



PROCEEDING

The 1st International Nursing and Health Sciences Symposium (INHSS)

“Adapting to New Habits: Strengthening Interprofessional Collaboration and Embracing Innovative Measures to Improve Quality of Healthcare Services”

Malang, 13th – 15th November 2020

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Publisher:

School of Nursing
Faculty of Medicine, Universitas Brawijaya

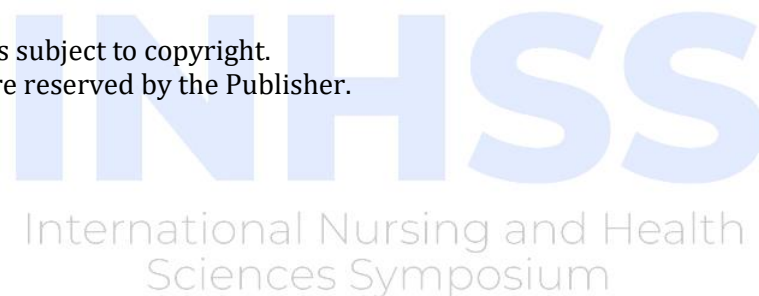
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First edition, December 2020

ISBN 978-623-95759-0-8

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INHSS
International Nursing and Health
Sciences Symposium



FOREWORD

The 1st International Symposium of Public Health (3rd ISOPH), was successfully held in collaboration with School of Nursing and Nutrition Department, Faculty of Medicine, Universitas Brawijaya, Malang, East Java, Indonesia, at virtual conference using Zoom Apps from 13th-15th November 2020. More than one-hundred participants from 5 countries gathered to discuss knowledge related to collaboration between professions in patient care and ensuring food security during the application of the new normal. The articles contained in this Proceedings cover a wide range of topics including: nursing sciences, nutritional issues as well as other health sciences related topics. Thank you to all committee for their encouragement in preparation of these proceedings.

1st INHSS Committe



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International Nursing and Health
Sciences Symposium



LIST OF CONTENTS

Cover		i
List of Committee		ii
Foreword		iv
List of Contents		v
Welcome Messages		vi
Articles		
Anita Setyawati*, Ristina Mirwanti	The use of complementary therapies in children and adolescents with cancer: a literature review	1
Arif Adi Setiawan*, Budi Rahayu	The effect of foot massage on anxiety in Acute myocardial infarction (AMI) patients in RSUD Dr. Moewardi: a pilot study	13
Clara Ayu Lestari*, Alfrina Hany	The effect of "MOTENSI" application on low salt diet adherence in hypertensive patient at the Malang City public health center	22
Sri Nurhayati*, Weni Novandari, Wahyu Siswandari	The influence of the Unified Theory of Acceptance and Use of Technology (UTAUT) model on the acceptance of the electronic medical record system (study at regional general hospital Prof. Dr. Margono Soekarjo)	30
Sunardiman*	Disaster preparedness in pre hospital provider setting: literature review	40
Alfrina Hany*, Titi Cahyanti	Effect MOTENSI apps on adherence behavior taking antihypertensive drugs in patients with hypertension in malang city health care	50
Tri Wahyuni Bintarti*, Nanda Fadhilah Witris Salamy, Choirotussanijjah	Effect of <i>Rosa damascena</i> mill. extract on blood glucose levels in diabetes model rats (<i>Rattus norvegicus</i>)	60
Muliatul Jannah, Hanifatur Rosyidah, Nida Syafara*	Literature review: relationship between social support and postpartum blues incident	66
Muhamad Nur Rahmad*, Ahsan, Yulian Wiji Utami	Hypothermic therapy in head injury patients: a literature review	72
Fajar Mulia Dewi*, Kuswanto Rusca Putra	Effect of intervention method work load of nurses on the quality of nursing services: systematic review	80
Ani Budiati*, Kuswanto Rusca Putra	Discharge planning to improve the life quality after stroke: a systematic review	97
Feronika Maryanti Maarang*, Kuswanto Rusca Putra	The effect of patient safety culture in efforts to reduce incidents with missed nursing care: systematic review	109



WELCOME MESSAGE THE CHAIR OF ORGANIZING COMMITTEE

Assalamu'alaikum Warahmatullahi Wabarakatuh

On behalf of the 1st INHSS committee, I would like to thank all speakers, all symposium committee, all participants, and to everyone who had contributed in many ways to ensure the success of this symposium.

The 1st INHSS was held in collaboration with School of Nursing and Nutrition Department, Faculty of Medicine, Universitas Brawijaya, Malang, East Java, Indonesia, at virtual conference using Zoom Apps from 13th-15th November 2020. The aim of this symposium is to facilitate interaction and knowledge transfer between world class professor to academe or practitioners from within or international countries, to improve knowledge, skills, and trends issue on the collaboration among health workers in the healthcare service in the era of new normal, to improve the scientific writings of scholars and practitioners of nursing and nutrition to strengthen healthcare system in the era of new normal, and to increase the capacity of School of Nursing and Nutrition Department Universitas Brawijaya more useful in the surrounding communities by applying science and health technology transfer, especially in healthcare services in the era of new normal.

Evi Harwiati Ningrum
Chair of Organizing Committee

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The use of complementary therapies in children and adolescents with cancer: a literature review

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Abstract

Children and adolescents with cancer can experience unpleasant experiences, such as pain, anxiety, fatigue, sleep disturbances, balance disorders, and even mental, behavioral, and emotional disturbances. These negative experiences lead to decrease in quality of life. A recent research indicates that complement therapies can reduce the terrible effects of cancer. So this literature study aimed to identify the use of complementary therapies in children and adolescents with cancer. This study was a literature review that begins with a search for articles on digital databases, Science Direct and Google Scholar, using the keyword "complementary therapy AND cancer AND adolescents". The inclusion criteria in this study were articles published in 2010-2020, full text, research results, in English, and contained about the use of complementary therapies in children and adolescents (0-18 years) with cancer. Total of 12 articles were analyzed in this literature study. The results of this study showed there are four groups of complementary therapies for children and adolescents with cancer. Complementary and alternative medicine in general, cutaneous stimulation (massage therapy and acupressure), art therapy (group art therapy and creative art therapy), as well as body and mind therapy (eurythmy therapy and yoga), have both physiological and psychological effects. These four therapeutic groups can elicit physiological and psychological responses in children and adolescents with cancer. Patients can feel a reduction in the discomfort. Based on the results of this literature review, nurses and patients' families are expected to provide complementary therapies in the care of children and adolescents with cancer.

Keywords: Adolescents, Cancer, Children, Complementary Therapy



Background

Cancer is a large group of diseases that can affect any part of the body and in anyone, including children and adolescents. One of the main characteristics of cancer is the rapid formation of abnormal cells that grow outside of normal boundaries, and then can attack adjacent parts of the body and spread to other organs, which is known as metastasis (WHO, 2018). The number of cancer incidents in children and adolescents occurs around 3% -5% of the total cancer incidence in the world and is the second-largest cause of death in children in the 5-14 year age range (P2PTM Kemenkes RI, 2018). Cancer in children and adolescents itself is cancer that affects children aged less than 18 years, including children who are still in the womb.

Cancer can be a very dire experience for children and adolescents, both from the prognosis of the disease itself and from the management that needs to be given to children with cancer. Children and adolescents with cancer may experience persistent symptoms, including fatigue, sleep disturbance, and balance impairment (Hooke *et al.*, 2016). In one of the treatments given to cancer patients, namely chemotherapy, children and adolescents with cancer can experience side effects in the form of nausea and vomiting (Abusaad & Ali, 2015). Moreover, children and adolescents with a posterior fossa brain tumor can experience extensive neurological, emotional, behavioral, and mental disorders (Kanitz *et al.*, 2013). Besides, children and adolescents with cancer withdraw at home and school and from family and friends, find it difficult to engage in recreational activities and play, and experience devastating physical conditions (Abdulah & Abdulla, 2018). Moreover, children and adolescents with cancer in palliative care often experience pain and anxiety that is not properly managed (Genik *et al.*, 2020). These conditions can have an impact on reducing the quality of life in children and adolescents with cancer (Abdulah & Abdulla, 2018; Genik *et al.*, 2020; Madden *et al.*, 2010).

Nowadays, it is known that there is increasing use of complementary therapies to reduce disease symptoms, treatment side effects, and improving the quality of life for cancer management that can be experienced by children and adolescents with cancer (Erdem *et al.*, 2020; Gottschling *et al.*, 2014). The use of Complementary and Alternative Medicine (CAM) in children and adolescents during cancer treatment ranges from 6% -91% worldwide (Bishop *et al.*, 2010). Complementary therapy approaches are a group of diverse medical and health care systems, practices, and products whose origins come from outside of conventional medicine (NCCIH, 2014). This literature study aims to identify the use of complementary therapies in children and adolescents with cancer.

Method

The first step in preparing this literature study was searching for articles through an online digital database, namely Science Direct and Google Scholar. The keywords used in the search process were "complementary therapy AND cancer AND adolescents" and there were 4,401 articles in Science Direct and 91,900 articles in Google Scholar. The next step is sorting articles based on predetermined inclusion criteria, including (1) articles published in the period 2010-2020, (2) full text, (3) articles containing research results, (4) articles using English, and (5) The article contains the use of complementary therapies in children and adolescents (0-18 years) with cancer. Sorting articles by year of publication resulted in 2,464 articles in Science Direct and 19,100 in Google Scholar. Furthermore, sorting articles based on the availability of



full text, type of article, the language in the article, and article content, got 6 articles in Science Direct and 7 articles in Google Scholar. Of the 13 articles found, 2 articles were the same, namely 1 article in Science Direct and 1 article in Google Scholar. In the end, there were 12 articles analyzed in this literature study.

Results

Table 1 shows results of articles based on article selection process.

Discussion

Complementary and alternative medicine in general

Six of the twelve articles found revealed that children and adolescents with cancer use CAM in their treatment of themselves, 90% of children and adolescents with cancer in Guatemala (Ladas *et al.*, 2014); 73.3% of children and adolescents with cancer in Turkey (Karali *et al.*, 2012); 62.4% of children and adolescents with cancer in Taiwan (Yen *et al.*, 2017); 55% of children and adolescents with cancer in the UK (Revuelta-Iniesta *et al.*, 2014); 53.6% of children and adolescents with cancer in Turkey (Erdem *et al.*, 2020); and 53% of children and adolescents with cancer in Switzerland (Magi *et al.*, 2015).

In the six studies, the most widely used types of CAM were natural products (93.2%) (Erdem *et al.*, 2020); Chinese herbal remedies (Yen *et al.*, 2017); classical homeopathy (53%) (Magi *et al.*, 2015); vitamins and minerals (53%) (Revuelta-Iniesta *et al.*, 2014); dietary changes (55%) and herbal supplements (55%) (Ladas *et al.*, 2014); and biologically based therapies (95.5%) (Karali *et al.*, 2012).

In the study of (Karali *et al.*, 2012), it was found that the proportion of children and adolescents with cancer who used two types of CAM simultaneously was higher than the proportion of children and adolescents with cancer who used one type of CAM. This is in line with the study results of (Magi *et al.*, 2015; and Revuelta-Iniesta *et al.*, 2014) that found children and adolescents with cancer use more than one type of CAM (76% and 55%, respectively). Meanwhile, in the study of (Ladas *et al.*, 2014), it was found that the proportion of using one type of TCAM by children and adolescents with cancer was higher than the proportion of using 2 types of TCAM simultaneously. Besides, this literature study also shows that the use of CAM in girls and boys is higher than in boys and girls (Erdem *et al.*, 2020; Ladas *et al.*, 2014).

All articles have examined extensively whether CAM is used to replace or complement medical treatment in cancer patients. Two articles stated that 100% of children and adolescents with cancer use CAM as a complement to medical treatment (Karali *et al.*, 2012; Revuelta-Iniesta *et al.*, 2014). 78.4% of them shared with the CAM-related physicians they used (Karali *et al.*, 2012). While four other articles mention 99.95% (Yen *et al.*, 2017), 96.8% (Erdem *et al.*, 2020), 67% (Ladas *et al.*, 2014), and 63.89% (Magi *et al.*, 2015) who use CAM as a complement to medical treatment, and the rest use CAM as a curative therapy in cancer treatment.

Some of the main reasons found for the use of CAM by children and adolescents with cancer are to improve the general condition of the patient (Karali *et al.*, 2012; Magi *et al.*, 2015); improve the immune system (Magi *et al.*, 2015); obtaining better blood values (Karali *et al.*, 2012); increasing strength, increasing well-being, and reducing symptoms of the disease (Ladas *et al.*, 2014); reduce treatment side effects (Erdem *et*



al., 2020; Magi *et al.*, 2015; Revuelta-Iniesta *et al.*, 2014); it even reduces stress and improves the quality of life (Revuelta-Iniesta *et al.*, 2014); and ease the pressure from relatives (Karali *et al.*, 2012). Meanwhile, it is also known that the reasons for children and adolescents with cancer who do not use CAM are not having enough information about CAM, do not believe in the effectiveness of CAM, and prevent children and adolescents with cancer from experiencing additional stress (Magi *et al.*, 2015).

Cutaneous stimulation (massage therapy and acupressure)

Two of the twelve articles obtained have identified the use of cutaneous stimulation in the form of massage therapy and acupressure in children and adolescents with cancer. The study results of (Genik *et al.*, 2020) showed that there was a significant reduction in pain and worry in children and adolescents who had been given massage twice ($p = 0.03$ and $p = 0.03$, respectively). This shows that massage therapy can be well received by children and adolescents with cancer and in line with research of (Jacobs *et al.*, 2016) that massage therapy can improve sleep quality and reduce fatigue in children with cancer.

The study results of (Abusaad & Ali, 2015) showed that there was a significant decrease in vomiting frequency and retching frequency in the first week ($p = 0.001$ and $p = 0.002$, respectively); on vomiting frequency, nausea duration, nausea frequency, retching experience, and retching experience in the second week ($p = 0.001$; $p = 0.009$; $p = 0.002$; $p = 0.031$; $p = 0.042$; respectively); on vomiting frequency, vomiting distress, nausea severity, and retching frequency in the third week ($p = 0.024$; $p = 0.047$; $p = 0,000$; $p = 0,000$; respectively); and vomiting distress, nausea frequency, and retching frequency in the fourth week ($p = 0.010$; $p = 0.012$; $p = 0.049$; respectively). This shows that the acupressure given to the intervention group was quite effective in reducing chemotherapy side effects in the form of nausea and vomiting in adolescents with cancer.

Art therapy (painting- and handcrafting- based art therapy and creative art therapy)

Two of the twelve articles found evaluated the benefits of art therapy in children and adolescents with cancer. The study results of (Abdulah & Abdulla, 2018) showed that there are significant differences in children and adolescents who do group art therapy, namely being more physically active, energetic, and fit ($p < 0.001$), and having a lower level of depressive mood and emotions and stressful feelings ($p = 0.003$). Additionally, they had more opportunities to structure and enjoy their social and leisure time, and participation in social activities ($P = 0.016$), created more social relationships ($P = 0.047$) and had better overall health ($P < 0.001$). However, the quality of children's interaction with other children, parents, and health care providers, and the children's feelings toward their parents/health care providers were not significantly different ($P = 0.120$) and no significant difference was found in the child's / adolescent's perception of his / her cognitive capacity and satisfaction with school performance ($P = 0.161$).

Study analysis of (Madden *et al.*, 2010) found improvements in certain areas such as pain, nausea, and emotional reactions in children and adolescents in the intervention group who did creative art therapy compared to the control group. The results of this study reflect that the bad symptoms experienced by children and adolescents with cancer can be reduced by creative art therapy. The results of the study also reported



an increase in the quality of life experienced by children and adolescents with cancer in the intervention group. Besides, positive responses from children and adolescents with cancer, families, and providers to creative art therapy interventions are also illustrated in this study.

Body and mind therapy (eurythmy therapy and yoga)

Two of the twelve articles found revealed that children and adolescents with cancer have benefited from body and mind therapy. The research of (Hooke *et al.*, 2016) showed that children and adolescents with cancer feel enjoy doing yoga. In this study, yoga can significantly reduce anxiety in children aged 6-12 years and shows a trend of decreasing anxiety in adolescents aged 13-17 years. This is in line with the research results of (Thygeson *et al.*, 2010) which showed that yoga can reduce anxiety and increase a sense of well-being in adolescents.

The study results of (Kanitz *et al.*, 2013) found that there are good adherence and improvements in cognitive and neuromotor functioning and better visual integration in children and adolescents with cancer. The results of the pilot study showed that eurythmy therapy is a promising therapy in addition to conventional treatment in the aftercare of children and adolescents with tumors of the posterior fossa.

Conclusion

Complementary therapies are well received by children and adolescents with cancer worldwide. Complementary therapy affects the bodies of children and adolescents with cancer through physiological and psychological mechanisms to improve and maintain health and well-being. The results of this literature study recommend that complementary therapies be used as complementary therapies to medical treatment in cancer patients, which can be done independently by children and adolescents with cancer or given by parents/families, nurses, or providers.

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Table 1. List of review articles

Author and Year	Research Design	Study Objectives	Sample	Results
(Erdem <i>et al.</i> , 2020)	A descriptive and cross-sectional design.	To identify the use of CAM by mothers of children with cancer.	To identify the use of CAM by mothers of children with cancer. Mothers of children and adolescents (0-18 years) with cancer at a hematology-oncology clinic and an outpatient clinic of a tertiary hospital in Turkey (n = 110).	53.6% of respondents gave CAM to children with cancer, with 93.2% of them using the CAM method in the form of using natural products (containing carob, mulberry, and grape).
(Genik <i>et al.</i> , 2020)	A pretest-posttest design.	To identify the acceptance of message therapy by children with cancer and their parents to know the effect of message on pain, fear, and quality of life for children with cancer.	Children and adolescents (10-17 years) with cancer and their parents at a single tertiary care pediatric institution in Canada (n = 7).	4 respondents completed all message therapy sessions, 2 respondents missed one message therapy implementation, and 1 respondent did not complete the message therapy implementation at all. The respondents stated that there was a significant reduction in pain after receiving two message therapies and a significant decrease in fear after receiving one message therapy.
(Abdulah & Abdulla, 2018)	An experimental randomized controlled trial.	To determine the effect of art therapy on quality of life in children with cancer.	Children and adolescents (7-16 years) with cancer in Duhok, Iraq (n = 60: a control group = 30 children, n = 30).	There were no significant changes in the signs and symptoms of pain and the quality of life of the respondents between baseline and follow-up. Significantly, respondents in the intervention group were more physically active, energetic, and fit (p <0.001), and had lower levels of depressive mood and emotions and stressful feelings (p = 0.003).



Author and Year	Research Design	Study Objectives	Sample	Results
			an intervention group = 30 children).	Significantly, respondents in the intervention group had more opportunities to organize and enjoy social and leisure time and participation in social activities ($p = 0.016$), create more social relationships ($p = 0.047$), and have better overall health ($p < 0.001$).
				The quality of the respondents' interactions with other children, parents, and health service providers and the respondents' feelings towards their parents/health service providers did not differ significantly ($p = 0.120$).
				Respondents' perceptions of cognitive capacity and satisfaction with school performance did not differ significantly ($p = 0.161$).
(Yen <i>et al.</i> , 2017)	A retrospective survey.	To identify the use of Traditional Chinese Medicine (TCM) in children with cancer.	Children and adolescents (0-18 years) with cancer in Taiwan (n = 12,965).	62.4% of respondents are TCM users. Types of TCM commonly used by respondents are herbal remedies; manipulative therapy; acupuncture; manipulative therapy combined with herbal remedies; acupuncture combined with herbal remedies; manipulative therapy combined with acupuncture; and acupuncture, manipulative therapy, and herbal remedies.
(Hooke <i>et al.</i> , 2016)	A one-group repeated-measures design.	To evaluate the effects of yoga on children	Children and adolescents (10-18 years) with cancer at two pediatric cancer	Yoga significantly reduced cognitive fatigue ($p = 0.05$) and anxiety / sense of



Author and Year	Research Design	Study Objectives	Sample	Results
(Abusaad & Ali, 2015)	A quasi-experimental design, pre, and post-intervention.	To assess the effectiveness of acupressure in reducing nausea and vomiting induced by chemotherapy among cancer.	Children and adolescents (11-17 years) with cancer at Mansoura oncology center (n = 60: a control group = 30, an intervention group = 30).	There was a significant difference in decreasing nausea duration (p = 0.013), nausea frequency (p = 0.056) and retching frequency (p = 0.001) in the intervention group compared to the control group.
(Magi et al, 2015)	A retrospective survey.	To determine the prevalence of using CAM in children and adolescents with cancer.	Parents of children and adolescents (0-18 years) with cancer at the division of pediatric hematology/oncology at the University Children's Hospital Bern, Switzerland (n = 133).	53% of respondents gave CAM to children with cancer, with 87% of them perceived positive effects from CAM. The most widely used type of CAM is homeopathy.
(Revuelta-Iniesta et al, 2014)	A retrospective survey.	To identify the prevalence of CAM use and spiritual practice in children and adolescents with cancer.	Families of children and adolescents (<18 years) with cancer at the Royal Hospital for Sick Children, United Kingdom (n = 74).	55% of respondents gave CAM and 57% of respondents gave spiritual remedies to children and adolescents with cancer.
(Ladas et al, 2014)	A cross-sectional survey.	To describe prevalence, usage patterns, and descriptive associations of the use of Traditional and Complementary / Alternative Medicine (TCAM) in children with cancer.	Parents of children and adolescents (<18 years) with cancer at a pediatric oncology center in Guatemala City, Guatemala (n = 100).	90% of respondents gave TCAM to children with cancer. 67% of respondents use TCAM as a complementary therapy, but 34% of respondents are known to also use TCAM as a curative therapy. The types of TCAM that are most commonly used are dietary changes, herbal



Author and Year	Research Design	Study Objectives	Sample	Results
(Kanitz <i>et al.</i> , 2013)	A pilot study.	To assess the feasibility, medication adherence, and impact of eurythmy therapy in pediatric neurooncology.	Children and adolescents (6-17 years) with cancer in Germany (n = 7).	<p>supplements, prayer, juicing, touch therapies, oral nutritional supplements, ointments, bioenergetic treatments, and others.</p> <p>There were good adherence and improvement in cognitive and neuromotor function in all respondents.</p> <p>There was better visuomotor integration among 5/7 respondents after 6 months of eurythmy therapy. However, after the next 6 months without eurythmy therapy, neuromotor function, and visuomotor integration decreased to some extent.</p>
(Karali <i>et al.</i> , 2012)	A long-term survival study.	To determine the type, frequency, reasons for using CAM, factors associated with CAM use, and effects of CAM use on long-term survival in children with cancer.	Families of children and adolescents (0-18 years) with cancer in Pediatric Oncology Department of Uludag University Hospital (n = 120).	<p>73.3% of respondents gave CAM to children with cancer, with 95.5% of them using biologically based therapies (dietary supplements and herbal products).</p> <p>43.2% of respondents used honey and 43.2% of respondents used stinging nettle as a dietary supplement or herbal product.</p> <p>There is no significant relationship between the use of CAM with socioeconomic factors, sociodemography, and other factors in respondents.</p> <p>Five-year survival rates for CAM users and nonusers were found as 81.5% and 86.5% respectively (p> 0.05).</p>

Author and Year	Research Design	Study Objectives	Sample	Results
(Madden <i>et al.</i> , 2010)	A 2-group, repeated measure randomized design.	To evaluate the effect of creative art therapy on quality of life in children with cancer.	Children and adolescents (2-18 years) with cancer in the outpatients oncology clinic at a tertiary care, university affiliated, pediatric hospital (n = 16).	After being given CAT, there was an improvement in the hurt (p = 0.03) and nausea (p = 0.0061) experienced by the respondent. After being given CAT, there was a significant increase in the mood on the faces scale (p <0.01), and respondents were more excited (p <0.05), happier (p <0.02), and less nervous (p <0.02).





The effect of foot massage on anxiety in Acute myocardial infarction (AMI) patients in RSUD Dr. Moewardi: a pilot study

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Abstract

Cardiovascular disease is the number one cause of death in the world. In Indonesia the incidence of heart disease by 1.5% of the total population of Indonesia and heart disease often encountered is Acute myocardial infarction (AMI). Patients with AMI experience anxiety if not addressed anxiety can be a contributing factor of complications such as recurrent heart attack and heart failure. Anxiety can be overcome by anxiety management both pharmacology and non-pharmacology, one of the non-pharmacological techniques is relaxation techniques such as foot massage. This study aims to determine the effect of foot massages on anxiety in AMI patients at RSUD Dr. Moewardi. This research designs uses quasi experimental design with one group pretest and posttest design without control group approaches With SA-I as Instrument to measurement, will measure in 30 minutes before and after intervention. The number of samples is 10 respondents with purposive sampling technique. The results of the study showed that there was an influence of foot massages on anxiety reduction in AMI patients with a p value <0.05. Anxiety in AMI patients after a foot massage immersed in a decrease from anxiety score of 38,06 to 60,29. Relaxation has a calming effect on the limbs, lightness and feel warmth that spreads throughout the body. Foot massage can stimulate the central nervous system and thalamus in the release of endorphins, causing relaxation.

Keywords: Foot massages, AMI, Anxiety, Relaxation, Massage

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Background

Cardiovascular disease is the number one cause of death in the world. According to World Health Organization data, more than 17.9 million or 31% of people died due to cardiovascular disease. Indonesia ranks 32nd the highest death rate from cardiovascular disease, which is 371 per 100,000 population per year (WHO, 2016). The incidence of heart disease in Indonesia is 1.5% (Ministry of Health Republic of Indonesia, 2018). According to Riskesdas 2018, the province of Central Java is included in the top 15 rates of heart disease in Indonesia. The heart disease encountered in Central Java is myocardial infarction.

According to the 2017 Report of Noncommunicable Diseases the number of heart and blood vessel diseases was 3.61% of the 1,593,931 PTM cases, namely 57,541 cases (Dinkes Jawa Tengah, 2017). According to Dr. ICD hospital data Moewardi Surakarta, the total number of Acute myocardial infarction (AMI) patients in the inpatient rooms in 2018 was 521 patients. Acute myocardial infarction is a clinical manifestation of acute coronary syndrome (PERKI, 2015). The situation where the myocardium is permanently damaged due to grafting of the arteries, which then causes an imbalance of oxygen supply and oxygen demand or ischemia (Brunner & Suddarth, 2013). Acute myocardial infarction is influenced by several factors, namely irreversible risk factors such as age (over 40 years), gender and family history (Iskandar, *et al.*, 2017). In myocardial infarction patients refractory changes occur, conductivity and sensitivity and sensitivity to stimulation so that in AMI patients often experience symptoms such as chest pain suddenly and continuously (Wijaya & Putri, 2013). Myocardial infarction patients also experience symptoms of shortness of breath, nausea, vomiting and anxiety (Brunner & Suddarth, 2013). Psychological reactions also occur in myocardial infarction patients such as depression and anxiety (Maendra, 2014).

From research Karima K. & Setyorini Y. (2017) found that AMI patients experience moderate anxiety by 43.3%. The prevalence in AMI patients peak in the first 12 hours to 18 hours (Setiawan, *et al.*, 2016). According to Corwin 2009 anxiety can be overcome by managing anxiety both pharmacological and non-pharmacological. Non-pharmacological techniques, namely interventions with other than drugs, where one of them is with relaxation techniques (Arianto, 2018). Based Nursing Intervention Classification (NIC) interventions to overcome anxiety one of them with relaxation techniques such as a foot massage.

