiled by Wallerstein on behalf of the WHO[6].

To date, no narrative or systematic review on the subject of empowerment and health behavior in TB programs has been published. Thus the aim of the current systematic review was to identify studies that used an empowerment approach within the field of health behavior in TB programs.

2. Methods

Studies included in systematic reviews must meet the following selection criteria: (i) the studies must be published as original articles, (ii) the concept of empowerment must be important for the intervention and therefore explicitly mentioned and (iii) the research must be based on empirical data collection (i.e. qualitative or quantitative processes or the outcome parameters reported). Studies were excluded if the paper was a systematic review (comment), commentary, letter or conference, if no abstract is available or if the language of the article was not English.

The articles were identified through a database search (Scopus, ProQuest, ScienceDirect, PubMed, SageJournals, SpringerLink and JSTOR). The latest database update came in January 2014. The titles, abstracts and keywords were searched using the following search terms: (Model of Empowerment) AND (Tuberculosis) AND (Family Support) AND (Health Behavior))

The titles and abstracts of the articles were initially filtered to meet the selection criteria. The authors performed the filtering procedures independently of each other. Cases of nonconformity were discussed afterwards until consensus was reached. Furthermore, the rest of the study potentially fulfilled the requirements and the articles were assessed in detail by reading the full text paper.

The summary table was designed to collect any interesting research characteristics (see Table 1). The appropriate data was then extracted by the author. As for the definition and conceptualization of the empowerment approach, the information was extracted from the articles in accordance with the author's expression.

The systematic review was conducted based on the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) Statement in order to maintain the quality of the search process and an adequate level of reporting within the present paper[7].

3. Result

Section 1.01 *3.1 Study selection*

The database searches produced 1,990 results (Scopus, ProQuest, ScienceDirect, PubMed, SageJournals, SpringerLink and JSTOR). After excluding any duplicates, there were 1,936 articles that qualified for further screening. The screening of the titles and abstracts according to the inclusion and exclusion criteria led to 16 articles which were then examined as full-text papers. Finally, 5 studies were included in the current systematic review. The process of selecting the studies has been illustrated in the flow diagram (see Fig. 1).

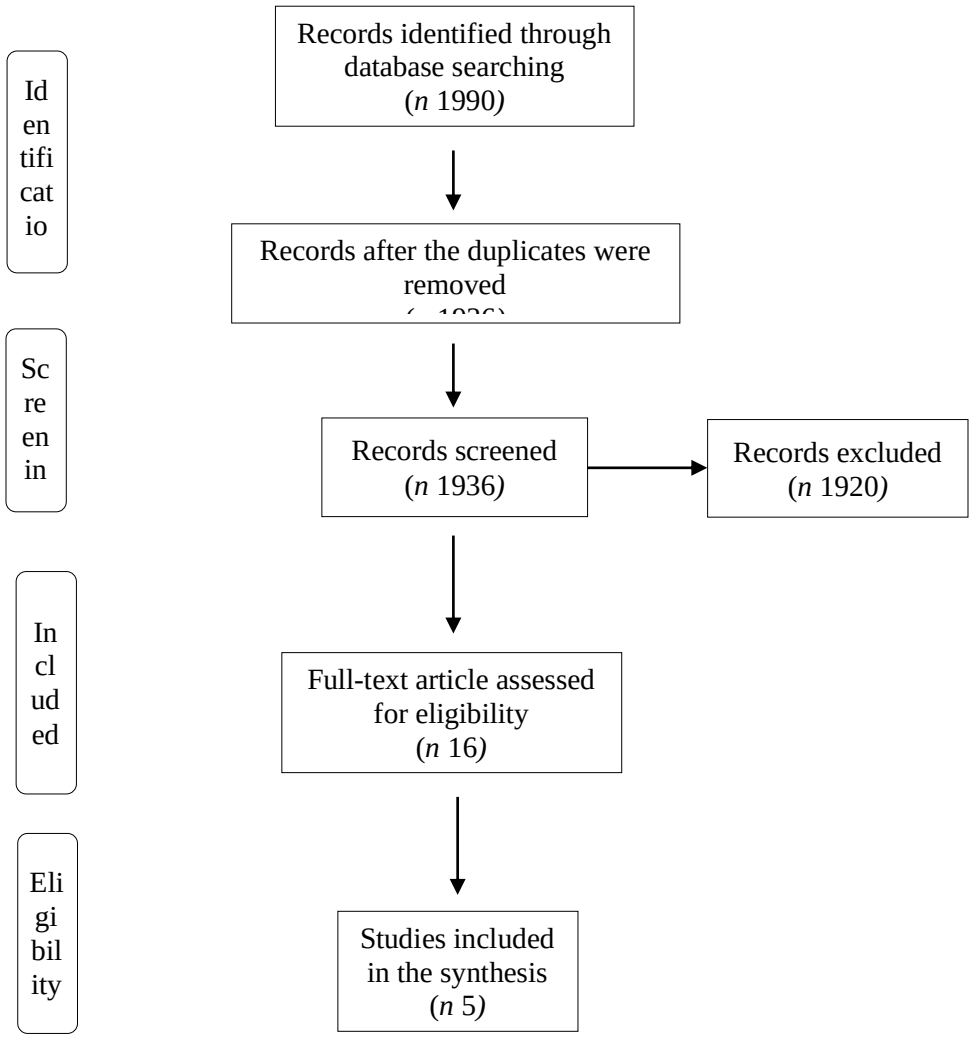

Fig 1. Flow diagram of the study selection process

Section 1.02 3.2 Study Characteristics

Table 1 provides an overview of the main characteristics of the five studies included[8–11]. The studies were conducted in India, Armenia, Ethiopia, Brazil and South Africa. All of the studies target TB patients. This review included three studies using quantitative research designs to evaluate the results, and two used qualitative methods for the data collection and analysis.

Table 1 - Main characteristics of the studies included in the present review

No.	Title, Authors and Year	Country	Target group And setting	Research Design	Quantitative evaluation: Outcome(s):	Qualitative evaluation: Outcome(s):
1.	A case study on tuberculosis treatment defaulters in Delhi: Weak health links of the community with the public sector, unsupported migrants and some misconceptions [8]	India	TB patients at the New Delhi Government Hospital	Case study	-	Proposals from the community: 1. The TM / CAM program is recognized as access to TB treatment programs. 2. Increased medical services at affordable costs. 3. The existence of empowerment initiatives for social support for immigrants. 4. Provision of tools that are suitable to the needs of the community.
2.	People-centered tuberculosis care versus standard care in the form of directly observed therapy: study protocol for a cluster randomized controlled trial [9]	Armenia	TB patients and families at the Armenia Outpatient Center	Cluster Randomized Controlled Trial	With this empowerment model, the patients and families both get the support needed to carry out their role in TB treatment.	-
3.	Psychological and Educational Interventions to Improve Tuberculosis Treatment Adherence in Ethiopia Based on the Health Belief	Ethiopia	TB patients at Addis Ababa City Health Center	Cluster Randomized Controlled Trial	It is recommended to include psychological counseling and health education interventions when carrying out the DOTS strategy to reduce the level	-

	Model: A Cluster Randomized Control Trial [10]				of medication non-compliance.	
4.	Patients' perception regarding the influence of individual and social vulnerabilities on the adherence to tuberculosis treatment: a qualitative study [12]	Brazil	TB patients in the city of Campina Grande Brazil	Qualitative descriptive Cross-sectional study	-	Advice from patients: 1. The need for an explanation to the public about TB in the community so then the negative stigma towards the patients or TB that is still very strong in the community can be reduced or lost. 2. Required social support such as financial assistance and additional nutritional assistance. 3. The support of the closest person / family is needed to accept the illness and overcoming obstacles in the treatment period. 4. The need for health education and the empowerment of families in order to provide support to TB patients.
5.	Tuberculosis knowledge and the attitudes and practices of patients at	South Africa	TB patients at Mangaung Metropolitan South Africa	Cross-sectional study	The results of this study highlight the need for	-

primary health care facilities in a South African metropolitan: research towards improved health education[11]		health education in the Puskesmas area in Mangaung to overcome misunderstandings about TB and to correct the misinformation that prompted the social isolation of TB patients.

4. Discussion

Section 1.03 4.1 Principal finding

The aim of the present review was to explore the empowerment concepts on the topic of health behavior in a TB program. This resulted in the inclusion of five studies. Given the widespread dissemination of empowerment programs for health behavior and initiatives utilizing an empowerment approach, this is a surprisingly low number. It seems that promoting health behavior in TB via an empowerment approach may be unfamiliar to scientists, politicians and stakeholders in the health-care sector. Within many of the included studies and their respective intervention projects, the explicit measures or methods used to operationalize empowerment were not described in detail.

As far as the other included studies are concerned, we would have expected to learn more about how the goal of enabling people to take control over their lives was achieved in the specific intervention measures or what made the particular intervention an empowerment intervention. Unfortunately, due to incomplete or imprecise reporting, it was frequently unclear how the theoretical description of empowerment corresponded to the implemented measures in the practical intervention projects[13].

Section 1.04 4.2 Empowerment and behavior

The relationships between empowerment and behavior (change) are varied. The link might be unidirectional, reciprocal or even non-existent. This applies to the field of health behavior (change) as well. From a theoretical point of view, the tensions between empowerment and behavior (change) arise if the conceptualizations of empowerment, health-promoting behavior and health are derived from different paradigms. This is assuming that a narrow bio-medical model of health will impose difficulties on arguing how empowerment goals could translate into health. From this perspective, an increased level of autonomy, which is an example of an empowerment goal, has nothing in common with making healthier food choices. However, when referring to a more comprehensive understanding of health (e.g. according to the definition by the WHO), the links between being empowered and experiencing autonomy and bio-psycho-social health are obvious, as they are states of empowerment and the feeling of autonomy that represent health per se just as they are assumed to be the fundamental basics of health. Rappaport argues accordingly that when he states that a certain behavior can be seen of as an expression of health and as an expression of empowerment[2]. Tengland provides a detailed discussion of how empowerment goals (e.g. autonomy, control) are related to health (behavior) goals. He suggests that health-related abilities (e.g. self-confidence, self-efficacy) might mediate the relationship between empowerment and health, but that empowerment goals also need to be pursued for their own sake[14].

This discourse is not novel in the field of health promotion, but it seems to be especially crucial for health promotion in terms of healthy nutrition. Still, the predominant paradigm in nutrition

sciences is the bio-medical one, which might explain why empowerment is still used scarcely, as was shown in the current systematic review.

5. Conclusion

Overall, the concept of empowerment is almost non-existent in health promotion programs that focus on health behavior. The public health discipline has used the most empowering interventions available in the field of HIV / AIDS prevention. HIV / AIDS prevention empowerment strategies have been shown to improve health status by increasing condom use and reducing HIV infection rates[6]. This can inspire further empowerment interventions in other disciplines.

Many studies included in the current systematic review lack a detailed and comprehensive implementation-related description of the empowerment concepts. A detailed analysis could not be completed because of the low number of studies included. Further research on empowerment in health promotion that focuses on health behavior in TB is needed. The researcher must focus on a thorough description of the application of empowerment in practice.

References

[73] World Health Organization 1986 Ottawa Charter for Health Promotion *1st Int. Conf. Heal. Promot.*

Rappaport J 1987 Terms of empowerment/exemplars of prevention: Toward a theory for community psychology *Am. J. Community Psychol.***15** 121–48

Woodall J R, Warwick-Booth L and Cross R 2012 Has empowerment lost its power? *Health Educ. Res.***27** 742–5

Sofi F, Cesari F, Abbate R, Gensini G F and Casini A 2008 Adherence to Mediterranean diet and health status: Meta-analysis *Bmj***337** 673–5

Anderson R and Funnell M 2010 Patient Empowerment: Myths and Misconceptions *Patient Educ Couns***79** 277–82

Wallerstein N 2006 *What is the evidence on effectiveness of empowerment to improve health?*

Moher D, Liberati A, Tetzlaff J, Altman D G, Altman D, Antes G, Atkins D, Barbour V, Barrowman N, Berlin J A, Clark J, Clarke M, Cook D, D'Amico R, Deeks J J, Devereaux P J, Dickersin K, Egger M, Ernst E, Gøtzsche P C, Grimshaw J, Guyatt G, Higgins J, Ioannidis J P A, Kleijnen J, Lang T, Magrini N, McNamee D, Moja L, Mulrow C, Napoli M, Oxman A, Pham B, Rennie D, Sampson M, Schulz K F, Shekelle P G, Tovey D and Tugwell P 2009 Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement (Chinese edition) *J. Chinese Integr. Med.***7** 889–96

Jayachandran V 2014 A case study on tuberculosis treatment defaulters in Delhi: Weak health links of the community with the public sector, unsupported migrants and some misconceptions *Ann. Trop. Med. Public Heal.***7** 124–9

Khachadourian V, Truzyan N, Harutyunyan A, Thompson M E, Harutyunyan T and Petrosyan V 2015 People-centered tuberculosis care versus standard directly observed therapy: study protocol for a cluster randomized controlled trial *Trials***16** 281

Tola H H, Shojaeizadeh D, Tol A, Garmaroudi G, Yekaninejad M S, Kebede A, Ejeta L T, Kassa D and Klinkenberg E 2016 Psychological and Educational Intervention to Improve Tuberculosis Treatment Adherence in Ethiopia Based on Health Belief Model: A Cluster Randomized Control Trial *PLoS One***11**

Kigozi N G, Heunis J C, Engelbrecht M C, Rensburg A P J van and Rensburg H C J D van 2017 Tuberculosis knowledge, attitudes and practices of patients at primary health care facilities in a South African metropolitan: research towards improved health education *BMC Public Health***17**

Silva R D da, Luna F D T de, de Araujo A J, Camelo E L S, Bertolozzi M R, Hino P, Lacerda S N

B, Fook S M L, Figueiredo T M R M de, da Silva R D, de Luna F D T, de Araujo A J, Camelo E L S, Bertolozzi M R, Hino P, Lacerda S N B, Fook S M L, de Figueiredo T M R M, Silva R D da, Luna F D T de, de Araujo A J, Camelo E L S, Bertolozzi M R, Hino P, Lacerda S N B, Fook S M L and Figueiredo T M R M de 2017 Patients perception regarding the influence of individual and social vulnerabilities on the adherence to tuberculosis treatment: a qualitative study *BMC Public Health***17** 725

Baffour T D and Chonody J M 2012 Do empowerment strategies facilitate knowledge and behavioral change? the impact of family health advocacy on health outcomes *Soc. Work Public Health***27** 507–19

Tengland P A 2007 Empowerment: A goal or a means for health promotion? *Med. Heal. Care Philos.***10** 197–207

TDS-636

AN UPDATE POTENTIAL RISK FACTORS FOR ASTHMA: A SYSTEMATIC REVIEW

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ABSTRACT

Asthma is a heterogeneous entity that is the result of complex interactions between environmental and genetic factors. In fact, WHO through extrapolation from existing data, predicts a further increase in the number of asthmatics by an additional 100 million in 2025.This highlights need for application of standardized and validated methods to enable improved evaluation of temporal trends of asthma prevalence by managed the various risk factors. A systematic review to conduct of various risk factors that caused asthma based on international studies, systematic reviews, and literature reviews. There are 1100 identified articles published between 2014-2018 through database search such as Scopus, Proquest Springer, and Science direct and 12 articles relevance with inclusion criteria choosen for arranged systematic review. According to findings, risk factors can be categorized as internal and external factors such as childhood, adult and very late onset asthma, genetics, indoor allergen exposure, microbiome exposures, respiratory viruses, environmental tobacco smoking, air pollution, smoking, obesity, occupational exposures, sex hormones, stress events and medication related asthma. There are various risk factors that cause asthma and the dominant potential risk factor is external factor such as air pollution, allergens and smoking.

Keywords: asthma, potential, risk factors

1. Introduction

Asthma is a heterogeneous entity that is the result of complex interactions between environmental and genetic factors[1]. Despite therapeutic advances, the continued rise in asthma prevalence suggests that the fundamental causes of asthma are still poorly understood. Akin to the prevalence data, the study of the risk factors and protective relationships in asthma has proven to be difficult due to the myriad of related factors. Of note, there is an extensive degree of overlap between the risk factors for childhood and adult onset asthma [2].

Asthma is a global problem that is estimated to affect 300 million people around the world. The global prevalence of asthma is variable. According to some relatively standardized and comparable studies, the prevalence rate of asthma has varied between 1% and 18% for children and adults[3]. Studies from Turkey conducted relying on the European Community Respiratory Health Survey (ECRHS) methodology reported that the prevalence of asthma was between 0.3% and 7.6%, which are similar to most European countries[4]. Studies have shown that social and environmental factors may affect asthma prevalence, like a lack of exclusive breast feeding, the use of antibiotics, cockroaches at home and the use of feather pillows. A study about the modifiable risk factors of asthma revealed that most of the asthmatic children lived in urban areas, had exposure to tobacco smoke at home, were living in covered houses, had pets and had carpets at home.

Moreover, the increase in knowledge can increase the prevention of asthma associated with family careers. It is important to implement educational and behavioral interventions for the reduction in the prevalence of asthma at the primary level[5]. The purpose of this study was to conduct a systematic review of the various risk factors that cause asthma. The findings originate from various international studies, systematic reviews and literature reviews.

2. Method

2.4.Data sources and collection process

The journal used an English language search strategy that began with asking the following research question: "Which risk factors influence asthma?" The databases used for searching for the journals were Scopus, PubMed, Science Direct and ProQuest. The keywords used were "asthma", potential" and "risk factor". The journal articles were limited to 2014-2018 for the publication years, within the areas of nursing, respiration and English-language journals. The authors chose 12 articles from the 652 suitable titles that were in accordance with the inclusion criteria. The data from the studies was extracted by the means of a data extraction form. This data included the first author and year of publication, the year and country where the survey was carried out, the number of participants, the participants' age and gender, their exposure assessment and the number of participants in each group.

2.5.Article selection criteria

The search resulted in 652 suitable articles, and the authors chose 12 articles that met the inclusion criteria. They then analyzed the results, advantages and limitations and also discussed the study. The study inclusion criteria were that they 1) included various asthma patients, 2) stated all of the risk factors that affect the common causes of asthma in varied age patients and 3) that they referred to various demographics and economic statuses.

2.6.Research design

From the12 selected articles, most of them used a cross-sectional, cohort or case study design.

3. Result

3.1 Respondent's Characteristics

The number of respondents in the selected articles varied between at least 140 respondents to, at most, 65,372 respondents with variations in age from 8 to 25 years old. All of the respondents were individuals who experienced asthma outside of the hospital, both in public areas and in private areas (e.g. their house).

This systematic review chose 12 selected articles originating from 3 continents, namely the Americas, the European continent and the Asian continent. Articles from the Americas came from the USA and Argentina, and those from the Asian continent came from China, Korea, Pakistan and Malaysia.

Articles from the Asian continent are expected to reflect the profile and characteristics of cases of asthma that occur in children in Asian communities. As a comparison of the occurrence and management of asthma cases that occur in developed countries, we refer to articles from several developed countries. The search results originally began with 652 articles, and the authors choose 12 articles that were suitable according to the inclusion criteria and then analyzed the results and engaged in a discussion. A total of 12risk factors for asthma were identified and classified in two potential risk categories: external and internal factors and any potential risk factors from external factor that often caused asthma are air pollution, allergens and cigarette smoking. The risk of bias in individual studies was generally high or intermediate, which may impact the validity of our results. The common weakness was in general in the selection procedure, for example the representativeness

of the sample, there was a justification of the sample size and the percentage of non-respondents. However, the risk of bias was eliminated by following the exclusion criteria.

3.2 Air pollution

The United States Environmental Protection Agency (EPA) defines air pollution as any visible or invisible particle or gas found in the air that is not part of the natural composition of air itself[6].

Research from Orelano *et al.*, 2017on air pollution and asthma identified the relationship where there was an increased risk from air pollution due to it exacerbating pre-existing asthma through acute exposure as well as being involved in the development and impairment of asthma through chronic exposure to ambient air pollutants[3]. Various pollutants include ozone (O_3), nitrogen dioxide (NO_2), particulate matters (PM) such as PM_{10} and sulfur dioxide (SO_2)[3]. Research from Buelo *et al.*, 2017 found that the pollutants of interest, including traffic-related air pollution (TRAP), can cause oxidative stress. The ability of the antioxidant defenses to handle the increased load of reactive oxygen species generated in the lungs after exposure is an important determinant of the risk of subsequent adverse effects[7]. Specific polymorphisms in the antioxidant enzyme genes, such as the glutathione Stransferase genes, GSTM1 and GSTP1, can modify risk of asthmatic responses to pollutants 34,35 and these variants (GSTM1 null and GSTP1 Ile105Val) can also interact with a tumor necrosis factor (TNF) promoter variant (G-308A), which affects the expression of TNF, hence the early inflammatory response asthma[4]

3.3 Environmental tobacco smoke (ETS) or smoking

Environmental tobacco exposure (ETS) is well recognized as increasing the risk of asthma in the early stages of life. Exposure from ETS can caused significant direct and indirect effects such as pulmonary physiology effects on asthma severity[7].

Many studies such as those by Ahmad *et al.*, 2018, Bao *et al.*,2017, Buelo *et al.*, 2018 and Kuruvila *et al.*, 2018 have also explained that the prevalence of asthma was higher in smokers than in non-smokers[2][7][8][9]. Additionally, a previous study showed that smoking might cause an asthma severity increase due to the impairment of lung function, and that it can also decrease the response to drugs and thus make the asthma more difficult to control. Moreover, the incidence of smoking in asthmatic patients is high. Around 20–35% of asthmatic patients from the United States and other Western countries self-reported smoking and 35% of asthmatic adults visiting the emergency department reported smoking. These findings indicate that we should educate the general population, especially the asthmatic population, on the benefits of quitting smoking[2].

3.4 Allergens

Allergens are substances that cause an allergic reaction. Allergens can enter the body by being inhaled, swallowed, touched or injected[6]. More than 26 million people in the US have asthma, and allergic asthma is the most common type, affecting around 60% of people with asthma. Both allergic and non-allergic asthma has the same symptoms, such as shortness of breath and wheezing. Having allergic asthma means that *allergens* trigger your asthma symptoms. Allergens cause an allergic reaction because our immune system thinks that it is harmful. Our immune system responds by releasing a substance called immunoglobulin E (or IgE), and an increase of IgE can trigger the inflammation (swelling) of the airways in your lungs[1].

This can make it harder to breathe and this can trigger an asthma attack. Many allergens can be a trigger for asthma including pet animals (cat, dog, rabbit), and also indoor allergens including house dust mites, mice, cockroaches, animal dander, and fungi. In the context of fungi, both qualitative and quantitative measures of fungal exposure have been linked with an enhanced allergy and asthma risk. Cockroach exposure is an even more potential inducer of sensitization, with a threshold 10- to 100-

fold lower than other indoor allergens. Recent data suggests that exposure and allergic sensitization to mouse antigens is a stronger predictor of severe asthma than cockroach allergens[7]. In a US cohort of inner-city residences, 95% had detectable mouse allergens, with increased levels being associated with cockroach infestation. The allergens of cats have been shown to be strong airway sensitizing agents and the allergens of dogs have been shown to be similar to the allergens of cats, with a mild cross-reaction. These allergens easily become airborne, which increases the risk of asthma or outbreak in susceptible populations. At the same time, the relevant literature reported that early exposure to the presence of animal allergens in the environment can reduce the risk of asthma in children. Therefore, the relationship between pet ownership and asthma has not yet been fully defined[10]

4. Discussion

The Asthma and Allergy Foundation of America (AAFA) analyzes data from across the continental United States and ranks the 100 largest cities where it is challenging to live with asthma. Fourteen years after releasing our first report, they have changed the focus for the 2018 Asthma Capitals report to measure the most critical health outcomes – asthma prevalence, emergency room visits due to asthma attacks and asthma mortality. Ten people die every day from asthma. Most of these deaths are preventable with the proper management, access to adequate medical care, housing improvements and better air quality. However, asthma still remains one of the most prevalent chronic diseases in our nation. It is also one of the most costly diseases with an estimated annual cost to society of $82 billion.

This systematic review was about the risk factors that influence the occurrence of asthma and the articles came from the USA and Argentina and the Asian continent, including China, Korea, Pakistan, and Malaysia. The new focus about causes of asthma in this systematic review than study before is about the 3 big causes of asthma that many people can easily modify to decrease the incidence of asthma in their daily lives. Based on the 12 articles, there are 3 potential risk factors for asthma including air pollution, allergens and smoking. Moreover, the presence of the risk factors due to air pollution in 3 articles referred to the allergens related to the risk factors including pet animals (cat, dog, rabbit), also indoor allergens including house dust mites, mice, cockroaches, animal dander and fungi in 4 articles. The third factors was smoking or environmental tobacco smoking (ETS) as found in 6 articles. The discovery of the most common risk factors in the incidence of asthma included air pollution, allergens and smoking. The limitations of this study were that it included only cross-sectional studies. There are relationships between the risk factors and asthma development to some extent. We further matched case control and prospective cohort studies. More is needed to investigate thoroughly and more time is needed to know the relationships in the future because it need more time concern to analysis cohort data.

The results of the review of many studies can be used to help patients with asthma. Nurses can provide interventions and structured management education to ordinary people. Parents who have children with asthma need to know about prevention and environmental modification assistance should be provided to patients with asthma. The factors that affect the life safety of patients with asthma exacerbation can increased with better prevention and management.

5. Conclusion

Based on the 12 articles, the authors found there to be various risk factors that influence the occurrence of asthma. There are both internal and external factors. The internal factors include gender, age, family history, serum IgE level, ethnicity, obesity, damage and lung function and co-morbid asthma (atopic dermatitis, Gastro Esophageal Reflux Disease (GERD), mental health disorder, chronic sinusitis, chronic bronkhitis, eczema and genetics). The external factors include as pet animals, a lack of breastfeeding, carpets and pillows at home, environmental tobacco smoke, air pollution, allergen, poor access to care, low parental education and occupational exposure. The most common risk factors found in the incidence of asthma are allergens, air pollution, and environmental

tobacco smoke (smoking). The identification of these risk factors can be useful for the development of prevention strategies to decrease asthma exacerbation incidences.

References

[74] Erhan U, Ba S and Evyapan F 2014 Symptom prevalence and risk factors for asthma at the rural regions of Denizli , Turkey **6** 452–8

Kuruvilla M E, Vanijcharoenkarn K, Shih J A and Lee F E 2019 Epidemiology and risk factors for asthma *Respir. Med.***149** 16–22

Orellano P, Quaranta N, Reynoso J, Balbi B and Orellano P 2017 Association of outdoor air pollution with the prevalence of asthma in children of Latin America and the Caribbean : A systematic review and meta- analysis Association of outdoor air pollution with the prevalence of asthma in children of Latin America and the Caribbean : A systematic review and meta-analysis *J. Asthma***0** 1–13

Guarnieri M and Balmes J R 2014 Asthma 1 Outdoor air pollution and asthma *Lancet***383** 1581–92

Welker K, Nabors L, Lang M and Bernstein J 2018 Educational and home-environment asthma interventions for children in urban , low-income , minority families ABSTRACT *J. Asthma***0** 1–14

Foundation A *The Most Challenging Places to Live With ASTHMA Asthma Has a Profound Effect on People and Communities Nationwide* –

Buelo A, Mclean S, Julious S, Flores-kim J, Bush A, Henderson J, Paton J Y, Sheikh A, Shields M and Pinnock H 2018 At-risk children with asthma (ARC): a systematic review 813–24

Ahmad S, Malik Q, Chattha M N, Hussain A W and Abbas M 2018 1 T O 1 2 Y E A R S O L D C H I L D R E N **68** 1493–8

Bao Y, Chen Z, Liu E, Xiang L, Zhao D and Hong J 2017 Risk Factors in Preschool Children for Predicting Asthma During the Preschool Age and the Early School Age : a Systematic Review and Meta-Analysis

Lin J, Wang W, Chen P, Zhou X, Wan H, Yin K, Ma L, Wu C, Li J, Liu C, Su N, Liu G, Xie H, Tang W, Huang M, Chen Y, Liu Y, Song L, Chen X and Zhang Y 2018 Prevalence and risk factors of asthma in mainland China : The CARE study *Respir. Med.***137** 48–54

Akula M, Kulikova A, Khan D A, Brown E S, Akula M, Kulikova A, Khan D A and Brown E S 2018 The relationship between asthma and depression in a community-based sample ABSTRACT **0903**

Kang H, Song H J, Nam J H, Hong S, Yang S, Ju S, Lee S W, Kim T, Kim H and Lee E 2018 Risk factors of asthma exacerbation based on asthma severity : a nationwide population-based observational study in South Korea

Khalid F and Holguin F 2018 A review of obesity and asthma across the life span ABSTRACT **0903**

Larkin E K, Gao Y, Gebretsadik T, Hartman T J, Wu P, Wen W, Yang G, Bai C, Jin M, Ii L J R, Gross M, Shu X O and Hartert T V 2015 New Risk Factors for Adult-Onset Incident Asthma A Nested Case – Control Study of Host Antioxidant Defense **191** 45–53

Appendix

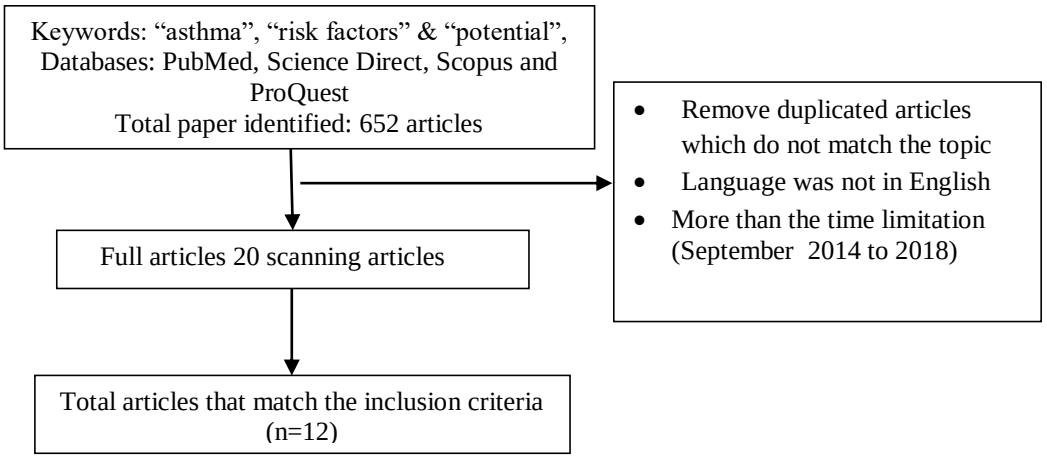

Figure 1. Results of the literature search and article selection.