Foot massage is performed on the lower leg for 10 minutes with 12 steps using massage, rubbing and rotation of the feet (Afianty, 2017). Massage movements cause lymphatic drainage effects and the mechanism of blood flow undergoes vasodilation and reduces sympathetic nerve activity (Maliya and Andria, 2018). foot massage has great benefits for AMI patients and other cardiovascular disorders so based on this background researchers are interested in examining the effect of foot massage on anxiety in AMI patients.

Methods

This research: A Pilot Study is an Experimental Quassy type using one group pre-post test design without control group design. The population in this study was all AMI (Acute Miocardial Infarction) patients who were hospitalized in ICVCU room Dr. Moewardi Surakarta. The number of samples for the study was 10 respondents with the sampling technique used in this study was purposive sampling. Data collection

used an S-AI anxiety questionnaire administered 30 minutes before and after the intervention. To analyze the data the researchers used the Paired T-test, the purpose of using paired t-tests was to compare the differences between anxiety levels before and after being given foot massage. If the P value $> \alpha$ (0.05), then H_0 is accepted and H_a is rejected, if P value $< \alpha$ (0.05), then H_0 is rejected and H_a is accepted. To analyze the data the researcher conducted a normality test and a homogeneity test, based on the results of the normality test using Saphiro Wilk showed that the average anxiety before foot massage had a significant value (p) of 0.998 ($p > 0.05$), the average anxiety after performed foot massage has a significance value (p) of 0.910 ($p > 0.05$) which means the average anxiety between before and after foot massage has a normal data distribution. In addition to conducting a normality test the researchers conducted a homogeneous test with a significance value of 0.635 ($p > 0.05$) which meant that anxiety before and after foot massage was the same or homogeneous.

Results

Based on figure 1, shows that out of 10 respondents who were male were 6 respondents (60 %) and those who were female were 4 respondents (40 %). From Figure 2 shows of 5 respondents of them aged 40-49 years (50 %), 3 respondents aged 60-69 years (30 %). From figure 3, education of 3 of them were Elementary school (30 %), respondents who had a junior high school education were 2 people (20 %), respondent was senior high school (20 %), and 1 respondent with an educational background in university education (10 %). Based on figure 4, the results are obtained that before foot massage the average anxiety score of AMI patients is 38.06. The lower the anxiety score, the more AMI patients feel anxiety. Whereas in figure 5, anxiety in AMI Patients in RSUD Dr. Moewardi Surakarta after an average foot massage on the anxiety score of AMI patients was 60,29. The more do not feel anxiety, the greater the score. Meanwhile, table 1 shows distribution of the effects of foot massage on average anxiety in our patients before and after getting a foot massage at RSUD dr. moewardi surakarta. In table 1, based on the results obtained that overall there is a significant difference in anxiety in AMI patients between before and after getting foot massage intervention with a significant value ($p = 0,000$).

Discussion

The results showed that there were significant differences in anxiety in AMI patients between before and after receiving foot massage intervention with a significant value ($p = 0,000$). Foot massage can reduce anxiety by 22.23, before doing foot massage, the average anxiety of AMI patients is 38.06 and after foot massage the average anxiety of AMI patients is 60.29. The lower the anxiety score, the more AMI patients feel the anxiety, the more they don't feel the anxiety, the greater the score. In this study, there was a decrease in anxiety levels in AMI patients measured 30 minutes before foot massage and 30 minutes after foot massage with intervention on both feet for 20 minutes.

Foot Massage has many benefits, especially in AMI patients, such as improving blood circulation, increasing comfort, relaxation and so forth. In accordance with research Nugraha *et al* (2018) that anxiety scores in patients before and after massage interventions have a significant difference ($p = 0.001$) where the average anxiety score before intervention is 24.67 (moderate anxiety) and decreases after the massage intervention to be 19.90 (moderate anxiety). Physiologically relaxation provides a relaxed response and can be identified by decreasing blood pressure and



heart rate, besides relaxation is useful for regulating emotional and physical, anxiety and stress (Sari, 2015). In this study, the result of hemodynamic reduction in blood pressure of siastole was 13.47 mmHg, where before foot massage the average blood pressure of siastole was 151.35 mmHg and after foot massage for 20 minutes the mean dropped to 137.88 mmHg. This is in line with research by Malinti & Hutagalung (2018) Response of Cardiovascular Parameters to Foot Massage in Prehypertensive Clients. The average systolic blood pressure before foot massage was 131.50 mmHg, and the average diastolic blood pressure before foot massage was 83.65 mmHg. Both of these blood pressure are included in the category of prehypertension. On the other hand the average pulse before foot massage is 71.60 times / minute, this is a normal pulse at rest. After 30 minutes of foot massage, the average systolic blood pressure becomes 121.55 mmHg and diastolic blood pressure becomes 72.85 mmHg. This figure shows a decrease in systolic and diastolic blood pressure values. The average pulse after foot massage becomes 64.80 beats / minute, this shows a decrease, but still within the normal pulse rate.

Relaxation with massage can overcome anxiety by providing a relaxing effect, can reduce blood pressure, and affect hormonal aspects and relieve heart work. In the study of Yunitasari *et al* (2018) states that touch and pressure on the skin and skin tissue in the feet stimulate the nervous system and provide comfort, relax and reduce pain. Massage affects the autonomic nerve perceiving relaxation by touch to activate the thalmus in the release of efacalin endorphins (Hariyanto *et al.*, 2015).

Relaxation has a calming effect on the limbs, lightness and feel warmth that spreads throughout the body. When relaxation occurs changes in autonomic nerves with emotional responses and calming effects that change the dominant sympathetic physiology into the dominant parasympathetic system. This results in a decrease in catecholamine and cortisol hypersecretion and increases parasympathetic hormones and neurotransmitters such as DHEA (Dehidroepinandrosteron) and dopamine or endorphins that give pleasure (Sukmawati *et al.*, 2018). The mechanism of the massage causes relaxation of the nerve muscles where the body is in a homeostatic state, the body is calm, but not sleeping and in a comfortable position, a situation that copes with stress and anxiety, (Sunaryo & Lestari, 2014). In foot massage techniques rubbing, massage, and scour. Rubbing movements on the feet cause an increase in temperature and activate the activities of the sympathetic who provide neurotransmitter signals to the brain that can provide comfort and relaxation (Afianty, 2017). Massage sends a signal that will balance the nervous system or release endorphins that cause or encourage relaxation and blood circulation (Ardiansyah, 2019).

From several studies, relaxation techniques with foot massage can accelerate blood circulation, provide vasodilation effect, reduce pain, anxiety and improve sleep quality, in this study obtained anxiety results in AMI patients between before and after getting foot massage intervention with a significant value ($p = 0,000$) with a decrease in anxiety from moderate to mild anxiety, which means that with foot massage for 10 minutes on each foot in AMI patients has an influence on anxiety where there is a decrease in anxiety with an average score difference of 22.23 in AMI patients treated at ICVCU Hospital Dr. Moewardi Surakarta.



Conclusion

1. Average anxiety score in AMI patients in Dr. Moewardi before foot massage was 38.06.
2. Average anxiety scores in AMI patients at RSUD Dr. Moewardi after a foot massage was 60.29.3.
3. There is an influence of foot massage therapy on anxiety in AMI patients in Dr. Moewardi with a P value = 0,000 (p value <0.05).

Suggestions

1. It is hoped that this research will serve as material to add insight and knowledge to Critical Nursing in the management of anxiety by using non-pharmacological techniques such as relaxation with foot massage.
2. It is expected that the results of this study can be real research with more respondents and improve the design.
3. It is hoped that the results of this study can be applied as consideration for AMI patients in anxiety management.
4. It is expected that further research can add a control group as a comparison in the research conducted so that it can compare the results / differences between the control group and the intervention group in providing foot massage.

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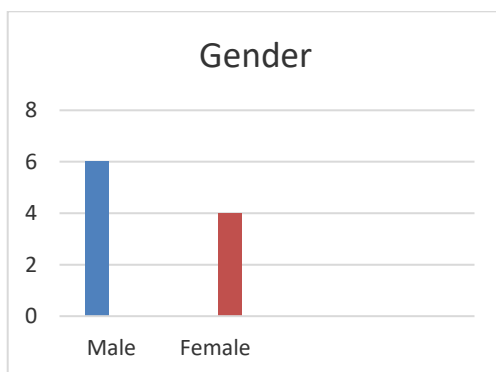


Figure 1. Distribution of Gender Characteristics of Respondents in ICVCU Room Dr. Moewardi.

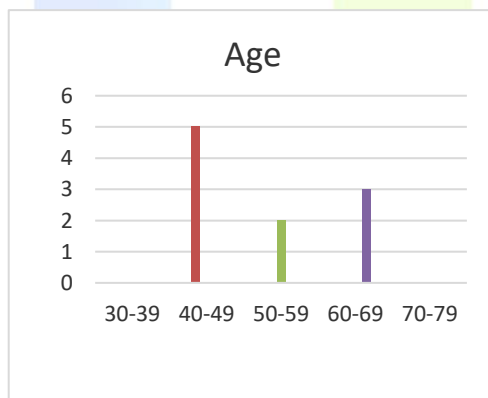


Figure 2. Distribution of Respondent Age Characteristics in ICVCU room Dr. Moewardi.

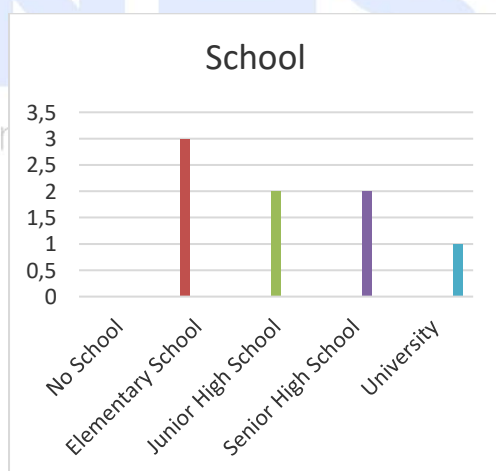


Figure 3. Distribution of Educational Characteristics of Respondents in ICVCU room Dr. Moewardi.

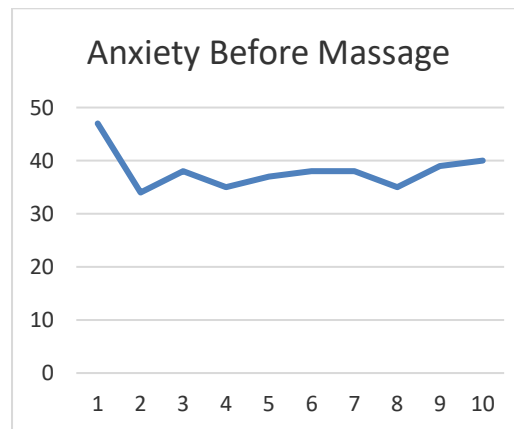


Figure 4. Distribution of Anxiety Mean Before Foot Massage

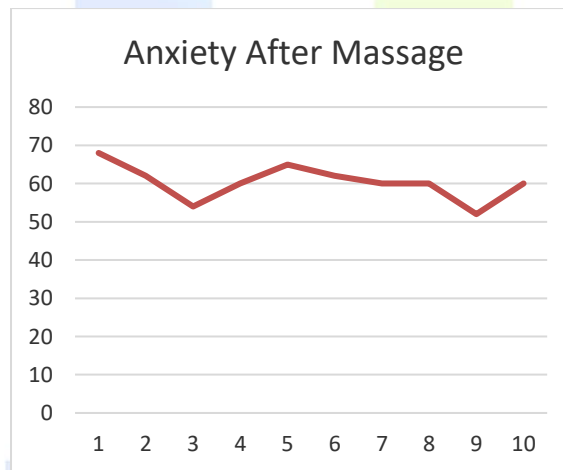


Figure 5. Distribution of Anxiety Mean After Foot Massage

Table 1. Distribution of the Effects of Foot Massage on Average Anxiety in OUR Patients Before and After Getting a Foot Massage at RSUD Dr. Moewardi Surakarta

Variable	Mean	Mean Difference	Min-Max	(p) Value
Anxiety Before	38.06	22.23	30-47	0.000
Anxiety After	60.29		54-67	



The effect of "MOTENSI" application on low salt diet adherence in hypertensive patient at the Malang City public health center

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Abstract

Hypertension is a non-contagious disease which is the leading cause of death in the world. In an effort to treat hypertension, hypertension sufferers need a long-term hypertension therapy or management, one of them is a low salt diet. Non-compliance hypertension management can cause complications. The application of MOTENSI is expected to increase the compliance of low-salt dietary therapy patients with hypertension. MOTENSI application is an application designed by researchers to help hypertension sufferers in carrying out low-salt diet therapy. This study aims to determine the effect of adherence to a low salt diet after the use of the MOTENSI application in patients with hypertension in Malang City Health Center. The true experimental research method is the randomized control group pretest-post test design approach. Respondents in this study were 52 respondents. The results using the Mann Whitney test showed differences in adherence to the low salt diet at post test with a p-value of 0.006 (<0.05). The results of adherence before and after application were obtained significant p-value changes of 0.004 in the control group and 0.000 (<0.05) in the intervention group. After giving the application MOTENSI there is the effect of low salt diet adherence in patients with hypertension.

Keywords: Hypertension, MOTENSI Applications, low salt diet compliance

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Background

Hypertension is one of the most common causes of death in the world. According to data from the World Health Organization (WHO) in 2015, in 2025, the number of people with hypertension worldwide is estimated to be 1.13 billion, and the number of deaths due to hypertension and complications is 9.4 million each year.⁸ The number of hypertension in Indonesia continues to increase every year. This was proven in 2013, the results of Riset Kesehatan Dasar, which amounted to 25.8% of hypertension in Indonesia, the prevalence increased in 2018 to 34.1%. Of the total hypertension sufferers in 2018, only 8.4% of hypertension sufferers received treatment.¹¹ The latest data on the Health Profile of East Java Province in 2018 the incidence of hypertension in East Java has increased to 36.32%.⁷ Based on the Health Profile of Malang City in 2018, 41,591 (9.53%) people were categorized as hypertension.³

There are several factors that influence high hypertension, such as age, gender, hereditary history, race, education, excessive sodium consumption, obesity, high blood fat levels, alcohol consumption, smoking, coffee, non-steroidal anti-inflammatory drugs, use of contraceptive pills, and stress. Complications that arise when a prolonged increase in blood pressure are kidney failure, coronary heart disease and stroke which leads to death.² The Dietary Approach to Stop Hypertension (DASH) recommends that people with high blood pressure reduce salt consumption, saturated fat, low calorie, high fiber, potassium, lose weight if obese, reduce smoking, reduce alcohol consumption, and carry out physical activity.⁴ Implementation of a good hypertensive diet can normalize blood pressure, such as reducing foods high in salt.⁵ The cause of the high incidence of hypertension in Indonesia is due to the unhealthy lifestyle of the people.⁸ 60.4% of people who suffer from high blood pressure behave poorly when running a hypertensive diet.¹⁸ Based on research by Sarasaty *et al*, Indonesians consume an average of 15 grams of salt per day, and the use of MSG has reached an alarming level.¹³

Researchers have developed a method that can facilitate increasing compliance with a low salt diet, a method that can increase hypertension sufferers to manage themselves independently at home. Researchers made an innovation to design an easy and simple application for hypertension management in a low-salt diet for hypertension sufferers. This application can be used by people with hypertension who have an Android-based smartphone. This application is also flexible and easy to carry anywhere with the condition that the patient brings his smartphone, this application can be monitored directly by sufferers and health workers who treat hypertension sufferers, making it easier to monitor at home and by health workers. This application has a feature that represents controlling the lifestyle of people with hypertension in the form of a low salt diet.

Methods

Experimental research method with randomized control group pretest-posttest design. Divided into 2 groups, the intervention group was given treatment in the form of MOTENSI application developed by the researcher. The application used by respondents in the intervention group for 4 weeks. Before and after the research, a pre and posttest would be carried out in each group.



The study population and sample were hypertensive patients in the Mojolangu Health Center, Dinoyo Health Center and Barend Health. Respondents in this study were 52 respondents. Divided into 26 control groups and 26 treatment groups.

Results

Based on table 1, the characteristics of respondents from each group are mostly women, most of the respondents aged 56-65 years, most of the respondents at the latest senior high school. Based on the length of time they were diagnosed with hypertension, most of the respondents <5 years, based on socialization of hypertension in the control group, they stated that they had never received any socialization of hypertension, in the intervention group more stated that they had attended hypertension socialization. According to systolic and diastolic blood pressure, most of the control and intervention groups were included in the category hypertension stage 2.

In the study, the control group and the intervention group there was a change in obedience, where the control group had a higher level of obedience at posttest, 10 people obedience (38.5%), compared to 7 people (26.9%) obedience at the time of the pretest, whereas in the intervention group, respondents had more obedience levels at posttest where 19 (73.1%) obedience, compared to 6 people (23.1%) obedience to a low-salt diet at pretest (Table 2). In the study, it showed that most of the respondents with the pretest results of control and intervention group most of the respondents were disobedience, while in the posttest results most of the respondents in the intervention group were obedience to a low salt diet (Table 3).

In the results of the Mann Whitney analysis on the pretest, it was obtained $p = 0.121$ (> 0.05), which means that there was no significant difference in low salt diet adherence in the control group and the intervention group before being given the application, while in the posttest the analysis results obtained $p = 0.006$ (< 0.05) which means there is a significant difference in low salt diet adherence in the intervention group and the control group (Table 4). In the study, the results of the Wilcoxon analysis showed $p = 0.004$ (< 0.05) in the control group, while the intervention group showed $p = 0.000$ (< 0.05) meaning that there was a significant difference in low salt diet adherence to the control group and the intervention group (Table 5).

Discussion

The results of the study most of the respondents were women, where the control group consisted of 19 people (73.1%) while in the intervention group there were 23 (88.5%). This same with the results of Riskesdas where in Indonesia the prevalence of female hypertension is higher than the prevalence of male gender.¹¹ This is because women who are not menopause have the hormone estrogen as a protector and increase the levels of High Density Lipoprotein (HDL), women who are menopause will experience a decrease in the ratio of androgen and estrogen, which causes an increase in renin which causes blood pressure to tend to increase.¹² Based on the results of the study, most of the respondents were aged 55-56 years, with 16 in the control group (61.5%) and 14 in the intervention group (53.8%). The age factor also affects the prevalence of hypertension, this concurs with Prayitno's study where the incidence of hypertension increases with age due to increased arterial pressure and degenerative processes usually occurring at ≥ 40 years of age.¹⁶



In controlling blood pressure in hypertensive patients, there are two types of management for hypertension therapy, such as pharmacology and lifestyle modification consisting of a low salt diet, nutritional modification, weight loss, exercise, smoking cessation, drinking less alcohol and reducing stress.² There are several factors that influence the management of hypertension, one of them is education, based on the results of the study, the most data was senior high school, 11 people in the control group (42.3%) and 12 in the intervention group (46.2%).

The level of education will affect the understanding regarding the information obtained about the disease. This is mentioned in Lailatul's research where respondents with low education mostly do not know about how to maintain their own health, while respondents with high education tend to get more information so that they know how to maintain their own health.⁹ Information on hypertension management is also something that affects the understanding of hypertension management, based on the results of the research on the characteristics of respondents from each group, seen from whether or not they have received hypertension socialization in the control group, most of them stated that they had never received hypertension socialization as many as 15 (57.7%) and most of the intervention group stated that they had received hypertension socialization as many as 22 people (84.6%).

Long diagnosed hypertension plays a role in treatment adherence, people who have been diagnosed with hypertension for a long time tend not to adhere to treatment. This is because people with hypertension feel bored and bored with the treatment that they must undergo.⁶ According to the characteristics of respondents in this study, respondents diagnosed with hypertension were mostly <5 years as many as 16 (61.5%) in the control group, while in the intervention group there were 14 (53.8%).

Low Salt Diet Compliance Pretest

The pretest results of low salt diet adherence in the control group were 19 (73.1%) disobedience and 7 (26.9%) obedience, while the pretest results in the intervention group were 20 (76.9%) who were disobedience, and as many as 6 people (23.1%) obedience to a low salt diet. There are several things in the respondent that cause disobedience, based on Annisa & Bahri's research where demographic data on age, gender, education, attitudes, and long suffering from hypertension can affect a person in adhering to a hypertensive diet.¹ Adherence is the extent to which the patient is fully involved in the healing process and follows the recommendation of a doctor or health worker, both in taking prescription drugs, exercising, eating healthy food and therapy.¹⁴

Individuals with hypertension have different characteristics and personalities for each person depending on their attitude related to their disease and depending on self-management of people with hypertension. Several factors influence the success of treatment in hypertensive patients, namely playing an active role in searching information and being willing to check and see a doctor and being obedient in carrying out treatment. The effectiveness of therapy is determined by the compliance of the patient.^{10 17}



Low Salt Diet Compliance Posttest

Posttest obedience was taken using a questionnaire, previously in the intervention group given the MOTENSI application, the posttest results of the control group were 16 (61.5%) disobedience and 10 (38.5%) obedience, in the intervention group there was an increase in results. Posttest where there were 7 (26.9%) people who were disobedience and 19 (73.1%) people were obedient. This is in line with Suyoto's research where by using the hypertension diet compliance application there are significant changes in the posttest. This shows that the use of applications in the treatment of hypertensive patients has a good role in helping hypertension sufferers to treat a low salt diet.¹⁵

Effect of Application of Motivation on Compliance with Low Salt Diet

The application "MOTENSI" Hypertension Monitor itself, is made to facilitate outpatient hypertension sufferers to always maintain adherence to the therapy given even though they are not directly monitored face to face with health workers. This application provides features such as a daily diary of salt consumption which is filled directly by people with hypertension in the application. Compliance is facilitated in this feature where respondents have to fill out a low-salt diet every day by reporting the consumption of salt consumed into the application, besides that there is data on the results of reports on filling a low-salt diet that can be accessed by researchers so that it makes monitoring easier.

The adherence of the low salt diet in the treatment group before using the MOTENSI application was more disobedience, this indicates that most respondents did not do a low salt diet. After giving the application, there was an increase in the compliance of respondents who obedience. This condition was strengthened by comparing the pretest and posttest results of the statistical analysis test in this study, it was found that the Wilcoxon test results obtained significant changes in adherence to a low salt diet in the intervention and control groups.

The results of non-parametric analysis on the results of the Man Whitney test at the pretest before the intervention there were no significant differences related to low salt diet adherence, while in the posttest analysis results showed that there was a significant difference in the adherence to low salt diet in the intervention group with the control group. This condition agrees with Suyoto's research where after pre and posttest was carried out in the intervention and control groups there was a significant difference in the mean value difference in the level of adherence to a hypertensive diet was higher (5.34) in the intervention group than in the control (3.48). This shows that the use of hypertension management through an Android application is more effective in increasing adherence to a low salt diet in people with hypertension.¹⁵

Conclusion

Measurement results in the intervention group, adherence to a low salt diet in hypertensive patients at the pre and posttest time, there is an increase in the majority of hypertensive patients who adhere to a low salt diet. The results of the analysis show that there is a significant effect after using the MOTENSI application on compliance with a low salt diet.



List of Abbreviation

WHO : World Health Organization

MOTENSI : Monitor Hipertensi Sendiri (Hypertention monitor by self)

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Table 1. Distribution of Respondents Based on Characteristics

Variabel		Control Group		Intervention Group	
		n (26)	%	n (26)	%
Gender	Male	7	26.9%	3	11.5%
	Female	19	73.1%	23	88.5 %
Age	36-45 year	4	15,4 %	5	19.2%
	46-55 year	6	23.1 %	7	26.9 %
	56-65 year	16	61.5 %	14	53.8 %
last education	Elementary	9	34.6 %	3	11,5%
	Junior high school	5	19,2 %	8	30,8 %
	Senior high scool	11	42,3%	12	46,2 %
	Bachelor degree	1	3.8 %	3	11,5 %
Length of Diagnosis of Hypertension	< 5 year	16	61.5%	14	53.8%
	> year	10	38.5%	12	46.2%
Hypertension socialization	Yes	11	42,3%	22	84,6%
	No	15	57,7%	4	15,4 %
Blood Pressure	Systolic (mmHg)				
	Hypertension Stage 1 (130-139)	9	34.6%	3	11.5%
	Hypertension Stage 2 (≥ 140)	17	65.4%	23	88.5%
	Diastolic (mmHg)				
	Pre Hypertension (<80)	1	3.8%	1	3.8%
	Hypertension Stage 1 (80-90)	1	3.8%	3	11.5
	Hypertension Stage 2 (≥90)	24	92.3%	22	84.6%

Table 2. Pretest and Posttest Compliance with Low Salt Diet

Low Salt Diet Compliance	Category	Pretest		Posttest	
		n (26)	%	n (26)	%
Control Group	Obedience	19	73,1%	16	61,5%
	Disobedience	7	26,9%	10	38,5%
Intervention Group	Obedience	20	76,9%	7	26.9%
	Disobedience	6	23,1%	19	73.1%



Table 3. Cross tabulation results of pretest posttest control group and intervention group with adherence to low salt diet

Group	Pretest		Posttest	
	Disobedience	Obedience	Disobedience	Obedience
Control Group	19	7	16	10
Intervention Group	20	6	7	19

Table 4. The Difference in Compliance with Low Salt Diet Pretest and Posttest

Low Salt Diet Compliance	P Value	
	Pretest	Posttest
Control group and intervention group	0,121	0,006

Table 5. Changes in Compliance with Low Salt Diet

Low Salt Diet Compliance	Z	P Value
Pretest-posttest Control group	-4,680	0,004
Pretest-posttest intervention group	-2,871	0,000

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The influence of the Unified Theory of Acceptance and Use of Technology (UTAUT) model on the acceptance of the electronic medical record system (study at regional general hospital Prof. Dr. Margono Soekarjo)

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Abstract

Electronic medical record (EMR) is a computerized health information system containing patient medical data, supporting patient medical decisions, and contributing to patient safety. The Unified Theory of Acceptance and Use of Technology (UTAUT) model is needed to analyze user acceptance of the application of technology system which has 4 construct: performance expectancy, effort expectancy, social influence, facilitating conditions. This study aims to examine the effect of the Unified Theory of Acceptance and Use of Technology (UTAUT) model on the application of the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo. The research method was quantitative with cross sectional design. The sample of this study were doctors who used electronic medical records at Regional General Hospital Prof. Dr. Margono Soekarjo used simple random sampling method. Measuring tool using UTAUT questionnaire and data analysis using Partial Least Square software. The study was conducted on 57 respondents with the majority of were male 71,9%, age 30-40 years 49,1%, and experience using EMR of 1-3 years 56,1%. All constructs exhibited an acceptable level of reliability and validity with $C\alpha$ and $CR > 0.7$ and $AVE > 0.5$. Performance expectancy and effort expectancy have a significant influence on behavioral intention to use EMR with $\beta = 0.384$, t-statistic = 2.145, $\beta = 0.376$, t-statistic = 2.820, respectively. Facilitating condition had no direct significant effect to use of behavior EMR with $\beta = 0.060$, t-statistic = 0.511. There is an insignificant influence between social influence on behavioral intention and facilitating condition on the behavior of using EMR. Performance expectancy and effort expectancy have positive and significant effect on the behavioral intention of doctor for using electronic medical record. In addition, behavioral intention variables has a positive and significant effect on usage behavior electronic medical record in Regional General Hospital Prof. Dr. Margono Soekarjo.

Keywords: Electronic Medical Record, Unified Theory of Acceptance and Use of Technology, User Acceptance, Partial Least Square



Background

Information technology is increasingly developing in the world of health to improve the quality of health services and support the implementation of health service operational activities.¹ One of the applications of information technology in the field of health services in the health service documentation system is Electronic Medical Records (EMR).² An electronic medical record (EMR) is a computerized health information system containing patient medical data, demographic data, and services with a decision support system.³

The development of EMR in Indonesia has not been specifically regulated but with the support of ministry of health regulation No 269/2008 that medical records must be written, complete, and clear or electronically to become legal evidence provides bright hope for the development of EMR in Indonesia.⁴ EMR is very important for management to manage health problems because it provides integrity and accuracy of documentation, it can also be a solution to increase cost efficiency, increase access and quality of services in hospitals. Even though it provides many benefits, implementing EMR in the world of health is not easy and faces many complex challenges.⁵ One of the challenges in implementing EMR is the ability of human resources in implementing electronic medical records.⁶

The use of computer-based electronic medical records in Indonesia is still limited in several hospitals. Electronic medical records at Regional General Hospital Prof. Dr. Margono Soekarjo has been started since 2013, starting at the Outpatient, Inpatient, Central Surgical and Emergency Room to ensure the speed of service and the accuracy of data. All health workers, both doctors and nurses, are required to use electronic medical records (EMR). However, the acceptance of health workers for the use of an electronic medical record system has not yet reached the standard, supported by primary data from the medical record unit at Regional General Hospital Prof. Dr. Margono Soekarjo, who has not reached 100% in January to June 2020.

Evaluation of the application of technology systems according to user perceptions is very important because users feel the needs and benefits of implementing technology systems. The theory that can be used to evaluate technology acceptance is the Unified Theory Acceptance and Use of Technology (UTAUT).⁷ UTAUT is a model that combines several models of human behavior that aims to analyze user acceptance of the application of information technology.⁸ UTAUT has 4 main constructs that directly affect behavior intention and technology use behavior, namely: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) Facilitating conditions. UTAUT has been widely adopted to conduct user acceptance research of information technology.⁹

Performance expectancy is defined as the level of individual believes that the use of existing systems can help them to obtain benefits in job performance.⁷ Based on research study shows that performance expectancy has a positive and significant effect on behavioral intention to use technology.^{7,10,11} With respect to the above literature, this study tested the following hypotheses: **H₁: Performance expectancy has a positive effect on behavioral intention to use the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo.**



Effort expectancy is defined as the level of ease related with the use of the system that can reduce a person's energy and time in doing his job.⁷ Research studies proposed that effort expectancy significantly influences on behavioral intention to use technology.^{11,12} As for this specific study it was hypothesized that: **H₂: Effort expectancy has a positive effect on behavioral intention to use the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo.**

Social influence refers to the degree to which an individual perceives that other people convince him to use the new system.⁷ Research studies suggested that social influence has strong impact on behavioral intention to use technology.^{10,13,14} In this study, it was hypothesized that: **H₃: Social influence has a positive effect on behavioral intention to use the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo.**

Facilitating condition is defined as the level to which an individual believes that the infrastructure and supporting facilities that are owned are available to support the use of the system.⁷ Research studies conducted on technology acceptance indicated that facilitating condition is a determinant factor of behavioral intention to use technology.^{10,12,13} This study tested the following hypotheses: **H₄: Facilitating conditions has a positive effect on the use of behavior the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo.**

Behavioral Intention can be defined as the level of willingness of users to utilize the system continuously in the future.⁷ behavioral intention to use technology could be influenced by many factors as discussed earlier, and its influence on use of behavior of the new system has been documented in research conducted studies.^{12,15,16} Thus, this study proposed a hypothesis to be tested as: **H₅: Behavior intention has a positive effect on the behavior of using the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo.**

The research design model has illustrated in Figure 1. Based on the background of the problems above, the researcher is interested in examining the acceptance of doctors to the use of electronic medical records. The purpose of this study was to examine the effect of the Unified Theory Of Acceptance And Use Of Technology (UTAUT) model on the acceptance of the electronic medical record system by doctors at Regional General Hospital Prof. Dr. Margono Soekarjo.

Methods

This study used a quantitative research with a cross-sectional approach. The sample of this study were doctors who used electronic medical records at Regional General Hospital Prof. Dr. Margono Soekarjo used simple random sampling method with a total sample of 57 doctors. The independent variables in this study are performance expectations, effort expectancy, social influence, and facilitating conditions. The dependent variable in this study are behavioral intention and use behavior. The data collection method is to distribute questionnaires in the form of closed statements using a Likert scale with a score range of 1-5 and data were analyzed using Partial Least Square software. In conducting the study, ethical clearance was secured from Regional General Hospital Prof. Dr. Margono Soekarjo Purwokerto ethical review committee. Additional permissions to access participants were obtained from deputy

director of support and education of Regional General Hospital Prof. Dr. Margono Soekarjo Purwokerto and verbal informed consent from the respondents was also attained.

Results

Characteristics of the respondents

The study was conducted on 57 respondents who were doctors who worked at the General Regional Hospital Prof. Dr. Margono Soekarjo Purwokerto. The selection of respondents was done randomly by meeting several doctors who were willing to be respondents at a certain time until the number of respondents was sufficient. The majority of respondents were male 71,9%, the majority of respondents are in the age 30-40 years as much as 49.1%, most of the participants had specialist education was 61.4%, and most of the respondents had an experience using electronic medical record of 1-3 years 56,1% as shown in Table 1.

Measurement Model Assessment

The reliability of construct measurement was assessed by computing composite reliability, average extracted variance and Cronbach's alpha coefficients ($C\alpha$) for individual items as presented in Table 2. All constructs exhibited an acceptable level of reliability and validity with $C\alpha$ and $CR > 0.7$ and $AVE > 0.5$.¹⁷ Convergent validity has a function to measure the validity of the indicators used to measure variables. Convergent validity of a set of observed variables with respect to their associated construct was established by examining AVE.¹⁸ As shown in Table 2, all factor reliability results are above the acceptance limit of 0.7 and the result of convergent validity is above the acceptance limit of 0.5. Discriminant validity specifies the degree to which each construct measures different variables of the study. We assessed the constructs discriminant validity by comparing the square roots of average variance extracted (AVE) to the absolute values of correlation between constructs. As presented in Table 3, all of the square roots of AVEs (diagonal) are greater than the correlations among constructs, which illustrates the discriminant validity¹⁹

Structural Model Assessment

The measurement model was assessed using Partial Least Square. The coefficient of determination (r^2) was used to explain the variance of each endogenous target variable with a standard measurement of about 0.670 strong, 0.333 is moderate, and 0.190 or below indicates a weak level of variance.²⁰ The value of r^2 in this research demonstrated moderate performance in explaining the variabilities in the outcome variables with $r^2 = 0.668\%$ of behavioral intention and strong performance in explaining the variabilities in the outcome variables with $r^2 = 0.728$ of electronic medical record system use explained.

Hypothesis testing can be done by looking at the free coefficient and statistics by comparing the t-statistic value with the t-table with a significance value of 0.05 (t-statistic > t-table 1.96). The results related to hypothesis testing are given in Table 4. The results specified that, with the exception of two hypotheses (Hypothesis 3 and Hypothesis 4), all the proposed hypotheses were significant. The analysis showed that performance expectancy has a significant influence on behavioral intention to use electronic medical report with $\beta = 0.384$, t-statistic = 2.145, p values = 0.032. Effort



expectancy has a significant influence on behavioral intention to use electronic medical report with $\beta = 0.376$, t-statistic = 2.820, p values = 0.005. On the other hand, social influence had no direct significant effect on behavioral intention to use electronic medical report with $\beta = 0.060$, t-statistic = 0.511, p values = 0.609. Facilitating condition had no direct significant effect to use of behavior electronic medical report with $\beta = 0.060$, t-statistic = 0.511, p values = 0.609. Behavioral intention has a significant influence on behavioral intention to use electronic medical report with $\beta = 0.376$, t-statistic = 2.820, p values = 0.005.

Discussion

The results of this study illustrate that performance expectations have a positive influence on behavioral intention to use an electronic medical records system. This suggests that the intention of doctor to use an electronic medical record system might be increased if performance expectancy to use the electronic medical records system improves. Perceptions of doctors at Regional General Hospital Prof. Dr. Magono Soekarjo on the acceptance of electronic medical record technology in the aspect of performance expectancy, the majority of respondents stated that electronic medical records made the documentation process easier because doctors did not need to write a lot and also made it easier for doctors to access patient health information quickly, making it easier and faster for doctors' work. These results are in line with previous studies where performance expectations are the most powerful variable in influencing behavioral intentions and the successful application of technology systems is the result of a good explanation from management regarding the system's advantages to their performance.¹⁰ The results of other studies indicate that performance expectations are a significant factor in the intention to use electronic medical records even though they are not the strongest predictors.¹⁴ The existence of an electronic medical record provides an opportunity to be able to view the clinical history of patients during treatment thus increasing their desire to use the system.²¹ Effort expectancy has a positive effect on behavioral intention to use the electronic medical record system. This suggests that behavioral intention doctor to use electronic medical record systems can increase if effort expectancy increase. The electronic medical record system that is designed to be user-friendly will facilitate the use of the system thus increasing behavioral intention to use electronic medical records. Effort expectancy aspects of the majority of doctors in Regional General Hospital Prof. Dr. Margono Soekarjo stated that electronic medical records were easy to operate. The results of this study are in line with previous research which states that effort expectancy is an important variable in determining behavioral intention. Ease of use of the hospital information system is an important factor in implementing the system.¹⁰ Other studies have shown that effort expectancy has a positive and significant effect on intention to use electronic medical records.^{12,21}

Based on the results of data analysis, it can be seen that social influence has no effect on behavioral intention to use electronic medical records. Aspects of the social influence of the majority of doctors at Regional General Hospital Prof. Dr. Magono Soekarjo stated that other people's opinion about the importance of using electronic medical records did not affect the behavioral intention to use electronic medical records. Research that contradicts the results of this study reveals that social influence significantly affects behavioral intention.^{10,13,14} The results of this study are in line with previous research which revealed that social influence has no influence on intention to use.¹¹ Other studies also reveal that social influence has no significant effect on behavioral intention.¹²



Based on the results of data analysis, it can be seen that facilitating conditions did not significantly affect the behavior of using electronic medical records. Aspects of the condition of the majority of the Regional General Hospital Prof. Dr. Magono Soekarjo stated that the availability of resources and supporting facilities for electronic medical records had no effect on the behavior of using electronic medical records. The results of this study are in line with previous research which revealed that facilitating conditions had no significant effect on the behavior of using electronic hospital management information systems (HEIMS). Health workers such as nurses tend to reject technology, so technology equipment is needed for use of HEIMS and good training, otherwise any HEIMS application can be rejected.¹³ Research that contradicts the results of the study reveals that facilitation conditions have a significant effect on behavior. In this case the condition plays an important role in RME usage behavior. By increasing existing resources such as computers and other hardware, increasing related knowledge, training specialists in information technology and health information management and their accessibility for personnel related to electronic medical records, it can improve usage behavior.^{10,12}

The results of data analysis reveal that behavioral intention has a positive influence on the behavior of using the electronic medical record system. This means that the behavior of doctors using electronic medical records will increase if the behavioral intention increases. The behavioral intention of doctors to use electronic medical records in Regional General Hospital Prof. Dr. Magono Soekarjo affects the behavior of using electronic medical records. This study is in line with previous research which shows that there is a significant relationship between behavioral intention and usage behavior, behavioral intention is the main factor affecting the use of technology.¹² Other studies have shown that the intention to use a technology affects the actual use of the technology. Investigating and understanding the factors that influence the intended use of electronic medical records can lead to actual use of the system.^{14,22}

Conclusion

Based on the results of the study, there is an positive effect of performance expectancy and effort expectancy to use of behavior electronic medical record by doctor in Regional General Hospital Prof. Dr. Margono Soekarjo. Than, use of behavior an electronic medical record system is directly and significantly influenced by behavioral intention to use an electronic medical record system. Future research should consider evaluating the model with possible moderator effect as shown as the previous studies.¹⁰

List of Abbreviation (optional)

- EMR – Electronic Medical Record
- UTAUT – Unified Theory of Acceptance and Use of Technology
- PE – Performance Expectancy
- EE – Effort Expectancy
- SI – Social influence;
- FC – Facilitating Conditions;
- BI – Behavioral Intentions;
- UB – Use Behavior



Declaration Section

Competing interests

The authors declare that there are no competing interests regarding the publication of this paper.

Ethics approval and consent to participate

This study was approved by the Regional General Hospital Prof. Dr. Margono Soekarjo health research ethical committee (No. 420/10118/IX/2020). The deputy director of support and education also gave approval before data were collected. All the participants were contacted during their working shifts and invited verbally to participate in this survey. An informed consent form (signed) was obtained from those who agreed to take part in the study. The participants were guaranteed response anonymity

Consent for publication

Not applicable

Availability of data and material

All data generated or analyzed during this study are included in this article.

Funding

Not applicable.

Acknowledgement

The authors of this study would like to thank all doctors for their time and collaboration during our data collection. The authors of this study would like to also thank Regional General Hospital Prof. Dr. Margono Soekarjo.

Authors' contributions

All authors contributed equally. All authors have read and approved the final manuscript.

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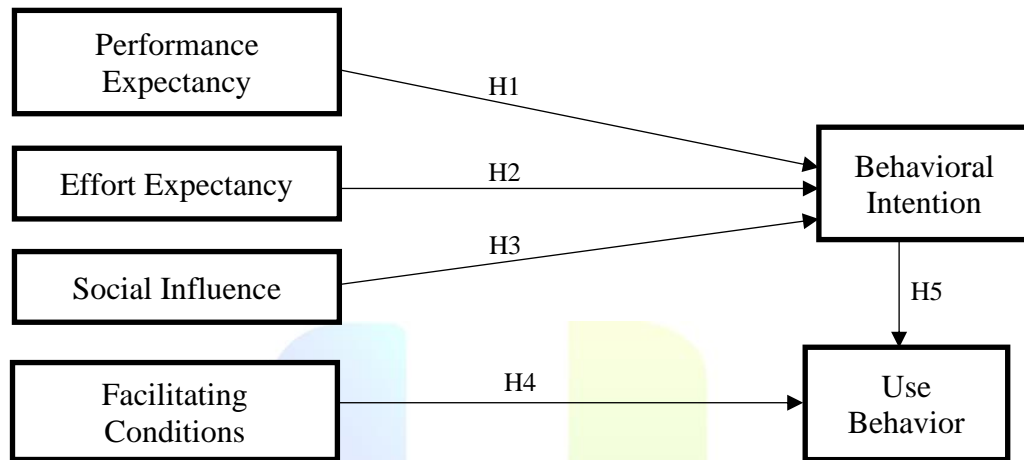


Figure 1. Research Model

Table 1. Socio-demographic characteristics of participants.

<i>Characteristics</i>	<i>N</i>	<i>%</i>
Age		
30 – 40 years	28	49.1
41 – 50 years	15	26.3
51 – 60 years	14	24.6
Gender		
Male	41	71.9
Female	16	28.1
Education		
Specialist	35	61.4
Specialist + Magister	15	26.3
Subspecialist	7	12.3
Experience using EMR		
<1 tahun	1	1.8
1 – 3 tahun	32	56.1
4 – 10 tahun	23	40.4
>10 tahun	1	1.8



Table 2. Reliability and Convergent Validity of The Measurement Model

Variable	Items	Loading factor (LF)	Cronbach alpha (CA)	Composite reliability (CR)	Average variance extracted (AVE)
Performance expectancy	PE1	0,919	0,886	0,929	0,814
	PE3	0,920			
	PE4	0,867			
Effort Expectancy	EE1	0,942	0,870	0,939	0,885
	EE3	0,939			
Social Influence	SI1	0,704	0,729	0,841	0,639
	SI2	0,860			
	SI3	0,825			
Facilitating Condition	FC1	0,932	0,702	0,864	0,762
	FC2	0,809			
Behavioral Intention	BI1	0,925	0,901	0,938	0,835
	BI2	0,893			
	BI3	0,923			
Use of Behavior	UB1	0,950	0,842	0,925	0,861
	UB2	0,904			

Table 3. Discriminant Validity of Measurement Model

	Performance expectancy	Effort Expectancy	Social Influence	Facilitating Condition	Behavioral Intention	Use of Behavior
PE1	0,919	0,795	0,576	0,730	0,711	0,636
PE3	0,920	0,679	0,602	0,682	0,589	0,590
PE4	0,867	0,542	0,596	0,636	0,599	0,577
EE1	0,725	0,942	0,531	0,766	0,664	0,565
EE3	0,690	0,939	0,503	0,764	0,649	0,497
SI1	0,325	0,196	0,704	0,184	0,240	0,310
SI2	0,554	0,490	0,860	0,543	0,457	0,378
SI3	0,615	0,533	0,825	0,571	0,480	0,391
FC1	0,725	0,746	0,529	0,932	0,716	0,617
FC2	0,585	0,678	0,514	0,809	0,513	0,379
BI1	0,700	0,635	0,497	0,667	0,925	0,738
BI2	0,612	0,677	0,442	0,659	0,893	0,657
BI3	0,620	0,603	0,480	0,651	0,923	0,709
UB1	0,645	0,539	0,429	0,560	0,816	0,950
UB2	0,589	0,509	0,413	0,544	0,579	0,904

Table 4. Structural relations related to the research model and related values

Hypothesis	Path Coefficient (β)	T statistic	P values
PE → BI	0,384	2,145	0,032
EE → BI	0,376	2,820	0,005
SI → BI	0,060	0,511	0,609
FC → UB	0,083	0,612	0,541
BI → UB	0,709	7,446	0,000



Disaster preparedness in pre hospital provider setting: literature review

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Abstract

Developing countries are particularly vulnerable to disasters because they lack disaster preparedness systems and have higher rates of poverty, poor governance, inequality and reduced access to resources. Preparedness is a part of the disaster management process and in the concept of disaster management that is currently developing. Increased preparedness is one of the important elements of disaster risk reduction activities before a disaster occurs. To reviewing journal articles on disaster preparedness in pre hospital services. Search for articles using databases of Siencedirect, Proquest, Pubmed, and Google Scholar. There are 9 articles that meet the inclusion and exclusion criteria for review. Document selection and selection were carried out using PRISMA model. 9 journal articles were found discussing disaster preparedness in pre hospital services and there are 3 factors that influence disaster preparedness in pre hospital services is knowledge, attitudes and skills. In conclusion, increased preparedness is one of the important elements of disaster risk reduction activities before a disaster occurs.

Keywords: disaster, preparedness, pre hospital provider.

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Background

Developing countries are particularly vulnerable to disasters because they lack disaster preparedness systems and have higher poverty rates, poor governance, inequality and reduced access to resources⁽¹⁾. Disaster events that occur due to the hydrometeorological group include floods, extreme waves, land and forest fires, drought, and extreme weather. Meanwhile, the geological disasters that often occur are earthquakes, tsunamis, volcanic eruptions, and landslides. This disaster had a very large impact, especially on the economic and environmental sectors, both direct and indirect impacts. Human activities also worsen environmental conditions⁽²⁾.

Preparedness is a part of the disaster management process and in the concept of disaster management that is currently developing. Increased preparedness is one of the important elements of disaster risk reduction activities before a disaster occurs. One of the resources needed for disaster preparedness is human resources, especially health workers, which greatly affect disaster preparedness because the number of health workers will be an important factor in dealing with emergency situations. In the disaster management process represented as a cycle model, increased preparedness is part of the disaster risk management process which emphasizes on preparing the ability to be able to carry out emergency response activities quickly and accurately⁽³⁾.

The increasing number of emergency cases that have occurred and Indonesia's geographical factors caused the Ministry of Health of the Republic of Indonesia has encouraged new innovations to improve health and emergency services, one of which is the 119 Public Safety Center service which can be used throughout Indonesia. These conditions and phenomena require an increase in the quality of health services through improving health facilities and infrastructure and increasing access to health services to the public. Emergency medical services through 119 numbers can be accessed widely and for free by the public via cellphones or landlines. This emergency service is an integration between the Central Government through the 119 National Command Center located at the Ministry of Health and the Regional Government through the Public Safety Center (PSC) in each Regency / City. In accordance with Presidential instruction number 4 of 2013 which mandates that each Regency / City must form a PSC that functions as a coordination center for emergency services in an area⁽⁴⁾.

Methods

There are 4 stages in the literature review conducted by the researcher. The first is identifying a research question. This research starts from determining research questions, where the research question is how to disaster preparedness in pre hospital services. Second, namely identifying relevant studies. Journal articles are obtained from search results on data based on Proquest, Science Direct, Pubmed and Google Scholar using the keywords disaster, preparedness, pre hospital provider using the help of Boolean techniques "AND" and "OR". The limit set is to contain abstract and full text by including keywords. The third is selecting studies for inclusion. Screening and selection of articles based on inclusion and exclusion criteria defined by the authors. The full text review is also carried out by the author himself without the assistance of a reviewer. Fourth, namely data gathering, charting, organization and summarizing.

The author filters all titles and keywords, accesses the abstract, identifies articles that meet the requirements of inclusion and exclusion criteria, the author examines the abstracts that have been screened, all selected articles are viewed in full text. The main data extraction was analyzed with the outcome that was considered was disaster preparedness in pre hospital services. All selected articles are viewed in full text. The main data extraction was analyzed with the outcome that was considered was disaster preparedness in pre hospital services. All selected articles are viewed in full text. The main data extraction was analyzed with the outcome that was considered was disaster preparedness in pre hospital services.

220 article titles were obtained on Siencedirect, 123 on Proquest, 10 on Pubmed, and 11 on Google Scholar after a combination using "OR, AND". The screening process to determine duplication resulted in 109 duplicate articles so that it must be excluded. Subsequently, the title, abstract and full text were adjusted accordingly, resulting in 33 articles. There are 9 articles that meet the inclusion and exclusion criteria for review. Document selection and selection were carried out using the modified PRISMA flowchart. The PRISMA flowchart can be seen in Figure 1.

Results

The results obtained are then reviewed and evaluated. The author then examines every recommendation from disaster preparedness from start to finish on pre hospital services. Furthermore, the authors decided to use 9 articles to compile disaster preparedness guidelines for pre hospital services. Disaster preparedness recommendations for pre-hospital services that have been successfully compiled include the impact of nurses' knowledge, attitudes, skills and readiness in dealing with disasters. Journal article identification can be seen in Table 1. From the results of the review conducted, it was found that the factors that influence disaster preparedness in pre-hospital services are knowledge, attitudes, and skills. Factors that affect disaster preparedness in pre hospital services can be seen in Table 2.

Discussion

Nurses better prepared for disasters, this highly visible and productive group of health care providers must be equipped with the necessary knowledge and skills. As the front line, nurses must be ready and responsive to disasters immediately. This can be achieved through providing training for nurses during non-emergency cooking and during initial health care education. According to Veenema (2016) nurses can play an important role and cope with disasters more effectively if they are prepared and trained⁽⁵⁾. Conversely, nurses who lack knowledge and readiness will have difficulty providing adequate care and support to disaster victims and their families⁽⁶⁾. Therefore, nurses must be given the opportunity to follow the actual disaster incident, participate in mock disaster drills, and enroll in other educational and training opportunities relevant to disaster preparedness. In one study, self-efficacy improvement activities were recommended to be integrated into disaster training for nurses⁽⁷⁾.

Nazrabadi *et al* also reported that lack of knowledge and preparedness is a factor in causing emotional distress in carrying out their duties in these difficult conditions and the World Health Organization considers preparedness and trained personnel to be one of the factors involved in reducing the rate of injury⁽⁸⁾. Khankeh *et al* reported that trained staff is one of the factors facilitating health service delivery, leading to

increased competency of health system staff in disaster response. Therefore, the most important thing that health care providers must pay attention to to reduce disaster complications is the development of training programs for staff to carry out their duties in this area. Bartly *et al* also reported that education and training of health staff is a major component of disaster preparedness. Several educational strategies can be used for disaster education, including lectures, seminars, distance education using the internet, background experiences, databases or computer-assisted learning and formal discussions, which enhance the knowledge and skills of nurses⁽⁹⁾.

Conclusion

Increased preparedness is one of the important elements of disaster risk reduction activities before a disaster occurs. The factors that influence disaster preparedness in pre hospital services are knowledge, attitudes and skills. Special attention needs to be exercised during disaster management during a disaster. Effective efforts to reduce the occurrence of worsening conditions in all disaster sectors that can be done are by implementing disaster preparedness management in pre hospital services. This can be realized by preparing nurses who are competent in disaster preparedness management, conducting training, completing health facilities and infrastructure. In addition, team collaboration is needed to reduce the risk of disasters that occur during a disaster. However, there are still problems related to the current lack of nurse training for disaster preparedness. Therefore, further scientific research is needed regarding the role of nurses in disaster management.