Author	Number of Sample	Mean Age	Man	Woman
(Ahmad et al., 2018)[8]	150	20-25 yrs	-	50
(Bao et al., 2017) [9]	2150	15 yrs	1000	2050
(Akula et al., 2018)[11]	2168	20 yrs	920	1248
(Buelo et al., 2018)[7]	16109	8-18 yrs	15	-
(Kang et al., 2018) [12]	22130	≥20 yrs-25 yrs	4597	17533
(Khalid and Holguin, 2018)[13]	18 cases	15-20 yrs	18	-
(Lin et al., 2018)[10]	5035	10-15 yrs	3035	2000
(Orellano et al., 2017)[3]	48442	10-25 yrs	21500	26942
(Welker et al., 2018)[5]	140	15-20yrs	60	80
(Erhan, Ba and Evyapan, 2014) [1]	20 cases	8-18 yrs	-	20
(Larkin et al., 2015)[14]	65372	5-10 yrs	45200	20172
(Kuruvilla et al., 2019)[2]	3362	5-18 yrs	-	3362

Table 2 List of risk factors for asthma that form the basis of making a systematic review

Author	**Type of Study**	**Sample size**	**Outcome**
(Ahmad et al., 2018)	Cross-sectional study	150 participant	1. Pet animal 2. Carpet and cockroaches at home 3. Cigarette smoke 4. Food 5. Use Pillow
(Bao et al., 2017)	Cohort study	2150participant	1.Exposure smoke 2.Atopic dermatitis

			3.Family history of asthma and wheezing, 4.Serum Ig E level ≥60kU/l
(Akula et al., 2018)	Cohort study	2168 participant	1.History of nervous 2. Emotional 3. Mental health disorder 4. Depressive symptoms 5.Lifetime psychiatric disorder
(Buelo et al., 2018)	Cohort study	16109 participant	1. Highly : Previous attack, persistent symptoms, poor acces to care 2. Moderate: suboptimal drug regimen, allergic disease, ethnic (e.g. American), poverty and vit D deficiency. 3. Slightly : Environmental, tobacco smoke exposure, younger age, obesity, Low parental education
(Kang et al., 2018)	Cohort Study	22130 participant	1.Comorbid including GERD (Gastro Esophageal Reflux Disease), chronic sinusitis 2. Depression 3. Anxiety
(Khalid and Holguin, 2018)	Case-control study	18 cases	1.Gender : female 2. Obesity 3. Lung function
(Lin et al., 2018)	Cohort study	5035 participant	1. Smoking 2. Allergic rhinitis, chronic bronchitis, COPD, allergic pneumonia, eczema
(Orellano et al., 2017)	Cohort study	48442 participant	1. Polluted environment 2. Outdoor air pollution
(Welker et al., 2018)	Cross-sectional study	140 participant	1. Education diseases 2. Home environment
(Erhan, Ba and Evyapan, 2014)	Case-control study	20 cases	1. Unhealthy diet 2. Treatment non adherence 3. Obesity 4. Decreased physical activity 5. Psychological problems 6. Exposure to environmental triggers

(Larkin et al., 2015)	Case-control study	65372 participant	1. Platelet activating factor acetylhydrolase (PAH-AH) 2. Alfa-tochoferol and PAH Activity
(Kuruvilla et al., 2019)	Cohort-study	3362 participants	1. Childhood onset asthma 2. Genetics 3. Indoor allergen exposure 4. Microbiome exposure 5. Respiratory viruses 6. Environmental tobacco smoke 7. Air pollution 8. Adult onset asthma 9. Obesity 10. Occupational exposure 11. Sex hormone 12. Stress even onset medication

TDS-709

THE OVERVIEW OF THE FAMILY AS SUPERVISOR FOR TAKING MEDICATION AGAINST KNOWLEDGE AND COMPLIANCE WITH MEDICATION FOR PATIENTS WITH LUNG TUBERCULOSIS IN TOBADAK HEALTH CENTER

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ABSTRACT

The increase of Tuberculosis spreading in various regions in West Sulawesi has become a significant issue. Hence, the attention and handling are increasingly massive by various parties. Communities can overcome the problem by taking an active role in compliance and knowledge of tuberculosis therapy. One of factors in the successful therapy is adherence to treatment. Pulmonary tuberculosis can be overcome and prevented if people have good knowledge. This study purpose was to find out about the family as a Drug Control Supervisor on knowledge and medication adherence for patients with pulmonary tuberculosis. This study was a descriptive study with a cross sectional approach. Sampling was carried out in the working area of the Tobadak health center in West Sulawesi. The instrument used was a questionnaire with a total sample of 76 patients. This study showed that 76 pulmonary Tuberculosis patients, (55.3%) men and (44.7%) women. Most patients are in the age group 50-79 (42.1%) years, based on education (52.6%). Good knowledge sufferers (10.5%), sufficient (30.3%), less (59.2%). Compliance in drug use was deivided into obedient category (61.8%) and non-compliance (38.2%). This research showed that adherence to medication is largely a level of lack of knowledge of patients with Tuberculosis.

Keywords: PMO family, pulmonary TB, knowledge, compliance

1. Introduction

The most common cause of failure is the patient's disobedient behavior towards the treatment, so that the cause of the treatment failure and lack of discipline is strongly influenced by the drug supervisor. The working area of the Tobadak Health Center is in a very remote location and it is difficult to reach by the health workers who are supervising the patients taking the medicine. The amount of health workers is not comparable to the number of TB patients, and this causes drop-out cases. The irregularity in taking the medicine is due to the ineffective role of the supervisors. There is a need for the families as supervisors to provide more optimal supervision. One of the causes of failure is the patient's disobedient behavior towards the treatment. The cause of treatment failure and the lack of discipline in the patients with pulmonary TB is strongly influenced by their drugs supervisor[18].

Tuberculosis is a global health problem that mostly occurs in developing countries like Indonesia[1,4]. Nearly 3 million people die each year from Pulmonary TB[2,3]. It is present in a third of the world's population. This disease is a major public health problem in Indonesia although the government's TB control programs have been carried out over the past few decades[1,4]. The medical treatment failure and a lack of discipline in the sufferers of pulmonary TB are strongly influenced by

their drug supervisor[5,6,7]. Tuberculosis (TB) is an infectious disease that is acquired through the bacteria that cause the disease. About 90 percent of those who become infected show no sign of the disease, but the organism has a risk of developing active TB later on. Left untreated, a third of those who do go on to develop the disease will die from it. Many ways to control tuberculosis have been carried out; the incidence and deaths from tuberculosis have declined but the worldwide mortality rate from tuberculosis is still high at 1.8 million in 2016[8,10,11,18].

According to the WHO in the 2016 Global Tuberculosis Report, there were 10.4 million new cases of tuberculosis worldwide in the 2015 statistics, equivalent to 28,500 people worldwide exposed to tuberculosis every day. Indonesia is included in the list of 6 countries which cover 60% of the new tuberculosis cases in the world. Indonesia is in second rank in the world as the biggest contributor of tuberculosis patients after India[22,23,29].

Based on the WHO Global Tuberculosis Report (2017), the incidence of Indonesian tuberculosis is up to 391 per 100,000 population and the mortality is 42 per 100,000 population. The number of new TB cases in Indonesia is 420,994 cases in 2017 (data as of May 17, 2018)[22,23]. The prevalence in 2017 is 919 per 100,000 population while in 2017, it was 628 per 100,000 population. In 2017, there were 425,089 cases of tuberculosis. This can be compared to all tuberculosis cases found in 2016, which amounted to 360,565 cases[22,23]. According to the 2014 West Sulawesi Health Service report regarding TB cases, it found 1,596 cases. In 2015, there were as many as 1,607 TB cases with the highest number of cases being in Polewali Mandar District with as many as 425 cases. This was followed by Mamuju Regency with a total of 388 cases and the lowest case was in Mamasa District with 74 cases. There was an increase in the number of TB cases in the 2016 amounting to 2,330 with the deaths as many as 2.88 per 100,000 population with the highest number of new cases being found by smear (+) TB in Mamasa Regency, by as many as 740 cases. Polewali Mandar District had as many as 425 cases, in Mamuju there were as many as 410 cases, in Majene there were 250 cases, in North Mamuju there were 116 new cases and in Central Mamuju, there were as many as 230 cases[12,14].

2. Research methods

2.1. Types of research

The type of research was quantitative using the descriptive observational method with a cross-sectional design. This was to obtain an overview of the level of knowledge and medication adherence of the pulmonary TB patients in the working area of the Tobadak Community Health Center, Mamuju Tengah District, West Sulawesi.

2.2. Population and sample

2.2.1. Population. The population used in this study was affordable, met the research criteria and were usually accessible to the researchers from their groups. The population in this study was the family of the tuberculosis patients (intensive and advanced stage) in the working area of the Tobadak Community Health Center, Mamuju Tengah District, West Sulawesi.

2.2.2. Sample. The samples were a part of an affordable population that was used as the research subjects. The sampling technique used in this research was purposive sampling. A total sample of 76 respondents were selected according to the inclusion criteria (TB patient's husband/wife or their parents, age of the TB patients ≥ 17 years, TB sufferers in the period of DOT treatment) and exclusion criteria (having hearing loss, not cooperative, patients who hid their disease).

2.3.Research variables

The variables in this study were distinguished between the independent variables (free) and the dependent (bound) variable. The independent variable in this study was the supervisor related to the patient taking their medicine and the dependent variable was their knowledge and compliance with taking the medication.

2.4.Research instrument

The instrument for knowledge consists of the knowledge of the pulmonary TB patients. The knowledge was assessed using a questionnaire with 2 choices for the answers, namely right and wrong. The instruments related to compliance when taking the medication were questionnaire sheets and observation sheets. For the questionnaire sheets, there were 10 questions with 2 choices of answer, namely yes and no. The TB-01 and TB-02 forms are known widely in the various health centers in Indonesia.

2.5.Data analysis

The data obtained at the time of the study was analyzed using descriptive observational analysis techniques systematically with a cross-sectional approach to illustrate the level of knowledge and adherence to taking medication.

3. Results

From a total of 76 respondents, 42 respondents are men (55.3%), while the rest are women 44.7%. The age distribution shows that of a total of 76 respondents, there are different frequencies for each age group. Most of the respondents were aged 50 - 79 years (42.1%), followed by the age range of 17 - 34 years (26%). In addition, most of the respondents only had an elementary school level for their education background (52.6%). There were 7 respondents in the undergraduate category (9.2%) (see Table 1).

Table 1. Characteristics of the family members as drug supervisors

Category		**Frequency**	**Percentage**
Gender	Men	42	55.3
	Women	34	44.7
	Total	76	100.0
Age	50-79 year	32	42.1
	35-49 year	18	23.7
	17-34 year	26	34.2
	Total	76	100.0
Education	Elementary School		
	Junior High	40	52.6
	School	16	21.1
	Senior High	13	17.1
	School	7	9.2
	Undergraduate	76	100.0
	Total		

Table 2. Distribution of knowledge and the patient's compliance to taking the medication

Variable	**Frequency**	**Percentage**

Knowledge	Good	10	13.2
	Moderate	35	46.1
	Less	31	40.8
	Total	76	100.00
Compliance	Compliant	62	81.6
	Non-compliant	14	18.4
	Total	76	100.0

From the total of 76 respondents, the results showed that the level of knowledge of disease and therapy in pulmonary TB patients was varied. There were only 10 respondents that had knowledge to a good level (13.2%), while most of the respondents (35 respondents) had knowledge at a moderate level (46.1%) and some had the lowest level of knowledge (40.8%). Related to the compliance of the TB patient, the results showed that most of the respondents were included in the compliant category (81.6%), while the rest (14 respondents) were in the non-compliant category (18.4%).

4. Discussion

TB eradication in Indonesia has been carried out nationally since 1969 through the Tuberculosis Eradication Program by the Ministry of Health of Indonesia. Since 1995, the program was intensified using the Directly Observed Treatment Short Course (DOTS) strategy which recommended by WHO[22,23]. However, the successful rate of treatment has not yet reached the target set by the Ministry of Health of Indonesia, which was that 85% of pulmonary TB sufferers must be cured. In addition, the WHO has estimated that since 2013, cases of pulmonary TB with MDR (Multi-Drug Resistant) in Indonesia have increased. This can be proven by the data on the incidence rate of new cases being as many as 6,800[9,13,15]. The failure of TB patients in terms of their treatment can be caused by many factors, such as drugs, disease and the sufferers themselves. This is usually caused by co-morbidities or immunological disorders. The factors related to the patients themselves can include a lack of knowledge about TB, cost, laziness when it comes to treatment and feeling healed[8,10,11]. Knowledge and attitude are also important when it comes to increasing the obedience to taking the medication, as low knowledge and education can influence the patient's understanding of carrying out the drug treatment[21,24].

To improve compliance, there needs to be information transmitted through both education and the media to patients about the benefits and importance of compliance to achieving treatment successfully, giving the patients confidence about the effectiveness of the drugs in healing, while also giving the patients an awareness of the risk of non-compliance[9,13]. TB infection control measures are constrained by the way that the health workers direct the patients through effective communication. The low number of health care providers is not comparable with the number of patients in health institutions, there is an absence of isolation TB units for patients in health institutions and there is a limited availability of masks as protection for the health workers[20,24]. Knowledge and attitude is also important when it comes to increasing the obedience to taking medication. A low level of knowledge and education can affect the patient's understanding of taking the medication [20,24]. Quality of life is one of the main criteria for knowing the health service interventions such as morbidity, mortality, fertility and disability. In developing countries over the past few decades, the incidence of chronic disease has begun to replace the dominance of infectious diseases in society. Carrying the burden of chronic illness means that the patient's quality of life becomes a concern for health service[13,16].

One of the components of DOTS is direct supervision when the patient consumes the anti-tuberculosis drugs. To ensure the regularity of the treatment, the family can be drug supervisors, because they are identified, trusted and approved by both the health workers and the sufferers. Besides that, they are respected and live close to the sufferers, and they are willing to help the

sufferers by volunteering[9,11,12]. It is expected that the families will care more about the TB patients through family control, so the supervision will thus be more controlled[20]. There is a significant relationship between the role of the supervisors with taking medication and drinking compliance[24]. The compliance with taking medication for pulmonary TB patients can be achieved by involving the family as their supervisors when taking medication[17,21]. Therefore, increasing the level of discipline and encouraging the patients to be obedient in the treatment program requires support from the patient's family or from their fellow patients[17,19,21]. The selection of the correct drugs supervisor can be done by the health workers or by the community. The duty of the drug-taking supervisor is to monitor the pulmonary tuberculosis patients to encourage them to take their medication regularly until the completion of the treatment. This includes encouraging the patients with pulmonary tuberculosis to seek treatment regularly and to remind the patients with pulmonary tuberculosis to check their sputum at a predetermined time. Thus it is expected that the TB patients will take the initiative to take the medicine regularly when there is a supervisor accompanying them[21].

Previous studies can be used as a basis for the researchers to empower drugs supervisors according to green health influenced by 2 main factors, namely behavioral and external factors. Realizing health behavior requires several stages as part of a health promotion program, which is known as a model of assessment and follow-up (Precede-Proceed Model)[3]. The theory of the Precede-Proceed Model is oriented towards creating a society that successfully changes behavior due to health promotion interventions. Precede has 5 stages; social diagnosis, epidemiological diagnosis, behavior and environmental diagnosis, organizational education and diagnosis and the administration and diagnosis policy. Procede has 4 stages, namely: implementation, process evaluation, impact evaluation and the outcome evaluation[5,6,14]. The process above can be applied by receiving assistance from outside environmental factors. In this case, this refers to the family as the drug supervisors for the patients who suffer from pulmonary TB.

5. Conclusion

From the results of this study, it can be seen that the research conducted at the health center in the Tobadak central work area showed varied results, namely concerning the level of knowledge, especially that of the family as drug supervisors in relation to the medication adherence of the pulmonary TB patients. The research results indicate that the majority are caused due to a lack of knowledge on medication handling, the methods of therapy and medication obedience of Tuberculosis patients, especially in the Tobadak area, West Sulawesi Province, Indonesia.

The patients should remain obedient in terms of taking the medication and the patient’s family as the drug supervisors must continue to provide support to the patients by always reminding and motivating patients to take their medication regularly and taking the time to assist whenever the patients need help.

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References

[1] Cheng L, Wang L, He M, Feng S, Zhu Y and Rodgers C 2018 Perspectives of children, family caregivers, and health professionals about pediatric oncology symptoms: a systematic review

Support. Care Cancer 26 2957–71

[2] Diana I, Sari, Rofingatul M and Sudibyo 2016 Hubungan Pengetahuan dan Sikap dengan Kepatuhan Berobat pada Pasien TB Paru yang Rawat Jalan di Jakarta Tahun 2014 Relationship between Knowledge and Attitude and Patient Compliance Among Outpatient Tuberculosis in Jakarta Province 2014 243–8

[3] Green, L. W., & Kreuter, M. W 2005. Health program planning: An educational and ecological approach. McGraw-Hill New York

[4] Hadifah Z 2015 Pemenuhan Tugas Pengawas Menelan Obat (Pmo) Bagi Penderita Tuberkulosis (Tb) Sebagai Indikator Penyakit Menular Di Puskesmas Kota Sigli Kabupaten Pidie 17–23

[5] Handayani L 2012 Breastfeeding Education in Term of Knowledge and Attitude through Mother Support Group 6 65–72

[6] Harahap J, Amelia R, Wahyuni A S and Andayani L S 2018 Community empowerment program for increasing knowledge and awareness of tuberculosis patients, cadres and community in Medan city IOP Conf. Ser. Earth Environ. Sci. 125

[7] Indah M 2018 Tuberkulosis InfoDATIN 2018 Kementeri. Kesehat. Republik Indones. 6

[8] Kementerian Kesehatan 2015. Profil Kesehatan Indonesia 2014. Kementerian Kesehatan Republik Indonesia (Vol. 51).

[9] Kiwuwa M. S, Charles K, & Harriet M. K. 2005. Patient and health service delay in pulmonary tuberculosis patients attending a referral hospital: a cross-sectional study. BMC Public Health, 5(1), 122.

[10] Mohammadi T, Bansback N, Marra F, Khakban A, Campbell J R, FitzGerald J. M, Marra C. A. 2017. Testing the External Validity of a Discrete Choice Experiment Method: An Application to Latent Tuberculosis Infection Treatment. Value in Health, 20(7), 969–975.

[11] Yazdani-Charati J, Rezai M S, Fendereski A, Mohammadi S and Alipour N 2017 Treatment delay and total delay among pulmonary tuberculosis patients in the North of Iran: Application survival data analysis Tanaffos 16 13–21

[12] Ndwiga J M, Kikuvi G and Omolo J O 2016 Factors influencing knowledge on completion of treatment among tb patients under directly observed treatment strategy, in selected health facilities in embu county, Kenya Pan Afr. Med. J. 25 1–8

[13] Bikmoradi A, Masmouei B, Ghomeisi M and Roshanaei G 2016 Impact of Tele-nursing on adherence to treatment plan in discharged patients after coronary artery bypass graft surgery: A quasi-experimental study in Iran Int. J. Med. Inform. 86 43–8

[14] Mokrousov I, Shitikov E, Skiba Y, Kolchenko S, Chernyaeva E and Vyazovaya A 2017 Molecular Phylogenetics and Evolution Emerging peak on the phylogeographic landscape of Mycobacterium tuberculosis in West Asia : De fi nitely smoke , likely fi re 116 202–12

[15] Mulogo E M, Nahabwe C, Bagenda F and Batwala V 2017 Determinants of treatment completion among rural smear positive pulmonary tuberculosis patients: a cross-sectional survey conducted in south-western Uganda Infect. Dis. Poverty 6 104

[16] Muniroh N, Aisah S and Mifbakhuddin - 2013 Faktor-faktor yang berhubungan dengan kesembuhan penyakit tuberculosis (TBC) paru di wilayah kerja puskesmas Mangkang Semarang Barat. J. Keperawatan Komunitas 1 33–42

[15] Nhavoto J A, Gronlun A and Klein G O 2017 Mobile health treatment support intervention for HIV and tuberculosis in Mozambique : Perspectives of patients and healthcare workers PLoS One 1–13

[17] Reierson I Å, Solli H and Bjørk I T 2015 Nursing students' perspectives on telenursing in patient care after simulation Clin. Simul. Nurs. 11 244–50

[18] Perrone R, Lavezzo E, Riello E, Manganelli R, Palù G, Toppo S, Provvedi R and Richter S N 2017 Mapping and characterization of G-quadruplexes in Mycobacterium tuberculosis gene promoter regions 1–11

[19] Sukartini Tintin 2018 Pelatihan Sistem Interaksi Kader Pasien oleh FKp Unair Guna Cegah Drop Out TB di Surabaya
[20] Sukartini T 2015 Pengembangan Model Peningkatan Kepatuhan Berbasis Teori Sistem Interaksi King Dan Pengaruhnya Terhadap Kepatuhan Pasien Tuberkulosis Paru
[21] Swerdlow S H, Campo E, Pileri S A, Harris N L, Stein H, Siebert R, Advani R, Ghielmini M, Salles G A and Zelenetz A D 2016 The 2016 revision of the World Health Organization (WHO) classification of lymphoid neoplasms Blood blood-2016
[22] Ma L, Li Z, Tang Z, Sun F, Diao L, Li J, He Y and Dong B 2017 Prevalence and socio-demographic characteristics of disability in older adults in China : Findings from China Comprehensive Geriatric Assessment Study Arch. Gerontol. Geriatr. 73 199–203
[23] Trisnowati H, Universitas U and Yogakarta R 2017 Peran Pengawas Menelan Obat (Pmo) Dalam Upaya Penyembuhan Penderita Tb Paru (Studi Pada Puskesmas Besimaka , Kecamatan Malaka , Nusa Tenggara Timur)
[24] Ukwaja K N, Alobu I, Nweke C O and Onyenwe E C 2013 Healthcare-seeking behavior, treatment delays and its determinants among pulmonary tuberculosis patients in rural Nigeria: a cross-sectional study BMC Health Serv. Res. 13 25
[25] Venturini E, Tersigni C, Chiappini E, de Martino M and Galli L 2017 Optimizing the management of children with latent tuberculosis infection Expert Rev. Anti. Infect. Ther. 15 341–9
[26] Vries G De, Aldridge R W, Caylà J A, Haas W H, Sandgren A, Hest N A Van and Abubakar I 2014 Epidemiology of tuberculosis in big cities of the European Union and European Economic Area countries 1–8
[27] Strock S B, Gaudieri S, Mallal S, Yu C, Mitchell D, Cogan J, Mason W, Crowe D and Loyd J E 2015 Fibrosing mediastinitis complicating prior histoplasmosis is associated with human leukocyte antigen DQB1 * 04 : 02 − a case control study ??? 1–5
[28] Kastien-hilka T, Abulfathi A, Rosenkranz B, Bennett B and Schwenkglenks M 2016 Health-related quality of life and its association with medication adherence in active pulmonary tuberculosis – a systematic review of global literature with focus on South Africa Health Qual. Life Outcomes
[29] WHO 2018. Global Tuberculosis Report 2018 WHO Library Catalouging in Publication Data. Frence.egrating community-and other civil society

TDS-775

FINANCIAL BURDEN OF TUBERCULOSIS PATIENTS IN LOW AND MIDDLE INCOME COUNTRIES: A SYSTEMATIC REVIEW

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ABSTRACT

In order to inform the development of appropriate strategies to improve financial risk protection, we conducted a systematic literature review of the financial burden of tuberculosis (TB) that is faced by the patients and their affected families. Apart from ensuring that the healthcare services are fairly financed and delivered in a way that minimizes direct and indirect costs, there is a need to ensure that TB patients and their families receive appropriate income replacement and other social protection interventions. Most countries aim to provide TB diagnosis and treatment free of charge through the public health services. The method involved a systematic review of financial risk protection with a study selection criteria using a Scopus, Science Direct, Pubmed and Spinger link database search with 2013-2018 for the year of publication range. The search used the English language with 'financial burden', 'tuberculosis patients', 'low and middle income countries' and 'protection intervention' as the keywords. The PICOS approach was used. In total, 1674 journal were found and 15 journals were found to be appropriate and thus assessed. This review shows that while costs are catastrophic for many patients, they are minimal for others. It is crucial to identify the factors that contribute to the costs incurred and to financial ruin.

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1. Introduction

In order to inform the development of appropriate strategies to improve financial risk protection, we conducted a systematic literature review of the financial burden of tuberculosis (TB) faced by the patients and their families. The total cost of TB for the patients can be catastrophic. Income loss often constitutes the largest financial risk for patients [1]. Apart from ensuring that the healthcare services are fairly financed and delivered in a way that minimizes direct and indirect costs, there is a need to ensure that the TB patients and their families receive appropriate income replacement and other social protection interventions [2]. Most countries aim to provide TB diagnosis and treatment free of charge within the public health services [1]. However, many TB patients are still facing very high direct and indirect costs due to the TB illness and care-seeking, thus hampering access and putting people at risk of financial ruin and further impoverishment [3].

The World Health Organization (WHO) is developing a post-2015 Global TB Strategy that highlights the need for all countries to progress towards universal health coverage to ensure "universal access to needed health services without financial hardship in paying for them", as well as social protection mechanisms for "income replacement and social support in the event of illness". One of the tentative global targets for the strategy is "no TB-affected family facing catastrophic costs due to TB", which is desired to be reached globally by 2020. This target reflects the anticipated combined financial risk protection effect of the progressive realization of both universal health coverage and social protection [4].

Universal health coverage has long been on the global TB control agenda, which stresses the need for universally accessible, affordable and patient-centered services. Social protection has emerged more recently as a key policy area for TB care and prevention [5]. Social protection involves schemes to cover the costs beyond direct medical costs, including the compensation of lost income.

Examples of social protection schemes include sickness insurance, disability grants, other conditional or unconditional cash transfers, food assistance, travel vouchers and other support packages [6]. Such schemes exist in most countries but they may not be fully implemented due to inadequate financing or the insufficient capacities of the healthcare and social welfare systems [1]. Furthermore, they may not include TB patients among those eligible [4].

2. Research Methods

The method of this review was a systematic review of financial risk protection with the study selection criteria using the Scopus, ScienceDirect, Pubmed and Spinger link databases between 2013 - 2019 for the date of publication. The journals had to be in the English language, the keywords used were financial burden, tuberculosis patients, low and middle income countries and protection interventions. The PICOS approach was used. The journals that were found totaled 1674 journals and 15 journals were found to be appropriate and thus were assessed [3].

3. Results

In total, 1674 journals were found and 15 journals were deemed as appropriate and thus assessed. The database search found 270 in Scopus (n=85), Science Direct (n=115), Pubmed (n=45) and Spinger link (n=35). The duplicated articles that were deleted totaled 45; the reviewed abstracts found to be inappropriate were n=225, and there were also articles that did not qualify in terms of mentioning financial burden or that involved tuberculosis patients in low in middle income countries n= 135. The review of the full text stage n = 90, the articles that did not match the inclusion criteria n= 65 and the articles finally used n= 15. This review shows that while the involved costs are catastrophic for many patients, they are minimal for others. In total, 49 studies fulfilled the inclusion criteria. One study was without any cost data but it was still included since it provided data on coping strategies.

3.1 Study Characteristics

The study characteristics were that 2 articles were cross-sectional, 1 article was a quantitative study and 12 were randomized control trials.

3.2 Results of the Review Study

This review demonstrates that the economic burden of seeking TB care is often very high for the patients and that it affects the associated households. Clearly, accessing TB care and continuing treatment comes with a high risk of financial ruin or further impoverishment for many people. In most settings, income loss is a dominating reason for the high costs. This should be expected as the burden is determined by a range of factors, such as socioeconomic status, clinical needs, the health system structure, the TB service delivery model, the distance to the health services, insurance coverage, the capacity to work, the existence of any social protection scheme and the effectiveness of informal social networks supporting the patients and their families [7].

4. Discussion

This review shows that, while the costs are catastrophic for many patients, they are minimal for others. It is crucial to identify the factors that contribute to the costs incurred and thus to financial ruin [8]. Unfortunately, few studies provided sufficient details about the models and context of care to allow us to quantify the relative importance of the different factors. However, the available data hints at some key explanations and intervention entry points [9].

Affordable health services, as well as social protection schemes, are needed to enable access, to reduce delays and to compensate for direct and indirect costs. Social protection schemes cover the general categories of vulnerable persons, such as those with disabilities or sickness and other causes

of limited or reduced income. TB patients may, in some settings, meet the criteria for such support [7].

Another option is to use generic or locally defined irreversible coping strategies as proxy indicators for catastrophic costs [9].

Further work is needed to assess the correlation between a high total cost in relation to income and seemingly irreversible coping strategies [10].

5. Conclusions

This review shows that while costs are catastrophic for many patients, they are minimal for others. It is crucial to identify the factors that contribute to the costs incurred and thus to financial ruin.