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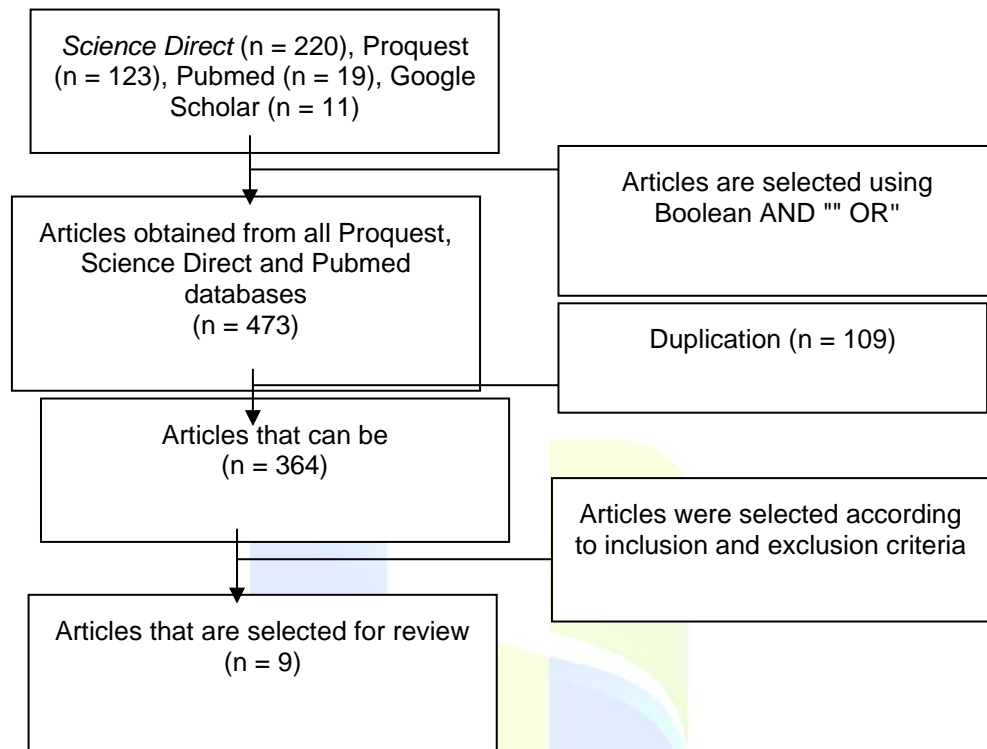


Figure 1. Model PRISMA

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Table 1. Identification of Journal Reviews Article

No.	Author	Country	Findings
1	Ryan <i>et al</i> , 2019	Australia	The main influence on post-disaster self-management skills is access to treatment, medical services, water, medicine and care, electricity and food. Stress and anxiety, lack of sleep, weakness or fatigue, and shortness of breath are common problems for all patients. Access to treatment and medical services is a priority for all post-disaster patients.
2	Goniewicz <i>et al</i> , 2020	Poland	The preparedness of nurses against incidents and disasters that claimed many victims was better than the readiness of their current workplaces. The pilot study shows that a well-designed questionnaire can be used to assess the relationship between the hospital and staff to disaster preparedness and response for efficiency.
3	Labrague <i>et al</i> , 2016	Philippines	Three-quarters of respondents (n = 136.80%) stated that they were not fully prepared to respond to disasters, while only 20% (n = 34) stated that they felt they were sufficiently ready. Respondents believed that they could function as educators (n = 107, 62.94%), caregivers (n = 104, 61.17%), and counselors (n = 82, 48.24%). More than half of the respondents (n = 98, 57.7%) do not know the existing disaster management protocols in the workplace. The nurses in this study revealed that they were not sufficiently prepared for disasters nor did they know disaster management protocols in the workplace.
4	Naser <i>et al</i> , 2018	Yemen	The overall knowledge status of Yemeni health professionals is insufficient in terms of emergency and disaster preparedness. Of all respondents, 32.0% had good knowledge, 53.5% had moderate knowledge and 14.5% indicated poor knowledge. Education level is a key factor in the knowledge gap among respondents. Regardless of the period of experience, postgraduate staff are more knowledgeable than graduates. The absence of a teaching program is a major problem in the lack of knowledge of health professionals on disaster preparedness.
5	Tušer <i>et al</i> , 2020	Czech	EMS in the Czech Republic does not have central management, nor does it use uniform data documentation. Investigations into the current situation have shown that the attitude of the EMS in the respective regions of the Czech Republic towards the duty of emergency preparedness for mass casualty incidents is not identical. Current methods of evaluating the improvement of the quality of EMS emergency preparedness are less consistent and not comprehensively monitored.



No.	Author	Country	Findings
6	Maleki <i>et al</i> , 2018	Iran	The results showed that there was a positive relationship between knowledge and attitudes and the knowledge score was considered a predictor of attitude (OR = 1.638, p = 0.00001). In addition, work history (OR = 1.072 and p = 0.024) and possession of the kit items needed in the disaster (OR = 20.746 and p = 0.004) were considered predictors of desired attitudes. This study reveals that increasing nurses' knowledge level, having the necessary equipment in a disaster, and improving their work history can improve their attitudes, leading to improving their practice of responding effectively to disasters.
7	Timperio <i>et al</i> , 2020	Indonesia	A real case study of Indonesia, one of the countries with the highest exposure to disaster risk on a global scale, has been investigated using the software anyLogistix. The findings of this study illustrate the ideal network configuration along with transportation policies and inventory for the case at hand. This study makes a case for a paradigm shift as it proposes an interdisciplinary approach that integrates practical experience with analytical and dynamic simulation methods that have been widely applied in the commercial supply chain arena.
8	Nofal <i>et al</i> , 2018	Saudi Arabia	One hundred eleven (58.7%) had clinical experience of more than 5 years, while 78 (41.3%) participants had more than 3 years of clinical service at the Tertiary care hospital in Riyadh, Kingdom of Saudi Arabia. Score correct knowledge of disaster and emergency preparedness score 6.2 ± 2.5 . Participants with more than 5 years of experience had a statistically significant knowledge scale score (p = 0.009) for disaster and emergency preparedness. Overall, 186 (98.4%) patients believed that training was needed for all healthcare workers. About 153 (81%) participants reported conducting disaster drills in their hospital. The level of knowledge of health workers is satisfactory with attitudes, practices and collaboration on disaster preparedness.
9	Veenema <i>et al</i> , 2016	United States of America	This study develops a vision for the future of disaster nursing, and identifies current barriers and opportunities for advancing professional disaster nursing. A wide variety of recommendations for nursing practice, education, policy, and research, as well as implementation challenges, are summarized in this article. Nurses and the health and human services organizations that employ them are encouraged to engage in a broad national

No.	Author	Country	Findings
			dialogue on how best to incorporate the vision and recommendations into the lives of their individuals and the organizations in which they work.

Table 2. Factors affecting disaster preparedness in pre hospital provider

No.	Author	Knowledge	Attitude	Skills
1	Naser <i>et al</i> , 2018	One third of the participants (32.0%) had good, provisional knowledge the other has good or bad inside knowledge disaster management (53.5%, and 14.5%) respectively. In addition, there is a significant difference (p <0.05) in the level of knowledge between undergraduate and postgraduate graduates. Postgraduate students responded with better almost all knowledge test questions.	Attitudes towards disaster management are generally positive. 84.9% of respondents agree with the teaching of disaster management. They want to have an emergency plan, know a role during the emergency response, and want to attend disaster management training. The findings also show that the level of attitudes about management disasters among the health professions differ statistically.	-
2	Maleki <i>et al</i> , 2018	The correlation between the scores of knowledge and attitudes as well as work on research subjects in relation to disaster preparedness was high and there was a relationship between the knowledge scores and attitudes of both.	The correlation coefficient for Spearman's knowledge and attitude is $r = -0.253$ and $p < 0.0001$, indicating a direct, positive and weak correlation between the knowledge and attitude scores of nurses in relation to the preparedness stage to demonstrate response to disasters.	-
3	Nofal <i>et al</i> , 2018	Comparing the mean scores of the disaster and emergency preparedness	The attitude towards disaster and emergency preparedness	Practices for dealing with disasters and emergency preparedness found



No.	Author	Knowledge	Attitude	Skills
		knowledge scale with the demographic characteristics of the participants, it was found that participants with > 5 years of total clinical experience had a statistically significant knowledge score (p = 0.009) which was even higher as compared to participants with ≤5 years.	shows the agreement of the participants on disaster emergency preparedness. About 12 (6.3%) participants were not interested in knowing emergency (disaster) operational plans, and around 21 (11%) agreed that disaster management and planning is for some people in the hospital.	that 153 (81%) of the total participants reported conducting disaster drills in their hospital and nearly two thirds indicated regular updating of the disaster emergency operational plan. In addition, more than two thirds of respondents reported on ongoing training on disaster preparedness.

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Effect MOTENSI apps on adherence behavior taking antihypertensive drugs in patients with hypertension in malang city health care

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Abstract

Treatment for patients with hypertension is a long-term therapy because they have to take antihypertensive drugs for life. Non-compliance with therapy is often found in the treatment of hypertension due to boredom or forgetting to take medication. Motensi application of was made to monitor the compliance of hypertension sufferers to be more obedient in treatment. It also can be used by nurses at the health center to monitor without having to have a home visit but only through a smartphone. Aims of this study was to determine the effect of using the application of Motensi as a reminder to take antihypertensive medication on adherence behavior in patients with hypertension in Malang City. The design in a experimental control variabel grup study uses pretest and posttest with random group selection, to determine the comparison before and after treatment is given. The research ranging from January to March 2020. Population and sample of this study was patients with hypertension recorded receiving outpatient therapy and were at home in the areas of the Mojolangu Health Center, Dinoyo Health Center, and Bareng Health Center. Research respondents numbered 52. Divided into 26 control groups and 26 treatment groups. Measuring compliance scoring using the MMAS-8 questionnaire. The results shows in treatment in the two groups showed an influence seen from the results of the pretest 0.702 there was no change before treatment and the results of the posttest 0.002 showed a change after being treated. In conclusion, there is an influence of the use of the application of motivation on the medication adherence behavior of hypertension sufferers in the Malang City Health Center.

Keywords: Adherence Behavior Taking Medication, Hypertension, Motensi Apps

Background

Hypertension is a health problem that causes cardiovascular disease and the number one cause of death in the world²⁸. According to WHO (World Health Organization) in 2015 there were about 1.13 billion people with hypertension, so one in three people was diagnosed with hypertension. Hypertension increases every year, it is estimated that in 2025 there will be 1.5 billion sufferers of hypertension. Hypertension does not only cause 7.5 deaths or around 12.8% of the total deaths from the disease and its complications but causes of disability amounting to 57 million disabilities or around 3.7% of the total causes of disability²⁹.

The prevalence of hypertension in Indonesia from the results of Riskesdas (Basic Health Research) in the population aged ≥ 18 years there are 34.1% of patients diagnosed with hypertension. In East Java, 36.32% of hypertension sufferers were recorded. The prevalence of hypertension in Malang City is 9.53% or 41,591 people categorized as hypertension. Most sufferers are women reaching 26,271 people, while men reaching 15,320 people¹¹.

Management for pharmacological and non-pharmacological control of hypertension⁵. Non-pharmacological treatment in the form of doing a healthy lifestyle such as weight control, stress control, reduction of salt intake, not smoking and mild physical activity and regular exercise. Pharmacological treatment is by taking antihypertensive medication routinely every day and controlling blood pressure to health facilities regularly^{18,28}.

The prevalence of adherence to take medication for patients with hypertension in East Java based on doctor's diagnosis and history of taking medication there are 8.59% of patients who are registered, but patients who are recorded taking antihypertensive medication, not all adherents take medication regularly, only 56.07% of patients who regularly drink medication, not routinely at 29.23% and the rest do not even take medication. The most reasons for not taking medicine are because they feel they are healthy (64.14%), do not routinely seek treatment (28.52%), take traditional medicine (11.74%), and (10.3%) often forget to consume the drug as well as other reasons²². The factor of forgetting to take medicine or irregularity of taking medication as recommended is non-compliance which can cause disease severity and even complications in the treatment of chronic diseases such as hypertension^{22,24}.

Efforts to reduce mortality and disability of hypertension are to reduce or control blood pressure¹⁴. Non-compliance with hypertension in taking medication is due to lack of knowledge about the dangers caused by the effects of non-compliance with taking medication and the causes of complications such as coronary heart disease to stroke. Lifestyle modification and adherence to taking hypertension medication are important to prevent complications and minimize the risk of disability until the death of hypertension. Therefore an intervention is needed to assess patients with hypertension in order to always maintain compliance in taking drugs¹⁷.

Adherence behavior with drug use plays an important role in the long-term treatment of hypertension. Monitoring patient compliance in drug use cannot be separated from the support of health workers¹⁷. Previously using the following media for an increase in medication adherence to patients, namely: counseling, providing educational leaflets, giving short messages (SMS) reminders of drug information services (DIS),

and motivation²⁵. However, this intervention cannot be carried out comprehensively because of the limited access and resources of health center health workers in Malang. Areas with a high number of hypertension sufferers, three of them include Mojolangu Health Center by 21.01%, Arjuna Health Center 17.47% and Joint Health Center 15.98%²⁰.

According to data from the Health Office (Dinkes) Malang City there are still high numbers in hypertension sufferers in puskesmas working areas which continue to increase every year, puskesmas working areas with high hypertension sufferers include Mojolangu Puskesmas, Dinoyo Puskesmas and Bareng Puskesmas²⁰. In addition to the high number of people with hypertension in the region, there is a low compliance behavior. For this reason the researcher wants to make a study based on the use of medication adherence reminder applications to determine the effect of the use of reminder applications on antihypertensive medication adherence behavior in hypertensive patients independently.

The application "MOTENSI" monitors hypertension itself as a reminder to take medication according to the recommended time but also can find out the dosage and compliance in taking antihypertensive medication which can be evaluated directly by the health care centers nurse via smartphone. All this time, monitoring of adherence to taking hypertension medication has been limited by nurses. So we need a monitor that can be used to monitor outpatients without face to face between nurses and patients. The use of a reminder application with a reminder feature in the form of an alarm to control compliance with taking medication for hypertension sufferers to avoid the severity of the disease. In addition to the main function of the application to control drug compliance, there are features that are useful for monitoring related to non-pharmacological therapies including salt diet and physical activity of patients and this application can be used by community nurses in health centers to monitor drug compliance even if not by direct supervision but is linked to the recorded data is applied and can be seen directly by the nurse who monitors it.

Methods

The design in a true experimental control grup uses pretest and posttest with random group selection, to determine the comparison before and after treatment is given. Aims to determine the effect of using the application of motivation to the compliance behavior of taking medication. the research ranging from January to March 2020. Measurement of the adherence score used the MMAS-8 questionnaire. Questionnaires were given to respondents in the form of a pretest and posttest.

Population and sample of this study was patients with hypertension recorded receiving outpatient therapy and were at home in the areas of the Mojolangu Health Center, Dinoyo Health Center, and Bareng Health Center. This research has been conducted using probability sampling with simple random sampling technique. Research respondents numbered 52. Divided into 26 control groups and 26 treatment groups. Inclusion Criteria: a. Patients with hypertension at home who receive outpatient therapy, b. Ages 18 to 65 years, c. Received antihypertensive therapy for at least 3 months, d. Has an android smartphone that can be paired with applications with 30MB of storage, e. Available to be a respondent. Exclusion criteria: Hypertensive patients with cognitive impairment or depression.

Results

This study involved 52 respondents in various groups, namely the control group of 26 respondents and the treatment group of 26 respondents. The results from the pretest of the two groups were more non-compliant (low) data while the results of the posttest showed changes in the treatment group for high levels of adherence (adherence) more than the control group for hypertension medication adherence behavior. The Wilcoxon test is used to find out whether there is a difference between the average of two paired samples. If p value <0.05 means there is a difference in the two samples, and if p value >0.05 there is no difference in the mean of the two groups. The result is a difference in the mean pretest and posttest scores in the two groups. The above results obtained 0,000 data (<0.05) which means that there are differences in the two samples. The results of differences in treatment in the two groups showed an influence seen from the results of the pretest 0.702 there was no change before treatment and the results of the posttest 0.002 showed a change after being treated.

Discussion

The research respondents were outpatient hypertension sufferers who were in the areas of the Bareng Health Center, Mojolangu Health Center, Dinoyo Health Center. Respondents numbered 52 people with the division of 26 respondents each in the control group and the treatment group by giving Motensi applications. The characteristics obtained consisted of age, last education, sex, duration of diagnosis, degree of blood pressure and socialization obtained related to the management of hypertension.

Gender data were obtained for each respondent (76.9%) for female respondents and (23.1%) for male respondents. According to Rasajati in her study, it was found that there were more female respondents than men because they paid more attention to their health, but there was no relationship between sexes related to medication adherence behavior²¹. At most age data are elderly by 13 (50%) people in each group. Hypertension in the elderly is related to the aging process such as the occurrence of menopause in women and also from lifestyles that are carried out at a young age such as smoking and drinking habits in men and women¹¹. In addition, the age of the elderly makes large arteries not flexible and makes the blood flow in the blood vessels pumping heavier than usual, making blood pressure rise¹⁵. However according to Liberty there is no relationship between adherence and age behavior¹⁴.

Data from blood pressure shows the degree of hypertension in degree 1 and degree 2 for the control group shows the same data (50.0%) and for the treatment group for hypertension degree 2, it is equal (80.8%). The length of time diagnosed with hypertension in respondents was more abundant in respondents who were diagnosed for less than 5 years (<5) from both groups of (88.5%) control groups and (69.2%) treatment groups whereas in more than 5 years (>5) obtained less. In the study of Suwarso the results had an influence on compliant behavior in taking medication. Another possible factor is that the longer you suffer from hypertension, you will get bored taking medication and the level of compliance decreases⁶. However, according to Suhadi there is a relationship between adherence with medication adherence because they feel they are used to it.

Information understanding factors related to hypertension are obtained data from socialization obtained from puskesmas or from posyandu, socialization data in the control group were more often not received information (61.5%) while for the treatment group data obtained (76.9%) more were got socialization. Getting socialization is also a factor to do medication adherence in accordance with the recommendations. The most recent education was from high school level in both groups. Data of high school in the control group (42.3%) and the treatment group (46.2%) and the bachelor control group (11.5%) and the treatment group (7.7%). Higher education will have the knowledge and ability to get better information than those who have low education.

Behavioral Compliance Taking Hypertension Medication

In this study conducted by comparing the two groups, namely the control group without the application and the treatment group with the application. The division of these two groups is to find out which comparisons are effective which influence the compliance behavior of taking hypertension medication in outpatients. Assessment of medication adherence behavior is assessed by completing the pretest and posttest questionnaires.

In the control group, the results of the medication compliance questionnaire for pretest and posttest showed that the results of the pretest were 20 (76.9%) respondents, less obedient 6 (23.1%) respondents and obedient behavior (0). Then after the posttest shows the results of 16 (61.5%) of respondents for disobedience, 7 (26.9%) of respondents results for lack of compliance and results from obedient behavior of 3 (11.5%) respondents. From these data obtained changes from the pretest and posttest data but it still has not been said to be a significant increase in medication adherence behavior. From the results of the pretest and posttest in both groups, the data on the behavior of non-adherence to taking medication was still high in the control group compared to the treatment group and the data on the behavior of medication adherence was higher in the treatment group than in the control group after being given treatment of applications.

In the treatment group the results of the pretest obtained 19 non-compliant data (73.1%), less compliant 5 (19.2%) and compliant 2 (7.7%). After a pretest, an application was installed for one month to monitor medication behavior and then posttest with improved results, data obtained from disobedience of 19 (73.1%) respondents found 7 (26.9%) respondents were not compliant, other than the data was not compliant 5 (19.2%) respondents became 13 (50.0%) respondents were less compliant and the rest of the number of obedient were 2 (7.7%) respondents became 6 (23.1%) respondents were obedient. From these results it was found that medication adherence behavior increased after treatment according to research conducted by Tarigan regarding factors in compliant behavior, among others, the role of health workers such as providing applications to monitor health workers conducted by this study²⁶.

Factors of compliance with medication adherence behavior due to understanding of instructions given or socialization obtained and the role of health workers in the management of therapy⁶. Related compliance factors include the level of education and knowledge of respondents²⁴. Health workers also influence the level of compliance in the long term therapy^{19,23}.

According to WHO adherence behavior in treatment is the main thing compared to the treatment itself because it is the responsibility of the patient and the outpatient team in the regularity of therapy²⁹. However, it is estimated that adherence to chronic treatment around 50% of the level of adherence can decrease over time after the initial prescription is written, or when obstacles arise in conducting therapy. Usually, an adherence level of 80% or more is needed for optimal therapeutic efficacy. Improved adherence is a good health investment in chronic treatment, in addition to the persistence of undergoing therapy, treatment regimens, and communication between health workers and patients will make knowledge about treatment and disease will increase awareness to carry out compliant behavior in therapy^{4,16}.

In a study conducted by Gardner someone will get used to new habits or behavior seen from the behavior that is shown to take 66 days⁷. At that time it was said that people are really familiar with their new behavior, but according to Jen in his article writing 30 days to get a treatment program is a good start, because with 30 days to assess how the continuation of treatment given¹⁹.

Effect of Motensi Application on Compliance with Taking Medication

From the research results obtained from the analysis of data obtained Wilcoxon test results obtained from the pretest and posttest values for the treatment group obtained p value = 0,000 (-4,417). Then the results obtained differ from the results before being given treatment and after being given treatment. In the treatment group the data showed significant results indicating the influence of the treatment given to respondents given the application. For the value in the control group shows data p-value = 0,000 (-3624) shows that the data obtained significant results, but when compared with the treatment group the results obtained indicate the data have less effect. Based on the results of the Wilcoxon test from pretest to posttest, the treatment group compared to the control group showed there is a difference between the pretest and posttest results in the two groups, the treatment group shows a significant increase than the results of the control group.

The results of the Mann Whitney attitude test between the treatment group and the control group obtained the results for the Asymp pretest score. Sig. (2-tailed) > 0.05 p value of (0.702) which means that there is no influence from the pretest results in both groups when the pretest is being used for the Asymp posttest score. Sig. (2-tailed) < 0.05 p value (0.002). From the Mann Whitney test data result, it shows that there is a difference in effect after posttest being given treatment by using the MOTENSI application.

Then the conclusions from these data show differences that indicate the influence between the group treated (given the application) and the control group (without the application). In this study, in line with the results of a study in Banjarmasin, the Digital Pillbox Remainder Application for adherence to taking hypertension medication shows that the application has an effect on medication adherence with p value = 0,000²⁵. In addition, in Malang, namely the AIMOHit application which shows the influence between the application of compliance with hypertension medication adherence with an average score of p value = 0,000²⁷.

In a study in the United States conducted an intervention in the form of an electronic reminder in the form of a short message text conducted to find out from adherence to taking outpatient medicine the result was an increase in adherence to the therapy he was undergoing and an electronic reminder showed high adherence behavior. In addition to the comparative study of drug availability and reminders to take

medication with a ratio of 90 days and 30 days also showed the results of increasing compliance with therapy¹². The My Heart application shows the impact of a health care system that will be useful for the future in order to comply with hypertension medication by self-management which will help for monitoring systems if developed using the same method¹⁰.

There is a difference in this study with previous research, namely the application features used. In previous studies, the application was only used for patients, namely to independently monitor their medication for taking hypertension without being able to be known directly by health workers who can monitor. Therefore the current research researchers add features in the application that can be monitored by health workers, which means that any data entered by respondents on management related features of the application can be seen not only by respondents but also by researchers or health workers. The main reason researchers want to add this feature is to facilitate and streamline the performance of health workers in remote patient monitors without visits in an easy way that is by using this Motensi application.

Conclusion

The treatment group got higher posttest medication adherence after treatment was given in the form of motive application compared to the control group taking medication adherence lower than the treatment group seen in the pretest and posttest results. Then the results of the analysis show that there is an influence of the use of Motensi applications to increase medication adherence behavior in outpatients in Malang City Health Center.

List of Abbreviation

WHO : World Health Organization

Motensi : Monitor Hipertensi Sendiri (Hypertention monitor by self)

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Table 1. Characteristics of Respondents

Characteristics of Respondents	Group	
	Control N(%)	Treatment N(%)
Gender	Women	20 (76,9%)
	Men	6 (23,1%)
Age	Late Adult 35-45	3 (11,5%)
	Pre-Elderly 46-55	10 (38,5%)
	Elderly 56-65	13 (50,0%)
Last Education	Elementary School	5 (19%)
	Middle School	7 (26,9%)
	High School	11 (42,3%)
	Bachelor	3 (11,5%)
Duration Covered Hypertention (years)	<5	23 (88,5%)
	>5	3 (11,5%)
Blood Pressure (mmHg) (systole)	First degree hypertension (130-139)	13 (50,0%)
	Second degree hypertension (≥ 140)	13 (50,0%)
Socialization about hypertension	get socialization	10 (38,5%)
	did not get socialization	16 (61,5%)

Table 2. Compliance Behavior in Taking Hypertension Medication

Adherence Behavior Taking Hypertension Medication	Group			
	Control		Treatment	
	Pretest	Posttest	Pretest	Posttest
Non-compliance (low)	20	16	19	7
	76,9%	61,5%	73,1%	26,9%
Not Compliant (moderate)	6	7	5	13
	23,1%	26,9%	19,2%	50,0%
Compliant (high)	0	3	2	6
Total	26 (100%)		26 (100%)	

Table 3. Analysis of Differences in Adherence Behavior in Taking Medicines

Difference Test for Compliance Behavior in Taking Medications	Z	P
Pretest & Posttest Control Group	-3,624	,000
Pretest & Posttest Treatment Group	-4,417	,000

Table 4. Analysis of Differences in Adherence Behavior from Pretest and Posttest

Adherence Behavior with Taking Medication	Asymp. Sig (2-tailed)	
	Pretest	Posttest
Results of Control Groups and Treatment Groups,	,702	,002

Effect of *Rosa damascena* mill. extract on blood glucose levels in diabetes model rats (*Rattus norvegicus*)

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Abstract

Diabetes mellitus (DM) is a chronic metabolic disorder caused by a lack or resistance to insulin and is characterized by hyperglycemia in the postprandial and fasting states. Postprandial hyperglycemia can lead to non-enzymatic glycosylation of various proteins, leading to the development of chronic complications. Control of postprandial plasma glucose levels is very important in the initial treatment of DM to reduce chronic vascular complications. This study aims to determine the effect of *Rosa damascena* extract on blood glucose levels. RDM is obtained from Batu city. A total of 3 kg of rose petals was dried, mashed, soaked with 96% ethanol, filtered, then extracted from the filtration using a rotary evaporator. The study used male wistar rats (*Rattus norvegicus*) 8-10 weeks old and weighing 150-200 grams. Rats were randomly divided into 6 groups of negative control group (KN), positive control group (KP), metformin group (KM), treatment group 1 (P1) RDM 250 mg / kg body weight, treatment group 2 (P2) RDM 500 mg / kg body weight, treatment group 3 (P3) RDM 1000 mg / kg body weight. Examination of blood glucose using peripheral blood before euthanasia. The Kruskal Wallis test results showed a Sig (P-Value) of 0.030 ($p < 0.05$), which means that there were significant differences in all treatment groups. The results of the Mann Whitney-U test showed that the KN group was significantly different from all groups (Sig P-Value $< 0, 05$) while the KP, KM, P1, P2 and P3 groups had no significant differences with other groups (Sig P-Value > 0.05). The lowest blood glucose level was in the P1 group, the treatment group given STZ and *Rosa damascena* Mill extract at 250 mg/kg body wt. Meanwhile, the highest blood glucose level was in the KP group, the positive control group that was only given STZ. In conclusion, *Rosa damascena* Mill extract may have an antidiabetic effect by reducing postprandial blood sugar levels.

Keywords: Diabetes Mellitus, Rosa Damascena Mill, Blood Glucose

Background

Diabetes mellitus (DM) is a chronic metabolic disorder caused by a lack or resistance to insulin and is characterized by hyperglycemia in the postprandial and fasting states (1). Postprandial hyperglycemia can lead to non-enzymatic glycosylation of various proteins, leading to the development of chronic complications. Control of postprandial plasma glucose levels is very important in the initial treatment of DM to reduce chronic vascular complications (2). WHO data shows that the incidence rate of non-communicable diseases in 2004 which reached 48.30% was slightly higher than the incidence rate of infectious diseases, which was 47.50%. Even non-communicable diseases are the number one cause of death in the world (63.50%) (3). In Indonesia, the prevalence of DM based on a doctor's diagnosis in the population aged ≥ 15 years, the results of Riskesdas 2018 increased to 2% when compared to 2013. The lowest prevalence of DM based on doctor's diagnosis and age ≥ 15 years was found in NTT Province, which was 0.9% , while the highest prevalence of DM in DKI Jakarta Province was 3.4% (4).

Pharmacological management of DM is to administer blood sugar-lowering drugs. The pharmacological approach recommended by the American Diabetes Association (ADA) and the American Association of Clinical Endocrinologists and American College of Endocrinology (AACE) is with metformin, but the use of metformin often causes adverse drug reactions (ROM) in the form of side effects of gastrointestinal disorders such as diarrhea, nausea, vomiting, and flatulence (5).

Rosa damascene Mill. is one of the most famous ornamental plants that are cultivated around the world, especially for the fragrance industry. Rosa Damascene Mill has a lot of useful phytochemicals, such as polyphenols, flavonoids, glycosides, terpenes, and anthocyanin as well as various vitamins. Rosa damascene Mill has been researched for its medicinal benefits. Ibnu Sina (980-1037 AD) revealed that the medical benefits obtained from Rosa damascene Mill. include digestion, heart, helps in repairing skin and mucosal tissue, and has anti-inflammatory, antioxidant and antidiabetic effects (6).

In other research, Rosa damascene Mill. Significantly reduced the dose of postprandial glucose levels dependently in normal and diabetic rats with a single oral intake dose of 100-1000 mg / kg of methanol extract. The research shows that the extract of Rosa damascene Mill. demonstrated a noncompetitive intensive α -glucosidase inhibitory effect comparable to acarbose (7). With the increasing incidence of DM in Indonesia and the pharmacological effects of DM drugs, this study aims to determine the effect of Rosa damascene Mill extract on blood glucose levels.

Methods

Rosa Damascena Mill flowers obtained from Gunungsari village, Bumi Aji District, Batu City. A total of 3 kg of dried rose petals. Then mashed until it becomes a powder. Rosa damascena Mill powder. then soaked in 96% ethanol for 3 days. After that it was filtered using Whatmann paper no. 41. The results of the filtration were extracted with a rotary evaporator at 40 C and dried in an oven at 40 C. Rosa damascena Mill extract. stored at -20 C. This research is an experimental study with a research design using a posttest control group design. The *Posttest Only Control Design* is a design with the experimental group and the control group not chosen randomly. In this design

both the experimental group and the control group are compared. The experimental group received treatment while the control group received no treatment (8). This study used male wistar rats (*Rattus norvegicus*) aged 8-10 weeks and weighing 150-200 grams. The mice were acclimatized for 7 days with room temperature ($22 \pm 30C$) and lighting for 12 hours. Furthermore, the rats were randomly divided into 6 groups, namely the negative control group (KN) which was only given standard feed without intervention, the positive control (KP) was given STZ without *Rosa damascena* Mill, the metformin group (KM) was given STZ and Metformin 150 mg/kg body wt, treatment group 1 (P1) given STZ and *Rosa damascena* Mill extract. 250 mg/kg body wt, treatment group 2 (P2) given STZ and *Rosa damascena* Mill extract. 500 mg/kg body wt, treatment group 3 (P3) were given STZ and *Rosa damascena* Mill extract. 1000 mg/kg body wt. The treatment was carried out for 28 days, then euthanized. Before euthanasia, the rats were tested for blood sugar levels. Sugar levels were checked by taking blood from the rats and using a glucometer. The results of blood sugar levels were analyzed statistically.

Results

The independent variable in this study was the *Rosa damascena* Mill extract, while the dependent variable was the blood sugar level before euthanasia. The results of the normality test of Saphiro Wilk show Sig (P-Value) > 0.05, which means the data is normally distributed. However, the results of the Levene homogeneity test showed a Sig (P-Value) of 0.003 which means that the data was not homogeneous (Sig (P-Value) > 0.05). therefore, the kruskal wallis statistical analysis was used in this study.

The results of the *Kruskal Wallis* statistical test showed a Sig (P-Value) of 0.030 ($p < 0.05$) which indicated that there were significant differences in all treatment groups. Furthermore, to determine the differences between groups, the *Mann Whitney-U* test was used (Table 1).

The results of the *Mann Whitney-U* test showed that the KN group had significant differences with all groups (Sig P-Value < 0.05), while the KP, KM, P1, P2 and P3 groups had no significant differences with other groups (Sig P-Value > 0.05). Figure 1 show that the lowest blood glucose level was in the P1 group, the treatment group given STZ and *Rosa damascena* Mill extract at 250 mg/kg body wt. Meanwhile, the highest blood glucose level was in the KP group, the positive control group that was only given STZ.

Discussion

This study aims to determine the effect of *Rosa damascena* Mill extract on blood glucose levels in diabetic rats. These results are the same as the results of research conducted by Gholamhoseinian *et al.* that *Rosa Damascena* Mill. has a significant effect on blood glucose levels (7). Diabetes Mellitus (DM) is a chronic disease characterized by hyperglycemia and glucose intolerance that occurs because the pancreas gland is unable to produce insulin adequately or because the body cannot use the insulin produced effectively or both (9). Chronic hyperglycemia conditions in diabetes mellitus patients can cause several complications through various mechanisms, namely the formation of superoxide, advanced glycation, polyol pathways, increased PKC (Protein Kinase C) and the hexosamine pathway (10).

Diabetes can cause complications, a lot of protein glycation and free radicals (ROS) are formed in body tissues. An imbalance between the formation of ROS and antioxidants contributes to tissue damage. Giving antioxidants is an attempt to inhibit the production of intracellular free radicals or increase the ability of defense enzymes against free radicals in order to prevent the emergence of oxidative stress and vascular complications related to diabetes. Various kinds of supplements that contain antioxidants and/ or factors that can increase the production of nitric oxide (NO) have the potential to improve endothelial dysfunction and mitochondrial function in cells, and reduce the activity of the enzyme NAD (P) H oxidase. (11).

Rosa Damascena Mill contains polyphenols, flavonoids, glycosides, terpenes and anthocyanins as well as various vitamins such as vitamins C, A, B1, B2, B3 and K. The other ingredients are citric acid, malic acid, pectin, tannins and carotenoids. Rosa Damascena Mill. also contains active phenolic compounds, such as kaempferol, cyanidine 3,5 d-glycosides, quercetin, and gallic acid. The main chemical constituent structures are β Citronellol, nonadecane, geraniol and hencosane (6).

The content of Rosa Damascena Mill is thought to be able to prevent these complications through inhibition of the formation of free radicals which is characterized by a decrease in blood glucose levels. As in Anjani's study, anthocyanin substances can be used as an option for non-pharmacological diet therapy because their content can control blood glucose levels so that they can prevent insulin resistance in people with diabetes, especially type 2 diabetes (12). Cyanidine and glycosides are included in anthocyanins, both of which have anti-diabetic functions. In in vitro studies, it was stated that cyanidine and glycosides inhibited the pancreatic α -glucosidase and α -amylase enzymes. Anthocyanins inhibit the release of glucose in the blood by inhibiting enzymes that digest carbohydrates (13).

The results showed that the blood sugar levels in the treatment group (P1, P2, P3) decreased insignificantly. This interpreted that the blood sugar levels in the treatment group (P1, P2, P3) were not much different from those in the positive control group (KP) and the metformin group (KM). The first reason is probably due to the quality of the ethanol used to make the RDM extract. The ethanol used is not food grade ethanol so this may affect the quality of the RDM extract produced. The second reason is probably because the body weight of *Rattus norvegicus* varies so that it may affect the effectiveness of the RDM extract. Blood sugar levels in the positive control group (KP) and the metformin group (KM) were still higher than the treatment group (P1, P2, P3). Although not significantly, however in this case it appears that RDM is better for lowering postprandial blood sugar levels.

Conclusion

Rosa damascena Mill extract may have an antidiabetic effect by reducing postprandial blood sugar levels.

Author Contributions: Data curation, Formal analysis, Investigation, Methodology, Tri Wahyuni Bintarti; Project administration, Nanda Fadhilah Witris Salamy ; Resources, Supervision, Writing-original draft, Choitrotussanijjah.

Funding: This study was funded by PDP RISTEKDIKTI 2020



Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript.

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Table 1. Mann Whitney-U Test Result

	KN	KP	KM	P1	P2	P3
KN		0,021*	0,021*	0,021*	0,021*	0,021*
KP	0,021*		0,564	0,149	0,248	0,248
KM	0,021*	0,564		0,386	0,248	0,149
P1	0,021*	0,149	0,386		0,564	0,773
P2	0,021*	0,248	0,248	0,564		0,564
P3	0,021*	0,248	0,149	0,773	0,564	

Mean Blood Glucose Level (mg/dL) ± SD

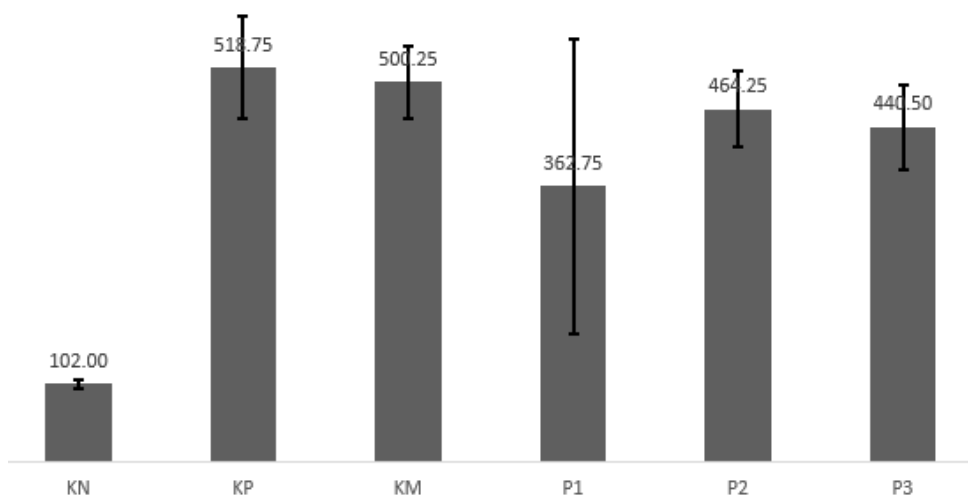


Figure 1. Mean ± SD Blood Glucose Level (mg/dL)

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Literature review: relationship between social support and postpartum blues incident

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Abstract

After giving birth, every woman has new roles and responsibilities. These new roles and responsibilities often make mothers feel insecure and experience stress. This condition makes the mother becomes more sensitive and this condition is known as baby blues or postpartum blues. Many factors can lead to postpartum blues, one of them is social support. This literature review aims to determine the relationship between social support and the postpartum blues incident. The literature was searched using databases including Google Scholar, and Scientific Publication Journals. There are 6 articles, each of which represents the relationship between social support and the postpartum blues incident. The results of 6 articles say indicate that Social Support is related to the Postpartum Blues Incident. In conclusion, based on the analysis conducted, it shows that there is a relationship between social support and the incidence of postpartum blues.

Keywords: social support, incident, postpartum blues

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Background

Postpartum Period is a time of all female reproductive organs after birth returned to its original state as before pregnancy(1). The recovery process during the puerperium is called postpartum adaptation. Post partum adaptations consist of physiological and psychological adaptations. Psychological adaptation in postpartum mother started when she started taking care of her baby. This is a new role and responsibility for every woman after giving birth(2). In this situation mothers often feel insecure and experience stress due to new roles and responsibilities. She felt sad and desperate because not able to care for babies well. This condition makes mothers become more sensitive. This condition is known as baby blues or postpartum blues. Postpartum blues appear in the first to second week after delivery and peaks on days three to five. In Asia, the incidence of baby blues or postpartum blues is quite high and varies between 26-85%, while in Indonesia the incidence of baby blues or postpartum blues is between 50-70% of post partum women (3).

It is not certain what the cause of Postpartum blues(4). Internal factors and external factors suspected to affect the occurrence of postpartum blues. Internal factors include hormonal fluctuations, psychological and personality factors, a history of previous depression, cesarean section delivery, unplanned pregnancies, and mothers who breastfeed and have difficulty breastfeeding and mothers who have no experience caring for babies(5). Meanwhile, external factors include social support, the condition and quality of the baby, and the husband's mental status(4).

Postpartum blues mothers should be identified early on and treated adequately, if the mother's condition is stressful, it will release adrenaline and cortisol which will inhibit the production of the hormones prolactin and oxytocin so that it will affect the production and production of breast milk(6). Social support from family, friends and midwives / health workers affects the incidence of postpartum blues(7). This is in line with the results of research from previous studies that social support can influence the incidence of postpartum blues(8)(9). The purpose of this study was to determine the relationship between social support and postpartum blues incident.

Methods

In this study, a search was carried out using databases including Google Cendikia, and Scientific Publications Journals. The purpose of this article is to review the problem of Postpartum Blues. The keyword used for literature research is "social support in postpartum blues incident". The method used in searching for articles in English and Indonesian is relevant to the topic. Search was conducted using Google Scholar and PubMed. The keywords used are "social support", "incident", "postpartum blues". Articles obtained in the reviews to choose articles that match the criteria and obtained 6 national article which would then be in review.

The research article entitled "Social Support for Postpartum Primipara Mothers Against the Incidence of Postpartum Blues". In this research method using cross sectional study conducted in RSKIA Bandung in November 2018 - January 2019 with consecutive sampling technique sampling. A sample of 106 postpartum mothers day 1-7, all types of delivery, mothers are fully aware, able to read and write. Data collection using the Edinburgh Postnatal Depression Scale (EPDS) instrument and the postpartum support system questionnaire and family coping questionnaire. Data analysis using chi-square analysis. The results showed that the p value of 0.007 (p



<0.05) means that there is a relationship between social support and the incidence of postpartum blues among primiparous mothers at RSKIA Bandung(8).

The research article entitled The Relationship Between Mother Characteristics, Infant Conditions and Husband's Social Support with Postpartum Blues in mothers with SC births at the Ahmad Yani Metro General Hospital. Analytical research design with a cross sectional approach, the population in this study were all mothers who gave birth by Sectio Cessaria (SC) at Ahmad Yani Metro General Hospital in 2014. The sample to be taken is all mothers who gave birth in June 2014 as many as 35 people. The statistical test results obtained p-value = 0.002 ($p < 0.05$), it can be concluded that there is a significant relationship between husband's support and the incidence of postpartum blues at Ahmad Yani Metro General Hospital(10).

The research article entitled Post Partum Blues, The Importance of Social Support and Marriage Satisfaction in Primipara Mother. The subjects in this study were all women aged 18-35 years who had given birth to their first child in the Madiun district with babies aged 3-14 days totaling 35 primiparous mothers. The measuring instrument for Post Partum Blues given to primiparous mothers is the Edinburgh Postnatal Depression Scale (EPDS) and the social support scale used in this study compiled by Cohen (2000). Hypothesis testing is done using multiple regression analysis techniques. Research Results Social support with the tendency of post partum blues found a significance of 0.901 ($p > 0.05$), meaning that there is a relationship between social support and the tendency of post partum blues(11).

A research article entitled Psychological Factors Affecting Postpartum Blues. Data were collected by using a Likert scale which is based on the theories of the variables. Social support scale composed of a kind of social support are delivered Cohen and Syme (1985) is the support of information, emotional support, instrumental support, and support assessment or support, then use the instrument scale postpartum Edinburgh Postnatal Depression Scale (EPDS). The research instrument was then tested on as many as 25 subjects With the specific criteria of the research subjects, namely mothers who have babies aged 4-7 days, the mother's pregnancy is the first pregnancy, and is 20-40 years old. The simple linear test results show that there is a relationship between social support and the postpartum blues ($R = 0.549$; $p < 0.05$)(4).

The research article entitled Factors related to the incidence of postpartum blues in postpartum mothers in the Nuri Room at Bhayangkara Hospital, Makassar with 54 respondents who met the inclusion and exclusion criteria using incidental sampling techniques. The way of collecting data using a questionnaire consisting of questions based on the literature used. The independent variables include the type of delivery, parity, and family support with the dependent variable being the post partum blues incident. Data were processed and analyzed using SPSS for Windows with Chi-square statistical test with Fisher exact test alternative. The results showed that husband and family support was very important in preventing the postpartum blues(12).

Research article entitled Risk Factors for Postpartum Blues events in Palembang with cross-sectional design to the mother postpartum day 3 to 2-14 in 90 respondents with cluster random sampling technique Proportionale. The research instrument used standard instruments, namely the EPDS (Edinburgh Postnatal Depression Scale) instrument and the statistical tests used were chi-square and logistic regression. The



results of the study, there are 6 variables that have significance for the incidence of postpartum blues and family support is in the 5th position ($p = 0.009$; $OR = 5.323$)(9).

Results

From the results of the literature that has been obtained, there is no difference from the results of the research that has been done. Similar results were obtained that there is a relationship between social support to the incidence of postpartum blues. These results are in line with previous research which states that there is a relationship between social support and the postpartum blues with a P value of $0.001 < 0.05$ (13).

Discussion

Sources of social support expected by postpartum mothers can come from husbands, family, friends, neighbors and health workers due to unstable physical and psychological conditions(7). Good social support will improve the psychological well-being of the mother(14). Postpartum mothers who lack the support of her husband and family can lead to postpartum blues(15). Support provided by the family can provide comfort and calm, so that it can be a source of strength for postpartum mothers(16).

Social support can be in the form of emotional support, instrumental support, and reward support. Forms of social support given to the mother emotionally aims to increase self-esteem mother and mother feel good like, show a sense of caring and concern by assisting mothers during childbirth and entertaining when the mother sad / cry. forms of instrumental support, help the mother in caring for and nurturing the baby, help with the housework or meet the needs of mothers, in support of the award is to give praise or appreciate the efforts of a mother in caring for the baby and take care of household chores, so the mother becomes more zeal in carrying out his new role as a mother and feel she is significant / valued(17).

The more there is social support, it will minimize the impact of the appearance of the post partum blues symptoms(11). If the social support received by the mother is lacking and not treated immediately, it will increase the incidence of postpartum blues which can lead to postpartum depression(18).

Social support shown to have a relationship with the incidence of postpartum blues. With social support, it can have a big impact on a mother's confidence in her new role. The greater the support given by the husband, the family, and those around it the better the psychological condition of the mother. This will prevent incidence of postpartum blues.

Conclusion

Conclusions based on the analysis conducted by the authors of some of the literature, concluded that social support can prevent the incidence of postpartum blues.

Declaration Section

1. The submitted manuscript has never been published elsewhere in print or electronic format and is not being by other publications or electronic media.
2. Funding comes from the first author, namely Muliatul Jannah, S.ST., M. Biomed.



3. Muliatul Jannah, S.ST., M. Biomed dan Hanifatur Rosyidah, S.SiT., MPH as authors and supervisors who have taken the time to provide guidance until the preparation on this publication is complete.
4. All authors have read and approved the final manuscript.

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Hypothermic therapy in head injury patients: a literature review

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Abstract

Head injury is a disease that can change a person's level of consciousness and cause death with a case fatality rate (CFR) of 4.37%. In addition, the impact of these injuries can also cause cognitive impairment and physical function. An increase in brain blood volume associated with an increase in body temperature will increase intracranial pressure (ICP) and put the brain at risk for other injuries. The aim of this study was to determine the effect of hypothermic therapy in head injury patients with decreased consciousness. Methods: This study is a literature review obtained using databased: Google Scholar, PubMed, EBSCO and ScienceDirect with the keywords used are Traumatic Brain Injury, Hypothermic Therapy. The article inclusion criteria taken were research published in 2015-2020, the type of research was Randomized Clinical Trial (RCT), the study sample was head injury patients with decreased consciousness, the interventions provided were hypothermic therapy and articles were written in English. The results of the study concluded that hypothermic therapy in head injury patients had no significant effect on improving the outcome of head injury patients, because hypothermic therapy could cause side effects such as the use of vasoconstrictors which caused a decrease in blood pressure after cooling, the risk of bleeding due to hypothermia triggering coagulopathy, and the danger of an increase in Intracranial pressure (ICP). during rewarming after hypothermic therapy. Therefore, hypothermia therapy cannot be recommended as a non-pharmacological adjunct therapy for head injury patients who have decreased consciousness.

Keywords: head injury; hypothermia therapy, management of hypothermia

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Background

Head injury is a trauma to the scalp, skull or brain that occurs as a result of injury either directly or indirectly, with or without bleeding resulting in impaired brain function. According to Smeltzer and Bare, the definition of a head injury is an injury that occurs to the scalp, skull and brain due to a sudden blow or impact to the head with or without loss of consciousness.¹

In 2013, there were approximately 2.8 million patients with head injuries admitted to hospitals in the United States, approximately 500,000 people died, 282,000 were hospitalized, and 2.5 million patients were admitted to Emergency Departments (IGDs). In 2007-2013, the rate of head injury visits to the ER increased by 47%². In Indonesia, based on the results of the 2013 Basic Health Research, the incidence of head injuries reached 8.2% of the population and increased in 2018 to 11.9%. In addition to the increase in the incidence of head injuries, it is the second largest inpatient disease in hospital³.

Management of head injured patients must be comprehensive, starting from the scene of the accident, during transportation, the operating room, and post-surgical management (perioperative management).⁴ Patients at risk for intracranial hypertension, such as those with head injuries, are significantly affected by changes in body temperature because cerebral blood flow (CBF) increases with increasing body temperature. An increase in brain blood volume associated with an increase in body temperature will increase intracranial pressure (ICP) and put the brain at risk for other injuries therefore hyperthermia increases the risk of neuronal cell damage and puts the patient at risk for secondary brain injury through increased ICP⁵.

Hypothermia can decrease the metabolic and functional activity of the brain. The mechanism of protection of the brain from hypothermia is by reducing brain metabolism, reducing glutamate excitotoxicity, reducing free radical formation, reducing brain edema formation, for membrane stabilization, maintaining ATP, reducing calcium influx, changing ischemic gene expression, changing apoptotic signals, inhibiting inflammation and cytokines. , reduces damage to the blood-brain barrier, and maintains brain autoregulation⁶.

Post ischemic hyperthermia is associated with increased infarct size and poorer outcome. Although strict control towards normal body temperature has been noted as an important therapeutic strategy in the Guideline for Management of Severe Head Injury, however, management strategies for hypothermia as clinical therapy for practitioners are often considered ineffective and may be contraindicated in head injury patients⁷. This literature study aims to evaluate the effect of hypothermic therapy in head injury patients with decreased consciousness.

Method

This study is a literature review of several randomized clinical trials (RCTs). The research included in this study is a study that describes the effect of hypothermic therapy in head injury patients with decreased consciousness. Inclusion criteria: 1) articles taken, namely research published in 2015-2020; 2) type of randomized clinical trial (RCT); 3) the research sample was head injury patients with decreased consciousness, the intervention given was in the form of hypothermic therapy; 4) articles are written in English and in full text. Search for articles through databased



namely Google Scholar, PubMed, EBSCO and ScienceDirect. The keywords used are Traumatic Brain Injury, hypothermic therapy. These keywords are combined with each other in order to achieve more specific search results and searches are carried out in October 2020. To reduce the risk of bias in this review, a critical appraisal was carried out using the Critical Appraisal Skill Program (CASP) for each qualified article based on the inclusion criteria, however, there were several articles that were excluded so that 5 articles were reviewed in this study.

Results

Based on the results of a review of the 5 selected articles, all of these articles used a quantitative method with the Randomized Clinical Trial (RCT) design, all samples in the study were head injury patients who experienced decreased consciousness. The results of the study from these 5 articles indicated that there were statistically different differences in the intervention group and the control group after giving hypothermic therapy, but clinically it did not provide a good change in outcome in head injury patients after hypothermic therapy. The review results of 5 articles can be seen in table 1.

Discussion

Hypothermia therapy is given to head injury patients by various methods. Clinically the use of hypothermia in patients after traumatic brain injury, stroke, cerebral aneurysm may have a beneficial effect in terms of decreased ICP and possible brain protection. However, to date clinical studies have not confirmed the use of hypothermia for brain protection in these situations⁸.

Based on a review of 5 articles, the process of giving hypothermic therapy has a target temperature that is at an average of 32-35 °C. The process of giving hypothermic therapy in this study has several methods, including 1.) hypothermic therapy which is divided into 3 phases, namely the induction phase, the maintenance and rewarming phase, 2). hypothermic therapy accompanied by standard care (mechanical ventilation and sedation, osmotherapy, barbiturates and decompression craniectomy)

In a study by Andrews *et al*, (2015) showed that giving hypothermic therapy accompanied by standard care in patients with an intracranial pressure of more than 20 mmHg after a head injury did not produce a better outcome than standard care alone⁹. Hyperthermia in patients with head injuries occurs due to hypoxia of brain tissue resulting from a significant reduction in CBF and the formation of edema, which results in an increase in temperature higher than core temperature, another hypothesis revealing a potential role of heme degradation products. Heme molecules are degraded by heme oxygenase to biliverdin, iron, and carbon monoxide (CO), wherein carbon monoxide can increase body temperature by more than 1 °C¹⁰.

Non-pharmacological approaches to the treatment of patients with head injuries are focused on preventing intracranial hypertension and maintaining adequate brain perfusion. Research conducted by Lei, (2015) found that there was a change in intracranial pressure during hypothermic therapy in head injury patients but there was no significant outcome in head injury patients¹¹. As with the research of Hifumi *et al* (2016) there was no significant difference in outcomes between the intervention group giving hypothermic therapy and the control group¹². There are 4 negative



consequences of hypothermia in patients with head injury based on specific cerebral pathophysiology, which explains why hypothermia has not shown its effectiveness for outcomes or worsens outcomes in head injury patients, namely: 1) the effect of hypothermia triggers stress on the penumbra zone microcirculation, 2) side effects of use vasoconstrictor due to decreased blood pressure after cooling, 3) risk of bleeding due to hypothermia inducing coagulopathy, 4) danger due to increased ICP during rewarming in patients with increased ICP¹³.

In a study conducted by Cooper *et al* (2018), 511 respondents, which were divided into 2 groups (266 = intervention & 245 = control) resulted that hypothermic therapy in head injury patients was ineffective. Cooling patients with a target temperature of 33-35 °C within 8 hours after injury and maintained for 72 hours is not effective in improving patient clinical outcomes at 6 months after therapy administration¹⁴

The same thing in a study conducted by Maekawa *et al* (2015) resulted that there was no improvement in the neurological outcome in head injury patients after giving hypothermic therapy, the rewarming process in patients receiving hypothermic therapy could worsen the condition in patients¹⁵. According to Hifumi *et al* (2016), an increase in temperature (> 38 °C) can increase ICP (intra cranial pressure) and cerebral metabolic needs which consequently can cause secondary injury to the brain¹².

Conclusion

Management of hypothermia in head injury patients does not have a favorable outcome. This can be due to the consequences of pathophysiological hypothermic therapy, namely) the side effects of using vasoconstrictors due to a decrease in blood pressure after cooling and the risk of increasing ICP during the rewarming process.