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References

[1] Siroka A, Law I, Macinko J, Floyd K, Banda R P, Hoa N B and Tsolmon B 2016 The effect of household poverty on tuberculosis **20** 1603–8

[2] Tesfahuneygn G, Medhin G and Legesse M 2015 Adherence to Anti-tuberculosis treatment and treatment outcomes among tuberculosis patients in Alamata District, northeast Ethiopia *BMC Res. Notes* **8** 1–11

[3] Tanimura T, Jaramillo E, Weil D and Raviglione M systematic review 1763–75

[4] World Health Organization 2017 *END TB Global Tuberculosis Report 2017*

[5] Schrager L, Olesen O, Vekemans J, Lewinsohn D, Shea J, Hanekom W and Drager N 2018 Global Report on Tuberculosis Vaccines 2018

[6] Craig G M, Joly L M and Zumla A 2014 “Complex” but coping: experience of symptoms of tuberculosis and health care seeking behaviours--a qualitative interview study of urban risk groups, London, UK. *BMC Public Health* **14** 618

[7] Foster N, Vassall A, Cleary S, Cunnama L and Churchyard G 2015 Social Science & Medicine The economic burden of TB diagnosis and treatment in South Africa *Soc. Sci. Med.* **130** 42–50

[8] Hutchison C, Khan M S, Yoong J, Lin X and Coker R J 2017 Financial barriers and coping strategies: a qualitative study of accessing multidrug-resistant tuberculosis and tuberculosis care in Yunnan, China *BMC Public Health* **17** 1–11

[9] Fuady A, Houweling T A J, Mansyur M, Burhan E and Richardus J H 2019 Effect of financial support on reducing the incidence of catastrophic costs among tuberculosis-affected households in Indonesia : eight simulated scenarios **7** 1–14

[10] Yellappa V, Lefèvre P, Battaglioli T, Narayanan D and Van Der Stuyft P 2016 Coping with tuberculosis and directly observed treatment: A qualitative study among patients from South India *BMC Health Serv. Res.* **16** 1–11

TDS-866

THE CORRELATION BETWEEN FAMILY KNOWLEDGE ABOUT PULMONARY TUBERCULOSIS WITH FAMILY EFFORTS TO PREVENT SPREADING INFECTION OF PULMONARY TUBERCULOSIS AT PUSKESMAS KARANG TALIWANG NTB

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ABSTRACT

Pulmonary tuberculosis is contaminated infection that cause by *Mycobacterium tuberculosis*. This study was purposed to analyze correlation between family knowledge about pulmonary tuberculosis with family efforts to prevent spreading infection of pulmonary tuberculosis at Puskesmas Karang Taliwang NTB. This was correlational research with cross-sectional approach. Population were family pulmonary tuberculosis in work area of Puskesmas Karang Taliwang. Samples were taken by using purposive sampling and obtained 25 samples. Independent variable was family knowledge about pulmonary tuberculosis. Dependent variable was family efforts to prevent spreading infection of pulmonary tuberculosis. Data were taken using the questionnaire. Data were analyzed by using Spearman's rhotest with $\alpha \leq 0,05$. This study shows that there were moderate correlation between family knowledge about pulmonary tuberculosis with family efforts to prevent spreading infection of pulmonary tuberculosis ($p=0,000$, $r=0,695$). It can be concluded that are more higher knowledge, so more higher family efforts to prevent spreading infection of pulmonary tuberculosis. The results of this study suggest the nurses to arrange a health education related to pulmonary tuberculosis and the further research can develop a better research relate this study.

Keywords: knowledge, family of patients with pulmonary tuberculosis

Introduction

Transmission of pulmonary TB in the family can be done through coughing, sneezing, talking or spitting. Patients excrete TB germs into the air, known as bacilli [1]. Baciilli can be resolved in free air for 1-2 hours, depending on the presence or absence of ultraviolet light, good facilities and humidity. In humid and germicidal situations it can take days to months [2]. Patients with pulmonary TB with a positive smear status can transmit to at least 10-15 other people, including their own family. TB germs can become dormant for years by forming thick waxy cell walls. If a person's immune system decreases, then it is likely to be bigger TB [3].

One of the causes is the low or reduced family of transmission of the pulmonary TB virus. There neeeds to be an understanding the family in overcoming causes, ways of transmission, and preventing infections that increase the number of infections, and that increase the number of sufferers. Knowledge can be obtained through reading books, getting information from health workers, or from other facilities. The principle is the learning process, where there will be changes in knowledge and abilities (behavior) in the subject of learning itself [4].

After a preliminary study at the Karang Taliwang Health Center at 5 out of 10 respondents who had families with pulmonary TB sufferers did not understand how to care for those with pulmonary TB at home. In accordance with the results of the observation, pulmonary TB patients who visited the Puskesmas for treatment also did not close their mouth properly when sneezing and coughing and removing saliva. By the results from a brief interview, answers were obtained from 6 out of 10

families with pulmonary TB patients at home from eating utensils such as plates, cups, and containers. 4 out of 10 family members remained in one room with sufferers. Health education has also been carried out by the health center, but only in the community health center, not concentrated in several special places around the homes of residents. Every family who comes into contact with patients are given a short health education to care for patients with pulmonary TB, this is not done at the visual home by the puskesmas but in the homes of residents, so that loans allow for less optimal health.

Based on data from the Mataram City Health Office, Karang Taliwang Health Center ranks second with the highest number of pulmonary TB sufferers after Ampenan Health Center (65 people) in 2015. Based on data obtained from the Karang Taliwang Health Center, the number of tuberculosis patients from 2014-2015 were: 2014 amounted to 46 people from the total suspected tuberculosis of 202 people. While the number of tuberculosis sufferers in 2015 was 55 people from the total suspected tuberculosis of 247 people. TB data in Puskesmas in Mataram City in 2015 were: Ampenan Health Center at 65 people, Tanjung Karang Health Center at 24 people, Karang Pule Health Center 19 people, Karang Taliwang Health Center at 63 people, Mataram Health Center at 26 people, Selaparang Health Center 29 people , Pagesangan Health Center 31 people, Cakranegara Public Health Center 46 people, Dasan Agung Public Health Center 21 people, Dasan Cermen Public Health Center 23 people. Data from the Karang Taliwang Health Center for the third month were 11 people in January-March, 11 people in April-June, 14 people in July-September, and 27 people in October-December [5].

Home and family is an environment that is often interactive for positive TB sufferers, so the potential for disease transmission to occur means that people who live at home / have close contact with patients have a high risk of contracting it. The amount of bacillus that are exposed and continuous can facilitate transmission of infection. Long contact with patients with a higher percentage for household members. A bedtime history will also increase the likelihood of exposure to the TB bacillus. A lack of family knowledge in understanding causes, modes of transmission, and efforts to prevent infection can increase the number of spreads of infection, thus increasing the number of sufferers [4]. In addition, until now there are still many people who do not yet know of a free TB health care program at the Puskesmas.

Various efforts to overcome and terminate the chain of transmission of TB infection have been carried out through health programs at the Puskesmas level, in the form of developing a TB prevention strategy known as the DOTS strategy (directly observed treatment), which has been shown to reduce the number of infections, and also prevent the development of MDR (Multi Drugs Resistence) -TB, but the results are still felt not as expected. The main focus of the DOTS strategy is the discovery and healing of patients, with priority for infectious TB patients. This strategy will decide on TB transmission and is expected to reduce TB incidence in the community. Finding and healing patients is the best way to prevent transmission of pulmonary TB and break the chain of infection [3]. Therefore family support is very necessary, because it supports the success of one's treatment by always reminding the patient to take medication, a deep understanding of the patient who is sick and encouragment for them to continue to be diligent in their treatment. In addition, health workers such as doctors and nurses as part of professional health care providers are expected to always increase their knowledge and skills to be more perfect for detecting and diagnosing TB disease at an early stage.

This research uses behavioral theory from Lawrence Green who tries to analyze human behavior, departing from the level of health. That a person's health is influenced by two main factors, namely: behavioral factors (behavioral causes) which consist of predisposing factors, supporting factors, and driving factors, and non-behavior causes. Based on the above-mentioned explanation, the researchers felt interested in examining the relationship between the level of family knowledge and family efforts in preventing infection with pulmonary TB in the Karang Taliwang Community Health Center.

Research methods

The design of this study is correlational by using the method of collecting data in a cross sectional manner. Correlational research aims to expose important events that occur today. The population in this study were families of pulmonary TB sufferers in the Karang Taliwang Health Center Working Area during January - December 2015 at 63 people with the sampling technique used purposive sampling. The independent variable in this study is the level of family knowledge of patients with pulmonary TB and the dependent variable is family efforts in preventing transmission of pulmonary TB infection. The ethical clearance was carried out at the Airlangga university medical school. After being declared worthy of ethics, researchers then conducted research. Before collecting data, researchers chose patients who were used as respondents using purposive sampling adjusted for inclusion criteria and exclusion criteria. Then the collection of data is done door-to-door to the family homes of patients who have been determined to be respondents. After having the research procedure explained, the families of patients who were willing to respond were given informed consent to be signed and approved. The instrument used in the study was a questionnaire to determine the level of family knowledge and preventive behavior towards pulmonary tuberculosis that has been tested for validity and reliability. Furthermore, the data were analyzed using Spearman's rho statistical test with a significance level of <0.05, meaning that if Ho is rejected, it means that there is a relationship between the level of family knowledge and family efforts in preventing transmission of pulmonary TB infection.

Results

Data on respondents' characteristics will be presented in the table, consisting of age, gender, education level, and respondent's work. Then it will be presented also at the level of family knowledge about pulmonary TB, family efforts in preventing transmission of pulmonary TB infection, and the relationship of the level of family knowledge about pulmonary TB with family efforts in preventing transmission of pulmonary TB infection.

Table 1. Distribution of Characteristics of Respondents in the Karang Taliwang Community Health Center in Mataram, NTB on 8-15 January 2016

Characteristics	f	Percentage (%)
Age		
17-25 (late teens)	5	20
26-35 (early adult)	13	52
36-45 (final adult)	6	24
46-55 (early elderly)	1	4
Gender		
Man	16	64
Women	9	36
Education		
No School	3	12

Primary education (SD/SMP)	15	60
Secondary education	5	20
(SMA/SMK)	2	8
Higher education (D3/S1)		
Job		
Do not have a job	2	8
Private work	3	12
Government Employees	1	4
Farmer	2	8
Laborer	6	24
Entrepreneur	11	44

Based on table 1, it is known from the total number of respondents was at 25 people, it can be seen that the majority of respondents were in the early adult (26-35) years was at 13 respondents (52%). A total of 16 respondents were male (64%) and 9 respondents were females (36%). For education level, most respondents had a basic education, namely 15 respondents (60%). And for work, it can be seen that the majority of respondents have jobs as entrepreneurs, at 9 respondents (36%).

Based on table 2, it is known that the level of knowledge of respondents related to pulmonary TB, most respondents have a lack of knowledge, which is at 10 people (40%).

Table 2. Knowledge Distribution of Respondents in the Karang Taliwang Community Health Center in Mataram, West Nusa Tenggara on January 8-15, 2016

Variable		***Frequency***	***Percent***
Knowledge	Good	8	32
	Enough	7	28
	Less	10	40
	Total	25	100

Based on table 3, it is known that family efforts in preventing infection with pulmonary TB, at most respondents have efforts to prevent transmission of infections that are lacking, namely at 9 people (36%).

Table 3. Distribution of family efforts in preventing infection transmission in the Karang Taliwang Community Health Center in Mataram, West Nusa Tenggara on January 8-15, 2016

Variable		*Frequency*	*Percent*
Preventive Behavior	Good	8	32
	Enough	8	32
	Less	9	36
	Total	25	100

Table 4 shows Spearman's rho statistical test results obtained p value = 0,000 (p <0.05), thus the hypothesis (H1) is accepted and means that there is a relationship between family knowledge about pulmonary TB with family efforts in preventing transmission of infection in patients with pulmonary TB. Correlation coefficient shows a positive correlation (r = 0.695) which means it has a strong correlation. While the direction of the relationship is positive because the value of r is positive, which shows the higher level of knowledge, the more efforts to prevent transmission of infection.

Table 4. Cross tabulation of the relationship of family knowledge about pulmonary TB with family efforts in preventing transmission of pulmonary TB infection in the working area of Karang Taliwang Community Health Center, Mataram, West Nusa Tenggara on January 8-15, 2016

Knowledge	**Family efforts in preventing transmission of pulmonary TB infection**			**Total**
	Good	Enough	Less	
Good	5	3	0	8
Enough	3	2	2	7
Less	0	3	7	10
Total	8	8	9	25

Spearman's rho p=.000, r = 0.695

Discussion

Based on the results of the study, it was found that most of the respondents' knowledge was included in the less category, at 10 people. Conversely, only 8 respondents had good knowledge, and 7 respondents had sufficient knowledge. Understanding of knowledge according to [6] Notoatmodjo (2012) is the result of knowing, which occurs after people make sense of a particular object. Sensing occurs through the human senses, namely the senses of sight, hearing, smell, taste, and touch. Most knowledge is obtained from the sense of sight and sense of hearing. Knowledge is a very important domain in shaping one's actions. Knowledge is also influenced by the learning process that has distinctive characteristics by acquiring something new, unknown, and not yet understood, causing someone to get, know, and understand the information provided.

From the results of this study, most respondents could not answer question number 15, which is about talking to people with pulmonary TB at close range without using a mask that would not cause transmission of pulmonary TB disease. This is due to the low education level of respondents, resulting in less and limited acceptance of respondents to information. In addition, the low level of knowledge of respondents also occurred because they claimed that they still received less information or health education about pulmonary TB. In fact, the provision of health education can cause one's knowledge to increase. This opinion is in accordance with the opinion of Notoatmodjo [6] which states that health education is an effort or activity to help individuals, groups, and communities in improving the ability of both knowledge, attitudes, and skills to achieve optimal healthy living.

Submission of information through health education can change one's understanding from not knowing to knowing, and not being able to be capable. The lack of knowledge of respondents, apart from education factors, can also be influenced by age, employment, and income. The more mature the age and the higher income from one's work, the more mature the way of thinking of that person, which will later affect one's knowledge level.

Based on the results of the study, it was found that most family efforts to prevent transmission of pulmonary TB infection were included in the less category, at 9 people. While those included in the categories of good, namely at 8 respondents, and those included in the sufficient category also have the same number of respondents in the good category, namely at 8 respondents. According to Lawrence Green's theory cited by Notoatmodjo (2003) states that the enabling factors are factors that support a reason to behave or realize motivation to take action. According to Sunaryo [7], socio-economic is one of the exogenous factors that influences a person's behavior. This statement is supported by the theory of Snehandu B. Kar as quoted by Notoatmodjo (2003) that someone will behave if there is a situation that allows them to act. This opinion is supported by the results of research from Ristyo [8] which states that there is a relationship between the socio-economic level and the incidence of pulmonary TB in Jombang. Theory Green & Kreuter (1991) revealed that factors that influence, change, maintain, or improve behavior in a more positive direction one of which is health education. Although health education and health counseling can increase knowledge, where respondents are directed to understand about prevention of transmission of pulmonary TB infection. Then this knowledge will bring respondents to think and build emotions and shape the respondents' beliefs to be able to act in a more positive direction. This theory is supported by the results of research from Handayani [9] which states that there is an influence of health education in the control and treatment groups in Surakarta as well as the results of research from Noor [10] which states that there is an influence of health education on health knowledge and attitudes of clients with pulmonary TB in Sragen. Associated with poverty, which is closely related to work and income, low-income people usually have a low economic level. Income will have much influence on the behavior of maintaining individual health and in maintaining the family. This is because income affects education and a person's knowledge in looking for food intake and treatment affects the environment of residence such as the condition of the house and its condition. The incidence of pulmonary TB is closely related to one's socio-economic condition, which can be known by one of them from work, then family income. Families with sufficient income or in middle to upper economies have relatively better behavior in maintaining health. According to WHO [1], the relationship between poverty and TB is reciprocal, TB is a cause of poverty and because of poverty people suffer from pulmonary TB. This theory is in line with Rosmaniar's research [11] which also proves that there is a close relationship between family income and the incidence of positive smear pulmonary TB in Bekasi. People with low-income jobs are more at risk of increasing the incidence of pulmonary TB than those who work with high income.

From the results of this study, it was found that most respondents could not answer question number 4, about washing and drying the patient's mattress is not an important thing to prevent transmission of pulmonary TB. The lack of family effort in preventing infection transmission is due to the understanding of the family that the patient's mattress is only dried in the sun and washed once a month, if the mattress is dirty. Poor family efforts can be because most families cannot afford to provide separate rooms for sufferers with other family members for economic reasons. In addition, from the observations of researchers during conducting research, most of the respondents' homes lack direct sunlight, rarely families supervise patients in taking drugs directly, and provide masks for sufferers and other family members at home, thus making family efforts in prevention of transmission of this infection fall into the less category. It is supported by the results of a study from Firdiansyah [12] which states that there is a significant influence between ventilation and lighting on TB pulmonary disease in Surabaya Genteng District and the results of Adnani [13] stating that the risk of home residents is sky TB sufferers the ceiling of his house, windows, floors, ventilation, kitchen

smoke holes, the lighting that does not meet the requirements has the risk of pulmonary TB compared to residents who live in homes that are not dense and fulfill the requirements as a healthy home.

Based on the results of statistical analysis using Spearman's rho, using the degree of significance $\alpha \leq 0.05$, which indicates a significant difference with the value of $p = 0{,}000$ ($p < 0.05$), with the strength of a strong correlation ($r = 0.695$), which means H1 is accepted which is a relationship between the level of family knowledge and prevention of infection transmission in pulmonary TB patients in the working area of Karang Taliwang Health Center, Mataram City, NTB. This result is supported by research conducted by Nurfadillah [14] which states that there is a relationship between knowledge about pulmonary TB and prevention measures for transmission of pulmonary TB.

The results of this study are in accordance with the behavioral theory of Green & Kreuter (2005), because Green & Kreuter state that knowledge is one of the predisposing factors that influence a person's behavior. Knowledge or cognitive domains are very important domains in shaping one's actions (Krathwohl, 2002). The theory shows that knowledge has a relationship with efforts to prevent transmission of pulmonary TB infection. The results of this study are also in accordance with the study from Bowo [15] which states that there is a relationship between knowledge and attitudes of patients with the prevention behavior of transmission of pulmonary TB. The lower the level of knowledge, the lower the effort to prevent infectious pulmonary TB infection. The results of this study are also in accordance with the research conducted by Habibah [16] that there is a relationship between the level of knowledge of patients on the behavior of prevention of transmission in Riau. According to the Depkes RI [3], people who have higher levels of education are oriented towards preventive measures, know more about health problems and have better health status. A high level of education will make it easier for a person or community to obtain and digest information to then make choices in health services and implement a healthy life. This theory is supported by the results of research from Riswan (2008) which states that there is a relationship between knowledge and about pulmonary TB disease with the behavior of families and sufferers of pulmonary TB in Yogyakarta. According to Notoatmodjo [6], the factors that influence behavior are the environment, both the physical, socio-cultural and economic environment. Environmental factors are the dominant factors in a person's behavior. The behavior of someone who is not good can also be due to the lack of clarity of attitude and lack of motivation. Transmission of TB is easy among people who live at home. This theory is in line with the research from Sasilia [17] which states that there is a relationship between age, knowledge, comorbidities, and nutritional status with transmission of pulmonary TB in families living in houses in East Aceh. According to the Depkes RI (2011), poor ventilation can cause uncomfortable air (stiffness, bronchitis, recurrent asthma, colds) and dirty air (transmission of respiratory diseases). Ventilation is useful for circulating / changing air in the house and reducing humidity. Human sweat is also known to affect moisture. The more people in one room the higher the humidity, especially because of water vapor from both breathing and perspiration. Humidity in a closed space where there is a lot of human being is higher than the humidity outside the room. Rooms with ventilation that do not meet the requirements, if occupied by someone, there will be an increase in air humidity caused by evaporation of body fluids from skin or due to breathing. In conditions where there is no good air exchange, there will be an increase in the number and concentration of germs, so that the risk of transmission of respiratory disease becomes higher. Pulmonary TB is an infectious disease that can spread rapidly in conditions of poor air circulation due to ventilation that does not meet health requirements. Pulmonary TB will be easily transmitted to housing conditions with high humidity, as well as ventilation conditions that do not facilitate the occurrence of air exchange in the house. This theory is in line with the results of research from Adnani [13] which states that the risk of suffering from pulmonary TB is 5 times higher in residents who live in homes where ventilation does not meet health requirements.

Based on work, this research shows that respondents work more as traders. According to village potential statistics, the most employment or livelihoods in rural areas in Indonesia are agriculture,

which is 97.75%, second place is services by 0.58% and third place is trade 0.57% [18]. This is supported by the research of Rukmini [19] which states that TB risk factors that have a significant effect on the incidence of adult pulmonary TB in Indonesia are age, sex, lighting energy, actions to open room windows, nutritional status and household contact TB.

Based on age, in this study showed that more respondents were aged 26-35 years. According to Azwar [20], the age of an individual starts from the time of birth until the birthday. The more mature the level of maturity and strength of a person will be more mature in thinking and working. In terms of public trust, someone who is more mature will be more trusted than someone who is not mature enough. This is a result of experience and maturity, the older a person is, the more conducive to using coping with the problem at hand. This theory is also supported by research from Dotulong [21] which states that there is a significant relationship between age and TB pulmonary disease incidence in North Tapanuli.

From the results of Riskesdas, it is known that the prevalence of pulmonary TB tends to increase according to increasing age and the highest prevalence at the age of more than 65 years. The prevalence of pulmonary tuberculosis in men is 20% higher compared to women, besides the prevalence is three times higher in rural areas compared to urban areas and four times higher in low education compared to higher education [22]

The most common pulmonary TB is found in young or productive ages from 15-50 years. With the current demographic transition, the life expectancy of the elderly is higher. At more than 55 years old, a person's immunological system decreases, so it is very vulnerable to various diseases, including pulmonary TB disease. Patients with pulmonary TB themselves tend to be higher in men than women. According to Hiswani, who was quoted by the WHO, in one year there were around 1 million women who died from pulmonary TB. It can be concluded that more deaths occur in women caused by pulmonary TB compared to the consequences of the process of pregnancy and childbirth. In the male kelamim type, this disease is higher because of smoking, and alcoholic beverages which results in a decrease in the body's defense system, making it easier to be exposed to agents causing pulmonary TB. According to Haryanto's research (2004), there were proportions according to sex, men were 54.5% and women were 45.5% who had pulmonary TB. Most of them do not work that is equal to 34.9% and have a low education of 62.9% [22]

Knowledge, age, gender, occupation, and income of respondents are things that play a role in changing the behavior of respondents. Actions or behaviors that are based on knowledge will be long lasting than actions that are not based on knowledge, so that respondents with a good level of knowledge, their actions in preventing infection transmission will be good too, and vice versa. If the respondents' knowledge is included in the less category, then the respondent's actions will be even less. So even with age, work and income. The more mature the age and the higher income from one's work, the more mature the person's thinking is.

Conclusion

There is a relationship between the level of family knowledge about pulmonary TB with family efforts in preventive behavior of pulmonary TB infection in the work area of Karang Taliwang Health Center, Mataram City, NTB.

The results of this study are expected to increase the motivation of nurses to provide health education and counseling to people who still do not understand how to prevent transmission of pulmonary TB infection. Puskesmas are expected to hold activities and policies that involve families in preventing transmission of infection with pulmonary TB so that families can better understand pulmonary TB and how to prevent it. It is expected that respondents can maintain and improve knowledge, and change behavior that is not good in terms of preventing transmission of pulmonary TB infection, so that the spread of pulmonary TB in the family can be prevented. For future researchers, further research is needed on family attitudes about pulmonary TB disease, with a wider coverage area and more sample sizes.

References

[1] World Health Organization (WHO) 2004 GLOBAL TUBERCULOSIS CONTROL WHO REPORT 2004 Surveillance , Planning , Financing The World Health Organization monitors the tuberculosis epidemic , evaluating surveillance ,

[2] Suhaymi E 2008 Mengenal Penyakit Tuberkulosis (TB)

[3] Depkes RI 2008 Profil Kesehatan Indonesia 2007

[4] Notoatmodjo S 2012 *Promosi Kesehatan dan Perilaku Kesehatan* (Jakarta: Rineka Cipta)

[5] Dinas Kesehatan Kota Mataram 2015 Profil Kesehatan Kota Mataram

[6] Notoatmodjo S 2012 *Promosi Kesehatan dan Perilaku Kesehatan (Edisi Revisi 2012)*

[7] Sunaryo 2004 *Psikologi untuk Keperawatan* (Jakarta: EGC)

[8] P R S, A M I A and Nahariani P 2012 Hubungan Tingkat Sosial Ekonomi Dengan Angka Kejadian Tb Paru Bta Positif Di Wilayah Kerja Puskesmas Peterongan Jombang Tahun 2012 (The Relation Of Economic Social With Occurerence Number Lungs Tuberculosis With Positive BTA In The District Of Puskesmas Peterongan Jombang 2 012) **2012** 31–8

[9] Handayani T E and Purwanti O S Pengaruh pendidikan kesehatan terhadap tingkat pengetahuan dan sikap masyarakat tentang pencegahan tuberkulosis paru di dusun kayangan kecamatan karanganyar kabupaten karanganyar 169–80

[10] Noor A 2013 Pengaruh Pendidikan Kesehatan Terhadap Pengetahuan, Sikap Klien Dan Keluarga TB Paru di Wilayah Kerja Puskesmas Miri Sragen

[11] Rosmaniar 2009 Faktor-Faktor yang Berhubungan Dengan Kejadian TB Paru di Wilayah Puskesmas Kecamatan Bekasi Utara.

[12] Firdiansyah W N 2012 Pengaruh Faktor Sanitasi Rumah dan Sosial Ekonomi Terhadap Kejadian Penyakit TB Paru BTA Positif di Kecamatan Genteng Kota Surabaya 210–8

[13] Adnani H 2006 Hubungan Kondisi Rumah Dengan Penyakit TBC Paru Di Wilayah Kerja Puskesmas Karangmojo II Kabupaten Gunungkidul

[14] Nurfadillah, Yovi I and Restuastuti T 2014 Hubungan Pengetahuan Dengan Tindakan Pencegahan Penularan Pada Keluarga Penderita Tuberkulosis Paru Di Ruang Rawat Inap Paru Rsud Arifin Achmad Provinsi Riau

[15] Wasis Setyo Bowo 2015 Hubungan Antara Tingkat Pengetahuan Dan Sikap Terhadap Perilaku Pencegahan Penularan Tb Paru Pada Mantan Penderita Tb Paru Di Wilayah Kerja Puskesmas Sungai Durian Kabupaten Kubu Raya Wasis 1–20

[16] Habibah 2012 Hubungan Tingkat Pengetahuan Keluarga Tentang TB Paru Terhadap Perilaku Pencegahan Penularan Penyakit TB Paru di Puskesmas Sidomulyo

[17] Utara U S 2013 Faktor-faktor risiko penularan tb paru pada keluarga yang tinggal serumah di kabupaten aceh timur tesis

[18] Badan Pusat Statistik 2005 *Statistik Potensi Desa di Indonesia.*

[19] W R C U 2014 Kejadian Tb Paru Dewasa Di Indonesia (Analisis Data Riset Kesehatan Dasar Tahun 2010)

[20] Saifuddin A 2009 *Sikap Manusia, Teori, dan Pengukurannya*

[21] Dotulong J F J, Sapulete M R and Kandou G D Hubungan faktor risiko umur, jenis kelamin dan kepadatan hunian dengan kejadian penyakit tb paru di desa wori kecamatan wori 57–65

[22] Manalu 2007 Faktor-Faktor Yang Mempengaruhi Kejadian TB Paru dan Upaya Penanggulangannya

TDS-930

EFFECTIVENESS OF EDUCATIONAL INHALER TECHNIQUE INTERVENTIONS TO IMPROVE THE ADHERENCE OF COPD MANAGEMENT: SYSTEMATIC REVIEW

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ABSTRACT

Inhaler therapy is the principal pharmacological management of chronic obstructive pulmonary disease (COPD). Each inhaler has certain usage rules to be most effective, proper education of inhaler technique is an important part to improve treatment adherence. This systematic review is to conduct of various educational inhaler technique for COPD indexed in Science direct, ProQuest, Scopus, Ebsco, Pubmed for original research study, then we reviewed systematically. There were 15 journals with RCTs study designs that discussed about educational inhaler technique. This systematic review found five programs, they are face-to-face trainings, pharmacist counseling, health coaching, a model of self-management education, and virtual teach-to-goal. The results of studies was collected mostly for 6 months. An appropriate education of inhaler technique to improve adherence on COPD management which can be used as a monitor effort of COPD management.

Keywords: COPD, adherence, educational inhaler technique , inhaler technique

1. Introduction

Chronic Obstructive Pulmonary Disease (COPD) has been considered a significant global health problem which is a major cause of morbidity and mortality in countries of high, middle, and low income [1]. COPD is a preventable and treatable disease that is characterized by limited air flow not being completely irreversible. Nevertheless, the burden of each disease among patients is high and patients may be frequently hospitalized due to exacerbation [2]. Effective therapy options and evidence-based guidelines have been developed in recent years, disease control continues to be suboptimal in patients with chronic obstructive lung disease like asthma and COPD. There are numerous reasons for the lack of disease control in asthma and COPD patients. One important reason is the incorrect application of inhaler devices, which is associated with worsened health outcomes, such as increased risk of hospitalization and insufficient disease control [3].