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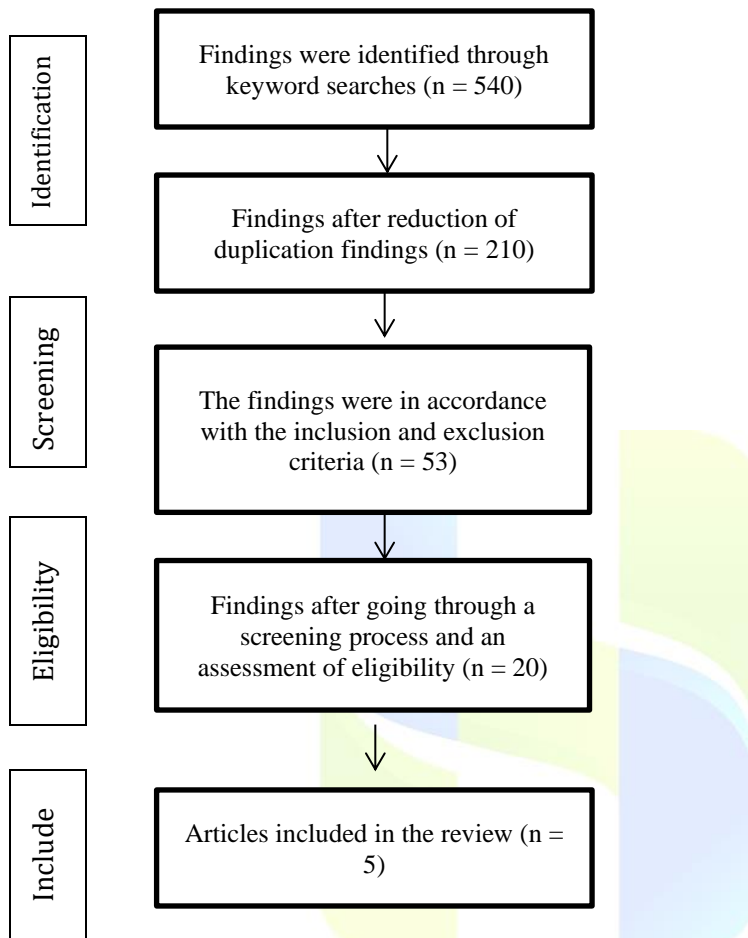


Figure 1. Flow diagram of trial selection process for critical review

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Table 1. Reviews Article

Author and Publication Year	Design	Sample	Intervention	Control	Outcome	Conclusion
Maekawa <i>et al</i> (2015)	RCT	N=148	The intervention given was in the form of hypothermic therapy in head injury patients with GCS 4-8, the target temperature at the therapy administration was 32-34 C, provide hypothermic therapy for 72 hours at a warming rate of 1 C / day	Not given hypothermic therapy. Respondents only received regular treatment and therapy in the room.	The results of statistical tests showed that 48% in the intervention group and 53% in the control group (normothermic) with p: 0.597	There was no improvement in neurological outcome in head injury patients after hypothermic therapy
Jin Lei <i>et al</i> (2015)	RCT	N= 300	The intervention given in the form of hypothermic therapy in head injury patients with a target temperature of 34-35 C Hypothermic therapy is given for more than 48 hours, given for 5 days	Not given hypothermic therapy. Respondents only received regular treatment and therapy in the room.	Statistical test results show that amounted to 43.5% in the intervention group and 29.0% in the control group	There is a change in intracranial pressure during hypothermic therapy in head injury patients but there is no significant outcome in head injury patients.
Andrews <i>et al</i> , (2015)	RCT	N= 378	The process of providing hypothermic therapy is accompanied by standard care. 1. Accompanied by mechanical ventilation and sedation 2. Osmotherapy 3. barbiturates and decompression craniectomy the process of giving therapy only in patients with intracranial pressure > 20 mmHg.	Respondents were only given standard care according to the one in the treatment room, such as providing mechanical ventilation and sedation	The results of statistical tests showed that hypothermic therapy in controlling intra-cranial pressure in the intervention group was 26% and the control group was 37% with (p = 0.03)	The results showed that the administration of hypothermic therapy accompanied by standard care in patients with an intracranial pressure of more than 20 mmHg after traumatic brain injury did not produce a better outcome than standard care alone.



Author and Publication Year	Design	Sample	Intervention	Control	Outcome	Conclusion
Hifumi, T <i>et al</i> (2016)	RCT	N : 129	This research method was divided into 2 groups, namely intervention and control. The intervention given was in the form of mild hypothermic therapy (MTH) with a target temperature of 32-34 C. With the patient's GCS score of 4-8	Not given hypothermic therapy. Respondents only received regular treatment and therapy in the room.	The results of statistical tests showed that the intervention group was 9.7% and the control group was 37.0% with p = 0.02.	The results showed that there was no significant difference between the intervention group giving hypothermic therapy and the control group
Cooper , <i>et al</i> (2018) ¹²	RCT	N:511	The research method is divided into 2 groups. 266 respondents received hypothermic therapy and 245 respondents did not receive hypothermic therapy (normothermic). The intervention given was in the form of hypothermic therapy in head injury patients with a target temperature of 33-35 C given for 72 hours for 7 days with a heating rate of 0.25 C / day	Not given hypothermic therapy. Respondents only received regular treatment and therapy in the room.	Statistical test results show the relative risk with hypothermic therapy, was 0.99 [95% CI, 0.82-1.19]; P = 0.94). And in the normothermic group the relative risk was 0.4% [95% CI, -9.4% to 8.7%];	The results showed that giving hypothermic therapy to patients with severe head injuries did not improve neurologic outcome at 6 months of intervention. These findings do not support the use of therapeutic hypothermia for patients with severe head injury / traumatic.

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Effect of intervention method work load of nurses on the quality of nursing services: systematic review

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Abstract

One of the factors affecting Missed Nursing Care is workload. The high workload for patients can cause Missed Nursing Care to occur. The workload of nurses occurs because of the many nursing tasks themselves and the presence of other tasks outside of nursing. Intervention methods for workload can improve service quality and improve patient safety by preventing Missed Nursing Care. This study aimed to identify effect intervention methods for workload currently available in nursing services. This research data sources obtained in the form of articles or journals relevant to the topic were carried out using databases: Science Direct, Proquest, Springer, Ebsco with full text. Time Publication Year Journal of the last 5 years, Study Design experimental study, quantitative study, Language using English. The strategy used to search for articles is a combination of PICO (T / S) and the PRISMA framework. Based on the results of literature search through the publication Science Direct, Proquest, Springer, Ebsco with full text with the theme "effect of intervention methods for workload currently available on nursing services". Based on literature search results 8 intervention methods for workload currently available in nursing services are: Nursing Workload Intervention Methods TISS (Therapeutic Scoring System), NIC (Nursing Intervention Classification), NAS (Nurse Activity Score), RAFAELA system, WISN (Workload Indicators of Staffing Need) have an effect that is felt by patients, which can improve the quality of nursing services, reduce patient safety incidents, and patient mortality. Nursing Workload Intervention Methods NIC (Nursing Intervention Classification), NAS (Nurse Activity Score), RAFAELA system, ABCD patient Classification Tools, Valpareso Software, WISN brought effects that were felt by nurses, namely adequate and professional staffing levels, workload distribution/ shift, nurse duties focused on patient care, and nurse job satisfaction. In conclusion, from the workload method intervention can improve the quality of hospital services: the quality of care from the patient's point of view is patient satisfaction with service quality and patient safety, while for nurses it will increase job satisfaction and equal distribution of work tasks during the work shift period.

Keywords: intervention method, work load, nurses, patient, quality of nursing services

Background

Missed Nursing Care is a phenomenon that can threaten patient safety in all countries and have a direct impact on the quality of care provision (1). Missed nursing care is influenced by internal and external factors: Internal factors that come from individual nurses themselves regarding the perceptions and internal values of nurses. External factors that come from the work environment, work teamwork, communication, organizational learning, workload, management support for patient safety, and available infrastructure (2). Nursing staff composition and missed nursing care were significantly associated with an increase in nurse workload by one patient and a 10% increase in percentage of missed nursing care was associated with 7% and 16% increased likelihood of a patient dying within 30 days of admission to care. (3)

The prevalence of missed nursing care events in the world is reported based on several studies in developed and developing countries. The incidence of missed nursing care at United State reached 53.4% in each existing hospital. Missed nursing care that occurred in Turkey reached 67.2% (4). Research results in 2016, reporting from 168 hospitals in the USA, the distribution of missed nursing care on nursing interventions was obtained as follows; individual needs intervention, basic needs intervention and planning. Percentage of responses for each reason for treatment from the MISSCARE Survey was indicated for six reasons: unexpected increase in patient volume / acuity (76.2%), heavy admission / expenditure (72%), inadequate assistant (59.5%), insufficient staff (58.9%), medicines not available when needed (56.5%), and urgent situations (53.0%) (5).

One of the factors that influence Missed Nursing Care is workload. Nurses are very important to provide safe and effective care, but the insufficient number of nurses and a high workload on patients can lead to missed nursing care (6). Nurse workload was significantly associated with Missed Nursing Care, and subjective workload ratings were very important indicating a significantly deteriorating relationship between the patient to nurse ratio and the likelihood of missing nursing care (7). Several researches on the incidence of Missed Nursing Care, one of the causal factors is the workload because of the large number of nursing tasks themselves and the many other tasks outside of nursing, an intervention method is needed for workload in nursing services.

Workload as situations and activities that involve nurses who are scheduled on a daily basis, in certain contexts, as part of their normal work life in the health sector (8). Nursing quality is an important factor in ensuring patient safety, because nursing care that is below standard directly leads to negative results for patients, Missed Nursing Care that occurs during treatment (9). This study aimed to identify effect intervention methods for workload currently available in nursing services.

Methods

This research was a systematic review study, data obtained from the results of research in the form of articles or journals relevant to the topic were carried out using databases: Science Direct, Proquest, Springer, Ebsco with full text. Time Publication Year Journal of the last 5 years, Study Design experimental study, quantitative study, Language using English." The strategy used to search for articles is a combination of PICO (T / S) and the PRISMA framework.



Results

1. Therapeutic Scoring System

The nursing workload / staff unit ratio was calculated from the total TISS-76 divided by the total number of bedside nurses. The average number of nurses working on each day was calculated to allow for the fact that different shifts may have different numbers of nurses' needs. A bedside nurse is classified as a nurse with primary responsibility for that shift. The relationship between workload / staff ratios and service outcomes is evident that the increase in staff corresponds to the workload can affect the results of service to patients (10).

2. NIC (Nursing Intervention Classification)

Development and validation of the instrument "Nursing Professional Interventions / Activities (Identification and activity mapping): a series of activities performed by nursing professionals obtained through reports in patient records and through direct observation to nursing professionals. These series of activities are classified under one of three categories: nursing interventions, related activities and personal activities. Interventional care includes direct and indirect care, in accordance with the NIC. Includes activities related to activities that do not require the performance of a professional nurse, but that are related to nursing work. Activities related to pauses in work nurses to meet physiological needs and for the rest are classified as personal. A cross-reference mapping technique is used to classify activities as direct or indirect treatment interventions. Direct care interventions are referred to treatments that are implemented through interactions with the user (patient / family). These nursing actions are thus characterized as physiological and psychosocial in nature, consisting of practical actions and acts of support and counseling. Indirect: a care intervention consists of treatment that is not done near the user, but is done. These activities include actions related to unit management and interdisciplinary collaboration. Research on the use of the NIC classification for quality service outcomes that patients perceive (11).

3. Calculate the level of dependence of the patient

The activities carried out by nurses are divided into four categories: Direct care is an activity that requires direct contact with the patient. Indirect care is an activity that deals directly with the patient, but direct contact is not mandatory. Activities related to the work of all departments that do not involve patient care. Personal activities are designed to meet the personal needs of a specialist. The relative number of nurse-patient contacts is directly proportional to the level of patient independence and the relative amount of time the nurse works (12).

4. NAS (Nurse Activity Score)

In addition, the number of nurses needed per shift is estimated, based on the time required and available for care. The efficiency of allocation of nursing staff is evaluated. The evaluation is based on the nursing activity score system (NAS) and



is carried out on morning, evening, and night shifts over a specified time period. the quality of patient care could be improved by a balanced workforce distribution relative to the workload in different shifts (13).

5. Valpareso Software

Nursing intensity indicator that reflects the patient's care needs every day Nursing intensity (SIIPS score) using the VALPARESO software. The reorganization strategy is managed in the context of institutional commitment, leadership coaching built on close manager-employee interactions, management of defragmentation between health care and all service providers, and good dissemination and sharing of indicator information between health care managers, nurses and health care assistants. Process optimization using software allows better allocation of tasks and allows nurses to refocus on patient care (14).

6. ABCD patient Classification Tools

The phases of eligible patients were consecutively classified into groups of four classes (A, B, C, D) and patients in group A required the highest care. After that, the nurses were matched with the patient classification and allocated via the census method. Actual nurse workload for each day shift was evaluated using a mini version of the Therapeutic Intervention Assessment System (TISS-28). The ABCD patient classification tool helps balance the general workload of nurses, nurse's experience with the level of satisfaction of the ABCD classification nursing staff as a method of routine activities in managing workloads (15).

7. RAFAELA system

Daily workload per nurse (Oulu Patient Classification (OPCq) / nurse) was measured by the RAFAELA system to compare results with regression based on standard patient / nurse measures. Research has shown an association between daily workload per nurse and patient safety incidents and mortality. The RAFAELA patient classification system was developed in the 1990s in Finland. Compared to most other patient classification systems that use fixed patient-nurse ratios, the RAFAELA system uses daily data on patient care needs and workload per nurse. This means a satisfactory number of nurses, neither too many nor too few, is allocated to provide care for the actual patient group (16).

8. WISN (Workload Indicators of Staffing Need)

Research proves for policies that will help Nigerians increase population access to quality health services and reduce unequal distribution of health workers. Evidence-based health workforce planning and redistribution using WISN must be institutionalized (17). The results of WISN show that existing staffing norms are inadequate, especially for puskesmas. The results provide an evidence base for reshaping policies, adopting workload-based norms, reviewing the scope of practice and targeting human resource investment. Long-term revision of staffing and investment norms to effectively reflect the actual workload and ensure quality service delivery at all levels is required (18). Estimating rules of different nursing in hospital wards always vary, given the time available to nurses and their workload in different wards and hospitals, and each ward has a specialty.



Therefore, a single rule for all wards and hospitals cannot be used for a fair distribution of nurses (19).

Discussion

Focus on types of interventions for workload distribution search results: **Therapeutic Scoring System (TISS)**; The results showed that a high one-day workload / staff ratio was associated with a substantially increased risk of death in critically ill patients. This confirms previous findings that excessive workload / staffing ratio is associated with increased mortality. The relationship between workload / staff ratios and service outcomes is evident that the increase in staff corresponds to the workload can affect the results of service to patients (10). **NIC (Nursing Intervention Classification)**: This study proves the use of NIC to identify nursing staff workload and is a more accurate indicator of identified interventions / activities during the period of care. Knowledge of nursing interventions and activities that affect the nursing workload contributes to a discussion about the level of professional staffing appropriate for the patient's care needs during the course of care. It also contributes to the measurement of nursing costs and, consequently, to demonstrate the cost-effectiveness of procuring nursing professionals in a service center. The use of NANDA as an international nursing diagnosis that seeks to find a mechanism to include time in workload calculations recognizes the importance of clinical assessment for a correct representation of the workload of professional nursing practice. Research on the use of the NIC classification for quality service outcomes that patients perceive (11). **Calculate the patient's level of dependence**: The relative number of nurse-patient contacts is directly proportional to the patient's level of independence; a strong or sufficiently strong linear relationship was established between the level of patient independence and the relative amount of nurse working time (12). **NAS (Nurse Activity Score)**: The results showed that the quality of patient care could be improved by a balanced workforce distribution relative to the workload in different shifts (13). **Valpareso Software**: The use of VALPARESO software in determining daily labor requirements as a good indicator of information between health care managers, nurses and health care assistants, Process optimization allows better allocation in tasks and allow nurses to refocus on patient care (14). **ABCD patient Classification Tools**: The ABCD patient classification tool is designed to predict workload and guide the staffing of nurses. The ABCD patient classification tool helps balance the general workload of nurses, nurse's experience with the level of satisfaction of the ABCD classification nursing staff as a method of routine activities in managing workloads (15). **RAFAELA system**: The main objective of the RAFAELA system is to ensure the appropriateness of the allocation of nursing staff resources and thus the NWL (nursing workload) as the optimal NWL. The PAONCIL (Professional Assessment of Optimal Nursing Care Intensity Level ') method is used to determine the optimal NWL that is applied to a certain environment. The daily NWL (Oulu Patient Classification (OPC) / nurse) measurement is then compared to this level, and resources are considered to be allocated appropriately at NWL. This means a satisfactory number of nurses, neither too many nor too few, is allocated to provide care for the actual patient group (16). **WISN (Workload Indicators of Staffing Need)**: Additional parameters (eg planned new services; local disease profile; changes in health policy) may be added in the future to readjust calculation methods as well as mapping of health services and human resources for health. Estimating rules for nursing differ in hospital wards always vary, given the time available to nurses and their workload in different wards and hospitals, and each ward has a specialization (20). WISN (Workload Indicators of Staffing Need) in the

long term from staffing and investment norms to effectively reflect the actual workload and ensure quality service provision at all levels is required (18). Nursing Workload Intervention Methods TISS (Therapeutic Scoring System), NIC (Nursing Intervention Classification), NAS (Nurse Activity Score), RAFAELA system, WISN (Workload Indicators of Staffing Need) have an effect that is felt by patients, which can improve the quality of nursing services, reduce patient safety incidents, and patient mortality. Nursing Workload Intervention Methods NIC (Nursing Intervention Classification), NAS (Nurse Activity Score), RAFAELA system, ABCD patient Classification Tools, Valpareso Software, WISN brought effects that were felt by nurses, namely adequate and professional staffing levels, workload distribution / shift, nurse duties focused on patient care, and nurse job satisfaction.

Conclusion

From the systematic reviews, it was found that there were 8 types of nursing workload intervention methods for hospital services, namely: Therapeutic Scoring System, NIC (Nursing Intervention Classification), Calculate the level of patient dependence, NAS (Nurse Activity Score), Valpareso Software, ABCD patient Classification Tools, RAFAELA system, WISN (Workload Indicators of Staffing Need). From the interventions found to be unique and have implications for workload interventions methods can improve the quality of hospital services: the quality of care services from the patient's point of view is patient satisfaction with the quality of service and patient safety, while for nurses it will increase job satisfaction and an even distribution of work tasks during the work shift period. This is evidenced by the application of intervention methods to workloads which can be the basis for service organizations to maintain nurse needs according to actual patient conditions and activities during period of working hours, so as to reduce the incidence of Missed Nursing Care and improve the quality of nursing services.

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Table 1. Inclusion-exclusion criteria

Criteria	Inclusion	Exclusion
Population/ Problem	International journal that discusses about intervention methods for workload currently available in nursing services.	International journals not related to distribution of the workload of nurses
Intervention	Intervention methods for workload currently available in nursing services.	Besides intervention of the workload of nurses
Comparison Outcome	There is no comparison factor. Focus type effect intervention methods for workload currently available to improve the quality of nursing services.	There is no comparison factor Outcome not a general workload
Time	Journal of the last 5 years	There is no stipulation on the length of the research period.
Study Design	experimental study, quantitative study	Systematic / literature review, qualitative study
Publication Year	Articles or journals published after 2015.	Articles or journals published before 2015.
Language	English	Apart from English and Indonesian.



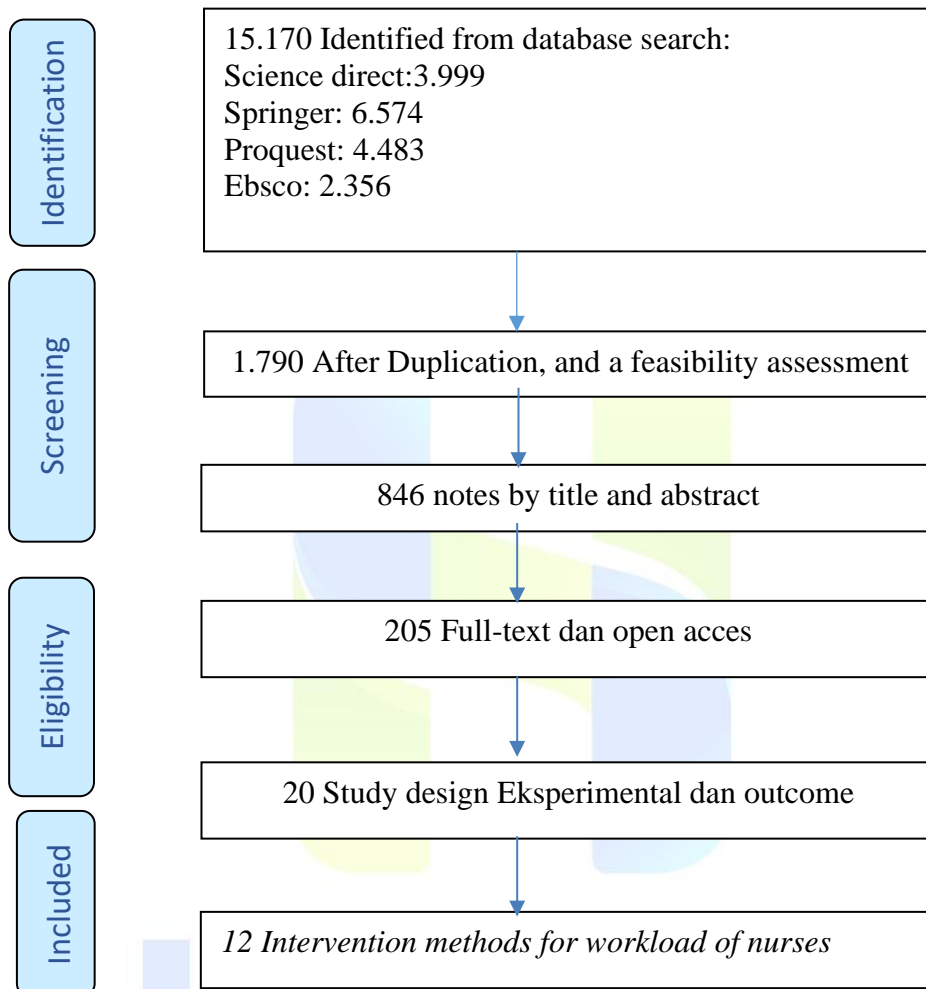


Figure 1. Prisma Framework

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Table 2. List of search results articles

No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
1.	Anna Lee, Yip Sing Leo, Cheung, Gavin, Matthew Joynt, Czarina Chi Hung Leung, Wai-Tat Wong and Charles David Gomersall	2017	Lee <i>et al.</i> <i>Ann. Intensive Care</i> (2017) 7:46 DOI: 10.1186/s13613-017-0269-2	Are high nurse workload/staffing ratios associated with decreased survival in critically ill patients? A cohort study	D: Desain Retrospective analysis cohort S: the patient was admitted to two ICUs in Hong Kong for 5 months. The patient was followed up until he was discharged from the hospital. Patients were admitted for <4 hours, <16 years, with a diagnosis of burns or transferred to the ICU. V: Identifying the exposure to inadequate workload / staff ratio during the ICU stay was independently associated with increased mortality I: Nursing workload [measured using the Intervention Therapeutic Scoring System (TISS-76)], disease severity (using Chronic Health Evaluation and Acute Physiology III) A: Chi-square test	Results: The analysis showed 95% high workload and a nurse ratio <40 the likelihood of patient death being more likely, when a nurse ratio > 52 had a lower risk of death. Conclusion: Relationship between workload / staff ratio and service outcomes: corresponding staff increase may affect patient outcomes	Springer
2.	Joao Francisco Possari, Raquel Rapone Gaidzinski, Antonio Fernandes Costa Lima, Fernanda Maria Togeiro Fugulin, Tracy Heather Herdman	2015	Rev. Latino-Am. Enfermagem 2015 Sept.-Oct.;23(5):781-8 DOI: 10.1590/0104-1169.0419.2615	Use of the nursing intervention classification for identifying the workload of a nursing team in a surgical center	D: observational and descriptive cross-sectional study. S: 11 nurses, 25 nursing technicians performing various roles in the operating room, 16 nursing technicians working with surgical instrumentation and two nursing technicians from the admissions department who worked in the surgical center during the transoperative period at the Paulo hospital in Brazil. V: analyzed the distribution of the nursing professional workload, according to the Nursing Intervention Classification (NIC), during the transoperative period in a surgical oncology center. I: collected data and interventions validated according to NIC taxonomy. A: use of the NIC to identify the workload of nursing staff in the center and identified surgical oncology interventions / activities during the transoperative period	Results: a total of 266 activities were identified and mapped into 49 nursing interventions, seven domains and 20 NIC classes. The most representative domains were Physiological-Complex (61.68%) and Health System (22.12%), while the most frequent interventions were Surgical Care (30.62%) and Nursing Documentation (11.47%). The productivity of the nursing team reached 95.34%. Conclusion: the use of the Nursing Intervention Classification contributes to an adequate and professional level of staffing, as it indicates the distribution of the workload in the	Science direct



No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
3.	Ramune Ciarnien, Roberta Suprikiene, Ruta Ciutienė, Asta Daunoriene, Olga Riklikiene	2019	Journal of Business Economics and Management, https://doi.org/10.3846/jbem.2019.8339	Managing Human Resources In Nursing: The Relationship Of Nurses' Working Time And Patients' Independence Level	D: time-and-motion study, analysis and synthesis of scientific literature, surveys S: a total of 72 observations totaling 777.2 hours of treatment time. V: investigated the relationship between workload and time allocation for nurses' daily care activities and patient levels of independence. I: The questionnaire was used to assess the level of patient independence by assessing four activities of the patient's daily life using the RAFAELA patient classification system. A: The linear correlation analysis method is used to determine the interface of quantitative characteristics. To determine the interdependence of the variables, the Pearson correlation coefficient was calculated.	surgical oncology unit. Research shows the use of NIC for quality service outcomes that patients perceive. Results: reveal the greatest the total working time of nurses, which is nearly half of the day shift, is spent on direct patient care, administration of drug use and performing various nursing procedures. Nurses will spend nearly half of their time on direct patient care on fully dependent patients, while a third will be spent on partially dependent patients. Conclusion: Relative number of direct patient-nurse contacts proportional to the level of patient independence; a strong or moderately strong linear relationship was established between the level of patient independence and the relative amount of nurse working time.	Proquest
4.	Marzieh Momennasab, Farzad Karimi, Fereshte Dehghanrad, and Ladan Zarshenas	2018	Trauma Mon. 2018 January; 23(1):e58161. Published online 2017 July 24. doi: 10.5812/traumamon.58161	Evaluation of Nursing Workload and Efficiency of Staff Allocation in a Trauma Intensive Care Unit	D: cross sectional study. S: all nursing care activities provided for 36 patients in the ICU unit were monitored and recorded. In addition, the number of nurses needed per shift is estimated, based on the time required and available for care. The efficiency of allocation of nursing staff is evaluated. V: evaluating the workload of nurses and the efficiency of allocation of nursing staff in the trauma ICU Shahid Rajaei Hospital, affiliated with Shiraz	Results: Based on findings, the mean NAS score was 23.19%. The number of nurses on the morning and evening shifts is less than amount required, except for the 3rd and 7th day. On the other hand, the number of nurses on a night shift is proportional to the number needed. Conclusion: research shows a	Science direct