The prevalence and severity of COPD in Vietnam has been reported in recent literature with the prevalence rate was found to be 6.7% in 12 Asian countries, while another study indicated that over half of those infected experienced exacerbation episodes[4]. According to research seventy-seven of 103 patients (74.8%) did at least one wrong step. Patients using Handihaler had the lowest compliance failure (42.5%). Low education level is the single most important factor related to the wrong technique [5].

Inhaler therapy is the principal pharmacological management of chronic obstructive pulmonary disease (COPD). The choice of device must be based on the needs of the patient [6]. Many inhaler devices have been developed, and each has specific instructions for use to ensure proper delivery of

drug doses to the airways. Although a number of different devices have enabled technological improvements in airway drug delivery, they certainly still have disadvantages [7]. Most patients in daily use still make inhalation errors. Incorrect inhaler techniques can cause poor control of disease, such as poor adherence, and an increased risk of hospitalization.[8].

The availability of effective treatments such as various educational inhaler techniques is pivotal to the implementation of successful intervention strategies [9]. Some studies do this by way of a systematic literature review, the search in 2000 to 2018 showed a significant influence on the research conducted and there did not show the level of scientific evidence in conducting research in the form of journals. There are some educations of inhaler technique that are used to study the development of interventions. This paper offers a systematic review of studies that investigate of educational interventions focusing on inhaler technique in COPD patients and assess their overall effectiveness.

2. Methods

We use four steps to identify and select journals that meet the criteria specified in this PRISMA review (Figure 1). First, we conducted a major search on the database (Scopus, SAGE journal, and Proquest) to identify relevant English works published in 2013-2019. The keyword used was Chronic Obstructive Pulmonary Disease (COPD), Educational Inhaler Technique, Inhaler Technique, and Adherence.

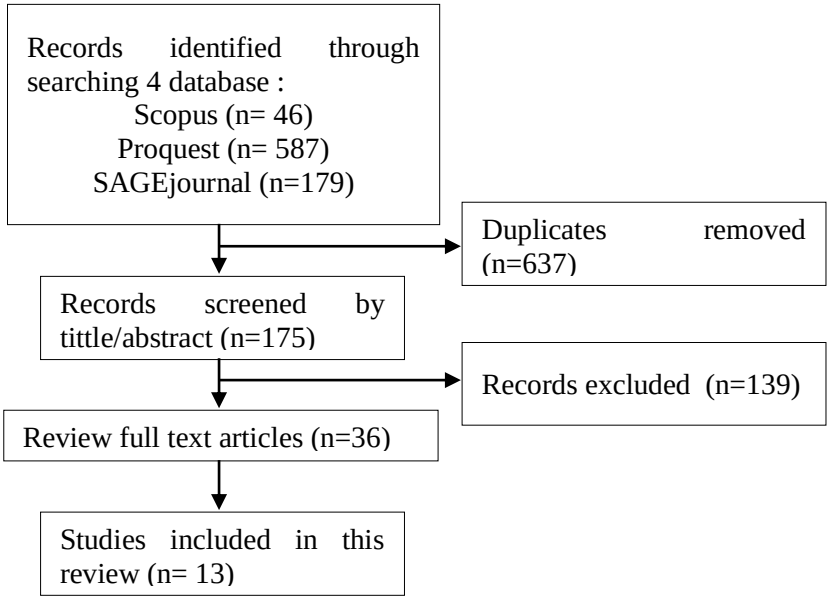

Figure 1. PRISMA flow diagram

The inclusion criteria for the article are articles use English and explain equational inhaler technique for patients with COPD. Articles would be excluded if the review/systematic review study. The feasibility of the study was assessed using the PICOT approach : participants are patients with COPD, interventions are types of educational inhaler technique, no comparison, outcomes are improved inhaler adherence, HRQoL, self-efficacy, self-management, the correct technique for using inhalers, and reduce the incidence of exacerbation. Study design is randomized controlled trial study (RCTs) and cross sectional.

3. Results

There were 13 randomized control trial designs and cross sectional studies of the journals reviewed. All participants were aged ±>45 years with COPD. There was one study with criteria for acute exacerbation participants, and one study with patients experiencing chronic bronchitis with COPD.

Almost all interventions included a physical or video demonstration of inhaler use. Interventions used face-to-face trainings, pharmacist counseling, health coaching, a model of self-management education and Virtual Teach-to-goal™. Six studies used face-to-face trainings. Two studies used pharmacist counseling. Two studies used health coaching. one study used a model of self-management education. Two studies used Virtual Teach-to-goal™.

4.1 Face-to-face Trainings

The research conducted by Aydemir (2015) used face-to-face training by cross sectional study for 3 minutes. The study was a real life desgin and no intervention was done except for the standard face-to-face training sessions conducted by the same trainer[10]. The patients were asked to administer medication using their own inhaler device and the inhalation procedure was observed. The main treatment devices were evaluated (quick-relief inhalers not included). Inhalation ability was assessed based on the Turkish version of the "A Guide to Aerosol Delivery Devices for Respiratory Therapists" published by the American Association of Respiratory Care (AARC) and the inhalation ability chart prepared by the inhalation therapies workgroup of Turkish Respiratory Society. Since the number of inhalation procedure steps was different for each device, three common statuses were defined to facilitate statistical analyses: correct use (CU), incorrect use (IU) and inadequate (false) use (FU). Inhaler device setup and inhalation technique were described using demonstration devices. The inhalation technique was observed immediately after the training [10]. The results of this research show that the physicians should pay attention, in particular, while prescribing pMDIs to elderly patients. Such patients' ability to use the device should be observed after the training, and the physicians should consider DPIs or home-nebulizer devices if inhalation cannot be achieved with the correct technique.

The research conducted by Yoo et al. (2017) used face-to-face trainings by Randomized Controlled Trials for one month. At first visit, we obtained the informed consent from each patient and conducted a knowledge assessment about their chronic airway disease, and tested the inhaler technique before the patients received the educational program. At the second and third visits, this education program was repeated. Questionnaires were completed by patients and physicians at the first visit and third visit to evaluate the following items; the knowledge about COPD, COPD assessment test (CAT), inhaler use technique, and measurement items of each topic were composed of six (knowledge), eight (CAT), seven (inhaler use), three (satisfaction of the patients), and five items (satisfaction of the physicians)[11]. This study showed that in the primary care setting, a comprehensive education program including inhaler training and COPD management resulted in correct inhaler usage and improvement of CAT score, suggesting that such programs should be extended further in the primary care of COPD.

Research Ngo, Phan, Vu, Dao, & Phan (2019) used a cross sectional design with face-to-face interviews which conducted after patients stabilized the acute condition. This study asked patients to demonstrate how they used their inhalers at home and to answer the 12-item Test of Adherence to Inhaler (TAI) [12]. The result of study showed that worse dyspnea, greater health condition impairment, and an increased frequency of exacerbations and hospitalizations were found to be associated negatively with correct inhaler use and treatment adherence. Instructions to COPD

patients about using inhalers should focus on correct inhaler technique and adherence even when feeling healthy.

Research conducted by Takaku et al., (2017) which focused on evaluate the number of instructions that are necessary to minimize errors in using pressurized metered-dose inhaler (pMDI), soft mist inhaler (SMI), and dry powder inhaler (DPI). The intervention program consisted of face-to-face training Inhalation guidance/evaluation was performed successively from 2 times up to 5 times at intervals of 2 weeks to 1 month until no further improvement was observed [13]. This study concluded that it is necessary to repeat at least three times of instructions to achieve effective inhalation skills in both asthma and COPD patients.

Face-to-face training in a study by Goris, Tasci, & Elmali, (2013) was conducted on an intervention group and control group. The intervention group was educated using an inhaler by verbal training, demonstration movie, and leaflet. A follow-up after 3 months was carried out in both groups. Patients in the control group were not educated but have been checked with the same indicators. Quality of life, condition of dyspnea, and attack improved 3 months later in the intervention group compared with the controls. Data were collected by a face-to-face interview for 15 months by the researcher. Three months after the interview, patients were invited for the second one (follow-up). Training took 15–20min on average and was held in a separate room apart from the outpatient clinic in order not to interrupt the conversation[14]. The result of study showed that a planned inhaler training given to the patients with COPD was found to decrease attack frequency and dyspnea, and improve quality of life.

Research conducted by Pothirat et al., (2015) assessed inhalation technique compliance at their routine medical (pre-training) visits by a qualified respiratory nurse without prior notification. The respiratory nurse observed each step of the inhalation technique and recorded each incorrect step. After the assessment, patients were given instructions, face-to-face demonstrations regarding the correct use of the controller devices, and training until they could use the devices correctly. One month later (post-training visit), all patients were requested to demonstrate their inhalation techniques and were reevaluated by the same nurse [8]. The result of study showed that formal training resulted in a statistically significant decrease in percentage of incorrect techniques for all devices and for the pMDI.

4.2 Pharmacist Counseling

There are two articles that used pharmacist counseling. An article from Axtell, Haines, & Fairclough, (2017) used the pharmacist counseling to compare the effectiveness of 4 different instructional interventions in training proper inhaler technique. These inhaler-naive subjects were randomly assigned to 1 of the 4 interventions using a dice randomization process: (1) reading a manufacturer-published MDI package insert pamphlet, (2) watching a CDC video demonstrating MDI technique, (3) watching a general popular YouTube video demonstrating MDI technique, or (4) receiving direct instruction of MDI technique from a pharmacist or fourth-year pharmacy student. Utilizing a timer, all interventions were limited to 2 minutes. Although previous studies suggest that successful health care counseling sessions may require approximately 6 to 20 minutes, the allocation of 2 minutes was considered to be more in line with the amount of time that a community pharmacist may routinely be able to devote to inhaler instruction [15]. The result showed that a 2-minute pharmacist counseling session is more effective than other interventions in successfully educating patients on proper inhaler technique. Pharmacists can play a pivotal role in reducing the implications of improper inhaler use.

Research conducted by Tommelein et al., (2013) used randomized controlled trials to knowing the impact of community pharmacist interventions on pharmacotherapeutic monitoring of patients with chronic obstructive pulmonary disease (COPD). This study was divided into two groups. Control group patients were given usual nonprotocol-based pharmacist care. Patients in the intervention group received a protocol-defined two-session intervention; one session at the start of the study and one session at the 1month follow-up visit. All interventions were given during one-to-one counselling sessions. The duration of interventions was not predetermined; however, we estimated the duration to be between 15 and 25min. To support interventions, pharmacists were provided with information leaflets on COPD, demonstration inhaler units and a list of practical solutions to specific nonadherent behavior [16]. The results this study showed that inhalation score and medication adherence were significantly higher in the intervention group compared with control group.

4.3 Health Coaching Programme

Research conducted by Derya Tuluce (2018) used health coaching on respiratory functions, treatment adherence, self-efficacy, and quality of life in chronic obstructive pulmonary disease patients. The implementation of "the education of COPD patient" initially on topics such as disease physiopathology, diagnosis of signs and symptoms, regular use of medications, exercises, nutrition, and control of exacerbations was performed by power point took about 40 to 50 minutes. After the education implementation, printed educational booklets were given as written materials, which were developed for the patients. The coaching agenda included treatment adherence in 4 coaching interventions for the first 4 weeks, self-efficacy in the next 4 interventions for the next 4 weeks, and the quality of life in the next 4 interventions for the last 2 months. The interventions were held in a room with a quiet and calm atmosphere where there was no interaction with other patients in the outpatient clinic. It took about 30 to 45 minutes [17]. After health coaching intervention, self-efficacy scale general score, and St. George Respiratory Questionnaire, total scores were found statistically significant different between 2 groups in interaction values. There was a significant difference in the 8-item Morisky Adherence Scale scores for degree of treatment adherence between the groups.

Another research conducted by Crane, Jenkins, Goeman, & Douglass (2014) used health coaching to improving inhaler techniques on patients with asthma and COPD. The comprehensive education intervention group received one-on-one technique coaching, which included critical observation of their device technique, verbal instruction regarding ways to improve their technique, physical demonstration of correct technique and encouragement. The device information pamphlets were standard educational pamphlets supplied by Astra-Zeneca (North Ryde, NSW, Australia) and GlaxoSmithKline (Ermington, NSW, Australia) to healthcare practitioners. Device technique was reviewed in both groups, at baseline and at 3 and 12 months. In the active group, this was done prior to education. Device technique was assessed discretely according to current National Asthma Council (NAC) guidelines and critical inhaler technique steps were scored using the NAC checklist for each device. The checklists can be downloaded from the NAC website http://www.nationalasthma.org.au/publication/inhaler-technique-in-adults-with-asthma-or-copd. Lung function, asthma control and medication adherence were also measured as part of the wider intervention[18]. Post education there was a statistically significant improvement in the proportion of participants with correct technique in the active group at 3-month follow-up. The results of this study indicate that provision of passive written information alone, even in pictorial form, is not adequate as a form of inhaler education for older people with COPD.

4.4 A model of self-management education

Research conducted by Bourbeau (2017) used self-management education program with coaching of a case managers who focused on treatment adherence, inhaler techniques, smoking cessation, and the use of an action plan for exacerbations for 1 year in six family medicine clinics (FMCs). Throughout the intervention, respiratory therapists acted as both educators and case managers. The initial visit lasted around 90 minutes and consisted ofan assessment of educational needs, a spirometry, and a 1-hour encounter with the educator (respiratory therapist). During this encounter, the following topics were covered: COPD etiology and pathophysiology, COPD control, smoking cessation, use of a written action plans for acute exacerbations, adequate inhaler technique, and medication adherence[19]. The result this study showed that The COPD self-management educational intervention reduced unscheduled visits to the clinic and improved patients' quality of life, self-management skills, and knowledge.

4.5 Virtual Teach-to-goal™

There are two articles that used Virtual Teach-to-goal™ adaptive learning. Article by Press, Kelly, Kim, White, & Meltzer (2016) used randomized controlled trials to develop and pilot a virtual teach-to-goal™ (V-TTG™) inhaler skill training module, using innovative adaptive learning technology. This study is the first to demonstrate the efficacy of a self-directed adaptive V-TTG™ learning tool to teach the inhaler technique. Among hospitalized patients with asthma or COPD. Then answer adaptive self-assessment through short-answer questions[20]. This study found that the innovative V-TTG™ adaptive learning strategy is an effective tool to teach the MDI technique to hospitalized patients with asthma or COPD. After inhaler teaching with V-TTGÔ, almost all participants demonstrated the improved inhaler technique with reduced rates of inhaler misuse, and nearly half had complete mastery, demonstrating the potential efficacy of this learning tool.

Research conducted by Thomas et al.(2017) used videoconferencing inhaler education program delivered at the patient's home and whether the training improved inhaler. The participant download the videoconferencing software (Cisco Jabber Video for TelePresence 4.5 software) and to complete a test videoconferencing visit. Training was given for prescribed inhalers. After the initial visit, most participants were offered a spacer. Participants were to complete 3 monthly videoconferencing visits with a study pharmacist trained in TTG methodology. The TTG method breaks down the technique for each inhaler into a standardized checklist of 12–17 steps, depending on the inhaler. With pharmacist input, the checklists were adapted. Each TTG training visit began with the pharmacist assessing the participant's baseline inhaler technique and assigning a pre-training score. The pharmacist then demonstrated correct technique and gave verbal instruction. After that educational intervention, the participant re-demonstrated inhaler technique, and each round was assigned a score of post-training 1, post-training 2, etc. The training was repeated until the participant demonstrated mastery (missed $\leq$ 2 steps) or after 3 cycles. TTG scores were used both as an educational tool to assist with inhaler training and as an objective measure of inhaler technique[21]. The results of this study showed that Inhaler training provided by a pharmacist using home videoconference technology in this pilot study improved inhaler technique during each participant visit, and improvements were sustained at the 1- and 2-month video- conference visits. In addition, participants reported improvements in COPD self-efficacy, COPD health-related quality of life, and inhaler adherence following the inhaler training.

4. Discussion

Various effective treatments are available for COPD, but patients still do not achieve treatment goals, partly because of low adherence to therapy. Non-compliance with treatment is associated with ineffective monitoring of symptoms, errors in inhaler techniques, and decreased quality of life related to health. There are many types of education on inhaler techniques that have been applied to COPD patients. This review showed that educational inhaler technique are effective, at least in the short term. Most of the results of the study show the impact of educational programs on inhaler techniques to increase the use of appropriate inhalers, quality of life, self-efficacy, self-management, and treatment adherence. Retrieved from seven articles related to improving of inhaler technique [10,11,13,8,15,18,20], there is one article that has an impact on quality of life [14]. Two articles related to improving treatment adherence [12,22]. There is one article that discusses quality of life and self-management [19]. Retrieved from two articles to improving quality of life, self-efficacy, and treatment adherence[17,21]. This systematic review showed that face-to-face trainings are more widely used with six journals. Face-to-face trainings increase the use of the correct inhaler technique [10,11,13,8], impact on quality of life of COPD patients [14], improve treatment adherence even when feeling healthy [12].

5. Findings

This systematic review has several limitations is some subjects may not be motivated to learn the right inhaler techniques as well as patients who are aware of the fact that inhalers are an important element in treating their COPD so that this can lead to bias. A list of standard assessments is used for all participants to minimize bias, and ratings for each step in the inhaler technique only give 2 choices : competent or incompetent. The educational inhaler technique what extended further in the primary care of COPD are effective to improve the correct inhaler technique, quality of life, and treatment adherence.

References

[1] Celli BR, Macnee W 2004 Standards for the diagnosis and treatment of patients with COPD : a summary of the ATS / ERS position paper 932–46.

[2] Gregoriano C, Dieterle T, Breitenstein A, Dürr S, Baum A, Maier S, Arnet I, Hersberger KE, Leuppi JD 2018 Use and inhalation technique of inhaled medication in patients with asthma and COPD : data from a randomized controlled trial 1–15.

[3] Melani AS, Bonavia M, Cilenti V, Cinti C, Lodi M, Martucci P, Serra M, Scichilone N, Respiratoria F, Elena IR 2011 Inhaler mishandling remains common in real life and is associated with reduced disease control *Respir Med*. **105** 930–8.

[4] 2003 ORIGINAL ARTICLE COPD prevalence in 12 Asia – Pacific countries and regions : Projections based on the COPD prevalence estimation model

[5] Al-worafi YM 2018 Evaluation of inhaler technique among patients with asthma and COPD in Yemen *J Taibah Univ Med Sci*. **13** 488–90.

[6] GOLD 2018 The Global Strategy For Diagnosis, Management and Prevention of COPD (updated 2016), the Pocket Guide (updated 2016)

[7] Luiza M, Souza DM, Meneghini AC 2009 Knowledge of and technique for using inhalation devices among asthma patients and COPD patients **35** 824–31.

[8] Pothirat C, Chaiwong W, Phetsuk N, Pisalthanapuna S, Chetsadaphan N, Choomuang W 2015

Evaluating inhaler use technique in COPD patients 1291–8.

[9] Backer V, Hedegaard M, Ma MJ 2013 Adherence to inhaled therapies , health outcomes and costs in patients with asthma and COPD

[10] Aydemir Y 2015 Assessment of the factors affecting the failure to use inhaler devices before and after training *Respir Med*. **109** 451–8.

[11] Yoo KH, Chung WY, Park JH, Hwang SC, Kim T, Oh MJ, Sc B, Kang DR, Ph D, Rhee CK, Yoon HK, Kim T, Kim DK, Park YB, Kim S, Yum H 2017 Short-term Evaluation of a Comprehensive Education Program Including Inhaler Training and Disease Management on Chronic Obstructive Pulmonary Disease **3536** 377–84.

[12] Ngo CQ, Phan DM, Vu G Van, Dao PN, Phan PT 2019 Inhaler Technique and Adherence to Inhaled Medications among Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease in Vietnam

[13] Takaku Y, Kurashima K, Ohta C, Ishiguro T, Kagiyama N, Yanagisawa T, Takayanagi N 2017 How many instructions are required to correct inhalation errors in patients with asthma and chronic obstructive pulmonary disease ? *Respir Med*. **123** 110–5.

[14] Goris S, Tasci S, Elmali F 2013 The Effects of Training on Inhaler Technique and Quality Of Life in Patients with COPD **26** 336–44.

[15] Axtell S, Haines S, Fairclough J 2017 Effectiveness of Various Methods of Teaching Proper Inhaler Technique : The Importance of Pharmacist Counseling **30** 195–201.

[16] Tommelein E, Mehuys E, Hees T Van, Adriaens E, Bortel L Van, Christiaens T, Tongelen I Van, Remon J, Boussery K, Brusselle G 2013 Effectiveness of pharmaceutical care for patients with chronic obstructive pulmonary disease (PHARMACOP): a randomized controlled trial

[17] Derya Tuluce SK 2018 The effect of health coaching on treatment adherence , self - efficacy , and quality of life in patients with chronic obstructive pulmonary disease 1–11.

[18] Crane MA, Jenkins CR, Goeman DP, Douglass JA 2014 Inhaler device technique can be improved in older adults through tailored education : fi ndings from a randomised controlled trial *Nat Publ Gr*. 1–5.

[19] Bourbeau J, Farias R, Li PZ, Gauthier G, Battisti L, Beauchesne M, Villeneuve D 2017 The Quebec Respiratory Health Education Network : Integrating a model of self-management education in COPD primary care *Chron Respir Dis*. 1–11.

[20] Press VG, Kelly CA, Kim JJ, White SR, Meltzer DO 2016 Virtual Teach-To-Goal ä Adaptive Learning of Inhaler Technique for Inpatients with Asthma or COPD *J Allergy Clin Immunol Pract*. 1–9.

[21] Thomas RM, Locke ER, Woo DM, Nguyen EHK, Press VG, Layouni TA, Trittschuh EH, Reiber GE, Fan VS 2017 Inhaler Training Delivered by Internet-Based Home Videoconferencing Improves Technique and Quality of Life 1412–22.

[22] Boven JFM Van, Tommelein E, Boussery K, Mehuys E, Vegter S, Brusselle GGO, Mölken MPMHR, Postma MJ 2014 Improving inhaler adherence in patients with Chronic Obstructive Pulmonary Disease : a cost-effectiveness analysis 1–11.

POS-545

RESISTANCE BAND EXERCISE PROGRAM IN IMPROVING ELDERLY HEALTH: A SYSTEMATICAL REVIEW

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ABSTRACT

Resistance band exercise is considered as simple and easy exercise and its implementation does not require an extended time to do which can be used as a sport alternative. To describe resistance band exercise for elderly health improvement by conducting a systematical review. This study was conducted by scrutinizing selected articles published in Pubmed, Sciendirect, Ebsco, Proquest, and Scopus in accordance with the specified criteria. The search was carried out in the period of June 2018 until January 2019 and analyzed by using PICO/PICOS. The articles that fulfilled the criteria were found to be 9 articles published in the period of 2010-2019. Predominantly, resistance band exercises without any additional exercise showed improvement in health status. The majority range of interventions was more than 4 months. Resistance band exercise is proven to be having great health benefits for the elderly. In addition to the health side, it is also beneficial in terms of financial that might be issued if the elderly are sick.

Keywords: Resistance band exercise, Health, Elderly

1. Introduction

In the elderly, there are many common health issues including cardiovascular disease, diabetes mellitus etc. On top of that, in general, the elderly often have more than one health disorder [1]. These conditions can be eliminated by exercising regularly and changing their lifestyle. The aim of exercise is to improve the physical abilities of the elderly and their physiological functions. Exercise is one of the planned, structured, and repetitive sports that has the ultimate and intermediate goal of improving or maintaining physical fitness [2].

Elastic band exercise is one of the regular exercises that can be given to hypertensive patients. The senior elastic band exercise can increase body flexibility to allow them to become fresher and to generate better sleep at night [3]. In addition, it is an effective exercise program used to improve muscle strength, bodily abilities, and to facilitate blood circulation in the body [4]. Moreover, the exercise can improve the activities of daily living, increase lung capacity, increase upper and lower body flexibility, and increase muscle strength and endurance [5]. The most popular and easiest elastic band exercise to be implemented is resistance band exercise which also can improve health, especially for the elderly who experience various health problems. Resistance band exercise is able to improve blood vascularity and the physical strength of the elderly [6]. In addition, it is also believed to increase the range of joint motion and body balance in the elderly [7].

In Indonesia, considering that the number of elderly people is increasing every year, it requires further management so then the elderly do not become a burden. In 2017, the number of elderly

people was reported to be approximately 0.93% of the 23.66 million population [8]. The aim of the management of the elderly is to improve or maintain their health through exercising regularly. Resistance band exercise is considered to be a simple and easy exercise and its implementation does not require an extended time, which is ideal as a sports alternatives. The purpose of this article review is to describe that resistance band exercise can improve the quality of health of the elderly who generally have a decrease in body function.

2. Methods

The writers collected online literature across several journal databases by entering the keywords "physical activity", "exercise", "elastic band exercise" and "elderly health". The online database search was conducted from June 2018 to January 2019 in Ebsco, Proquest, Pubmed, Scopus, and Sciencedirect. The process of identifying the various articles was based on the inclusion and exclusion criteria that had been set. The screening process details can be seen in Figure 1.

The inclusion criteria for the article analysis included English-written articles, the implementation of elastic band exercises as the main topic of the articles, clear measuring instruments used to assess the outcomes of the implementation, the subject of the articles devoted to the elderly, clear implementation objectives in the articles, and they should have been published in the period from 2010 up until 2019. On the other hand, the exclusion criteria were articles discussing cross-cultural implementation, articles only in abstract form, and the subjects having physical limitations in their bodily functions. For instance, using a wheelchair. Furthermore, the articles being analyzed must be categorized as quantitative study articles.

The process of analyzing the articles that have met the criteria was conducted using the PICO or PICOC model approach [Population, Intervention, Comparison, Outcomes, Context] which made it easier to arrange them in a table form [9]. The population within the analysis of this article was intended for elderly people in a stable condition who were able to exercise independently. Interventions that could be reviewed about specific elastic band exercises can be carried out independently. The further comparison was conducted by comparing the previous research studies to the latest research related to exercise that allowed it to be implemented in the context of the patients. The outcomes can be measured and assessed by applying valid and reliable measuring instruments. The context discussed in this article was particularly related to the health of the elderly.

3. Result and discussion

The search of the associated articles was conducted from June 2018 until January 2019, which resulting in 1,104 journals that matched the keywords. The article identification process can be seen in Figure 1. However, only a total of 9 articles elaborated that elastic band exercise can improve the life quality of the elderly.

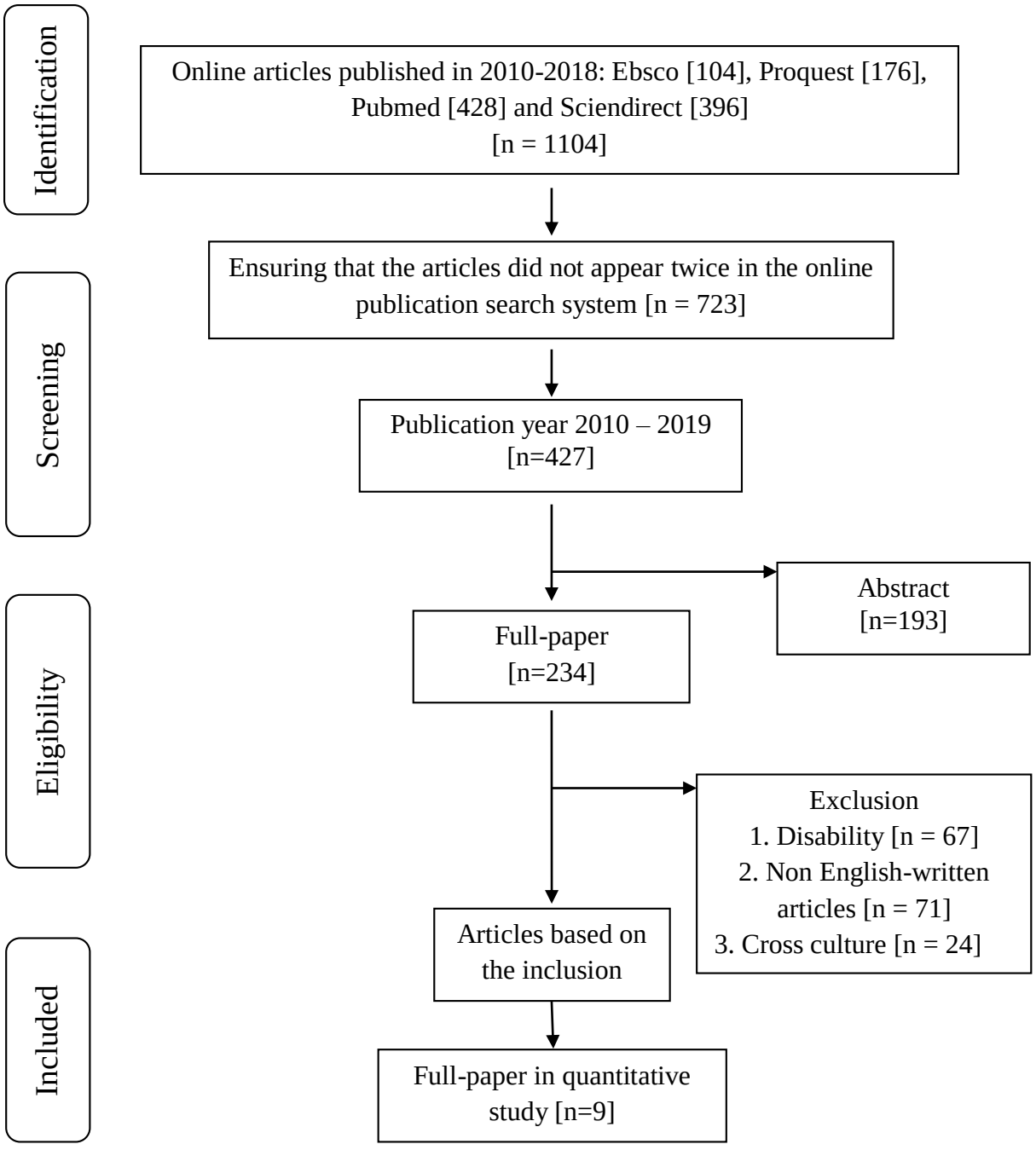

Figure 1. Flow Chart Diagram of resistance band exercise articles

The results of the article review revealed that 77.78% of the articles discussed resistance band exercise as an independent exercise without any additional exercise paired with it. Meanwhile, the rest discussed resistance band exercise either as an additional exercise or as the main exercise with the supplement of other therapies. Resistance band exercise consists of 3 actions namely a warm-up exercise, the resistance exercise [the main action], and a warm-down exercise. Resistance exercise is an exercise that has been proven to improve the health status of the elderly in a comprehensive manner. It is also able to improve quality of life if it is implemented for more than 3 months on average [Table 1].

Table 1. Elastic band exercise analysis related to elderly health

	N	Intervention	Period	Outcome
Smith [6]	Exercise group [7], control [9]	Resistance band exercise	6 months	Vasodilation of the upper and lower limbs, and improvement in quality of life
Kwak [10]	Experimental [23], control [22]	Resistance band exercise	30 minutes/days, 3 x/weeks, 8 weeks	↑ body balance, easy walking, joint movement, ↓ risk of falling
Liao [11]	Experimental [33], control [23]	Elastic resistance exercise	9 months	↑ muscle mass, ↑ physical ability, ↑ life quality of the elderly
Ahn [12]	23 subjects	Elastic Band Resistance Exercise	3 x per weeks [5 months]	Able to stand on one leg, ↑ cardiopulmonary
Ahn [13]	Exercise group [11], control [11]	Elastic Band Resistance Exercise	3 x per weeks Min 1 hour [4 months]	↑ physical ability, ↓ stress, ↑ immune
Fritz [14]	Handle group [22], Elastic group [21], control [20]	Elastic Band Resistance Training	2 x per weeks [8 weeks]	Improvement of body composition, improvement of physical appearance
Oesen [15]	Cognitive [29], Resistance [33], Resistance & nutritional [28]	Elastic Band Resistance Training	6 months	Safely implemented, providing benefits to improve the body function
Brito [16]	10 subjects	Elastic Band Resistance	> 3 months	Maintain conditions and improve cardiovascular strength
Wu [17]	Control [17], Exercise [16], Resistance & Exercise [17]	Elastic Band Resistance and Aerobic Training	± 20 minutes/days 6 months	↑ exercise ability, ↑ Quality of life

Resistance band exercise can improve blood vascularity, which is clinically able to stabilize blood pressure [6]. During exercising, the sympathetic nervous system experiences increased modulation whereas the parasympathetic nervous system encounters decreased modulation. This is characterized by an increase in heart rate. This condition is caused by an increase in oxygen consumption by the body in the formation of adenosine triphosphate [ATP] for energy. The body automatically responds by decreasing the blood pressure [18]. In addition, regular exercise will not only reduce the plasma concentration of endothelin-1 [ET-1] which acts as a strong vasoconstrictor,

but it will also increase the production of Nitrite Oxide [NO] in the blood vessels [19]. NO, based on various studies, can restore blood vessel elasticity and reduce peripheral arterial stiffness [20, 21].

Another benefit is that resistance band exercise increases muscle mass and the ability of the lower extremities. This is because, after exercising, the blood smoothly flows and consequently carries nutrients to the lower part of the body [6]. In these conditions, the ability of the elderly to stand on one leg is very possible. When muscle mass increases, the ability of the elderly to mobilize also increases as well. The burden of treatment related to this issue can thus be suppressed [22]. Furthermore, this is evidenced by their ability to walk as far as 8 meters before doing the resistance band exercise which took around 16.41 ± 6.90 s. In contrast, after carrying out the exercise, this improved to 13.18 ± 5.33 s. The speed of moving also improved from 55.63 ± 18.30 cm s to 68.97 ± 22.57 cm/s [12].

Resistance band exercise can improve the balance of the elderly based on the Functional Reach Test [FRT] value, which showed that before the action, it took about 18.1 ± 3.6 cm whereas after the action, it was 22.0 ± 3.6 cm. The conditions indicate that the elderly have a reduced risk for falls compared to before doing the resistance band exercise. Some researchers discovered that elderly people who have an FRT below 25.4 cm have a higher risk of falling than an FRT above 25.4 cm [7, 10]. However, elderly people with a less than 15.24 cm FRT indicate as having a four times higher risk of falling than those with a less than 25.4 cm FRT from the measured value [10, 23].

Resistance band exercise can be used to burn body fat by as much as 8.5% of the total. Individuals who do resistance band exercise need ATP because the body needs more ATP than during daily activity. The body compensates by breaking down the fat deposits available under the skin to meet these conditions. The resistance band exercise is mostly carried out over a period of 4 months which allows for a continuous process, meaning that it does not occur only once [14, 24].

4. Conclusion

Resistance band exercise is proven to have good health benefits for the elderly. In addition to the health side, it is also beneficial in terms of finances, which might be an issued if the elderly are sick. It consists of three actions, which are a warm-up exercise, resistance exercise [the main action], and a warm-down exercise. That being said, resistance band exercise can improve quality of life, improve body balance, faster walking, more free joint motion, increased lower extremity muscle mass, the ability of the physical and cardiovascular systems, being able to stand on one leg, and more a stable immune system. Furthermore, resistance band exercise can reduce stress and the risk factors for falls.

Referemces

Herlina, Agrina. Spirituality and health status among elderly people in nursing home in Riau, Indonesia. Enfermería Clínica. 2019.

Langhammer B, Bergland A, Rydwik E. The Importance of Physical Activity Exercise among Older People. BioMed research international. 2018;2018:7856823-.

Chen K-M, Tseng W-S, Chang Y-H, Huang H-T, Li C-H. Feasibility appraisal of an elastic band exercise program for older adults in wheelchairs. Geriatric Nursing. 2013;34[5]:373-6.

Chen K-M, Tseng W-S, Huang H-T, Li C-H. Development and Feasibility of a Senior Elastic Band Exercise Program for Aged Adults: A Descriptive Evaluation Survey. Journal of Manipulative & Physiological Therapeutics. 2013;36[8]:505-12.

Chen K-M, Li C-H, Chang Y-H, Huang H-T, Cheng Y-Y. An elastic band exercise program for older adults using wheelchairs in Taiwan nursing homes: A cluster randomized trial. International Journal of Nursing Studies. 2015;52[1]:30-8.

Smith MF, Ellmore M, Middleton G, Murgatroyd PM, Gee TI. Effects of resistance band exercise on vascular activity and fitness in older adults. International journal of sports medicine. 2017;38[3]:184-92.

Yeun YR. Effectiveness of resistance exercise using elastic bands on flexibility and balance among the elderly people living in the community: a systematic review and meta-analysis. Journal of physical therapy science. 2017;29[9]:1695-9.

Indonesia KKR. Analisis lansia di Indonesia. Jakarta: Pusat Data dan Informasi Kementrian Kesehatan RI. 2017.
Uman LS. Systematic reviews and meta-analyses. Journal of the Canadian Academy of Child and Adolescent Psychiatry = Journal de l'Academie canadienne de psychiatrie de l'enfant et de l'adolescent. 2011;20[1]:57-9.
Kwak C-J, Kim YL, Lee SM. Effects of elastic-band resistance exercise on balance, mobility and gait function, flexibility and fall efficacy in elderly people. Journal of physical therapy science. 2016;28[11]:3189-96.
Liao C-D, Tsauo J-Y, Huang S-W, Ku J-W, Hsiao D-J, Liou T-H. Effects of elastic band exercise on lean mass and physical capacity in older women with sarcopenic obesity: A randomized controlled trial. Scientific reports. 2018;8[1]:2317-.
Ahn N, Kim K. Effects of an elastic band resistance exercise program on lower extremity muscle strength and gait ability in patients with Alzheimer's disease. Journal of physical therapy science. 2015;27[6]:1953-5.
Ahn N, Kim K. The effects of resistance elastic bands exercises on salivary IgA and salivary cortisol levels in elderly women. Biomedical Research. 2018;29[5]:889-94.
Fritz NB, Juesas Á, Gargallo P, Calatayud J, Fernández-Garrido J, Rogers ME, et al. Positive Effects of a Short-Term Intense Elastic Resistance Training Program on Body Composition and Physical Functioning in Overweight Older Women. Biological Research For Nursing. 2018;20[3]:321-34.
Oesen S, Halper B, Hofmann M, Jandrasits W, Franzke B, Strasser E-M, et al. Effects of elastic band resistance training and nutritional supplementation on physical performance of institutionalised elderly — A randomized controlled trial. Experimental Gerontology. 2015;72:99-108.
Brito AdF, de Oliveira CVC, Brasileiro-Santos MdS, Santos AdC. Resistance exercise with different volumes: blood pressure response and forearm blood flow in the hypertensive elderly. Clinical interventions in aging. 2014;9:2151-8.
Wu W, Liu X, Li P, Li N, Wang Z. Effect of Liuzijue Exercise Combined with Elastic Band Resistance Exercise on Patients with COPD: A Randomized Controlled Trial. Evidence-Based Complementary and Alternative Medicine. 2018;2018:12.
Mohebbi H, Rohani H, Ghiasi A. Effect of involved muscle mass in resistance exercise on post exercise blood pressure and rate pressure product. Apunts Medicina de l'Esport. 2016;51[192]:123-9.
Pal S, Radavelli-Bagatini S, Ho S. Potential benefits of exercise on blood pressure and vascular function. Journal of the American Society of Hypertension. 2013;7[6]:494-506.
Ladawan S, Klarod K, Philippe M, Menz V, Versen I, Gatterer H, et al. Effect of Qigong exercise on cognitive function, blood pressure and cardiorespiratory fitness in healthy middle-aged subjects. Complementary Therapies in Medicine. 2017;33:39-45.
Zeigler ZS, Swan PD. Acute effects of whole-body vibration with resistance exercise on postexercise blood pressure and oxygen consumption in prehypertensive adults. Journal of Exercise Science & Fitness. 2016;14[1]:14-23.
Landers S, Madigan E, Leff B, Rosati RJ, McCann BA, Hornbake R, et al. The Future of Home Health Care: A Strategic Framework for Optimizing Value. Home health care management & practice. 2016;28[4]:262-78.
Mittaz Hager A-G, Mathieu N, Lenoble-Hoskovec C, Swanenburg J, de Bie R, Hilfiker R. Effects of three home-based exercise programmes regarding falls, quality of life and exercise-adherence in older adults at risk of falling: protocol for a randomized controlled trial. BMC geriatrics. 2019;19[1]:13-.
Boutcher SH. High-intensity intermittent exercise and fat loss. Journal of obesity. 2011;2011:868305-.

POS-655

THE CORRELATION BETWEEN NURSES' EXPERIENCES, WORKLOADS, ABILITIES AND NURSES' INDEPENDENT ACTION IN HOSPITALS

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ABSTRACT

Unoptimal independent actions performed by nurses in hospitals may increase the risk of decubitus and length of stay (LOS). The population was all nurses in the inpatient wards of RSUD dr. M. Haulussy Ambon amounted to 212 nurses. A total sample of 165 nurses recruited using probability sampling was used in this study. Data were collected by using questionnaires and observation, and analyzed using the Spearman rank correlation test and multiple linear regression tests. The results showed that the nurses' independent actions in the form of activity of daily living, caring and support, and rehabilitation were good. The experiences, abilities, and workloads of nurses were correlated with the nurses' independent actions. This study concluded that some factors associated with the nurses' independent actions were age, sex, education, years of service, experiences, abilities, and workloads. Nurses' knowledge, with the highest beta coefficient, was found to be the most dominant factor related to the nurses' independent actions. Based on the results of the study, it is suggested that the hospital management improve the nurses' independent actions by increasing the nurses' abilities through training and advanced study.

Keywords: independent action, years of service, experience, ability, workload

1. Introduction

Independent nursing actions are the nurses' actions delivered to the patients to improve the healing process based on the nurses' knowledge. Independent nursing actions aim to meet the bio-psycho-socio and spiritual needs of the patients when they are in the hospital[1]. They provide the most significant contribution to nursing services. When optimally implemented, independent nursing actions can increase patient satisfaction, accelerate patient recovery and improve safety. Therefore, all nurses should implement optimal and qualified independent actions to cure their patients.

Nurses in inpatient wards have a great responsibility as they have a longer time to care patients[2]. Nurses are the health workers who spend the longest time with the patients, amounting to 50-60%. They have to work for 24 hours through shift assignments and they are very close to the patients[3][4]. This situation arises as the nurses should perform a lot of nursing actions to patients with various conditions to speed up their recovery. However, many independent actions are not taken by the nurses on the ward.

Independent nursing actions which are not carried out or completed will have a negative impact on the delivery of nursing services; one of which is patient dissatisfaction with the services provided. Previous studies showed that out of the 12 procedures that nurses should carry out during their shift, it was indicated that only a few were carried out and that some were not carried out at all during one shift[5–7]. The results of a study in the USA found that 56% of patients in surgical installation reported dissatisfaction with the actions given by the nurses. A similar case was also reported in child care installation where 57.2% of patients felt dissatisfied with the services provided by the nurses.

Moreover, regarding the administration of the procedures, 53.3% of patients in non-surgical installation reported dissatisfaction with the explanation of the procedure performed by the nurses. In the installation, it was found that 14.7% of patients were less satisfied with the nursing services provided[3,7].

In hospitals in the UK, it was reported that there are many independent nursing actions which are not carried out by the nurses which impacts on the quality of the nursing service provided. The National Health Service hospital reported that independent actions such as oral care, providing health education to the patients and oral feeding were not carried out by the nurses. Actions that are not carried out are considered to be one of the failures in improving patient safety[8].

The results of the interviews with the nurses at a hospital in Ambon found that some of the nurses still found it difficult to distinguish between independent nursing actions and medical actions. High workloads tend to make the nurses do routine actions that are more likely to be medical actions and administrative activities. The results of the observation on the implementation of 10 independent actions also revealed that the nurses in the hospital carried out only four actions routinely. Some actions were not carried out including helping to feed the patients, listening to the patients' complaints, mobilizing the position of the patients and discussing the patient's condition with the patients themselves.

The impact of unperformed independent actions results in an increased decubitus rate that occurs in the hospital setting, which according to Ambon in 2015 amounted to 11.8%. An increasing rate of decubitus will have an impact on the quality of the nursing services given to the patients that indirectly reduces the quality of independent nursing actions. Dabney (2014) reported that unperformed independent actions will have an impact on patient wounds, new infections and patient falls[9]. Such a condition may happen due to the lack of ability of the nurses to monitor patients with total care dependence that requires position changes every 2 hours.

The nurse's inability to perform independent actions has an effect on the patient's dissatisfaction with nursing services. A study by Agusin in 2008 showed that a low quality of services regarding what the patients received resulted in a low level of satisfaction[10]. This situation may affect the perception of the health care users that the nurses are incapable of carrying out independent actions. If this issue is not immediately addressed, then it will affect the professionalism of the nurses in the hospitals. This is in accordance with a study conducted by Novitra in 2004 which argued that the nurses' professionalism has become an important element in an effort to improve the patients' health status[8,11].

Ensuring the quality of the independent actions is important to improve patient recovery. Independent actions that are given optimally can help the patients distinguish between the nursing actions and medical actions that are given to them[7,12]. Therefore, the patients will better understand that nursing actions can help to cure their disease, in addition to medication administration.

A study by Andrianiin in 2016 reported that most of the nurses in the wards did not perform nursing actions such as hair care (66.9%), dental and oral care (78.2%), toileting (66.2%) and perineal care (84.2%)[13]. These results indicate that the implementation of personal hygiene was not good on the ward. If this condition occurs continuously, then it will result in an increased number of LOSs, patient dissatisfaction and decreased self-care for the patients[6,14].

A study by Susantiin in 2013 reported that there was a significant relationship between experience and motivation in fulfilling the patients' personal needs in Dr. H. Koesnadi Bondowoso. The nurses gained a lot of experience in caring for the patients with various types of nursing diagnoses[7]. Such experience will provide the nurses with a clear picture of how to carry out independent actions. Not only experience, however, but workload also has a relationship with the quality of employee performance.

The nurses' workload is closely related to the nurses' performance in the hospital. One of the elements of the nurses' performances in the hospital is taking independent actions. The high workload

of nurses due to medical and administrative procedures has an impact on the quality of the actions given. This high workload is influenced by the ratio between the number of nurses and the number of patients and their level of dependence[15]. Therefore, based on the explanation above, it is important to examine the correlation between the nurses' abilities, experience, workload and the quality of their independent nursing actions.

2. Methods

2.1 Research design

This study used a cross-sectional design involving a data collection technique using observational studies to connect two or more dependent variables with the independent variables.

2.2 Sample size

The samples used in this study totaled nurses in 14 inpatient wards of RSUD Dr. M. Haulussy Ambon, including the pavilion unit, female surgical ward, male surgical ward, ENT, skin, and genital ward, Cendrawasih ward, children's ward, female medical ward, male medical ward, gynecology, neonatology, lung, and neurology. The total number of samples was 165 nurses calculated according to the multivariate regression linear formula, adjusted for the number of independent variables. The samples were recruited using probability sampling. The inclusion criteria for taking the samples were nurses working in inpatient wards and staff nurses. Meanwhile, the exclusion criteria were nurses pursuing higher education and nurses on leave.

2.3 Instrument

The nurses' abilities were measured using a questionnaire developed by Hersey and Blanchard which consisted of 35 item statements using a Likert scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The results showed a maximum score of 175 and a minimum score of 35. To measure the workload, the NASA-TLX questionnaire developed by Sandra G Hart and Lowell E Staveland was used. This questionnaire consisted of 6 workload indicators using a rating scale with the highest value possible being 21 and the lowest value possible being 1. The results showed a maximum score of 126 and a minimum score of 6. To measure the variable of experience, a question item was used. Observations regarding the implementation of independent actions were carried out related to 14 nursing actions which include the activities of daily living, caring and support, rehabilitation and monitoring.

The questionnaires used for measuring the nurses' abilities and workload were translated into Indonesian by linguists after permission to use and modify the questionnaires was granted. The questionnaires were modified and then tested for validity. The results of the validity test focused on the questionnaire used to measure the nurses' abilities showed that all items were valid with the lowest r-value being 0.383 and the highest being 0.795. The r-value> from r-table = 0.361 and the reliability value was 0.963. For the workload questionnaire, it was found that all items were valid with the lowest r-value being 0.422 and the highest being 0.697. The r-value>of the r-table = 0.361. The reliability test showed a value of 0.792, indicating that the questionnaire is reliable as the Cronbach's alpha value was $0.7>\alpha\geq 0.6$.

2.4 Ethical consideration and data collection

This study has been approved by the research ethics committee of the Faculty of Medicine of Diponegoro University in March 2017. Prior to the data collection, informed consent was obtained from the respondents.

2.5 Data analysis

The Spearman rank analysis was used to identify the relation between the factors that could be modified (experience, workload, ability) and the unmodified factors (genetic and marital status) that influence the quality of the nurses' independent actions in the inpatient ward of RSUD Dr. M. Haulussy Ambon.

3. Results

3.1 Characteristics of the respondents

Table 1 shows that the respondents consisted of both male nurses (18.8%) and female nurses (81.2%). About 92% of respondents were married and 7.3% were not married. These results indicated that most of the nurses working in inpatient wards were females and that most of them were married.

Table 1. Characteristics of the Respondents (n=165)

Characteristics	f	(%)
Sex		
– **Male**	31	18.8
– **Female**	134	81.2
Marital Status		
– **Married**	153	92.7
– **Unmarried**	12	7.3

3.2 Quality of the nurses' independent actions, experience, workload and abilities

The nurses in the wards showed a mean value of 10.67 in performing independent actions, with the highest score being 14 and the lowest score being 5. The mean value of nurses' experiences was 4.42with the highest experience of 30 years and the lowest of 1 year. The nurses' workload showed a mean value of 62.15 with the highest score bein 122 and the lowest score being 6. Meanwhile, the nurses' abilities showed a mean value of 141.30 with the highest ability being 173 and the lowest ability being 106.

Table 2. Quality of the nurses' independent actions, experience, workload and abilities (n=165)

Variables	Mean	SD	Min-Max
Independent actions	10.67	2.625	5-14
Experiences	4.42	3.691	1-30
Workloads	62.15	29.598	6-122
Abilities	141.30	10.744	106-173

3.3 Description of the Quality of the Nurses' Independent Actions, Experience, Workload and Abilities

The results of the analysis in Table 3 shows that 55.8% of nurses carried out independent nursing actions in the good category and that the remaining 44.2% carried out independent nursing actions in the lesser category. Regarding experiences, 61.2% of nurses had high experience and 38.8% had low experience. The ability of the nurses showed a value of 53.3% and 46.7%, indicating that the

nurses had a good ability or a lack of ability respectively. Regarding the workload, 52.7% of nurses had a high workload and 47.3% had a low workload.

Table 3. Description of the Quality of the Nurses' Independent Actions, Experience, Workload and Abilities (n=165)

	Variables	f	%
	Experiences		
-	**High**	101	61.2
-	**Low**	64	38.8
	Workload		
-	**High**	87	52.7
-	**Low**	78	47.3
	Abilities		
-	**Good**	88	53.3
-	**Less**	77	46.7

Table 4. Bivariate Analysis of Experience, Workload, Abilities and the Quality of the Nurses' Independent Actions (n=165)

Variables	Quality of Independent Actions	
	Correlation Coefficient	*p-value*
Experiences	r = 0.266	0.001
Workload	r = 0.232	0.003
Abilities	r = 0.257	0.001

The results of the bivariate analysis in Table 4 showed that there was a significant correlation between experience, workload, ability and the quality of independent nursing actions. The correlation between the variables was weak with an r-value ranging from 0.1 to 0.40.

Table 5. Results of the Multiple Linear Regression Analysis

Variables	β-coefficient	S.E	Coefficient correlation (β)	Sig	R	*p-value*
Experiences	0.069	0.052	0.097	0.185	0.645	0.000
Workload	0.014	0.006	0.006	0.011		
Abilities	0.036	0.015	0.150	0.023		
Constant	-0.965	2.539	-0.380	0.704		

Note: *) significant if α = 0.05

3.4 Most dominant factor influencing the quality of the nurses' independent actions

The results of the multiple linear regression analysis in Table 5 showed that all of the variables affected the quality of the nurses' independent actions, including experience (r=0.097; CI95%: 3.85-4.99; p=0.185), workload (r=0.006; CI95%: 57.60-66.70; p=0.011) and abilities (r=0.150; CI95%: 139.65-142.95; p=0.023). Of all the variables, the nurses' abilities were the most influencing factor of the nurses' quality independent actions with an r-value of 0.150.

4. Discussion

This study found that there was a correlation between the nurses' experiences on the ward and the nurses' independent actions. The majority of nurses gained a high level of experience for as long as three years. Over that period, a nurse has a lot of experience, especially in giving actions to the patients such as mobilizing the patients' position, bed making, and helping to provide food to the patients. A number of actions that the nurses perform can improve the quality of their independent actions. There will be a difference between the nurses who have experience and those who do not. Based on the results of this study, the longer the employers work, the more experience the employers gain[16]. Working experience increases a great deal of expertise and work skills. In contrast, limited work experience results in lower levels of expertise and skills[17]. Working experience is an individual main capital needed to engage in a particular field.

The results of this study are in accordance with a study which reported that each nurse has different experiences when caring or performing actions that affect the patients[18]. These different experiences will also have different effects for the individual nurses in carrying out their independent actions. Experiences also determine the extent to which the nurses are professional when carrying out their duties, especially in providing services to the patients[19]. This is because nurses have different characteristics and knowledge.

According to Ace in 2014, work experience increases expertise and work skills. Conversely, limited work experience results in lower levels of expertise and skills[20,21]. The working experience of an individual is sometimes more valuable than the high level of education. Work experience is the main capital for someone to get involved in a particular field[16,19]. Therefore, the nurses' experience in the ward should be a consideration for the hospital management when conducting recruitment or rotating nurses, as it will affect the delivery of independent actions to the patients.

The quality of independent actions is also influenced by workload. Thus, qualified independent actions will decrease the nurses' workload. This result is in line with a study conducted by Aprianathat, in that there was found to be a significant relationship between workload and nurse performance[22,23]. According to Gurses as cited in Satria in 2013, workloads can affect nurse stress, patient care and safety [24]. Performing independent actions is one form of nurse performance in the hospital. If the nurses' performance decreases, then it will affect the quality of the independent actions given. As a result, the patients are dissatisfied with the services provided, the quality of the patient care declines and the professional image of nurses will also decrease among the health care users.

Heavy workloads may cause stress for individuals which will ultimately affect the nurses in carrying out their independent actions. On the contrary, a light workload will lead to boredom in the work, which in the end will also cause the nurses to lack skills when carrying out their independent actions. Nurse workload is strongly influenced by the number of nurses and patients, and the condition of the patients [25]. A high workload is closely related to patient safety[26]. The higher the workload, the higher the risk for the nurses to make a mistake when giving the actions to their patients[27]. To reduce the nurse workload, it should be ensured that the number of nurses meets with the existing needs, that the provision of duties is in accordance with the proportion, and that there is the ability to create a work system that can reduce the work efforts [28]. Increasing the

capacity of the nurses when carrying out independent actions to improve their efficiency and effectiveness referring to the caring hours is also a way to handle the high workload on the wards.

Nurses are required to be able to provide optimal service to their patients. This ability involves the dimensions of knowledge and skills. According to Hersey and Blanchard, an ability consists of technical skills, social skills and conceptual skills [29].

The technical skills include the nurses' mastery of medical devices, independent action procedures and the obligations and duties of the nurses. The social skills include the ability to work with other nurses, which relates to the ability to empathize and work in teams. Conceptual skills include the understanding of the policies, goals and targets of the hospital. These three abilities have an important role in improving the quality of independent actions. Hence, nurses are required to have these abilities at work.

The nurses' abilities have a correlation with the quality of the nurses' independent actions. The results of this study are consistent with a study by Hartanto as cited in Listiyono (2015), that an individual's ability greatly determines their performance in a company or organization. Working ability is important for a nurse to perform and complete their independent nursing actions well.

This study showed that the nurses' ability was good. This result indicates that good ability will increase the nurses' independent actions. Nurses with low ability will spend more time and make more of an effort to complete the actions compared to the nurses with high ability. The nurses' abilities determines the nurse's performance in the hospital [29]. The success of implementing independent actions in hospitals is very dependent on nurse performance. High levels of abilities are important for the nurses to be able to complete their nursing duties properly as every action requires certain knowledge, skills, and attitudes in order to achieve optimal results.

The working ability of the nurses is determined by their high level of education and experience. These two elements determine the knowledge and skills obtained [30]. A high level of education supported by work experience will create nurses who have a high level of ability. High working ability creates high productivity, which results in the optimal implementation of nursing actions reflected toward the patients.

The ability of the nurses to improve the quality of their independent actions is one of the factors that needs to be taken into consideration by the hospital management to improve the nurse's performance. The hospital can delegate nurses to participate in training related to independent nursing actions. Increasing the quality of their independent actions will reduce the number of LOSs, and increase patient safety and patient self-care [31,32]. If all of the three components are addressed optimally, then complete nursing services will also be achieved.

5. Conclusion

This study concluded that the nurses' experience, workload and capacity were related to the quality of the nurses' independent actions in the inpatient wards. The nurses' capacity was the most influential factor in independent nursing actions. This study recommends that the hospital management should improve the nurses' independent actions by increasing the nurses' capacity through training and advanced study. Further studies may take other factors such as policy and supervision into consideration in the study.