No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
5.	Isabelle Briatte, Caroline Allix-Béguet, Gérard Garnier and Mercédès Michel	2019	Briatte <i>et al.</i> BMC Health Services Research (2019) 19:554 https://doi.org/10.1186/s12913-019-4376-7	Revision of hospital work organization using nurse and healthcare assistant workload indicators as decision aid tools	University of Medical Sciences. I: The evaluation is based on the nursing activity score system (NAS / nursing activities score) and carried out on morning, evening and night shifts for 1 month. A: SPSS version 19. Descriptive and nonparametric statistics were calculated for statistical analysis. D: prospective design S: Indirect care activities are recorded in the departments of medicine, surgery and obstetrics. Based on data collected in 2012, new organizational strategies were implemented and evaluated in 2015. From 1679 to 1951 beds in 2011 and 2015, respectively. Full-time equivalent amount health care workers increased from 3429 in 2011 to 3716 in 2015. V: describes the reorganization that causes resource management to no longer be based what has been achieved but based on the measured daily workload. I: nursing intensity indicators that reflect patient care needs every day Nursing intensity (SIIPS score) using the VALPARaiSO software. A: XLSTAT 2015 (Addinsoft)	heavy nursing workload in the ICU. Then the quality of patient care can be improved by a balanced workforce distribution to the workload in each shift. Results: Analysis of nursing intensity indicators leads to reallocation of labor per department, and units are managed based on this decision aid for adequate replacement and daily needs of staff. Conclusion: Reorganization strategies are managed in the context of institutional commitment, leadership coaching built on close manager-employee interactions, nurses to refocus on patient care.	Springer
6.	Lisbeth Fagerstrom, Marina Kinnunen, Jan Saarela	2018	BMJ Open 2018;8:e016367. doi:10.1136/bmjopen-2017-016367	Nursing workload, patient safety incidents and mortality: an observational study from Finland	D: linear mixed model S: 36 units of four hospitals in Finland. One of them is a tertiary acute care hospital, and the other three are secondary acute care hospitals. Participants Patient nursing intensity (249 123 classifications), nursing resources, patient safety incidents and patient mortality were collected daily for 1 year, corresponding to 12,475 data points. V: find out whether the daily workload per nurse (Oulu Patient Classification (OPCq)	Results: When the OPC / nurse was above the optimal level assumptions, the odds for incident patient safety were 1.24 and for patient mortality was 0.79. Based on the RAFAELA classification system. Conclusion: studies have shown an association between daily workload per nurse and patient safety	Science direct



No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
7.	Ziwen Wang, Liming You, Jing Zheng, Xiangdong Guan	2017	Int J Clin Exp Med 2017;10(6):9502-9507 www.ijcem.com /ISSN:1940-5901/IJCEM0052828	The ABCD patient classification tool for nurse-to-patient assignment to improve nursing workload balance: a multi-center study	<p>/ nurse) measured by the RAFAELA system correlates differently with the type of patient safety incidents and patient deaths, and to compare results with regressions based on standard patient / nurse measures.</p> <p>I: daily measurements based on the RAFAELA system.</p> <p>A: SPSS V.21.</p> <p>D: A multi-center before-after study</p> <p>S: During the previous phase between 20 May and 24 June 2012, nurses for day shifts were allocated by nurse managers according to standard practice. Furthermore, nursing managers and associated nurses receive education and training for the ABCD patient classification tool. The post-phase includes consecutive eligible patients between August 1 and September 4 2012 were classified into the fourth class group (A, B, C, D) and the patients in group A required the highest care. After that, the nurses were matched with the patient classification and allocated through the census method. Actual nurse workload for each day shift was evaluated using a mini version of the Therapeutic Intervention Assessment System (TISS-28)</p> <p>V: the effectiveness of the ABCD classification tool in balancing the workload of intensive care unit (ICU) nurses</p> <p>I: The ABCD patient classification tool is designed to predict the workload of nurses and guide nurses' staffing</p> <p>A: Statistical analyzes were performed using SPSS 19.0 (SPSS Inc., Chicago, IL, USA) or MLwiN Version 2.02 (Center for Multilevel Modeling, University of Bristol, UK).</p> <p>D: A observational method study</p>	<p>incidents and mortality.</p> <p>Results: After using the ABCD patient classification, the variation in the workload of nurses decreased from 32.40% to 28.50% and the percentage of nurses with normal workloads increased from 23.64% to 37.5%. The likelihood of normal workload increases by 43% when daily shifts and the number of staffing nurses based on the ABCD patient classification tool fit. No significant inter-phase differences in nurse satisfaction regarding workload were found from the ABCD method.</p> <p>Conclusion: The ABCD patient classification tool helps to balance the general workload of ICU nurses. While the level of nurse satisfaction is based on the ABCD classification as a workload management method has not yet appeared.</p>	Science direct
8.	Simone Aparecida	2019	Rev Bras Enferm.	Time and quality of	<p>D: A observational method study</p>	<p>Results: Nurses' mean time ranged</p>	Proquest



No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
	Trovo, Danielle Fabiana Cucolo, Marcia Galan Perroca		2020;73(5): e201902 67, http://dx.doi.org/10.1590/034-7167-2019-0267	admissions :nursing workload	S: 199 admissions conducted by nursing staff in seven units, Brazil V: to measure the average time spent by nursing staff during admission and investigate their adherence to the activities described by Nursing and Intervention Classifications; evaluate the level of disruption to the workload I: To measure the average time spent by nursing staff during admission and investigate their compliance with the activities described by the Nursing Intervention Classification; evaluate the level of disruption in team workloads. A: Statistical testing System SAS for Windows (Statistical Analysis System), version 9.2.SAS Institutelnc, 2002-2008, Cary, NC, USA.	from 5.5 to 13 minutes; and extras / technicians, between 4.7 and 6.8 minutes. The study met the conditions of six admissions made by nurses and 33 by assistants / technicians. The intervention took up 16.3% to 31.5% of the working hour team. Conclusion: Patient admissions / admissions have an impact on the nursing workload and need to be considered both in activity measures and in nursing staff sizes. This should also be improved considering the quality being targeted continuity of care.	
9.	Sunny Okoroafor, Samuel Ngobua, Maritza Titus, and Idonniboyeobu Opubo	2019	Global Health Research and Policy, https://doi.org/10.1186/s41256-019-0125-z	Applying the workload indicators of staffing needs method in determining frontline health workforce staffing for primary level facilities in Rivers state Nigeria	D: A study used workloads S: The application of the WISN methodology in Rivers Negara was carried out between February and August 2016 at primary level health facilities, primary model health care centers (MPHCs) and primary health care centers (PHC) in two LGAs - Port Harcourt City and Obio Akpor. V: get the right number of health workers in the right place at the right time to meet the health needs of the population I: WISN is a human resource planning tool A: WISN software.	The findings show varying degrees of shortages and an unequal distribution of health workers. Health facilities at PHALGA have a WISN ratio of 0.63 and a shortage of 31 nurses / midwives. There is also a shortage of 12 public health practitioners with a WISN ratio of 0.85. OBALGA has a shortage of 50 nurses / midwives and 24 community health practitioner nurses; as well as a WISN ratio of 0.60 and 0.79 for nurses / midwives and public health practitioners. Conclusion: This research provides evidence for policies that will help Nigeria increase population access to quality health services and	Science direct



No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
10.	Grace Namaganda, Vincent Oketcho, Everd Maniple, and Claire Viadro	2015	Human Resources for Health (2015) 13:89 DOI 10.1186/s12960-015-0066-7	Making the transition to workload-based staffing: using the Workload Indicators of Staffing Need method in Uganda	<p>D: A national WISN assessment</p> <p>S: September 2012) used purposive sampling to select 136 public health facilities in 33/112 districts. This study examined the staffing requirements for five cadres (nursing assistants, nurses, midwives, clinic staff, doctors) in puskesmas II (n = 59), III (n = 53) and IV (n = 13) and hospitals (n = 11).</p> <p>V: differentiate between facilities of the same type that have different staffing requirements.</p> <p>I: Uganda's human resources information system (HRIS)</p> <p>A: WISN software.</p>	<p>reduce inequality in the distribution of health workers.</p> <p>Results: With the WISN method, the three types of puskesmas have fewer nurses (42-70%) and midwives (53-67%) than required and consequently indicates a high workload pressure (30-58%) for these cadres. Puskesmas IV and hospitals lack doctors (39-42%) but have adequate clinical staff. All facilities demonstrate the strengths of the nursing assistant staff. For all cadres in puskesmas III and IV other than nurses, the norm is fixed or the number of staff already exists or both do not meet the requirements of WISN staff, for example, only half of the number of nurses and midwives. as required.</p> <p>Conclusion: The results provide an evidence base for reshaping policies, adopting workload-based norms, reviewing scope and targeting human capital investment. In the near future, the government can redistribute existing health workers in line with WISN outcomes and ensure quality service delivery at all levels is required.</p>	Springer
11.	Nazar Mohamed, Ahmed Al-Qasmi, Said	2018	East Mediterr Health J. 2018;24(An estimation of staffing requirements	<p>D: A national WISN assessment</p> <p>S: All types of Puskesmas services are detailed</p>	<p>Results: We calculated the number of doctors and specialists</p>	Science direct



No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
	Al-Lamki, Mohamed Bayoumi, and Ali Al-Hinai		9):823–829. https://doi.org/10.26719/2018.24.9.823	ts in primary care in Oman using the Workload Indicators of Staffing Needs method	(promotive, preventive, curative, rehabilitative and support services). We used 2014 data from the health information system and human resource management information system to develop staffing norms using the WISN method. First, we set norms based on national averages for those standard activities, then simulated norms in Muscat Governorate, which has 32% of the population. V: develop national staffing norms to ensure adequate numbers, an appropriate mix of skills and equality distribution of health workers in primary health services (Puskesmas) using the workload indicator for staffing needs (WISN). I: The WISN steps are followed in calculating health service activities A: The data used to calculate staffing norms is from computerized records of health information systems and human resource management information systems (HRM / human resources management).	required for puskesmas centers that provide core additional services and expected annual outpatient attendance. Simulations show that the number of doctors is less stressful in workload (WISN ratio 1.02) compared to nurses (WISN ratio 0.66) on average, despite some variation between health centers. Conclusion: Additional parameters (eg planned new services; local disease profile; changes in health policy) are possible added in the future to readjust calculation methods as well as mapping health services and human resources for health.	
12.	Ali Vafae-Najar, Mohammadreza Amiresmaeil, Mahmoud Nekoei-Moghadam, and Seyed Saeed Tabatabaee	2018	Human Resources for Health (2018) 16:42 https://doi.org/10.1186/s12960-018-0309-5	The design of an estimation norm to assess nurses required for educational and noneducational hospitals using workload indicators of staffing need in Iran	D: deskriptif cross-sectional S: conducted from December 2015 to November 2016 in 49 wards in 12 teaching hospitals and 17 non-educational hospitals in Mashhad, Iran. V: designed a norm of estimating nurse needs for teaching and non-teaching hospitals based on indicators of workload in Iran. I: focus groups, job studies, consensus, interview, and document review, staff and patient records, and modified Staffing Needs (WISN) modified Workload Indicator calculations used to collect data A: Service statistical data were collected from the information system reports and registers of each hospital management.	Results: Patient care, cardiopulmonary resuscitation, and hospital discharge were identified as the main focus group activities. Interviewing and reviewing documents led to the identification of 10 factors related to the available work time of the nurse. In teaching and non-teaching hospitals, the working time of all nurses except for nurses working in burns and psychiatry, burns ICU, and psychiatry, pediatric wards 1302	Springer

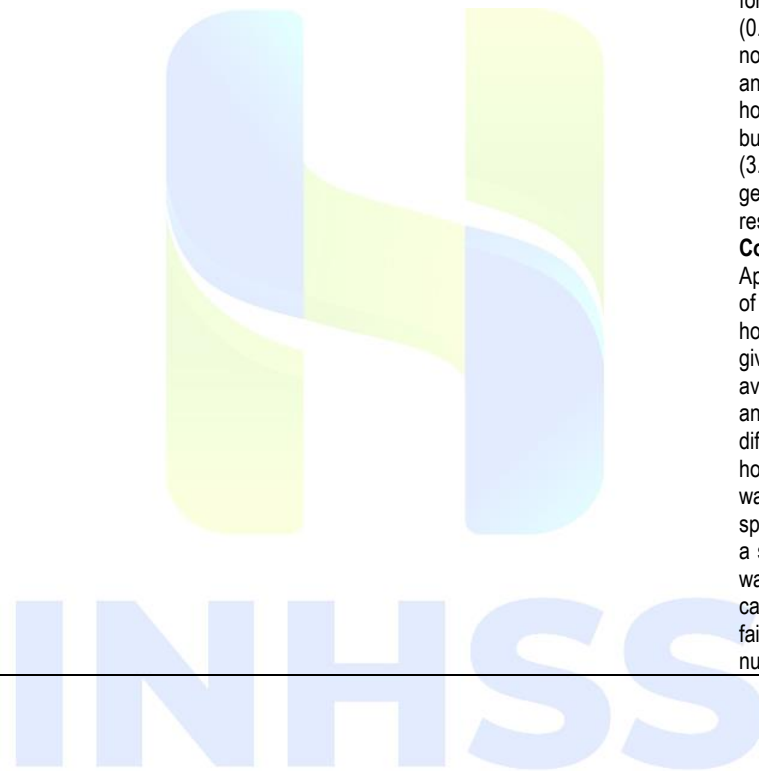


No	Author	Year	Journal	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research result	Data base
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hours per year, is 1411 hours per year. The calculation of the modified WISN method shows that the lowest norm in teaching hospitals is for psychiatry, eye surgery, and dermatology wards (0.53) and in non-teaching hospitals for ENT wards (0.57). The highest norm in teaching and non-teaching hospitals was for the burns ICU room (3.95) and the general ICU (3.07), respectively.

Conclusion:

Approximate norms of nursing across hospital wards vary, given the time available to nurses and their workload in different wards and hospitals, and each ward has a specialty. Therefore, a single norm for all wards and hospitals cannot be used for a fair distribution of nurses.



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Discharge planning to improve the life quality after stroke: a systematic review

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Abstract

Stroke causes disabilities that have an impact on quality of life. Discharge planning is a process to prepare patients for continuity of care to maintain their health status. This study aims to find out the discharge planning method that can improve the quality of life after stroke. Method used in this study is a scoping review. Data source: Ebsco, ProQuest and Science Direct database search from 2016 to 2020. Results: A review of 11 studies that have been selected states that the implementation of various discharge planning starting from the initial admission to the hospital, during treatment and continued care at home by using educational video, information technology (email, telephone, sms) and face to face has an effect on increasing knowledge, behavior change, improvement of quality of life after stroke, prevention of complications and prevention of recurrent strokes. In conclusion, modification of discharge planning is necessary to improve the quality of life after stroke.

Keywords: discharge planning, stroke, quality of life

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Background

Stroke is a critical health problem around the world, every year about 5.5 million people die from stroke and 44 people experience disabilities due to stroke.¹ In stroke patients will occur Post-stroke Movement Disorders (PSMD), PSMD represent up to 22% of all secondary movement disorder. However, PSMD are only observed in 1-4% off all stroke.² Study patients experienced high prevalence of depression 76%, of these 51.6% were categorized as higher category, factors that correspondingly predicted higher depression categorisation were low level of education, having comorbid chronic diseases, being a smoker.³

Clinical manifestations of stroke, among others dystonia 23,2 %, parkinsonisme 17,4% dan chorea 17,4 %.⁴ Currently, more than 75% of stroke patients survive the first stroke and 25% have moderate to severe disabilities.⁵ Furthermore, stroke patients are at high risk for future vascular events, including recurrent stroke, putting them at a greater risk of death and further disability.⁶ A support system is needed so that the impact of stroke can be managed so quality of life can be achieved.

Support systems for stroke patients can be provided by the patient's family or caregiver. This family or caregiver can help stroke patients fulfill basic activities in daily life so that the quality of life for stroke patients can be achieved.⁷ The quality of life of stroke patients can be achieved through the role of family or caregiver, the desire or enthusiasm of stroke sufferers to recover and the health service system, both in the hospital and in the community.

Quality of life is a multidimensional concept covering physical, psychological, social interaction, environmental or sensory dimensions, autonomy, activity, social, death and intimacy.⁸ The quality of life of stroke sufferers in physical dimensions includes diet, memory and concentration, physical mobility, speech, pain, sleep and rest; the psychological dimension includes self-image, life motivation, happiness and sadness; in the social domain includes changes in social functions and changes in roles. Achieving Quality of life can increase physical activity, diet, physical mobilization, speech, motivation to live, feelings of happiness and changes in social function.⁸ In order to achieve a good quality of life after a stroke, discharge planning is required, which is the process of preparing for the transfer of patients from hospital to home or to other health care providers.⁹ In the previous study behavioral intervention in stroke patients lowers blood pressure for up to 12 months, secondary analysis results show that discharge planning based on knowledge and skills is important to reduce vascular risk disparities in stroke.¹⁰

In the previous studies, in order for the discharge planning intervention to be in line with its objectives, communication competence, understanding of the team's role and the confidence of the health team are required.¹¹ Communication of the health team with patients and their families can be done face-to-face, using educational videos and also utilizing information technology such as telephones, e-mails, smart phones.

Based on the above background, the objective of this systematic review is to determine the effect of discharge planning on the quality of life of stroke patients.



Method

The literature search was carried out using the electronic database Ebsco, ProQuest and ScienceDirect from 2016 to 2020. The study in this scoping review was an experimental and randomized control trial. Search was limited to English only with post-stroke patient subjects. Keywords used: discharge planning, stroke, quality of life and Boolean operator AND, OR NOT or AND NOT.

The determination of inclusion and exclusion criteria based on the PICOS method was adjusted to the objectives of the scoping review. The determination of the criteria can be seen in table 1.

Based on search results through publications in three databases and using keywords, researchers obtained 205 articles. Then the articles were checked for duplication, it was found that 95 of the same articles were published and there were 110 articles left. Researchers then screened by title and found 56 articles that were not suitable, leaving 54 articles. 37 articles were screened based on the abstract and found 17 articles that fit the criteria. The feasibility assessment of 20 articles based on the overall text and compliance with the eligibility criteria obtained 11 articles which can be used in the scoping review. The results of study selection can be illustrated in a flow diagram using the PRISMA selection process in (Table 2).

Result

The study involved 3,290 stroke patients from hospitals in the United States, Australia, China, Austria, Thailand, Italy and Indonesia with a sample size of 17 to 2,149. The average participant was 18 to 65 years old with a diagnosis of tension ischemic attack, ischemic stroke, and hemorrhagic stroke. The inclusion criteria included mild to moderate stroke patients, being able to communicate, being able to do activities independently before a stroke. Meanwhile, the exclusion criteria for stroke patients were malignancy, severe stroke, aphasia, drug addiction, and alcohol abuse. This study involved the family as the patient's caregivers. From this review, 3 discharge planning intervention methods in stroke patients are found:

1. Face to face method

The face to face method is carried out by direct health education to the patient:

a. IPASS-R

In this program, group-based interventions are carried out in six 90-minute sessions led by trained occupational therapists and facilitators. The facilitator gives more time to communicate, simplifies words, helps write and ensures that the patient understands the material given. Handbooks are provided to make it easier for patients to understand the material provided.¹²

b. Transitional Care

Each participant prior to discharge received stroke unit-based care including acute medical care, early rehabilitation, health education and prevention of recurrent stroke. The intervention group received additional continuous rehabilitation at home through a multidisciplinary team, to ensure continuity of home care, a nurse was appointed as the coordinator. Home care activities include stroke rehabilitation performed by therapists, reconciliation of treatment performed by general practitioners and nurses and self-management education regarding controlling risk factors and early symptoms of stroke.¹³



- c. LAY
LAY intervention is performed on stroke patients in the post-acute phase, consists of 6 group sessions (for patients and caregivers) and 2 individual sessions (for patients). In the group session, education was given on the topics of emotional management, communication, requests for help, sleep quality, medical therapy management, pain, fatigue, nutrition, fall prevention, physical activity, community resources and future planning. While individual sessions are led by a physiotherapist with the topics of exercises for fall prevention, safe waking techniques after a fall and balance exercises. Provided guidebook facilities according to educational topics.¹⁴
 - d. Pre Discharge Education
Stroke education is given to all the participants before being discharged from the hospital. Additional interactive group education is given to the intervention group, the patient is motivated to actively ask questions, at the end of the session verification is carried out to determine the patient's understanding of the material provided. Educational topics include stroke risk factors, stroke symptoms and what to do during a stroke.¹⁵
 - e. CEP-BAM
CEP-BAM is divided into 3 phases, namely pre-education, intervention and evaluation. In the intervention phase, education is carried out to families about stroke and its prevention; education and family training on adaptive activities by exercising body movements such as exercise, walking, joint movement, toileting, dressing, eating and education on psychological management to treat stroke patients. Standard operating procedures (SOP), nurse modules, booklets and family monitoring books are provided.¹⁶
2. Education video method
- A 5 minute educational video is given before the patient is discharged from the hospital. Simple animated video about stroke definition, recognition of stroke symptoms, 911 calling, risk factors, rehabilitation, prevention and the importance of a control visit to the polyclinic. The video is saved on a laptop that is placed next to the patient's bed. The questionnaire was given before and after viewing the video.¹⁷ In another study an educational video was provided with the topic of post-stroke patient representative treatment experiences regarding post-stroke symptoms, the effects of stroke on patients and their families, and patient care that drives successful rehabilitation. The intervention was given for 4 weeks.¹
3. Information technology methods (email, web, sms, telephone)
- a. Additional intervention for the treatment group in is educating how to use technology in the form of online patient portal access, email or via a short message service. This additional education is sent on days 2, 6 and 10 after hospital discharge.¹⁸
 - b. MISTT, is a 3-group parallel design clinical trial with the usual treatment, SWCM and SWCM + MISTT web system. The SWCM website provides telephone-based home case management services, providing information on stroke education, prevention, recovery, community resources. Both interventions are given up to 90 days after hospital discharge. Data are collected on days 7 and 90.¹⁹
 - c. STROKE-CARD
STROKE-CARD treatment is a disease management program by a multidisciplinary stroke team consisting a standard 3-month visit and access to a web-based patient portal targeting risk factor management, post-stroke



complications, comorbidities and cardiovascular alerts, rehabilitation demands, and patient education, counseling, , and self-empowerment. Data are evaluated compared with a control group that received standard care. ²⁰

d. Reminder System

The intervention consists of self-efficacy education through a combination of face-to-face and telephone, handbooks, patient calendars and a weekly automated short message service. The control group received standard care. Data are collected at baseline and 3 months after hospital discharge. ²¹

Discussion

The discharge planning method applied to stroke patients has implications to:

1. Face to face method

The Improvement of life quality of stroke patients, especially in the sub self care, self efficacy, and social participation compared to the control group.¹² This is in line with other studies which state that discharge planning with face-to-face meetings can improve the physical health and mental health of stroke patients and can reduce ALOS.¹⁴ These results are in line with another study involving 200 patients, suggesting that a comprehensive discharge planning intervention can improve the life quality of stroke patients by 80% and reduce unmet needs with a 95% CI. ¹⁵ In another study stated that discharge planning can improve Fugl-Meyer Motoric function (intervention group 83.70 ± 4.44 ; control group 75.29 ± 2.89), Berg balance (intervention group 43.13 ± 2.32 ; control 38.29 ± 2.70) and the life quality scale (intervention group 190.57 ± 5.09 ; control group 175.90 ± 5.78).²²

2. Education video method

Educational video increases knowledge scores about stroke, self-efficacy and stroke patient satisfaction ¹⁷ and improve stroke care skills. ¹ Video-based interventions have been used to increase knowledge and encourage changes in health behavior in people with chronic diseases. Educational videos have been shown to be more effective than written materials for increasing knowledge and modifying health behaviors including cancer screening, self-care adherence to chronic heart failure and HIV .²³ Previous studies have demonstrated the effectiveness of stroke education video interventions in increasing knowledge of stroke patients and families in emergency waiting rooms. ²⁴

3. Information technology methods (email, web, sms, telephone)

Education through informatics technology increases readiness to go home and coping with stroke patients.¹⁸ Another study says the STROKE CARD method can improve all the life quality dimensions for stroke patients. Previous studies have stated that web-based education improves physical health and activation of stroke patients.²⁰ The importance of discharge planning intervention to increase knowledge and encourage changes in health behavior in stroke patients and their families can take advantage of information technology media through educational videos, use of cell phones, telephones, e-mails so that discharge planning objectives are achieved optimally.



Conclusion

From the scoping review found 3 methods of implementing discharge planning in stroke patients, namely: face-to-face method, educational video method and information technology method. The discharge planning intervention resulted in an increase the life quality of stroke patients so that it could prevent complications, recurrent stroke events and could shorten the patient's ALOS.

Suggestion

From several discharge planning interventions that are found to improve the life quality after stroke, it is expected that the hospital will apply one of the intervention methods so that the objective of discharge planning can be achieved optimally.