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References

[75] Black B P 2013 *Professional Nursing: Concepts & Challenges* (Elsevier)

Susanti E N 2013 *Hubungan Karakteristik Perawat dengan Motivasi Perawat dalam Pemenuhan Kebutuhan Kebersihan Diri Pasien di Ruang Rawat Inap RSU dr. H. Koesnadi Bondowoso*

CHICHI HAFIFA T 2014 *Faktor-faktor yang Berhubungan dengan Kepuasan Kerja Perawat Pelaksana di Ruang Rawat Inap RSUP Dr. M Djamil Padang tahun 2012*

Eriawan R D, Wantiyah . and Ardiana A 2013 Hubungan Tingkat Pengetahuan Perawat dengan Tindakan Keperawatan pada Pasien Pasca Operasi dengan General Aenesthesia di Ruang Pemulihan IBS RSD dr. Soebandi Jember *Pustaka Kesehat.***1** 54–61

Dabney B W and Kalisch B J 2015 Nurse Staffing Levels and Patient-Reported Missed Nursing Care *J. Nurs. Care Qual.***30** 306–12

Jones T L, Hamilton P and Murry N 2015 Unfinished nursing care, missed care, and implicitly rationed care: State of the science review *Int. J. Nurs. Stud.***52** 1121–37

Lake E T, Germack H D and Viscardi M K 2016 Missed nursing care is linked to patient satisfaction: a cross-sectional study of US hospitals *BMJ Qual. Saf.***25** 535–43

Ball J E, Murrells T, Rafferty A M, Morrow E and Griffiths P 2014 'Care left undone' during nursing shifts: associations with workload and perceived quality of care *BMJ Qual. Saf.***23** 116–25

Kalisch B J, Xie B and Dabney B W 2014 Patient-Reported Missed Nursing Care Correlated With Adverse Events *Am. J. Med. Qual.***29** 415–22

Trinkoff A M, Johantgen M, Storr C L, Gurses A P, Liang Y and Han K 2011 Nurses' Work Schedule Characteristics, Nurse Staffing, and Patient Mortality *Nurs. Res.***60** 1–8

Novitra M 2004 *Peranan Persepsi Pasien Mengenai Empati Perawat dan Aspek Spritualitas terhadap motivasi sembuh pasien rawat inap* (Universitas Gunadarma)

Menard K 2014 *Collegiality, the Nursing Practice Environment, and Missed Nursing Care* (Milwaukee)

Andriani D and Ardani M H 2016 *Gambaran Persepsi Pasien tentang Pelaksanaan Pemenuhan KebutuhanPersonal Hygiene oleh Perawat di RSUD Ungaran Semarang Tahun 2016*

Moreno-Monsiváis M G, Moreno-Rodríguez C and Interial-Guzmán M G 2015 Missed Nursing Care in Hospitalized Patients *Aquichan***15** 318–38

Marquis B L and Huston C J 2010 *Kepemimpinan dan Manajemen Keperawatan: Teori & Aplikasi* (Jakarta: EGC)

Östlund A-S, Wadensten B, Kristofferzon M-L and Häggström E 2015 Motivational interviewing: Experiences of primary care nurses trained in the method *Nurse Educ. Pract.***15** 111–8

Maben J, Adams M, Peccei R, Murrells T and Robert G 2012 'Poppets and parcels': the links between staff experience of work and acutely ill older peoples' experience of hospital care *Int. J. Older People Nurs.***7** 83–94

Koehn A R, Ebright P R and Draucker C B 2016 Nurses' experiences with errors in nursing *Nurs. Outlook***64** 566–74

Nurrofi A 2012 Pengaruh Disiplin Kerja dan Pengalaman Kerja terhadap Prestasi Kerja Karyawan pada Departemen Produksi PT. Leo Agung Raya Semarang *J. Ilmu Manaj. dan Akunt. Terap.***3**

Sudrajat A and P I Haeriyanto S 2014 Relationship Between Knowledge and Job Experiences with Nurse' Ability to do Triage at Emergency Room *J. Keperawatan***2**

Han A, Won J, Kim O and Lee S E 2015 Anger Expression Types and Interpersonal Problems in Nurses *Asian Nurs. Res. (Korean. Soc. Nurs. Sci).***9** 146–51

Apriana R 2016 *Faktor-faktor Yang Mempengaruhi Kinerja Perawat di Rumah Sakit* (Universitas Diponegoro)

Myny D, Van Hecke A, De Bacquer D, Verhaeghe S, Gobert M, Defloor T and Van Goubergen D 2012 Determining a set of measurable and relevant factors affecting nursing workload in the acute care hospital setting: A cross-sectional study *Int. J. Nurs. Stud.***49** 427–36

Satria W, Sidin A I and Noor N B 2013 Hubungan beban kerja dengan kinerja perawat dalam mengimplementasikan patient safety di rumah sakit universitas hasanuddin tahun 2013 *J.*

Beban Kerja dengan Kinerja

Hendianti G N 2012 Gambaran Beban Kerja Perawat Pelaksana Unit Instalasi Gawat Darurat Rumah Sakit Muhammadiyah Bandung *Students e-Journal***1** 31

Carayon P and Gurses A P 2008 Nursing Workload and Patient Safety—A Human Factors Engineering Perspective *Patient Safety and Quality: An Evidence-Based Handbook for Nurses* (Agency for Healthcare Research and Quality (US))

de Magalhães A M M, Dall'Agnol C M and Marck P B Nursing workload and patient safety--a mixed method study with an ecological restorative approach. *Rev. Lat. Am. Enfermagem***21 Spec No** 146–54

Mastini P, Suryadhi N T and Suryani A 2015 Relationship Between Nurse Knowledge, Attitude, Workloads with Medical Record Completion at the Emergency Unit, Sanglah Hospital, Denpasar *Public Heal. Prev. Med. Arch.***3**

Listiyono 2015 *Hubungan Kemampuan Kerja dan Komitmen Organisasional dengan Kinerja Perawat (Survey pada Perawat BLUD Rumah Sakit Umum Daerah Salatiga)* (UNS (Sebelas Maret University))

Nelson D and Welsh P 2015 Using the ability model to design and implement a patient care plan *Vet. Nurse***6** 141–9

Aiken L H, Sloane D M, Bruyneel L, Van den Heede K, Sermeus W and RN4CAST Consortium 2013 Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe *Int. J. Nurs. Stud.***50** 143–53

Spetz J, Fraher E, Li Y and Bates T 2015 How Many Nurse Practitioners Provide Primary Care? It Depends On How You Count Them *Med. Care Res. Rev.***72** 359–75

POS-772

SYSTEMATIC REVIEW: EMOTIONAL INTELLIGENCE FOR CARING NURSES

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ABSTRACT

The Objective of study was systematically review emotional intelligence for nurse caring behavior. Literature search used using the keywords Emotional Intelligence, and Caring nurses. Search is done on the Ebscohost, Elsevier, Sciendirec and Google Schoolar sites. The result showed there were five journals related to the theme. The results of the literature review found that a person's caring behavior can be influenced by emotional intelligence possessed by someone Some studies show that emotional intelligence can influence nurses' caring behavior. A person's emotional intelligence greatly influences the caring behavior of nurses where emotional intelligence can help a person to understand emotions themselves and others help to shape behavior.

Keywords: emotional intelligence, caring nurses

1. Introduction

Nursing as a profession is required to develop science as a form of concern in order to maintain and improve the health status of patients in hospitals, health centers and other clinical settings. Nurses work to increase their concern for their clients in the central nursing practice. This is a dynamic approach called caring[1].

Aiken's research (2012) showed that the percentage of nurses who have poor caring service quality in Ireland was 11% and in Greece, it was 47%. In Indonesia alone, caring is one of the assessments undertaken related to the users of the health services. Based on the results of the patient satisfaction survey in several hospitals in Jakarta, 14% of patients were dissatisfied with the health services provided due to poor caring behavior.[2] Nursing services are currently not satisfactory due to a lack of caring behavior from the nurses. This can be seen from the studies conducted in several hospitals. Among others, the study by Prabowo et al (2014) showed that 50% of the nurses behaved in a less caring manner. Another study conducted by Gaghiwu et al. (2013) found that 26.7% of nurses behaved poorly. Another study by Martiningtias et al (2013) showed that 29.6% of nurses were less caring concerning their patients. Ardiana's study (2010) also revealed that 46% of the nurses behaved in a manner that was not caring according to the patient perceptions. From the results of the above research, it can be seen that there are still many caring behaviors within the nurses in Indonesia. According to Marmi's study (2015), it was shown that the nurses' caring behavior according to the perceptions of the client or the client's family was in the best category, by as many as 13 people (72.2%).

There is the existence of individual factors, psychological factors and organizational factors that can influence caring behavior, which includes emotional intelligence skills and the demographic

characteristics of age, gender and education. Attitudes, personality and motivation, social level, demographic characteristics, human resources, leadership, rewards, structure and work all also tie into this. The caring behavior that is lacking in nursing services can result in a decrease in the quality of the nursing services. This results in a decrease in patient satisfaction. A lack of contact with patients can result in the psychological care of the patients [3]. Providing caring nursing can have a positive impact that can improve patient recovery. This is because the patients feel fulfilled in terms of their physical, emotional and spiritual needs. The patients feel comfortable with the nurse services[4]. The impact of a lack of caring behavior still needs to be improved.

According to Skinner, behavior is the result of interactions between the stimuli received with the responses given[5]. The caring behaviors of the nurses can be improved through caring training, increasing the intrinsic motivation of the nurses and increasing their emotional intelligence. Lestari's study (2017) found that there was a positive relationship between emotional intelligence and caring behavior, meaning that the higher the emotional intelligence of the nurses, the better their caring behavior, and vice versa. The lower the emotional intelligence of the nurses, the worse that their caring behavior is.

Emotional intelligence helps a person when moving, acting or encouraging the productivity of his work[6]. Emotional intelligence is very important when it comes to building a relationship between the nurses and their patients. This is because with emotional intelligence, a health worker will be more empathetic, have compassion and be wiser. Is there an influence of emotional intelligence on increasing the caring of the nurses?

2. Research Methods

The systematic review used nursing management articles to identify emotional intelligence and if it can improve caring in nursing. The article inclusion criteria used were emotional intelligence that increased the caring of the nurses, while the exclusion criteria were abstract articles, articles that did not use English and the articles where the full text was not available. The article search was limited to articles in English accessed through internet searches from select databases, namely EBSCOhost, Elsevier, ScienceDirect and Google Scholar, with the keywords 'emotional intelligence', 'nursing' and 'nursing caring'. Articles that met the inclusion criteria were collected and examined systematically. The search was for literature published between 2012 and 2017. The search process obtained 5 articles that met the requirements for the inclusion and exclusion criteria.

3. Results

The search obtained as many as 12 articles that were deemed to be in accordance with the objectives of the study which were then put together and screened according to whether the titles of the articles were the same or not. After screening, there were 9 articles with the same title. From the 9 articles, the screening was then based on eligibility according to the inclusion and exclusion criteria which found 5 articles for further review. The research consists of several studies conducted in various countries.

Table 1. Search strategies

Search engine	***EBSCO Host***	***Sciencedirect***	***Google schoolar***
Search results	20	14	28
Full text, pdf, 2012-2017	7	10	12
Appropriate title	3	2	7
The same title		9	

Eligible according to inclusion criteria and exclusion	5
4. **Results**	5

The analysis of the 5 articles showed that 2 journals used a correlation study design, 1 journal used a non-experimental quantitative design, 1 journal used a descriptive design and 1 used structural equation modeling. After a study of the quality of the 5 articles, they can be categorized as high before the data is extracted. The data extraction was done by analyzing the data based on the name of the author, the title, year and the results, namely grouping together the important data in the article.

5. Discussion

The nurses understand caring in nursing as a relationship with the patients that is characterized by the nurse's part through an individual approach using empathy, attention, experience and sensitivity. Through care, active communication takes place by providing information that reduces anxiety and that lessens the obstacles in the work. This relationship helps to protect the effectiveness, dignity and comfort of the patients. This requires experience on part of the nurses and this is influenced by their environment. The personal qualities of the nurses (what professional knowledge, attitudes and skills they have) and the availability, reliability and emotional and physical support that they offer is important to the patients [7].

The results of the study were r = 0.698 collectively while the results of the calculation of the coefficient of determination was 48.72%. The remaining 51.28% was influenced by the other factors that were not examined. With the level of hypothesis testing at an error rate of 1%, the value of the t count was 13.28% greater than Table 2.660, thus it can be concluded that Ho is rejected, meaning that emotional intelligence has a positive influence on employee performance in the district office of the Ministry of Religion Karawang [8].

The results indicate that spiritual intelligence affect emotional and psychological intelligence. Emotional intelligence affects psychology, fatigue and nurse caring behavior. A person's psychology influences fatigue and nurse caring behavior. Fatigue influences the caring behavior of the nurses. Psychology mediates the relationship between spiritual intelligence and caring behavior and between emotional intelligence and nurse caring behavior. Fatigue mediates the relationship between spiritual intelligence and caring behavior and between the psychological factors and nurse caring behavior[9].

Based on the research, it was found that the nurses 'caring behavior was greatly influenced by the nurses' emotional intelligence. Based on the results of the research conducted on the general nurses in both international and surgical hospitals, nurses who already have emotional intelligence tend to be good. However, the caring behavior shown is still lacking. This certainly requires a follow-up in the form of an effort to explore more about the factors that influence the nurses' caring behavior, especially in internal wards and in Surgery Badung Hospital[10].

In her research, it was explained that there is a positive relationship between emotional intelligence and caring behavior, meaning that the higher the emotional intelligence in the nurses, the better the caring behavior and vice versa; the lower the emotional intelligence in the nurses, the worse that their caring behavior is[11].

6. Conclusion

Several studies show that emotional intelligence can affect the nature of the caring exhibited by the nurses. Emotional intelligence can help someone to understand their emotions and those of others in

order to influence their behavior. With the existence of better behavioral changes, they are able to improve their nursing performance, especially caring in order to meet patient satisfaction.

References

[1] Sudarta I W 2015 *Managemen Keperawatan penerapan teori model dalam pelayanan keperawatan* (Yogyakarta: Gosyen Publishing)
[2] Depkes RI 2008 Modul Manajemen dan Pemberian Asuhan Keperawatan di Unit Ruang Rawat Rumah Sakit Bandung (Depkes RI)
[3] Morrison 2009 *Caring & Comunicating. Hubungan Interpersonal dalam Keperawatan (Terjemahan)* ed N Z Astuti (Jakarta: EGC)
[4] Brenda s gregory d 2000 *caring with the simple act*
[5] Donsu J D T 2017 *Psikologi Kesehatan Aspek - aspek Psikologi, Konsep Dasar Psikologi Teori Perilaku Manusia* (Yogyakarta: Pustaka Baru Press)
[6] Agustian A . 2007 *Rahasia Sukses Membangun Kecerdasan Emosi dan spiritual* (Jakarta: Arga)
[7] Drahošová L and Jarošová D 2016 Concept Caring in Nursing *Cent. Eur. J. Nurs. Midwifery***7** 453–60
[8] Kuswandi Jaya M 2012 Jurnal Manajemen Vol.10 No.1 Oktober 2012 1038 Pengaruh Kecerdasan Emosional Terhadap Kinerja Karyawan Pada Kantor Kementerian Agama Kabupaten Karawang *J. Manaj.***10** no **1**
[9] D K 2013 Effect of spiritual intelligence, emotional intelligence, psychological ownership and burnout on caring behaviour of nurses: a cross-sectional study. *J. Clin. Nurs.*
[10] Darmini A Y 2017 Gambaran kecerdasan emosional dan perilaku caring perawat di rumah sakit daerah badung, Bali
[11] Lestari 2017 NHubungan Kecerdasan Emosional dengan perilaku caring perawat rawat inap di RSUD di Jakarta

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CULTURE PHENOMENON OF FOOD SELECTION AMONG CHILDREN WITH LEUKEMIA IN SURABAYA

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ABSTRACT

The disease can occur as a result of the food consumed does not have nutritional value for the body or low quality or an unbalanced diet, mistakes in choosing a diet or a food menu. Food was one of the risk factors for cancer, such as leukemia. The aim of the study was to analyze the relation of culture based menu selection with the occurrence of leukemia in children at the Surabaya. The population in this study were all mothers or families and pediatric patients with leukemia who lived in Surabaya, with a capacity of ± 30 people. The independent variable in this study was the culture of food menu selection, consist of familly culture in the selection of food menus, knowledge about nutrition, the social function of food selection, preference food of familys. The dependent variabel was incident of leukemia. Linear regression used to see relation between dietary menu patterns with the incidence of leukemia in children. The result of this research was culture of food menu selection namely family belief, knowledge of nutrition, social functions, preferences food of family's were not contribute to the occurrence of Leukemia in children at Surabaya. This was likely because when carried out this study the mother or family of children suffering from leukemia who became respondents were already in the treatment period so that many of they were exposed to information from health workers, so many inappropriate cultures have been changed to follow a healthier food selection culture. There were other factors that cause leukemia besides food such as viruses, drugs, radiation, and genetics. Although there was no relationship between the culture of food selection and the incidence of leukemia, the family is expected to continue to implement a culture that supports the selection of healthy food for the family both on the component family belief, knowledge of nutrition, social functions, preferences food of family's.

Keywords: menu, culture, food consumption, leukemia

1. Introduction

The disease can occur as a result of the food consumed which does not have value for the body or which is low quality or forms an unbalanced diet, or mistakes in choosing a diet. Food is also one of the important risk factors for cancer, such as leukemia. Leukemia is a disease that can affect all types of ages, including children. Leukemia is a type of cancer that is often found in children under the age of 15 years. Leukemia is a chronic disease that ranks second and third as a cause of death in children [1].

The causes of leukemia have not been known for sure. Some studies have found several risk factors that can cause leukemia including pesticide use, electric fields, a history of miscarriages in the mother, radiation, chemicals (benzene), viruses, genetic disorders, mothers who are relatively old at birth, mothers who smoke while pregnant, alcohol consumption during pregnancy, marijuana use during pregnancy, magnetic field, parental work, birth weight, prenatal and postnatal radiation, vitamin K, and diet [2]. Children who suffer from leukemia tend to experience malnutrition threefold compared to children who are healthy / do not have a history of cancer. A balanced diet is

very helpful in the prevention of leukemia (Shils, 2008). Factors that influence the fulfillment of nutrition in children who suffer from leukemia include internal factors consisting of physiological factors, Psychological factors, External Factors: Culture, Religion, Ethical Decisions, Economic Factors, Social Norms, Health Education /Awareness, Media and Advertising. Culture is the main determinant of food selection. (Barasi. ME, 2007: 22). The basic human needs that must be fulfilled to carry out life are eating and drinking. Food is a manifestation of culture from the process of processing raw materials to ready-to-eat food, including culture in the way it is presented and consumed.

Food safety is the condition and effort needed to prevent food from the possibility of biological, chemical and other objects that can interfere with, harm and endanger human health. Food safety is a necessity of the community because safe food will protect and prevent disease or other health problems (Krisnamurni, 2007).

According to Anwar (2004), unsafe food can cause diseases called foodborne diseases, namely diseases arising from consuming foods containing toxic substances or compounds or pathogenic organisms, including chemical contamination such as fertilizers, pesticides, insecticides, mercury, arsenic, cyanide and so on. Based on qualitative research using a phenomenological approach to the mother or family and leukemic pediatric patients treated in Bona I Room, Dr. Hospital Soetomo Surabaya in November 2014 in 5 patients and their families, it was found that children suffering from leukemia mostly had a history of consuming fast food in the form of instant noodles in the daily food menu for a long period of time [3].

2. Methods

This type of research uses analytics using a simple linear regression/correlation approach, by looking at the dominant factors that influence the culture of food menu selection with the incidence of leukemia in children. The population in this study were all mothers or families and pediatric patients with leukemia who lived in the Surabaya shelter, composed of 30 respondents, with a total sampling technique.

Variable research on food menu selection culture in children with leukemia, with sub-variables as follows: trust in food menu selection, nutrition knowledge in food menu selection, social function in food menu selection, and preference for daily food menu selection variable independent to the incidence of leukemia in children. Analysis of the data used is the Regression Logistics Test to see the dominant factors that influence the culture of food menu selection with the incidence of leukemia in children. Accepted if P> 0.05.

3. Results AND DISCUSSION General data

3.1 Characteristics of Leukemic Patients in Shelter Houses

Table 3.1 Characteristics of Leukemic Patients in Shelter Houses from July 14 to August 21, 2017

Characteristic aspects	Category	Frequency	Percentage
	Women	18	60%
Age of the patient	5 year	14	47%
	> 5 year	16	53%
Patient Education	Low (no school - junior high school)	14	47%
	SMU	15	50%
	High (Bachelor)	1	3%
Family Income	> Rp. 1.000.000,-	16	53%
	< Rp 1000.000,-	14	47%
Number of siblings biological	< 2	13	43%
	> 2	17	57%
Previous medical history	there is	7	23%
	There is no	23	77%
Diet' pattern of mothers during pregnancy	Rice, fish, vegetables	17	57%
	Rice, fish, vegetables, Instant noodles	13	4 3%

3.2 Selection of food menu

Table 3.2 Culture Selection of food menus in children with Leukemia at the Shelter House for July 14-August 21, 2017

1. Trust

Category	Frequency	Percentage
Well	25	83%
Enough	5	17%
Less	0	
total	30	100%

2. Mother's Knowledge (Selection of food menu)

Category	Frequency	Percentage
Well	28	93%
Enough	2	7%
Less	0	
total	30	100%

3. The social function of parents in the food menu selection

Category	Frequency	Percentage
Well	16	53%
Enough	13	43%
Less	1	4 %
total	30	100%

4. Preferences

Category	Frequency	Percentage
Well	26	87%
Enough	4	13%
Less	0	
total	30	100%

5. Food selection pattern

Category	Frequency	Percentage
Well	20	67%
Enough	8	27%
Less	2	7%
total	**30**	**100%**

Based on table 3.2 above, it is explained that the culture of food menu selection for children with leukemia in a shelter about community trust shows that almost all of them are good (83%) and small enough (7% 0), a small portion is enough (7%), social function shows mostly good (53%), almost half is good (43%), a small portion is less (4%). preference or preference on the food menu shows almost all good (87%), a small portion is enough (13%), and the pattern of food menu selection shows that most are good (67%), almost half is enough (27%), a small portion is less (7%).

3.3 Leukemia in children

Table 3.3 Occurrence of Leukemia in children at Shelter Houses on July 14-August 21 2017

Type	Frequency	Percentage
ALL	27	90%
CML	3	10%
total	30	100%

Based on table 3.3 above, it is explained that the incidence of leukemia in children at halfway houses shows almost ALL (90%) and a small portion of CML (10%).

3.4 Cultural Relationship Selection of food menus with the incidence of leukemia

Table 3.4 Relationship Culture Menu selection with the occurrence of Leukemia at Home Stop on July 14 to August 21, 2017

The culture of food menu selection		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Trust Knowledge Social function	-.015	.038	.159	1	.690	.985
	Preferences or preferences	-.141	.114	1.525	1	.217	.868
	Menu selection pattern	-.098	.102	.929	1	.335	.907
	Constant	352	.290	1.471	1	.225	1.422
		-.046	.098	.219	1	.640	.955
		-6.519	20.463	.101	1	.750	.001

Based on table 3.4 above the Cultural Relationship Selection of the food menu starts a trust,

knowledge of the food menu, social functions, preferences or preferences, menu selection patterns show no influence according to the results of significance (P> 0.05).

4. Discussion

Culture selection of food menu about trust, knowledge of food menu, social function, preferences or preferences, the pattern of food menu selection for children at Rumah Singgah shows that almost all of them are good. This is according to the maternal characteristics that education has almost half (50%) of high school education and a small portion of PT (3%) so that it is sufficiently understanding while understanding is quite influential on behavior. Understanding someone's behavior according to Shiffman and Kanuk [4] is a behavior that is considered by someone in finding, buying, using, evaluating and ignoring products, services, or ideas that are expected to satisfy someone to be able to satisfy their needs by consuming the products offered. In addition, a person's behavior according to Loudon and Della Bitta (1993) is a process of decision making and physical activity. All of these behaviors involve individuals in assessing, obtaining, using or ignoring products. Knowledge and education in this study of parents of children have enough information about Leukemia, especially about the factors that contribute to or influence the incidence of this disease. The culture of menu selection related to social functions and the pattern of food selection in this study is a little less. This is according to social functions (religious functions and communication) which are still less applied so that important media in the efforts of humans to relate to each other is performed less, especially in the provision of food served [5]. The culture of menu selection related to the pattern of menu selection from the results of this study still has a small portion lacking, this is in line with family income, which is still almost half less than 1million rupiahs, so it is very influential in considering choosing a family food menu and menu type. According to Sanjur [6], it was explained that plaque selection of food was based on group ethnicity and excellence so that consideration in choosing menu types was not considered by parents.

Prevalence: The prevalence of leukemia in children at Shelter Houses is almost entirely diagnosed with ALL and there is a small percentage diagnosed with CML. It is appropriate that almost all children age acute lymphocyte leukemia or called LLA is the most common form of leukemia in children, this disease is the most common childhood malignancy. LLA incident is 1 / 60,000 people per year, with 75% of patients aged less than 15 years. The peak incidence is 3-5 years [7]. Whereas chronic myelogenous leukemia (CML) is also included in myeloid stem cell malignancy. However, more normal cells are compared in the acute form, so the disease is lighter. Genetic abnormalities called the Philadelphia chromosome are found in 90% to 95% of patients with CML. CML rarely attacks individuals under the age of 20 years, but the incidence increases according to the age of the child (Hockbenberry, 2007). The results of this study only identify the types of cancer in children (Leukemia) ALL but at the condition of other cancer stop houses such as; retinoblastoma, brain tumor, Wilms tumor, and there is a tendency or trend to increase the incidence of other types of tumors that have not been identified as a trend in numbers from 2014 to 2016 as follows: 7%, 15% and 22%.

Linear logistic analysis test results show that the relationship between the culture of food menu selection begins with trust, knowledge of food menus, social functions, preferences or preferences, menu selection patterns show no influence according to the significance results (P> 0.05). This is because parents of children are already in the stage of chemotherapy treatment so that they have been exposed to information about cancer, especially the trigger factors for cancer.

From several regressed factors, there are several factors that can contribute, namely knowledge factors, menu preferences or preferences and the socio-cultural function of food menu selection. Knowledge factor, one's knowledge is usually obtained from experience that comes from various sources, such as mass media, electronic media, manuals, health workers, poster media, close relatives and so on. Knowledge can also be obtained through learning processes such as counseling, training or knowledge courses can help explain important aspects of the world and predict events [8].

Preference or preference factors, the results of the Drewnowski (1999) study state that there is a significant relationship between food preferences and the frequency of eating in women. There are three main factors that influence food consumption, namely: individual characteristics, food characteristics, and environmental characteristics. A model or framework of thinking is needed to examine food consumption in relation to these characteristics, and the relationship between the characteristics themselves [6]. Social function factors, Food is an important medium in human efforts to relate to one another. In the household, the warmth of relationships between members occurs at the time of the meal together. Likewise, among large households, a meeting is held regularly with meals to maintain and strengthen the relationship of friendship. Between neighbors, they often exchange food [5].

5. Conclusions

Food menu selection culture with the occurrence of leukemia in children is as follows: Culture of food menu selection from the trust, knowledge of food menus, social functions, preferences or preferences of menu patterns do not contribute to the occurrence of Leukemia in children in Surabaya shelter trust, knowledge of food menus, social functions, preferences or preferences, menu selection patterns. So, the Cultural Recommendation Food menu selection is about trust, mother's knowledge, social functions, prevention and menu selection patterns are maintained. For other researchers, future researchers can conduct research with children newly diagnosed with ALL.

References

[1] Andra 2007 Peran Keluarga Pada Anak Resiko Tinggi Atopi *Farmacia* **6**
[2] Sumanto S 2003 *Neoplasma Sistem Hematopoietik: Leukemia* (Jakarta: Fakultas Kedokteran Unika Atma Jaya)
[3] Indriatie 2014 *Culture of food menu selection for children with leukemia*
[4] Schiffman L G, Kanuk L and Hansen H 2013 *Consumer Behaviour* (Pearson Education Limited)
[5] Almatsier S 2002 *Prinsip dasar ilmu gizi* (Jakarta: Gramedia Pustaka Utama)
[6] Sanjur D 1982 *Social and Cultural Perspectives in Nutrition* (Prentice-Hall)
[7] Hoffbrand A V 2005 *Kapita Selekta Hematologi* (Jakarta: EGC)
[8] Notoatmodjo S 2005 *Metodologi Penelitian Kesehatan* (Jakarta: Rineka Cipta)

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KNOWLEDGE OF STUDENT PRACTICES ABOUT SAFETY PATIENTS IMPROVE THE ABILITY OF FALLING RISK ASSESSMENT

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ABSTRACT

Falling patients are incidents in hospitals that can cause injury to patients. Falling risk prevention is very important and is one of the goals of patient safety. The incidence of falling patients can be caused by several factors, one of which is students undergoing clinical practice because of a lack of student knowledge about patient safety. This study aims to determine the relationship between students' knowledge about patient safety with falling risk assessment. This study is a type of quantitative research with an analytical survey approach. The design used is cross-sectional, the data collection technique uses total sampling. The number of samples was 65 respondents. Data analysis using spearman correlation test. The statistical test results show a p value of 0,000 ($p<0.05$) with a correlation coefficient of 0.492 and a positive relationship direction, this indicates a relationship between the knowledge of students about patient safety and risk assessment of falls. Increasing the knowledge of students about patient safety will improve ability of falling risk assessment.

Keywords: knowledge, patient safety, falling risk assessment

1. Introduction

Falling patients are frequent incidents in hospitals that can result in serious injury or even death. Falling risk prevention is the sixth patient safety goal and is important to do because patient falls are very alarming incidents in all hospitalized patients and have become the second most adverse event in health care after medication errors (Joint Commission International, 2011).

The incidence of falling patients has a detrimental impact on patients, one of the adverse effects of which is the impact of physical injury which includes abrasions, torn wounds, bruises, some severe cases of falls can result in fractures, bleeding, and head injuries. AHRQ (2008) said the incidence of patients falling in US hospitals was reported to be 700,000 to 1,000,000 patient falling each year. Reports from hospitals and mental health units in the UK in 2011 amounted to 282,000 patients each year, of which 840 patients had hip fractures, 550 patients had fractures, and 30 patients had intra-cranial injuries (National patient safety agency, 2007).

Data of falling patients in Indonesia based on a report from the XII PERSI congress (2012) showed that the incidence of patients fell into three major hospital medical incidents and was ranked second after medicine error. Data from the report shows that at 34 cases or equivalent to 14% of incidents fell in hospitals in Indonesia.

This proves that the incidence of patients falling is still high and still cannot reach the accreditation standard stating that the incidence of falling patients is expected not to occur in the hospital or 0% of events. (Joint Commission International, 2011). Efforts to anticipate and prevent the occurrence of falling patients really needs to be assessed from the beginning as well as a periodic fall risk assessment, this study needs to be carried out since the patient starts registering (Budiono, 2014). Nurse students have many roles in preventing patients from falling one by doing assessment risk falls such as the Morse Fall Score, (MFS) assessment or Humpy Dumty Fall Scale.

The results of research conducted by Iswati (2015). Student knowledge is still lacking in patient safety, including the process of correctly identifying 32%, effective communication at 61%, increasing the drug correctly by 74%, reducing the risk of infection 86%, and reducing the risk of falling 43%. The research conducted by Sari (2015) shows that students' knowledge of patient safety is far from being 100%. Students have limited clinical experience so that the risk of making mistakes in giving action to patients, so that when a procedure is done imperfectly or wrong it can endanger the patient's condition (Khasanah, 2012).

The results of a preliminary study conducted on September 5, 2018 at Sultan Agung Islamic Hospital Semarang with a questionnaire method and observations of 16 nurse students obtained results of 6 students (37.5%) had good knowledge about patient safety and were skilled in carrying out the fall risk assessment on patients, 8 students (50%) had sufficient knowledge about patient safety and were skilled enough in implementing a fall risk assessment, 2 students (12.5) had less and less skilled knowledge in carrying out fall risk assessment to patients. This illustrates that many nurse students who already have sufficient knowledge of patient safety to prevent the risk of falling but there are some students who are still lacking in patient safety knowledge and the implementation of falling risk assessments.

2. Research Methods

This type of research is quantitative by using an analytical survey method through a cross sectional approach. In this study the population is nurse students who practice at Sultan Agung Islamic Hospital Semarang in November 2018. The sample used in this study is all students who practice professions who practice at the Sultan Agung Islamic Hospital Semarang in November a number of 65 nurse students. Inclusion criteria are the general characteristics of the research subjects in the target population and in the affordable population. The inclusion criteria in this study were nurse students who practiced at Sultan Agung Islamic Hospital Semarang who were willing to be respondents and students who had received material about patient safety.

The instrument of students' knowledge about patient safety with 24 statements with 2 choices of right and wrong answers. Statements made to obtain data on students' knowledge in the form of a Guttman scale by weighting each answer consisting of 5 items to determine the accuracy of patient identification, 3 items for effective communication, 4 items for drug safety improvement, 2 items for the right location, right procedure, right patient operation, 7 items for increased risk of infection related to hospital health services and 4 items for reducing the risk of patients falling in hospitals Observation is used to assess students in carrying out the risk assessment of patients who fall 18 statement. Statements with answers always score 3, sometimes score 2, and never score 1.

Data analysis was performed by univariate and bivariate analysis. Univariate analysis is used to explain the frequency distribution and the percentage of the research subject and is presented in the form of a frequency distribution table. Bivariate analysis is used to determine whether or not there is a relationship between the independent variables and the dependent variable, the data of this study indicates an abnormal distribution of p value 0,000 (<0.05) so that bivariate analysis in this study uses a non-parametric statistical test (rank spearmen test).

3. Results

Table 1.1. Distribution of student characteristics based on age in Sultan Agung Islamic University (n=65)

Age	Frequency	(%)
20-21 years	30	46,2
22-23 years	35	53,8
Total	**65**	**100**

Table 1.1 shows that students at the age of 22-23 years were 35 students (53.8%) and those aged 20-21 at 30 students (45.5%).

Table 1.2. Distribution of characteristics of students based on gender in Sultan Agung Islamic University (n=65)

Gender	Frequency	(%)
Male	10	15,4
Female	55	84,6
Total	**65**	**100**

Table 1.2 shows that female students are 55 students (84.6%) and male students are 10 students (15.4%).

Table 1.3. Frequency distribution according to student knowledge in Sultan Agung Islamic University (n=65)

Knowledge	Frequency	(%)
Good	18	27,7
Enough	34	52,3
Less	13	20,0
Total	**65**	**100**

Table 1.3 shows that the majority of students who have sufficient level of knowledge are 34 (52.3%) students, and a small proportion have less knowledge level, at 13 (20.0%) students.

Table 1.4. Frequency distribution according to the implementation of the risk assessment falls by students in Sultan Agung Islamic University (n=65)

Falling Risk Assessment	Frequency	(%)
Good	16	24,6
Enough	40	61,5
Less	9	13,8
Total	65	100

Table 1.4 shows that the majority of professional student nurses in the implementation of risk assessment fell quite well at 40 students (61.5%) and a minority of less well at 9 students (13.8).

Table 1.5 Test for Normality of Student Practices with Implementation of Falling Risk Assessments in Sultan Agung Islamic University (n=65)

Variable	Kolmogorov smirnov[a]	
	n	*P value*
Risk assessment falls	65	0,000
Knowledge of patient safety	65	0,000

Table 4.5 shows the results of the normality test on the knowledge variable of the students about patient safety and the implementation of falling risk assessments that are abnormally distributed i.e. 0,000 (p value <0.05) because the abnormal data of the researcher uses rank spearmen data test

Table 1.6. The spearmen test is the relationship between the knowledge of students about patient safety and the implementation of falling risk assessments in Sultan Agung Islamic University (n=65)

Variable	R	*P value*
Knowledge of patient safety and the implementation of falling risk assessments	0,462	0,000

Table 1.6 shows the results that in this study obtained data there is a meaningful relationship between the knowledge of students about patient safety with the implementation of risk assessment falls in Sultan Agung Islamic Hospital Semarang with p-value of 0,000 or p-value <0,05 and correlation coefficient which is 0.462. with the direction of a positive relationship indicates the existence of a close relationship between the two variables. The results showed a significant relationship, if the safety knowledge of students is good then the better the implementation of risk assessment falls, this applies to the opposite.

Table 1.7. The results of cross tabulation of the relationship between the knowledge of students about patient safety and the implementation of risk assessment in Sultan Agung Islamic University (n=65)

		the implementation of risk assessment			Total
		Good	Enough	Less	
Knowledge of students about patient safety	Good	11 16.9%	4 6.2%	3 4.6%	18 27.7%
	Enough	4 6.2%	30 46.2%	0 .0%	34 52.3%
	Less	1 1.5%	6 9.2%	6 9.2%	13 20.0%
Total		16 24.6%	40 61.5%	9 13.8%	65 100.0%

Table 1.7 cross tabulation shows that students who have good patient safety knowledge with the implementation of risk assessment fall well there are 11 (16.9%) students. Students who have enough patient safety knowledge with the implementation of the risk of falling are quite good, there are 30 (46.2%) students and students who have insufficient patient safety knowledge with the implementation of a risk assessment of falling poorly there are 6 (9.2%).

4. Discussion

The results of the study showed that the majority of students were 22-23 years old. In general, the younger the age of students or less than 25 years, the more risky the less good in implementing patient safety. Whereas in the age of more than 25 years the better the implementation of patient safety.

This is in line with Suryani's research, et.al (2015) that there is a relationship between age and knowledge in implementing patient safety by students. Robbin's research (2003) says that age increase is closely related to the ability to analyze problems faced, commitment to an action or work, and be able to control emotions better.

The results of the research at the Sultan Agung Islamic Hospital found that the age of students greatly influenced nursing knowledge and practice, where the older a person's knowledge and ability to think they will be more mature and will create better work skills.

The study found that most of the students were female. The results of this study have similarities with the research conducted by Putra (2013) where most female student nurses do patient safety better than men.

This is consistent with the opinion of Kozier & Erb (2010) on the philosophy of the mother instinct that the majority of medical teams, especially nursing, come from women, where a woman has the instinct to care for herself as reflected in a mother and has a simple instinct to maintain family health, especially children.

The study at the Sultan Agung Islamic Hospital found that gender has a relationship in maintaining patient safety. This is because in the field of nursing there more women compared to

men. This is because women have more caring characteristics than men. Women also have an instinct to care for themselves and have simple instincts in maintaining health so that they will be better at carrying out patient safety measures.

The study found that the majority of students had enough knowledge. Research conducted by Jamshed et al (2014) found that students who have good knowledge have the ability to measure the accuracy of drug dosages and make appropriate decisions for patient safety. Manorek, et al. (2018) found good knowledge in nursing will affect the application of good patient safety goals. Knowledge is an important factor in someone making a decision, but someone's knowledge cannot always help them to avoid undesirable events, for example students who have a good level of knowledge do not always carry out patient safety properly because all actions taken are at risk for errors.

The study found that students' knowledge had a relationship with patient safety. Good student knowledge will produce good performance too. For this reason, it is necessary to add information sources through training, seminars or workshops on patient safety. In training students are provided with knowledge, skills and experience related to patient safety.

The study found that students in the implementation of risk assessments fell quite well. Harianto, et al. (2015) research results in which student knowledge of patient safety is in the sufficient and lacking category so knowledge management is needed to improve the competence of nursing students.

The study at Sultan Agung Islamic Hospital found that the implementation of risk assessment fell on students who were not good due to lack of knowledge and experience so that they had not reached a good level of skills in the virginity world, therefore the need to always involve students in training - skills training students are getting better.

The results of statistical tests using Spearmen Rank correlation obtained the correlation coefficient value of patient safety knowledge of 0.462 with a p value of 0.000 ($P < 0.05$), so that there was a significant relationship between the knowledge of students about patient safety and the implementation of falling risk assessment. The correlation value is 0.462 with a positive sign indicating a moderate relationship between the two variables. This can be interpreted if the knowledge of the students is good about patient safety, there will be increased skills in implementing the risk assessment to fall at Sultan Agung Islamic Hospital, Semarang.

The importance of patient safety knowledge in hospitals is needed by students because without good knowledge, students will not be able to perform and implement patient safety in patients in hospitals correctly and well. Notoadmojo (2015) states that cognitive knowledge is a very important domain in shaping one's actions.

A person's knowledge is closely related to one's actions in fulfilling their obligations, so further education is very important in trying to improve and obtain knowledge.

Patient safety for nurses is not only a guideline about what should be done, but patient safety is a commitment contained in the nurse's code of ethics in providing safe, competent, and based on a code of ethics for patients (Canadian Nurse Association, 2009). Providing safe services must be preceded by understanding hospital patient safety material that refers to international standards at the Joint Commission International (JCI). JCI is one of the hospital's international accreditation institutions that has been recognized by the world. JCI's main focus is to improve patient care through the provision of accreditation and certification services and through consultancy and education services with the aim of helping organizations implement practical and sustainable solutions (The Joint Commission, 2014).

The results of this study are also supported by Darliana (2016) that the factors of nurse knowledge about patient safety are proven to be able to contribute positively and significantly in influencing the implementation of the patient safety program. Other research by Bawelle, Sinolungan, & Hamel (2013) also obtained the same conclusion that there is a relationship between joint knowledge of experience, continuous information, values and abilities possessed by individuals in translating information that provides a framework for evaluating and adapting to experience and

information new. This is also in accordance with the theory of Health Belief Model (HBM) by Becker (1974, in Akubugwo, Ijeoma, & Burke, 2013) which states that behaviors formed in individuals are influenced by individual perceptions of knowledge and belief in an object.

5. Conclusion

Knowledge of good students about patient safety will improve the implementation of falling risk assessments.

Suggestion

1. For Students

Student knowledge about patient safety and the skills of implementing a fall risk assessment at the Hospital can be improved by attending training and seminars on patient safety

2. For hospitals

The field of education and training of hospitals should assess students about patient safety before students practice at the hospital. The hospital should carry out training, seminars, or guidance for students to improve student knowledge about patient safety.

3. Future research

It is hoped that this research can be a source for further research by further developing the results of this study with different dependent variables and increasing the number of respondents or conducting research at different hospitals so that the results obtained will be broader.

References

[1] Agency, N. P. 2007. National Patient Safety Agency.Slips, Trips and Fall in Hospital.

[2] AHRQ. 2008. Patient Safety and Quality. *Journal Pelaksanaan Asesmen Risiko Jatuh di Rumah Sakit*, 2.

[3] Akubugwo, Ijeoma, & Burke, M. 2013. Influence of Social Media on Social Behavior of Post Graduate Students. A Case Study of Salford University, United Kingdom. J*ournal of Research & Method in Education , 39-43*

[4] Budiono. S.A. 2014. Pelaksanaan Program Manajemen Pasien dengan Resiko Jatuh di Rumah Sakit. *Jurnal Kedokteran Brawijaya Vol 28 Suplemen No 1*.

[5] Bawelle, S.C, Sinolungan, J.S.V, Hamel, R.S. 2013. Hubungan Pengetahuan dan Sikap Perawat dengan pelaksanaan Keselamat Pasien (Patient Safety) di Ruang Rawat Inap RSUD Liun Kendage Tahuna. *Ejournal keperawatan*.1.1

[6] Canadian Nurses Association. 2009. *Position statement patient safety. Otawa The Author diakses 8 Maret dari: http://www.cnaaiic.ca/documents/ pdf/publication*

[7] Darliana, D 2016. Hubungan Pengetahuan Perawat Dengan Upaya Penerapan Patient Safety Di Ruang Rawat Inap Rumah Sakit Umum Daerah Dr. Zainoel Abidin Banda Aceh. *Idea Nursing Journal* Vol. VII No. 1 2016 ISSN : 2087-2879

[8] Harianto. J.W, Nursalam, Dewi.Y.S. 2015. Keselamatan Pasien Berbasis Knowledge Management Seci Srbagai Peningkatan Kompetensi Mahasiswa Keperawatan. *Jurnal Ners Vol. 10 No. 2*.

[9] Iswati. 2015. Pengetahuan dan Penerapan Sasaran dan Keselamatan Pasien pada Mahasiswa Semester 6 di Akaddemi Keperawatan Adi Husada Surabaya. *Adi Husada Nursing Journal- Vol.1 Juni*, 3.

[10] Jamshed, S.Q, et.all. 2014. Understanding of antibiotic use and resistance among final-year pharmacy and medical students: a pilot study, *J Infect Dev Ctries. Vol* 8 No. 6 : 780-785. https://jidc.org/index.php/journal/article/view/24916878/1090

[11] Joint Commission International (JCI), 2011 *Standar Akreditasi Rumah Sakit : Enam Sasaran Keselamatan Pasien*. Edisi ke-4. Jakarta

[12] Joint Commission International 2014, Accreditation Standards for Hospitals. Retrieved from Joint Commission International: http://www.jointcommissioninternational.org/

[13] Khasanah.U. 2012. *Tindakan Error Prosedur Keperawatan Jenis dan Faktor Penyebabnya pada Mahasiswa Profesi.*

[14] Kozier,B.,Glenora Erb, Audrey Berman dan Shirlee J.Snyder. 2010. *Buku Ajar Fundamental Keperawatan* (Alih bahasa : Esty Wahyu ningsih, Devi yulianti, yuyun yuningsih. Dan Ana lusyana). Jakarta :EGC

[15] Kongres PERSI. 2012. *Laporan Peta Nasional Insiden Keselamatan Pasien*. Jakarta

[16] Manorek, H,. A. Joy M.R., Tubagus D.E.A. 2018. Faktor-Faktor yang Berhubungan dengan Penerapan Sasaran Keselamatan Pasien Pada Perawat di R. Rawat Inap RSUD Sam Ratulangi Tandano. *Ikmas*. 2(4): 65-76

[17] Miake-Lye.dkk. 2013. Nasional Keselamatan Pasien Rumah Sakit . *Impatient Fall Prevention Program as a Patient Safety Departement Kesehatan RI Strategis Sistematic Revies, Annals of Internal Medicine*.

[18] Notoatmodjo, S. 2015 *Ilmu Perilaku Kesehatan. Jakarta:* Rineka Cipa

[19] *Permenkes RI 1691/ Menkes /Per/VIII/ tentang Keselamatan Pasien Rumah Sakit.* 2011.

[20] Potter, P.A., & Perry,A.G. 2010. *Basic Nursing essentials for practice (6th ed). C*anada :Mosby Elseiver.

[21] Robbins, Stephen P, 2003. *Perilaku Organisasi*, Jilid 2, PT. Indeks Kelompok Gramedia.

[22] Sari, D.W.P. 2015. Potret Pelaksanaan Patient Safety Mahasiswa Profesi Ners, *Jurnal Nurscope*, vol 1 No. 2 http://jurnal.unissula.ac.id/index.php/jnm/article/view/467

[23] *Suryani, L, Handiyani, H, Hastono, S.P. 2015.* Peningkatan Pelaksanaan Keselamatan Pasien oleh Mahasiswa melalui Peran Pembimbing Klinik. *Jurnal Keperawatan Indonesia*. vol 18 No.2.http://www.jki.ui.ac.id/index.php/jki/article/view/412.

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SPIRITUAL INTERVENTION AND THERMAL STIMULATION IN PREGNANT WOMEN WHO HAVE BACK PAIN IN SEMARANG CITY

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ABSTRACT

Back pain is one complaint that is often experienced by pregnant women. This complaint increases with increasing maternal age. The purpose of this study is to determine the effectiveness of spiritual intervention and thermal stimulation of back pain in pregnant women. The method use quantitative with quasi experiment pre post test design with control on 40 people, subjects were taken by purposive sampling. Interventions in group 1 were listened to murottal Alqur'an surah Ar-Rahman and giving warm compresses, while in group 2, murottal Alqur'an was the subject's favorite surah and given warm compresses for 20 minutes. Data were analyzed using the Wilcoxon and Man Whitney tests. The Wilcoxon test in group 1 showed that there was an effect of listening to murottal Alqur'an surah Ar-Rahman and warm compresses to decrease back pain, p value 0.000. In group 2, there was an influence of listening to murottal Alqur'an favorite surah and warm compresses to decrease back pain, p value 0.000. The Mann Whitney test from both groups showed no significant difference in decreasing back pain in groups 1 and 2 with p value 1.000. Spiritual intervention and thermal stimulation effective to reduce back pain in pregnant women.

Keywords: spiritual intervention, thermal stimulation, pregnant women, back pain

1. Introduction

Pregnancy is a physiological process that couples always expect in a family. During the pregnancy process the mother will experience changes in her body which often cause complaints. Complaints are common and are felt by almost every pregnant woman, including the back [1].

Complaints of back pain in pregnant women occur because it is influenced by several factors including physical changes that occur during pregnancy. During pregnancy, women generally experience changes in body size, weight gain and the growth of the fetus in the uterus. This condition causes the abdominal wall to become stretched according to the development of the uterus. Stretching of the abdominal muscles can cause the posture of pregnant women to experience lordosis [2].

Lordosis posture in pregnant women causes the shoulder to be attracted to the back due to prominent abdominal enlargement and to maintain body balance and curvature of the vertebrae inward becoming excessive. Sacroiliac joint relaxation that accompanies changes in body shape stimulates an increase in back pain. Complaints of back pain like this usually begin to be felt when gestation enters the second trimester and increases when the gestational age increases. Pregnant women with complaints of back pain have a lower quality of life and more often complain of pain [3].

Complaints felt by pregnant women who experience back pain have an impact on daily activities so that the mother experiences a disruption in carrying out activities such as moving or

changing positions, difficulty walking, sleep disturbances and emotional disturbances during pregnancy that affect the quality of life of pregnant women [4]. Pregnant women with back pain must be careful in carrying out activities and it is very important to be given an understanding of ergonomic positions, avoid maladaptive movements, improper pelvic movements and avoid unbalanced weight[5]. Treatment that is routinely carried out in the antenatal period can reduce pain in malposition due to back pain experienced by pregnant women[6].

Complaints felt by pregnant women should not be ignored and must get good treatment so that the mother feels comfortable during her pregnancy. Back pain in pregnant women can be given pharmacologically or non-pharmacologically. Efforts to treat pharmacology can be done by administering analgesic drugs, while non-pharmacological management can be done by providing acupuncture, relaxation, massage, distraction and exercise therapy[7]. Efforts to treat pain with pharmacology must be careful and it is necessary to monitor drug side effects that may occur, while handling pain with non-pharmacological safer and does not cause side effects [8].

Many studies suggest that pregnant women often get complaints of back pain which cause the mother to experience disruption in carrying out daily activities. As research conducted by[9]which states that multipara pregnant women with back pain have a significant sleep disorder compared to primiparous mothers. From all pregnant women who experience back pain data obtained 57.7% experience disruption of activity and 77.5% of mothers feel bored undergoing an increasingly old pregnancy[1]also mentions mothers with back pain will experience complaints of pain in the legs, neurological disorders and disorders of elimination both urination and defecation.

Management of warm compresses is part of non-pharmacological therapy that can be given in obstetric cases, women in the antenatal, intranatal and postnatal areas. In giving warm compresses the study subjects showed a significant reduction in pain between before and after the intervention[10]. Giving warm compresses in addition to reducing the level of pain can also increase blood flow to the local tissue[11]. In addition to warm compresses, music therapy can also be done to reduce the level of pain and anxiety. As research conducted by[12]which states that giving stimulation of auditory music therapy can reduce pain.

Research on efforts to overcome complaints of pain with the provision of warm compresses and music therapy is most often performed on mothers who face labor, while for mothers who experience back pain has not been done much. The average researcher gives treatment with warm compresses or just music therapy which then measures the pain level to be able to assess the level of reduction in pain that occurs. In this study a combination of warm compressing and murottal Alquran was part of auditory stimulation for distraction therapy.

2. Methods

This research is a quantitative study that uses quasi-experimental design studies with Two Groups Pretest - Posttest Design with control in 40 research subjects taken through purposive sampling technique in Semarang City, Central Java Province, Indonesia. The treatment given to the research subjects was spiritual intervention and thermal stimulation. Subjects in group I were given interventions to listen to Qur'anic murottal Ar Rahman surah and warm compresses, while the research subjects in group II were given to Qur'anic murottal interventions favorite subject's surah and warm compresses with a duration of 20 minutes.

3. Results

Table 1. Results of frequency distribution of low back pain before intervention in group I and group II pregnant women in Semarang City in 2018 (n = 40).

Pain Level	Group I		Group II	
	f	%	f	%
Mild	0	0	0	0
Moderate	11	55.0	10	50.0
Severe Controlled	9	45.0	10	50.0
Severe not Controlled	0	0	0	0
Total	20	100.0	20	100.0

Table 1. shows that before the intervention most of the research subjects in group I had moderate pain of (55%), while in group II the subjects experienced pain at the moderate and severe levels controlled with the same amount of (50%).

Table 2. Results of frequency distribution of low back pain after intervention in group I and group II pregnant women in Semarang City in 2018 (n = 40).

Pain Level	Group I		Group II	
	f	%	f	%
Mild	19	95.0	19	95.0
Moderate	1	5.0	1	5.0
Severe Controlled	0	0	0	0
Severe not Controlled	0	0	0	0
Total	20	100.0	20	100.0

Table 2. shows that after the intervention, the research subjects in group I and group II showed a decrease in the degree of pain. In both groups the majority of the study subjects were in mild pain as much as 95%

Table 3. Results of the normality test for low back pain in group I pregnant women in Semarang City in 2018(n = 20).

Pain Level	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre	.361	20	.000	.637	20	.000
Post	.538	20	.000	.236	20	.000

Table 3. Shows that data on low back pain in group I pregnant women using the Shapiro-Wilk test obtained a significance value of 0,000 which means the data is not normally distributed.

Table 4. The results of the normality test for low back pain in group II pregnant women in Semarang City in 2018 (n = 20).

Pain Level	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre	.335	20	.000	.641	20	.000

			POS-944			
Post	.538	20	.000	.236	20	.000

Table 4. Shows that the data on the level of low back pain in pregnant women in group II using the Shapiro-Wilk test obtained a significance value of 0,000, which means the data are not normally distributed.

Table 5. Differences in the level of low back pain before and after intervention in group I pregnant women in Semarang City in 2018 (n = 20)

	N	Mean Rank	Sum of Ranks
Negative Ranks	20[a]	10.50	210.00
Positive Ranks	0[b]	.00	.00
Ties	0[c]		
Z			-4.053[b]
Asymp.Sig.(2-tailed)			.000
Total	20		

Table 5. Shows that there was a decrease in back pain in the study subjects from before and after intervention the Qur'anic murottal of Ar-Rahman surah with a mean rank of 10.50. In the results of the study, there were no research subjects who experienced an increase in back pain and none had the same or constant pain level before and after the intervention. The study also shows the results of p value 0,000 which means there are significant differences in the level of back pain in group I before and after intervention. So it can be concluded that there is the effect of giving Qur'anic murottal of Ar-Rahman surah and warm compresses to decrease back pain of pregnant women.

Table 6. Differences in the level of low back pain before and after intervention in group II pregnant women in Semarang City in 2018 (n = 20)

	N	Mean Rank	Sum of Ranks
Negative Ranks	19[a]	10.00	190.00
Positive Ranks	0[b]	.00	.00
Ties	1[c]		
Z			-3.938[b]
Asymp.Sig.(2-tailed)			.000
Total	20		

Table 6. Shows that there was a decrease in pain in 19 research subjects before and after Qur'anic murotal listening intervention with the favorite surah research subject with mean rank 10. Data showed no study subjects had increased back pain and there was 1 study subject who experienced decreased pain but who was still in the same or constant degree of pain. The processing results obtained p value 0,000 so that Ha was accepted, there were differences in back pain before and after intervention in group II research subjects and it can be concluded that there was an influence of listening to murotal surrah and giving warm compresses to decrease back pain.

Table 7. Effectiveness of spiritual interventions and thermal stimulation on decreasing back pain in pregnant women in Semarang City in 2018 (n = 40)

Group	N	Mean Rank	Sum of Ranks
Group I	20	20.50	410.00
Group 2	20	20.50	410.00
p			1.000
Total	40		

Table 7. Shows that the results of processing data are p value 1,000, which means Ha is rejected, meaning that there is no significant difference in decreasing back pain in giving Qur'anic murottal Ar-Rahman surah as spiritual intervention and thermal stimulation by giving Qur'anic murottal favorite subject's surah as spiritual interventions and thermal stimulation. These results mean that Qur'anic murotal spiritual intervention of listening to Ar- Rahman surah and thermal stimulation by giving spiritual intervention, and listening to the subject's favorite surah and thermal stimulation with warm compresses, has the same impact on decreasing back pain in pregnant women.

4. Discussion

Research shows that murotal spiritual intervention of listening to Ar- Rahman surah and thermal stimulation by giving spiritual intervention, and listening to the subject's favorite surah and thermal stimulation with warm compresses, has the same impact on decreasing back pain in pregnant women.

The intervention given to both groups equally significantly affected the reduction of pain in pregnant women.

Spiritual intervention in the form of listening to Qur'anic murrotal is part of distraction therapy. Distraction therapy is a form of therapy that is done to divert attention to other things that can make patients forget about the pain that is felt [13]. Auditory stimulation can affect emotions, activities of the brain and also the nervous system and cardiac output [14].

The auditory interventions provided one of them can be Qur'anic murotal listening. Qur'anic murottal interventions are received by the auditory system, transmitted to the brain which in turn affects the limbic system. Hearing stimulation is accepted by the brain in the midbrain region which stimulates the midbrain to secrete Gama Amino Butyric Acid (GABA), enkepalin and beta endorphin, which act as electric conductive inhibitors, have an analgesic effect and function as a softener. Increased hormone endorphin is able to reduce stress levels and control the pain felt by individuals[15].The use of the Qur'anic murottal stimulation is a simple action to be carried out and optimizes the religious side of the research subject. Qur'anic murottal administration when compared with other auditory therapies such as music has more influence on pain reduction[16]. Patients who experience long-term pain conditions need a spiritual touch to increase their enthusiasm and strength in dealing with their pain.

Providing warm compresses of thermal stimulation has the benefit of increasing the temperature of local skin, promoting blood circulation, stimulating blood vessels, reducing muscle spasm, relieving pain sensations, and providing calm and comfort [17]. Warm water is a means of slowly pumping the heat to the body which has a positive effect. Warm water can also affect the outer body, inner body and blood circulation. Warm temperatures can make a positive value for the body's energy because it has a good influence on cell components which consist of various

electrons, ions and others[18]. Warm water with a temperature of 35-40 ° C has a physiological impact on the body which can prevent muscle spasm and smooth blood flow so as to reduce pain. The water temperature at the time of giving compresses for thermal stimulation must be maintained. Giving compresses can be carried out in between 15 and 20 minutes [19].

The physiological effects of heat therapy can relieve pain, increase blood flow and metabolism and increase the elasticity of connective tissue. Thermal therapy in the form of a warm compress is passed on by the TRPV1 1 TRP nerve transduction receptor (TRPV1), which is a heat receptor. This TRPV1 receptor is in the primary afferent neurons, spinal cord, and throughout the brain. Activation of TRPV1 receptors in the brain can reduce antinociceptive. Heat stimulation in tissues stimulates vasodilation and blood flow to the tissues so that the supply of nutrients and oxygen to the location of pain becomes smooth. This condition increases peripheral metabolism, provides warmth, makes the muscles of the body become more relaxed and reduce pain.

Warm compress therapy is one of the non-pharmacological methods for relieving pain that can be done easily, various variations of giving, using available equipment at any time without the need for complicated skills. But if done correctly, it will have a significant impact on reducing pain [20].

5. Conclusion

The study concluded that spiritual intervention and thermal stimulation were effective for reducing back pain in pregnant women in Semarang City. The provision of spiritual interventions by listening murotal and thermal stimulation by providing warm compresses can make pregnant women experience relaxation back pain. The two interventions support and enhance Mother's comfort so that back pain is significantly reduced.

References

[1] Sehmbi H, D'Souza R and Bhatia A 2017 Low Back Pain in Pregnancy: Investigations, Management, and Role of Neuraxial Analgesia and Anaesthesia: A Systematic Review *Gynecol. Obstet. Invest.* **82** 417–36

[2] Richens Y, Smith K and Wright S L 2014 Lower back pain during pregnancy: advice and exercises for women *Br. J. Midwifery* **18** 562–6

[3] Bishop A, Holden M A, Ogollah R O and Foster N E 2016 Current management of pregnancy-related low back pain: A national cross-sectional survey of UK physiotherapists *Physiother. (United Kingdom)* **102** 78–85

[4] Gharaibeh A, A A W, Qdhah E, Khadrawi M, A A S and Qaoud Y 2018 Prevalence of Low Back Pain in Pregnant Women and the Associated Risk Factors Journal of Orthopedics & Bone Disorders 1–7

[5] Shah S, Banh E T, Koury K, Bhatia G, Nandi R and Gulur P 2015 Pain Management in Pregnancy: Multimodal Approaches *Pain Res. Treat.* **2015**

[6] Casagrande D, Gugala Z, Clark S M and Lindsey R W 2015 Low Back Pain and Pelvic Girdle Pain in Pregnancy *J. Am. Acad. Orthop. Surg.* **23** 539–49

[7] Chen H M, Wang H H, Chen C H and Hu H M 2014 Effectiveness of a stretching exercise program on low back pain and exercise self-efficacy among nurses in Taiwan: A randomized clinical trial *Pain Manag. Nurs.* **15** 283–91

[8] Wahyuni S, Indahsari L N, Maternitas D, Keperawatan F I, Islam U, Agung S, Terapi E, Abdominal K, Dan E, Kunyit M and Dismenore A 2014 Efektifitas terapi kombinasi *Proseding Konf. Nas. II PPNI Jawa Teng.* 108

[9] Marques A, Cardoso M, Mota M J, Carvalho A, Demain S and Sá-Couto P 2016 Women's experiences of low back pain during pregnancy *J. Back Musculoskelet. Rehabil.* **28** 351–7

[10] Igwea S E, Tabansi-Ochuogu C S and Abaraogu U O 2016 TENS and heat therapy for pain

relief and quality of life improvement in individuals with primary dysmenorrhea: A systematic review *Complement. Ther. Clin. Pract.* **24** 86–91
[11] Malanga G A, Yan N and Stark J 2015 Mechanisms and efficacy of heat and cold therapies for musculoskeletal injury *Postgrad. Med.* **127** 57–65
[12] Simavli S, Gumus I, Kaygusuz I, Yildirim M, Usluogullari B and Kafali H 2014 Effect of music on labor pain relief, anxiety level and postpartum analgesic requirement: A randomized controlled clinical trial *Gynecol. Obstet. Invest.* **78** 244–50
[13] Tajerian M and David Clark J 2017 Nonpharmacological Interventions in Targeting Pain-Related Brain Plasticity *Neural Plast.* **2017**
[14] Panteleeva Y, Ceschi G, Glowinski D, Courvoisier D S and Grandjean D 2018 Music for anxiety? Meta-analysis of anxiety reduction in non-clinical samples *Psychol. Music* **46** 473–87
[15] Wahyuni S, Rahayu T, Islam U and Agung S 2017 Endorphin massage *J. Kebidanan dan Keperawatan Aisyiyah* **13(1)** 88–94
[16] Rilla E V, Ropi H and Sriati A 2014 Terapi Murottal Efektif Menurunkan Tingkat Nyeri Dibanding Terapi Musik Pada Pasien Pascabedah *J. Keperawatan Indones.* **17** 74–80
[17] Purwaningsih A, Rahayu H and Wijayanti K 2015 Effectiveness of warm compress and cold compress to reduce laceration perineum pain on primiparous at Candimulyo Magelang 2015 *Int. J. Res. Med. Sci.* **3** S24–9
[18] Dehghan M and Farahbod F 2014 The efficacy of thermotherapy and cryotherapy on pain relief in patients with acute low back pain, a clinical trial study *J. Clin. Diagnostic Res.* **8** LC01-LC04
[19] Essa R M and Ismail N I A A 2015 Effect of second stage perineal warm compresses on perineal pain and outcome among primiparae *J. Nurs. Educ. Pract.* **6**
[20] Akbarzadeh M, Nematollahi A, Farahmand M and Amooee S 2018 The Effect of Two-Staged Warm Compress on the Pain Duration of First and Second Labor Stages and Apgar Score in Prim Gravida Women: a Randomized Clinical Trial *J. Caring Sci.* **7** 21–6

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SPIRITUALITY RELATIONSHIP WITH COGNITIVE FUNCTIONS IN ELDERLY IN THE AGE OF PUCANG GADING SEMARANG

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ABSTRACT

Cognitive function is conscious activity includes thinking, remembering, learning and using language. In the elderly cognitive function has decreased. Spirituality means the experience of thinking to bring into contact with God (in other words, not only experiences that feel meaningful). The spiritual qualities of the elderly are very important in order to maintain cognitive function. The purpose of this study was to determine the relationship between spirituality and cognitive function in the elderly at the Pucang Gading Retirement Home Semarang. This research was quantitative research with correlational design. Data collection was done by used the Daily Spiritual Experience Scale (DSES) measure on spirituality and Mini Mental State Examination (MMSE) on cognitive functions. Sampling with total sampling of 75 respondents. The method of data analysis used Spearman test rho.The results of the analysis obtained p value 0,000 (p value <0.05) showed that the relationship of spirituality with cognitive function was significant, whereas for the value of spearman correlation rho 0,861 which showed the direction of positive correlation strength. There is any relationship between spirituality and cognitive function in the elderly at the Pucang Gading Semarang Retirement Home and the direction of a positive correlation strength.

Keywords: cognitive function, elderly, spirituality

1. Introduction

Those aged above 60 years are considered elderly. An elderly person would want to spend time in his old age by living quietly, peacefully and spending time with his beloved grandchildren. But in reality an elderly person is perceived as a burden on his family and society. This fact encourages the assumptions that exist in developing communities that a person who becomes an elderly person will suffer many of the health problems experienced by elderly people. This perception arises because an elderly person can only depend on people who are around and who are often sick (Restiana, 2016).

It should be noted that diseases that exist in an elderly person are cognitive functions. Symptoms often arise in the form of inability to carry out activities independently and these symptoms cause a burden on the family and society. Other symptoms that can arise from impaired cognitive function are social function disorders and a decreased role in work (Mace dan Rabins, 2006)

The number of elderly people on Earth in 2010 amounted to 13.4%, the number of all the elderly population was 924,000,000 (United Nation, 2010). In 2012 the number of elderly people in Indonesia was 6.78% of the total population or around 18.55 million (BPS, 2012). The increase in the number of elderly in the province of Central Java in 2010 was 3,275,069 people and in Semarang reached 67,114 (Hamid, 2007). It is estimated that the number of elderly people in Indonesia continues to surge until 2020, namely 11.09% or more than 29.12 million people with a life expectancy of 70-75 years (Maryam, 2008).

The increase in impaired cognitive function in the elderly will have an impact on his family. Research by Mace and Rabins (2006), states that families who care for elderly people with cognitive

impairment can have physical, psychological or emotional, social and financial impacts. The physical impact is fatigue because family members who care for the elderly will have less rest. The psychological or emotional impact will be caused by anger, anger is caused by fatigue in caring for the elderly with a decline in cognitive function. Whereas the social and financial impacts caused are social isolation due to lack of families interacting with friends and the environment, for the financial impact of the family will surely experience financial difficulties, because the family must treat elderly people with a decline in cognitive function so they cannot work (Mace dan Rabins, 2006).

Spirituality is a relationship that is psychological or spiritual in nature that is distinguished by physical or mental aspects (Hasan, 2006). Spirituality also greatly affects holistic health. The aspect of spirituality is very tight between himself and God as a thanksgiving for the situation that is being traversed. People with maximum religion are also referred to as a way to get closer to God. Maximum spiritual development will make it easier for the elderly to face reality, play an active role in life, and formulate the meaning and purpose of their existence in life (Setyoadi, Noerhamdani and Ermawati, 2011). Based on the description above, the researcher was interested in examining "The Relationship of Spirituality with Cognitive Functions in the Elderly".

Spirituality also plays an important role in the elderly with a decline in cognitive function, Mukarramah's study (2016), states that there is a relationship between the intensity of reading the Koran and cognitive functions in the elderly in Sangiasseri Village that 60 elderly (82.2%) intensity of reading the Qur'an both have good cognitive function with a p value of 0,000. While another study by Handayani, et al. (2012) showed that the elderly boarding school program had an effect on cognitive function, with the results of increasing cognitive function in women as much as 31.25% and in men reaching 60% (Handayani, et, al 2012).

From the results of a study conducted on Wednesday, September 12, 2018 at the Pucang Gading Semarang Elderly Service House, data was obtained that 45 elderly had cognitive impairment from 110 elderly people. The researcher conducted a survey using the interview method, with respondents numbering 5 people. Of the 5 people there were 3 men and 2 women, the results obtained by 2 people had normal cognitive function because respondents answered often to worship, pray, and believe in the existence of God, 2 respondents were also able to mention how long they stayed, able mentioning what year and stay where, the respondent is able to communicate well by answering all questions raised by the researcher. While the other 3 respondents were unable to communicate and did not answer when asked about God.

2. Research Methods

This type of research uses quantitative research with a correlational research design. In this study, researchers wanted to find out the closeness between spirituality and cognitive function in the elderly at the Pucang Gading Elderly Service Home Semarang.

Respondents who were used in this study were all the elderly who were at the Ivory Semarang Old-Age Services Home. This research conducted on 29 October 2018 - 6 November 2018 at 75 respondents.

The research instrument used a demographic questionnaire, the Daily Spiritual Experience Scale (DSES) questionnaire for spirituality and the Mini Mental Examination State (MMSE) questionnaire for cognitive function variables. Demographic questionnaires cover age, gender, and religion.

The DSES questionnaire uses a Likert scale and this statement only consists of Favorable statements. DSES consists of sixteen items. Fifteen items have six answer choices, namely often = 6, every day = 5, almost every day = 4, sometimes = 3, rarely = 2, never = 1. A number sixteen consists of four answer choices namely very not close = 1, close enough = 2, close = 3 and always close = 4. A number sixteen is an additional item to support the research subject's response. Interpretation for 15 statements: 15-40 = low spiritual level, 41-65 = moderate spiritual level, 66-90

= high spirituality level. The statement of 16 interpretations, namely the value 1 = not at all, 2-rather close, 3 = very close, 4 = as close as possible.

The MMSE questionnaire consisted of 11 statements in a favorable form using a Likert scale with the choice of answers: orientation = 10, registration = 3, attention and calculation = 5, considering = 3, language = 9. The interpretation was scores 0-17 = weight, 18-23 = medium, 24-30 = normal.

3. Results

A. Univariate Analysis

1. Age

Table 4.4 Frequency distribution of elderly at the Pucang Gading Elderly Home Semarang (n = 75)

Age	total	Percentage (%)
60-74	50	66,7
75-94	25	33,3
Total	75	100,0

Based on table 4.1, it can be seen that the elderly in homes with advanced age for pucang gading semarang are more in the 60-74 year old group, amounting to 50 respondents (66.7%) while the elderly with 75-90 years old are 25 respondents (33.3%)

The results of the study showed that the age of the respondents was the most in the age group 60-74 years i.e. 50 respondents from 75 respondents or 66.7%. The survey results of the Badan Pusat Statistik Kota Semarang (2017), showed that the age group in the range of 60-74 years was 83,949 elderly, that number was greater than the 75-90 year age group, which only amounted to 21,816 elderly.

It can be interpreted that the majority of the elderly with the age group 60-74 years is greater. This result is also in line with the research from Coresa & Ngestiningsih (2017), showing that the respondents at most are aged 60-74 years and were 30 respondents out of 41.

2. Gender

Table 4.2 Frequency distribution of elderly sex at the Pucang Gading Elderly Hospital Semarang (n = 75)

Gender	Frequency	Percentage (%)
Man	28	37,3
Women	47	62,7
Total	75	100,0

Based on table 4.2 shows the data on male sex is fewer, namely 28 respondents (37.3%) while the number of female elderly is 47 respondents (62.7%).

The gender of 75 respondents was dominated by women, at 47 respondents or 62.7%. And according to the Semarang City Central Bureau of Statistics (2017), the number of elderly people is also dominated by women at 58,614 people while in men there are 47,151 people. This is supported by research from Coresa & Ngestiningsih (2017), that the number of female sex is 31 elderly from 41 respondents.

It can be concluded that female respondents are found more often than men, so that the opportunities men have are fewer than women.

3. Religion

Table 4.3. Elderly religious frequency distribution at Pucang Gading Elderly Service Center Semarang (n = 75)

Religion	frequency	Percentage (%)
Islam	66	88,0
Kristen	6	8,0
Katolik	2	2,7
Budha	1	1,3
Total	75	100,0

Based on table 4.3 respondents who have more Islamic religion are 66 respondents (88%), Christians 6 respondents (8%), Catholics 2 respondents (2.7%) while Buddhists only 1 respondent (1.3).

The results of the study showed that almost all respondents were Muslim, at 66 respondents (88%) from 75 respondents.

The survey results of the Semarang City Central Bureau of Statistics (2018), the followers of the largest religion in Central Java are Islam with a total of 32,235,239 people. This is in line with the results of research that shows that the majority of elderly people are Muslim.

4. Spirituality in the Elderly

Table 4.4. Frequency distribution of elderly spirituality at the Pucang Gading Semarang Elderly Service Home (n = 75)

Spirituality	frequency	Percentage (%)
Low	32	42,7
The Middle	17	22,7
High	26	34,6
Total	75	100,0

The results of the study prove that from 75 respondents who had low spirituality, there were 32 respondents, or 42.7%. According to Azizah (2011), spiritual change is seen from the religious level of the elderly who are increasingly integrated, and regularly in their lives.

But in reality spirituality experienced by the elderly experiences low spirituality, this is because

the elderly experience physical changes and health status. According to Smeltzer & Barre (2002), someone with increasing age has various weaknesses in physical function and the appearance of disease.

In UU RI No 6 2015 concerning the Implementation of Social Welfare of the Governor of Central Java, Article 13 paragraph 2 point D concerning social rehabilitation is given in the form of spiritual mental guidance spirit in the service provided (Puspita, 2009). A holistic approach requires a nurse to look at the individual as a whole including physiological, psychological, sociocultural and spiritual aspects. But in reality nurses who are at the Pucang Gading Semarang Elderly Service House rarely touch on the spiritual aspects, for example not facilitating the elderly who cannot stand up to sit or lie down and not pay attention to the place in a sacred condition. It is hoped that the Pucang Gading Semarang Elderly Service House will provide services in the form of spiritual guidance that has been mentioned in the law so that the elderly can get their rights and with spiritual experiences can reduce impaired cognitive function.

5. Cognitive Functions in the Elderly

Table 4.5. The frequency distribution of cognitive function in elderly people at the elderly pucang gading semarang (n = 75)

Cognitive Functions	Frequency	Percentage (%)
Normal	23	30,7
Middle	14	18,7
Weight	28	50,6
Total	75	100,0

Based on table 4.5 shows that the majority of respondents experienced severe cognitive impairment which amounted to 38 respondents (50.7%), while respondents who were still in the normal category amounted to 23 respondents (30.7%) and moderate 14 respondents (18.7%).

The results showed that respondents who had severe cognitive function amounted to 38 respondents (50.7%) from 75 respondents. This is supported by other studies taken at the same place by Coresa & Ngestiningsih (2017), finding results that elderly with severe cognitive impairment were 60.9%.

Factors that influence the cognitive function of the elderly at the Advanced Pucang Gading Hospital in Semarang have severe cognitive function, one of which is age, low level of education, and lack of exercise or lack of activity. This is evidenced by the research of Maryati et al. (2013) that influences changes in cognitive function including age and level of education. Decreasing cognitive function can also be minimized by physical fitness exercises, because the elderly who are active in performing physical fitness exercises and having hobbies presents a great opportunity to experience normal cognitive function (Lanawati et al. 2015).

B. Bivariate Analysis

Table 4.6. The results of spirituality correlation with cognitive function of the elderly at the Pucang Gading Semarang Elderly Service House using the *Spearman Rho* test (n=75)

		Cognitive Functions					
		Weight	Middle	Normal	Total	P value	r
Spirituality	Low	32	0	0	32		
	Middle	3	13	1	17	0,000	
	High	3	1	22		0,861**	

					26
Total		38	14	23	75

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.6 shows that the value of ρ value 0,000 <0,05 which shows the correlation between spirituality and cognitive function is meaningful. The hypothesis results show that the significant level <α then H0 is rejected and Ha is accepted. The spearman correlation value of 0.861 shows that the direction of positive correlation with the strength of the correlation is very strong, which means the higher the spirituality of normal cognitive function.

This is supported by previous research conducted by Sunardi, et al. (2017) regarding the Relationship between Spiritual Level and Elderly Cognitive Function in Pangesti Lawang Nursing Home Area with a value of 0.471 and a sig value of 0.008. Vifonissi, et al (2018) also stated that there was a positive relationship between spiritual intelligence and students' cognitive learning outcomes.

According to Handayani, et al. (2012) the way to reduce the risk of decreasing cognitive function in the elderly is by the elderly boarding program, because after attending the three-month old boarding school program the elderly experience an increase in cognitive function. This means someone who has a high spirituality can influence cognitive function to be normal, because by making efforts to improve spirituality such as reading the Qur'an and prayer there is an activity of reading and remembering.

Recent studies on spirituality use sophisticated tools called SPECT (Single Photon Emission Computed Tomograhy) by Andrew Newberg and Eugene D'Aquili in Habibi and Asbi (2015), to observe people who are meditating. The results of their research were recorded in four books and a number of articles. In summary, they introduced the term cognitive operators to refer to a number of areas responsible for spirituality.

The evaluation conducted by Ghozali (2007) that the Pucang Gading Semarang Elderly Service House still lacks in providing services such as a barracks-shaped building because ideally a cottage-shaped building, a polyclinic is still less representative, and a lack of specialized Gerontik nurses based on needs holistically which overcomes the elderly problem, especially in this case, namely the spiritual aspect.

According to Darmawan (2014), there is a need for legal protection for the elderly as stipulated in the regional regulations regarding the implementation of elderly welfare in Central Java as an effort to improve social welfare which is realized for all citizens in fulfilling material, spiritual and social needs so that they have a decent life and are able to develop themselves, so that they can carry out their social functions well. Because in this case the regional regulations that already exist in the Central Java Provincial Government are still partial.

Newberg (2009), studies brain function in people who meditate or pray. He argues that mystical and spiritual experiences can be measured and explained through complex anatomical pathways. The frontal lobe is one of the parts most affected by religious activity. Newberg focuses on the prefrontal cortex and its relationship to the thalamus, posterior superior lobe and limbic system (especially the amygdala and hippocampus), by measuring blood flow in Newberg's conclusion that the more an individual enters a spiritual or religious activity the more active the frontal lobe and limbic system .

The frontal lobe is a part that plays an important role in concentration and attention and the limbic system is a part where emotions and feelings and behavior are regulated. Interestingly, when the frontal lobe and limbic system are active, the parietal lobe becomes less active. Studies conducted by assessing brain activity using a topographical electroencephalogram, cerebral blood flow or cerebral metabolism showed that there was an increase in temporal lobe activity during religious activities. The autonomic nervous system (sympathetic and parasympathetic) also experiences

significant activity during meditation and other spiritual activities. Activation that occurs in the autonomic nervous system causes a decrease in heart rate and breathing rate is the effect of relaxed feeling and can calm anxious limbic and transient structures strengthen the neural connection and synaptic relationships located in the pre-frontal cortex (Bingaman, 2015).

From the theory that has been explained, it can be concluded that those who regulate cognitive and spiritual systems work together so that the two systems influence each other, if one of the systems is interrupted then the other system is interrupted.

5. Conclusion

Spirituality with cognitive function in the elderly at the Pucang Gading Semarang Elderly Service House has a very close relationship. The higher the level of spirituality, the better cognitive function. Good spirituality also affects the physical aspects such as orientation, registration, attention and calculation, language and visual construction, memory so that it can reduce the problem of cognitive function disorders in the elderly.

References

[1] Azizah, Lilik M. (2011). *Perawatan Lanjut Usia.* Surabaya: Graha Ilmu

[2] Badan Pusat Statistik. (2012).*Jumlah penduduk di dunia*, Jakarta: BPS

[3] Badan Pusat Statistik. (2017). *Kelompok Umur dan Jenis Kelamin*. Semarang. http://semarangkota.bps.go.id/statictable/2017/08/10/84/penduduk-menurut-kelompok-umur-dan-jenis-kelamin-di-kota-semarang-hasil-sp2010-.html

[4] Badan Pusat Statistik. (2018). *Agama yang dianut*. Semarang. http://jateng.bps.go.id/statictable/2016/08/19/1272/jumlah-penduduk-menurut-kabupaten-kota-dan-agama-yang-dianut-di-provinsi-jawa-tengah-2015.html

[5] Coresa, T, & Ngestiningsih, D. (2017). *Gambaran Fungsi Kognitif pada Lansia di Unit Rehabilitasi Sosial Pucang GadingSemarang.* Jurnal Kedokteran Diponegoro: Semarang

[6] Dahlan SM. (2008).*Statistik untuk Kedokteran dan Kesehatan*. Edisi 3, S. Jakarta: Salemba Medika

[7] Danim S. (2003).*Sejarah dan Metodologi*. Jakarta: EGC

[8] Daradjat, Zakiyah. (2005). *Ilmu Jiwa Agama.* Jakarta : Bulan Bintang

[9] Dharma, K.K (2011). *Metodologi Penelitian Keperawatan*. Trans Info Media : Jakarta

[10] Elizabeth B. H. (1984). *Psikologi Perkembangan.* Jakarta : Erlangga

[11] Geertz, Cliffort. (1992). *Kebudayaan dan Agama.* Jogjakarta : Kanisius

[12] Greenberg, J.S. (2002). *Comprehensive Stress Management.* New York: MvGraw-Hill

[13] Hadidi, Marwan. Rasulullah Berdoa Minta Perlindungan dari Hal-Hal Berikut. (2014). http://muslim.or.id/22107-rasulullah-berdoa-mohon-perlindungan-dari-halhal-berikut.html. Penjelasan Hadits “Innamal A’malu Binniyat"

[14] Haeroni. (2014). *Pengaruh terapi membaca Al-Qur’an (surah Ar-Rahman) terhadap Demensia pada Lansia di Unit Rehabilitasi Sosial Wening Wardoyo Ungaran Kabupaten Semarang.* Program studi Ilmu Keperawatan STIKES Ngudi Waluyo Ungaran.

[15] Hamid A. (2007).*Penduduk Lanjut Usia Di Indonesia Dan Masalah Kesejahteraannya* [Internet]. [cited 2015 Nov 10]. Available from: http://www.kemsos.go.id

[16] Hamid AYS. (2000). *Aspek Spiritual dalam Keperawatan*. Jakarta: Widya Medika

[17] Handayani, Tika, dkk. (2012). *Pesantren Lansia Sebagai Upaya Meminimalkan Risiko Penurunan Fungsi Kognitif Pada Lansia Di Balai Rehabilitasi Sosial Lansia Unit II Pucang Gading Semarang*, Semarang : Prodi ilmu keperawatan, FK Undip

[18] Hasan, P. (2006). *Psikologi Perkembangan Islami*. Jakarta: Rajawali Press.

[19] Hawari. (2002). *Dimensi Religi dalam praktik Psikiatri dan Psikologi*. Fakultas Kedokteran Universitas Indonesia. https://muslim.or.id/21418-penjelasan-hadits-innamal-amalu-binniyat-1.html

[20] King & Koenig. (2009). *Conceptualising Spirituality for Medical Research and Health Service Provision*. BMC Health Services Reasearch, Vol 9.

[21] King, S.M. (2007). *Religion, spirituality, and workplace*: challenges for public administration. Public Administration Review, 67, 1, 103-114

[22] Kozier, B, & Blais, K. (1995). *Fundamentals of nursing: concepts, process, and pracrice.* California, USA: Wesley Publishing Company

[23] Lanawati, dkk. (2015). *Hubungan anatara Senam Kesegaran Jasmani dengan Fungsi Kognitif dan Keseimbangan Tubuh Lansia di Denpasar*. Fakultas Kedokteran Universitas Udayana

[24] Lestari, Nova. (2012). *Hubungan Intensitas Kebiasaan Membaca Al-Qur'an dengan Fungsi Kognitif Lanjut Usia di Wilayah Kerja Puskesmas Ciseeng Kab. Bogor*. Skripsi. Jakarta: Universitas Islam Negeri Syarif Hidayatullah,

[25] Mace, N.L. & Rabins, P.V. (2006). The 36-*hour day: a family guide to caring for people with Alzheimer disease, other dementias, and memory loss in later life,* 4th Edition, Baltimore, USA:The Johns Hopkins University Press

[26] Madani, F & Irawati, K. (2017). *Hubungan antara Kebiasaan Membaca Al-Qur'an dengan Fungsi Kognitif pada Lansia di Posyandu Lansia Menur Padokan Lor Tirtonirmolo Kasihan Bantul Yogyakarta.* UMY : Yogyakarta

[27] Maryam S. (2008).*Mengenal Usia Lanjut Dan Perawatannya*. Jakarta: Salemba Medika

[28] Maryati, Heni, dkk. (2013). *Gambaran Fungsi Kognitif pada Lansia di UPT Panti Werdha Mojopahit Kabupaten Mojokerto.*STIKES pemkab Jombang

[29] Maslihah, Sri, dkk (2017). Hubungan Spiritualitas *Psychological Well-Being* Pada Anak Didik Pemasyarakatan Di Lembaga Pemasyarakatan Anak Pria Kelas II A Tangerang. Jurnal Psikologi Klinik Indonesia. UPI: Bandung

[30] Maulany, Nur. (2015). *Hubungan Antara Spiritualitas Dengan Penerimaan Orang Tua Pada Orang Tua Yang Memiliki Anak Autis*, Makasar : Fakultas Psikologi, Universitas Negeri Makasar

[31] Mukarramah. (2016). *Hubungan Aktivitas Fisik Dan Intensitas Membaca Al-Qur'an Terhadap Fungsi Kognitif Lanjut Usia*. Skripsi. Program Studi Ilmu Keperawatan Fakultas Kedokteran Dan Ilmu Kesehatan Universitas Islam Negeri Alauddin Makassar

[32] Murtiyani, Ninik, dkk. (2017). *Fungsi Kognitif Dengan Activities Of Daily Living (ADL) Pada Lansia.* Prosdiding Seminar Nasional. Hasil Penelitian dan Pengabdian Masyarakat seri ke-1 tahun 2017

[33] Nafidah, Nur. (2014). *Hubungan Antara Aktivitas Fisik dengan Tingkat Kognitif Lanjut Usia di Panti Sosial Tresna Werdha Budi Mulia Margaguna Jakarta Selatan*. Skripsi. Jakarta : Universitas Negeri Syarif Hidayatullah.

[34] Nugroho, Wahjudi. (2008). *Keperawatan gerontik & geriatric* edisi ke-3. Jakarta: EGC.

[35] Padila. (2013). *Keperawatan Gerontik.* Yogyakarta : Nuha Medika

[36] Puteri, A. E. (2015). *Hubungan Lamanya Hipertensi Dengan Gangguan Fungsi Kognitif pada Lansia di Posyandu Lansia Wilayah Puskesmas Padang*, Medan : FK. USU

[37] Rahmah M, dkk. (2015). *Tingkat Spiritualitas Dan Tingkat Depresi Pada Lansia*. Universitas Lampung Mangkurat. Vol.3 no.1

[38] Restiana, Isnaeni. (2016). *Pengaruh Kebiasaan Baca Al-Qur'an Terhadap Kejadian Demensia Pada Lansia Usia Pertengahan Di Desa Pasuruhan Kecamatan Binangun Cilacap*. Skripsi. Program Studi S1 Keperawatan Sekolah Tinggi Ilmu Kesehatan Muhammadiyah Gombong.

[39] Rhosma, Sofia Dewi. (2014). *Buku Ajar Keperawatan Gerontik*.Yogyakarta: Deepublish

[40] Riyanto. (2011). *Buku Ajar Metodologi Penelitian*. Jakarta : EGC.

[41] Rush, et al. (2000). *Mini Mental State Exam (MMSE)*. Washington DC: pscchiatric Measures, APA

[42] Setyoadi, Noerhamdani, Ermawati. (2011). *Perbedaan Tingkat Kualitas Hidup Pada Wanita Lansia Di Komunitas dan Panti*. Jurnal Keperawatan Volume 2 Nomor 2 ISSN: 2086-3071.Fakultas Ilmu Kesehatan. Universitas Muhammadiyah Malang.

[43] Smeltzer, Suzanne C.& Bare, Brenda G. (2002). *Buku Ajar Keperawatan Medikal Bedah Brunner & Suddarth*. Jakarta: EGC

[44] Sugiyono. (2007). *Metode Kuantitatif Kualitatif dan R & D.* Bandung: Alfabeta.

[45] Sumiati, T. (2009). *Pemahaman perawat terhadap pemenuhan kebutuhan spiritual klien pada lansia di RSU Mardi Lestari Kabupaten Sragen*. Diperoleh tanggal 22 Juni 2015 dari http://undip.ac.id

[46] Theresa, R.M. & Trihandini, I. (2013). *Hubungan antara Fungsi Kognitif dengan Tingkat Kemandirian dan Kualitas Hidup Warga Usia Lanjut.* Perpustakaan UPN "Veteran" Jakarta. Prodi Profesi Dokter, FK UPN "Veteran" Jakarta

[47] Ummah, Athurrita C. (2016). *Hubungan Kebutuhan Spiritual Dengan Kualitas Hidup Pada Lansia Di Panti Wredha Kota Semarang*. Skripsi Jurusan Keperawatan Fakultas Kedokteran Universitas Diponegoro Semarang.

[48] United Nations. United Nations Population Information Network. United Na [Internet]. 2010. Available from: www.unescapsdd.org .

[49] Uraningsari, F. & Djalali, M. A. (2016). *Penerimaan Diri, Dukungan Sosial dan Kebahagiaan Pada Lanjut Usia.* Persona, Jurnal Psikologis Indonesia. UNTAG Surabaya.

[50] Wasis. (2008).*Pedoman Riset Praktis untuk Profesi Perawat*. Jakarta: EGC

[51] Yaffe K, W N. (2008). *Metabolic Syndrome and Cognitive Decline In Elderly Latinos.* The Sacramento area Latino Study Of Aging Study. J Am Geriatri Social

[52] Young, Koopsen. (2007). *Spritualitas, Kesehatan dan Penyembuhan*. Medan: Bina Media Perintis

[53] Yudrik, Jahja. (2011). *Psikologi Perkembangan*, Jakarta: Kencana

[54] Puspita, I. (2009). *Aplikasi Asuhan Keperawatan Spiritual Muslim di R. Firdaus III Al-Islam Bandung.* Jurnal UNP