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Table 1. Determination of inclusion and exclusion criteria

PICO Framework	Inclusion	Exclusion
Population	A study that focuses on discharge planning in stroke patients and is currently hospitalized	Studies that do not address the discharge planning of stroke patients
Intervention	Studies that examine discharge planning interventions that can affect the life quality of stroke patients	Studies that do not discuss the application of discharge planning in stroke patients
Comparators	The comparison intervention group used was another intervention or a group that was only observed without intervention	No exclusion criteria
Outcomes	Studies that describe discharge planning interventions that can affect the life quality of stroke patients	Discusses the benefits of other interventions that are not related to discharge planning
Publication Years	2015 to 2020	Before 2015
Language	English	Except English

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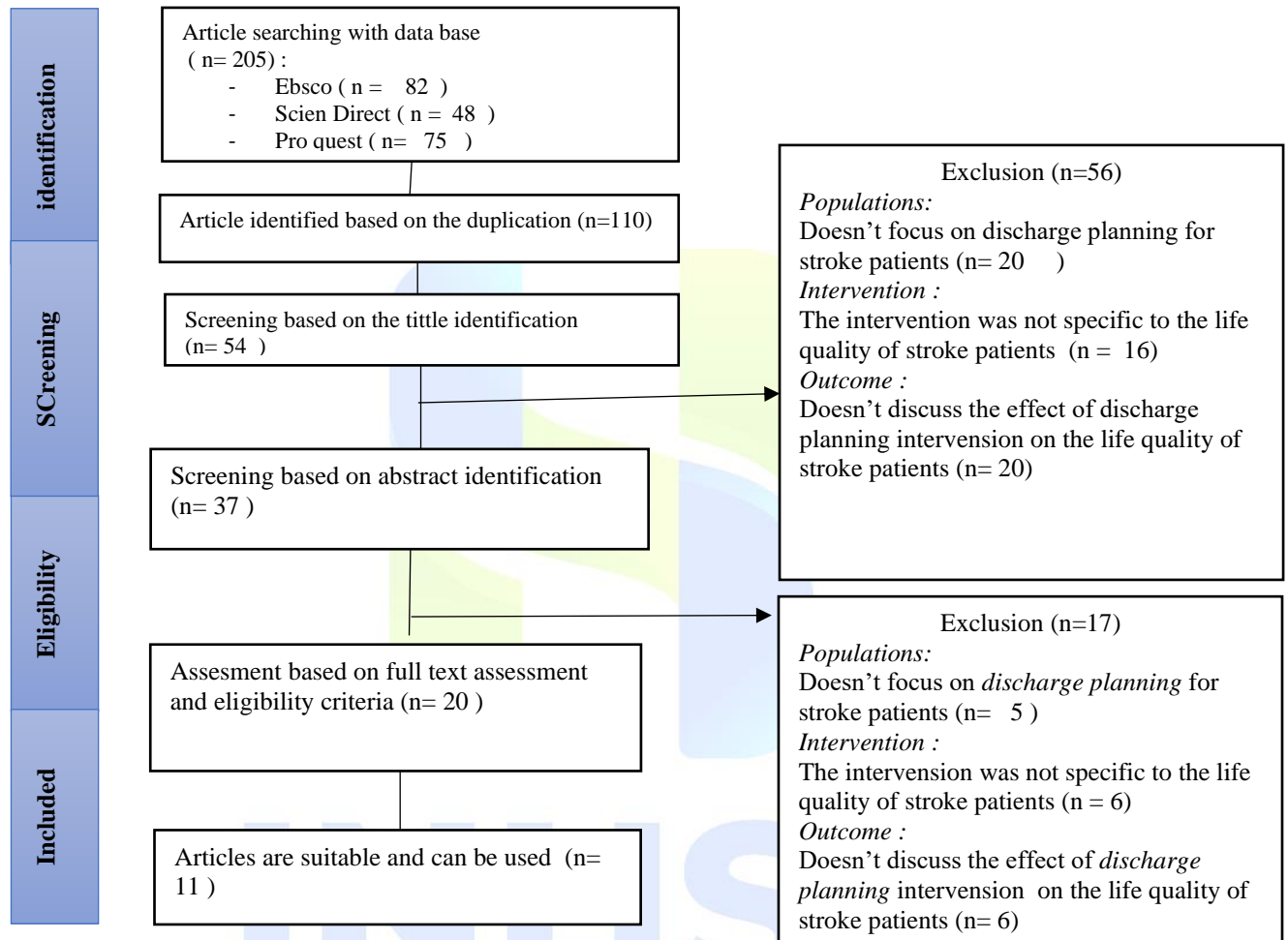


Figure 1. Flow diagram of the scoping review, using the PRISMA selection process

Tabel 2. Result Review

No	Author	Method (Desain, Sample, Variable, Instrument/Intervention, Analisis)	Research result
1	(Denny at al., 2017)	D: Pre & post test design S: 102 ICH & AIS stroke patients V: educational videos, self efficacy, stroke patients satisfaction I: <ul style="list-style-type: none"> • Questionnaire for stroke knowledge, self-efficacy and patient satisfaction • Educational video intervention consists of: definition of a stroke, stroke symptom recognition and action of calling 911, stroke risk factors, stroke rehabilitation, stroke prevention, and the importance of outpatient clinic follow-up A : deskriptif, Chi square, uji Fisher , Uji Wilcoxon rank-sum , Tes Kolmogorov-Smirnov, Koefisien korelasi Pearson	The post test score of knowledge, self efficacy and satisfaction increased compared to the pre test score increased with educational videos . ¹⁷
2	(Lee at al., 2017)	D: a quasi-experimental pilot study S: 17 (intervensi n = 9; kontrol n = 8) V: Self-care management and social participation I: <ul style="list-style-type: none"> • Reintegration to Normal Living Index (RNLI), Stroke Impact Scale (SIS), Partisipasi Skala Self-Efficacy. • face-to-face group intervention A :Wilcoxon Signed-Rank, Mann-Whitney	IPASS-R (The Improving Participation After Stroke Self management program) with face-to-face group intervention has very good consistency on self-care management, self efficacy and social participation of stroke patients in the treatment group than in the control group . ¹²
3	(Deng at al., 2020)	D : A Randomized controlled trial S : 98 (intervensi n = 49, kontrol n = 49) V: Transitional care and patient safety I: <ul style="list-style-type: none"> • Short-Form Health Survey-36, Modified Barthel Index dan Caregiver Strain Index • The intervention group received face-to-face rehabilitation at home through a multidisciplinary team. A : Uji pasti Fisher , Mann-Whitney U- uji, uji Levene's	The mean value and SD at 4 and 8 week of SF-36 PCS (40.2±6.3 and 42.9±3.7 VS 38.7±2.4 and 39.5±1.6), SF-36 MCS (43.9±2.6 and 46.1±1.8 VS 42.1±3.9 and 43.5±0.7), MBI (87.1± 9.2 and 92.5± 6.7 vs 62.3± 11.8 and 77.1± 14.3) was significantly better in the intervention group and there was a decrease in CSI CSI (23.6±1.2 and 19.7±2.4 vs 224.1±0.9 and 21.3±3.9) better in the intervention group than in the control group ¹³
4	(Schneider at al., 2017)	D: Comparative descriptive S: 42 control group (A) and 46 (B) intervention group V: discharge planning through technology and readiness to treat stroke patients I: <ul style="list-style-type: none"> • Readiness Score, coping score (stress & confidence), CCI (Charon Comorbidity Index) • Information/education provided via a technology package (including patient online portal access, e-mail/secure messaging) compared with current standard discharge teaching methods (verbal/written instructions). A: Non parametrik test	The readiness to go home (55.35±12.01 vs 54.64±12.33) and coping (18.88±16.99 vs 38.08±17.69) the intervention group was higher than the control group with statistical data for group A two times the readmission and group B three times, the Comorbidity Index of group. A 1.46; B 1.96 ¹⁸



No	Author	Method (Desain, Sample, Variable, Instrument/Intervention, Analisis)	Research result
5	(Reeves <i>et al.</i> , 2019)	<p>D : <i>Randomized trial</i> S : 265 stroke patients V : Michigan Stroke Transitions Trial (MSTT) and the health of stroke patients in transition I :</p> <ul style="list-style-type: none"> GCS; MISTT (Instrumen Michigan Stroke Transitions Trial); NIHSS(National Institutes of Health Stroke Scale); SWCM (sosial worker-led case management) The SWCM program provided in-home and phonebased case management services. The website provided patient-orientated information covering stroke education, prevention, recovery, and community resources. <p>A: Deskriptif statistic, analisis linier</p>	<p>With the MISTT method, the physical health and patients activation were better, the mean change in Patient-Reported Outcomes Measurement Information System Physical Health scores for group-3 (SWCM+MISTT Website) was significantly higher than both group-2 (SWCM; difference, +2.4; 95% CI, 0.46–4.34; P=0.02) and group-1 (usual care; difference, +3.4; 95% CI, 1.41–5.33; P<0,001). The mean change in Patient Activation Measure scores for group-3 was significantly higher than group-2 (+6.7; 95% CI, 1.26–12.08; P=0.02) and marginally higher than group-1 (+5.0; 95% CI, –0.47 to 10.52; P=0.07). There was no change in mental health quality of life.¹⁹</p>
6	(Messina <i>et al.</i> , 2019)	<p>D : Randomised controlled trial S : 103 intervensi group and 82 control group V: LAY intervensi and self management I :</p> <ul style="list-style-type: none"> LAY instrument , Chronic disease self management program (CDSMP), Self efficacy-Stroke self efficacy Quesioner (SSEQ),Disability- Modified Indeks Barthel (MBI), Quality of life-SF 12(Short form), Physical performance-Short Physical Performance Battery (SPPB), Depression-Geriatric Depression Scale (GDS) Interventions education with face to face based on problem-solving <p>A : Mann Withney</p>	<p>LAY interventions are effective to increase efficacy 7,79 point (p=0,001), physical performance 4,6 point (p=0,001), MBI 49,5 point (p<0,001) , quality of life 7,4 point (p=0,019), and shorter ALOS. The GDS score (depression) did not change over time, and there was no difference between groups.¹⁴</p>
7	(Benoit <i>et al.</i> , 2019)	<p>D : Randomized Trial S : 99 Intervensi group dan 100 control group V: Education pra discharge, stroke knowledge (SKS), quality of life I :</p> <ul style="list-style-type: none"> NIHSS, risk factors (BP, LDL, Hba1c Interactiv (face to face) education <p>A : shapiro-wilk test</p>	<p>The stroke knowledge score (SKS) in the intervention group was higher than the control group at month and 12 (11,1 and 12,8 vs 13,1 and 14,1) by the number of fr. The risk & mean number of symptoms were higher in the intervention group than the group control.²⁵</p>
8	(Willeit <i>et al.</i> , 2020)	<p>D: Randomized clinical trial S: 2,149 (711 control group and 1438 intervention group) V: STROKE CARD and quality of stroke patients I :</p> <ul style="list-style-type: none"> EuroQol-5-Dimensions-3-Levels (EQ-5D-3L) STROKE-CARD management programme that comprises a 3 month visit and access to the web-based patient portal "my stroke card" <p>A: Regresi Cox, Briant test, Mann Whitney</p>	<p>With the application of STROKE-CARD :</p> <ul style="list-style-type: none"> Major cardiovascular disease events occurred in 78 patients in the STROKE-CARD care group (5.4%) and in 59 patients in the standard care group (8.3%) (hazard ratio, 0.63; 95% confidence interval: 0.45-0.88; P=0.007). improves all dimensions of the EQ-5D-3L and functional results for up to 12 months (P=0,001)²⁰

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No	Author	Method (Desain, Sample, Variable, Instrument/Intervention, Analisis)	Research result
9	(Wan at al., 2018)	D: A Randomized controlled trial S: 91 divided the control group and the intervention group V: Post-stroke programs and health behavior I: <ul style="list-style-type: none"> • Health behavior scale scores (HPLP II) • follow-up telephone intervention A: Mann-Whitney U-tes	Treatment adherence was higher in the intervention group than in the control group (Cronbach α 0,878 and reliabilitas 0,801). ²¹
10	(Dharma at al., 2018)	D: Quasi experimental S: 80 (control 40, experiment 40) V: adaptation model (CEP-BAM) and quality of life I: <ul style="list-style-type: none"> • Barthel index, questioner quality of life, IADL • face-to-face educational interventions with family empowerment A : Anova	Quality of life ($33,40 \pm 3,65$ vs $30,60 \pm 2,78$) ($P < 0,05$) and functional capacity (bartel index) ($58,38 \pm 12,00$ vs $55,75 \pm 5,83$) of the intervention group were better than the control group. ¹⁶
11	(Pitthayapong at al., 2017)	D: experimental study S: 62 (31 control group & 31 intervention group) V: Post stroke care program and stroke functional status I: <ul style="list-style-type: none"> • Post stroke care skills checklist, modified Barthel index, complications checklist • Intervention video education stroke A : chi-square test, Fisher's exact test, independent t-test, and two-way repeated measures' analysis of variance	The experimental group experienced a significant increase in post-stroke care knowledge and skills compared to the control group ($F \frac{1}{4} 585.81, p < 0,001$). ¹

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The effect of patient safety culture in efforts to reduce incidents with missed nursing care: systematic review

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Abstract

Poor patient safety culture will have an impact on increasing the incidence rate or risk of an incident. Patient safety is a serious global public health issue and an important component of the quality of health care. Unsafe patient care is associated with significant morbidity and mortality worldwide, there is little practical evidence of patient safety culture and associated factors. This study aims to determine the effect of patient safety culture in reducing incidents with missed events. This study uses a scoping review with database search: Ebsco, ProQuest and Science Direct from 2013 to 2020. From 10 reviews, one study selected that 13.6% of nurses working in the Intensive Care Unit faced potential threats to patient safety incidents, where 48.8% of these incidents were falls and most of the nurses (88%) never documented the incident. It can be concluded that the hospital must provide safe and quality services to realize safety efforts. Home sick need to improve patient safety culture by efforts to reduce patient safety incidents with the incident is missed.

Keywords: patient safety culture, safety incidents, missed nursing care



Background

Patient safety is a serious global public health problem defined as prevention of harm to patients with an emphasis on the care delivery system where there are now many reports of patient claims for medical errors that occur in patients. The implementation of patient identification that must be done by nurses should be a culture or a habit so that incidents do not occur in the health service process. The impact of missed nursing care can cause a decrease in the quality of care and patient satisfaction with the delay in the response of nurses to the patient's condition (Jones, 2015). The solution for achieving patient safety in a hospital environment, the first step that needs to be done is to socialize with various methods and media including conducting seminars, workshops for nurses and other health workers through posters and leaflets, monitoring and evaluation of the implementation of SOP regularly by the nursing committee also need to be carried out to increase compliance with patient identification so that it can reduce the number of patient safety incidents, besides that in its implementation, supervision is required as an evaluation tool and improvement (Fatimah *et al.*, 2018).

A patient safety culture is very important to build. The organizational culture is the most basic factor that can move the organization towards a better patient safety culture. Working together is the first indicator of patient safety culture. Based on the results of the research, in carrying out nursing care to patients, nurses will always need help from nurses and other health workers. So that in building a patient safety culture it is said that it is very important for hospitals to measure cultural development by taking cultural measurements regularly.

Patient safety culture is an important factor in efforts to reduce the risk of harm in the hospital and improve patient safety. Empirically conducted aims to describe the nurse's perception of patient safety culture in an effort to decrease the incidence of safety. The Patient Safety Culture Survey was used to measure nurses' perceptions of patient safety culture, and the frequency of adverse risks occurring in the hospital was estimated by nurses. Results Patient Safety Culture responses varied from 23,6% to 89.7%. There were 47,8-75.6% of nurses who estimated that adverse events have occurred in the years past. After controlling for all factors, they were significantly associated with reduced incidence of pressure ulcers (OR = 0.249), prolonged physical restraint (OR = 0.406), and complaints (OR = 0.369); were significantly related to lower incidence of medication errors (OR = 0.699) and pressure ulcers (OR = 0.639). These results confirm that an increase in patient safety culture is associated with a decrease in the risk of adverse events (Wang, *et al.*, 2014).

In patient safety culture there is also a culture to report errors or near miss events. Reporting the incident is used as learning for an organization in improving the service system. This culture can only develop in an atmosphere that does not corner or blame individuals, thereby creating openness and honesty. Pronovost (2015) states that a positive and proactive safety culture requires a commitment to learning from mistakes, creating systems for reporting and analyzing errors and providing safeguards to staff who run patient safety programs.

Patient safety is a top priority that must be implemented by the hospital. This is closely related to both the image of the hospital and the patient's safety. The purpose of implementing patient safety in the hospital is to protect patients from unexpected events. The risk of this incident comes from the service process carried out by health



workers through programs that have been established by Hospital patient safety is a system where the hospital makes patient care safer which includes risk assessment, identification and management of things related to patient risk, reporting and analysis of incidents, the ability to learn from incidents and their follow-up and implementation of solutions to minimize risks and prevent injuries caused by mistakes resulting from taking an action or not taking the action that should be taken (Permenkes No.1691 / 2011).

Patient safety practice is to reduce the risk of adverse events associated with exposure to the diagnostic environment or medical treatment conditions. Hospital is a health service institution that provides complete individual health services that provide inpatient, outpatient and emergency services (Indonesian Ministry of Health, 2010). Meanwhile, patient safety interventions in hospitals are all forms of activities that can reduce the possibility of unexpected events resulting from the hospital health service system, not only due to active actions and procedures but also related to hospital services. A good patient safety culture can minimize incidents related to patient safety. Research by the Harvard School of Public Health (HSPH) (2011) states that from around the world 43 million people are harmed every year due to unsafe treatment, hospitals must be able to make sure for service recipients.

The goal of this system is if the patient has a different culture from the health worker or nurse to communicate, if the patient has certain cultural restrictions that are contrary to the medical actions that the nurse will take against the patient. Therefore, the nurse must first ask the patient so that there is no misunderstanding, or before the nurse takes action, she must first ask the patient or the patient's family for permission. Everyone has a different culture. As a nurse, you must also understand the different patient cultures, and if the patient has allowed us to take the action that will be done and it does not violate the culture he follows, then the nurse takes the action. So the essence of this goal is to communicate with patients so that no mistakes or unexpected actions occur.

Method

In the process of searching for literature, the author uses several databases including Proquest, Scient Direct and Ebsco. Keywords that are entered are keywords that are relevant to the material, namely "Patient Safety Culture", "Patient Safety Incident" and *Missed nursing care* and *Boolean operators* AND, OR, NOT or AND NOT. Due to time constraints, broad coverage of the topic and a large number of publications that are more prominent, a search for the year limit of publication in the last 7 years is 2020 now.

From the various literature findings obtained, in the end the authors chose 10 research articles that had been combined and were considered very relevant to the topic of discussion to be concluded in the systematic review. The determination of inclusion and exclusion criteria can be seen in the table 1.

Study Selection

Based on the search results through the publication of three databases using keywords, the researcher obtained 220 articles, then an independent examination was carried out. This study was able to filter based on the title of 120 articles, there were 80 duplication articles, then issued if there were 105 articles in



common. Articles that were screened based on the abstract were obtained according to the criteria for 15 articles, the feasibility *assessment* was that there were 20 articles based on the overall manuscript and those in accordance with the eligibility criteria obtained 10 articles which could be used. The results of study selection can be illustrated in a *flow diagram* using the PRISMA selection process.

Discussion

Safety (safety) has become a global issue including for hospitals. Therefore, patient safety is a top priority to implement and this is related to the occurrence of a Patient Safety Incident (IKP) in the hospital. D nature of the National Free Hospital Patient Safety, the first step patient safety program at the hospital is building a culture of patient safety or raise awareness of all employees will be the value of safety in hospitals. So, to improve the quality of patient safety services at the unit level, efforts must be made to change the patient safety culture in all hospital units.

Patient Safety Culture

Public demand for safer care has catapulted the healthcare industry's efforts to understand the relationship between patient safety and hospital performance. Brown & Wolosin's (2013) study attempted to explore the relationship between staff perceptions of safety culture and ongoing measures in the hospital based on the structure of the nursing unit, the care process, and the risk of harm to patients. The relationship between nursing actions, hospital performance and safety culture was explored in 9 California hospitals and 37 nursing units. Perceptions of safety culture were measured 6 months prior to collection of nursing metrics and the relationship between the two data was explored using correlational relationships and regression analysis. The significant relationship that was found was the process steps for fall prevention. Some associations were identified from a culture of safety and care delivery structure, such as a mix of skills, staff turnover, and the intensity of the workload shows the relationship that signif fish with safety culture.

Safety culture is an important factor in understanding efforts to promote safe patient care. These results provide service quality implications for hospital leadership. When leaders prioritize safety culture, risks to patients may have been improved by staff turnover and increased productivity. This can be used as an investment in a patient safety system to provide reliable and safe care (Brown & Wolosin, 2013).

To improve patient safety culture, nurses' awareness of the importance of patient safety also needs to be increased. Research conducted by Kim *et al* (2013) aimed to identify the factors that influence the perceived importance and practice of patient safety management among hospital employees in Korea. This research was conducted using a descriptive design and a questionnaire report. 280 employees were recruited from 3 hospitals using the convenience sampling method. The results of this study indicate that the factors that influence the perception of the importance of patient safety management are whether hospital employees contact patients while on duty, weekly working hours, patient safety management education, and patient safety management construction systems. Factors affecting patient safety management practices are workload, and patient safety management system construction. These results indicate the need to develop strategies to improve the perceived importance of construction and construction practices among all hospital employees (Kim, Park, Park, Yoo, & Choi, 2013).



The results showed that the influence of patient safety culture is very important in reducing the incidence of accidents that occur in hospitals. This is an important thing to improve the quality of service. So that the results of patient safety culture research can direct the important quality of health care that is associated with efforts to reduce the risk of harm to patients in the hospital and improve patient safety.

Reduction in Patient Safety Incidents

Research conducted by Yilmaz and Goris (2014) on 316 nurses who work in the Intensive Care Unit (ICU) at the Health Practice and Research Center of Erciyes University and the Kayseri Turkish Teaching Hospital with a descriptive survey approach. Data were collected using the Hospital Survey On Patient Safety Culture (HSOPSC) questionnaire developed by the Agency for Healthcare Research and Quality (AHRQ). The results found that 13.6% of nurses working in the ICU face potential threats to patient safety incidents, where 48.8% of these incidents were falls and most of the nurses (88%) never documented the incident. Therefore, nurses' awareness of patient safety must be increased and related knowledge must be updated by providing frequent training to nurses (Yilmaz & Goris, 2015).

This study shows that patient safety incidents in the hospital are still frequent, but the reporting of these incidents is still lacking. The results can measure the incidence rate of IHT related to patient safety events, human failure modes, and the type of action that is the level of unsafe (Shu-Hui Yang, *et al*, 2017).

Missed Nursing Care

Missed nursing care occurred in several countries, namely Britain as much as 86% and Sweden as much as 74% of nurses who had missed nursing care at the end of their shift (Ball, *et al.*, 2018), the incidence of missed nursing care in the United States reached 53.4% in each existing hospital, while in Turkey it reached 67.2% (Kalisch, 2014). Another study states that missed nursing care occurs in nursing assessments (Need, *et al.*, 2018). Other research states that missed nursing care often occurs in individual interventions such as indications for mobilization, administering 30 small doses of medication, and oral care (Winsett, 2016). Meanwhile, data in Indonesia shows that 80% of the performance of nurses with several interventions is still below standard (Asmirajanti *et al.*, 2019). Research conducted in Jakarta, it is known that nurses in inpatient rooms often skip the provision of nursing care as planned, namely giving a head position of 15-30 degrees is done by 23%, giving nutrition is done by 24%, and facilitating urination is carried out by 21% (Nilasari *et al.*, 2020). If this condition is not managed properly, it will have an impact on the quality of nursing services.

The results of this study indicate a significant influence on Missed Nursing Care, which refers more to the work environment of organizational culture related to members' attitudes, norms and beliefs about various patient safety behaviors that greatly affect patient safety culture, because there is a fear of being blamed, which causes nurses to tend not Reporting patient safety incidents for fear of being scolded or afraid of their friends in trouble, and disclosure of information in this case is a communication of trust that affects safety culture.



Conclusion

From the various research articles discussed above, it can be concluded that the hospital must provide safe and quality services to realize safety efforts. Hospitals need to improve patient safety culture in an effort to reduce incidents by implementing a patient safety culture and minimizing patient safety incidents with missed incidents in order to always report every patient safety incident to prevent an increase in incidents and information disclosure in this case is communication of mutual trust that affects safety culture, to achieve the goal of patient safety culture efforts in an effort to reduce patient safety incidents with missed events.

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Table 1. Determination of inclusion and exclusion criteria

PICO Framework	Inclusion	Exclusion
Population	Studies that focus on patient safety culture in an effort to reduce incidence in hospitals	Studies that do not address <i>patient safety culture</i>
Intervention	A study examining patient safety culture interventions with <i>missed nursing care</i> events	The study does not address the patient safety culture with the incidence of <i>missed nursing care</i>
Comparators	There are factors that influence patient safety culture	There were no exclusion criteria
Outcomes	Studies that describe patient safety culture interventions to reduce incidence	Discuss the benefits of other interventions not related to <i>patient safety culture</i>
Publication Years	2015 to 2020	Before 2015
Language	English	Languages other than English

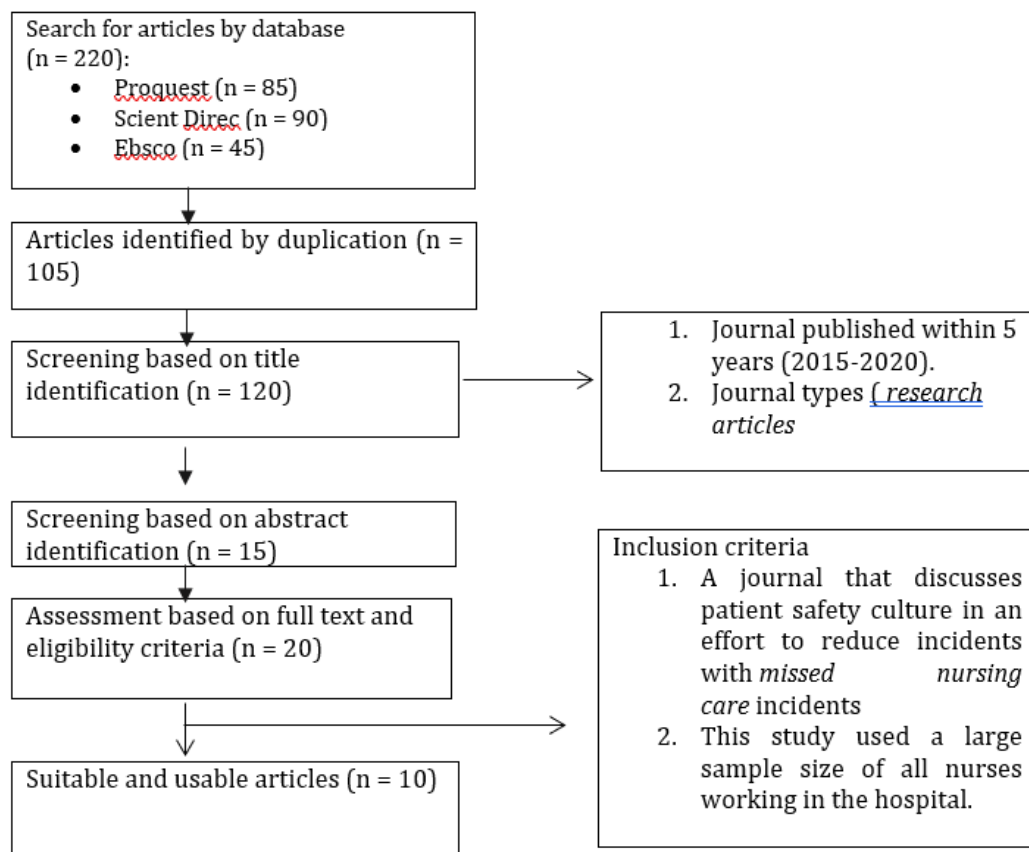


Figure 1. Flow diagram of the scoping review, using the PRISMA selection process.



Table 2. Search result from data base

No.	Author	Methods (Design, Variable, Instrument)	Sample	Research result
1	Kyoung-Ja Kim, <i>et al</i> , 2018	D: Cross Sectional Studies S: 186 nurses who work in the hospital V: The culture of patient safety and nursing care is overlooked I: Patient safety survey questionnaire		The main finding was that missed nursing care was found to be influential with clinical career, nurse work environment, and patient safety culture. Therefore, missed nursing care can be managed through the implementation of interventions that promote a positive nursing work environment and a patient safety culture.
2	Soo-Hoon Lee, <i>et al</i> , 2016	D: time-and-motion study, analysis and synthesis of scientific literature, survey S: 42 staff V: The study was conducted with hierarchical multiple linear regression on the data from the 2010 Survey. I: Evaluation is based on the nursing activity score system (NAS / nursing activities score) and performed on morning, evening, and night shifts for 1 month.		The main finding is that of effective delivery of information, responsibility, and accountability necessary for a positive perception of patient safety. Feedback and communication about errors is very positive with regard to patient information transfer.
3	Julia Hiromi Hori Okuyama, <i>et al</i> , 2018	D: Meta regression S: 59 Study with 12 dimensions of patient safety V: Patient safety culture in studies using hospital surveys of patient safety culture (HSOPS) I: Using survey scoring		Identifying perceptions of health practitioners through Surveys are widely used to assess patient safety culture in prioritizing safety.
4	Asma Ben Cheikh, <i>et al</i> , 2016	D: descriptive study and cross sectional study S: 116 consisting of doctors and health practitioners V: Culture of patient safety among healthcare workers I: Valid <i>safety care questionnaire</i>		Nursing management support is very influential in patient safety culture as a top priority.
5	Melkamu Garuma, <i>et al</i> , 2020	D: <i>Cross sectional study with simple random sampling</i> S: 421 health practitioners V: The level of patient safety culture		The overall score for patient safety culture is low for that in improving the current state Patient safety in public hospitals will require tailored interventions to address



No.	Author	Methods (Design, Variable, Instrument)	Sample,	Research result
				I: Using univariate and bivariate and multivariate analysis assessment components , such as non- punitive responses to errors.
6	Eun-Mi Choi, et al, 2019	D : <i>Cross Sectional study</i> S: 377 health experts V: assessment of patient safety culture I: Using a survey on a 5-point Likert scale		In order to establish high quality care and practical patient safety system policies must be put in place, in particular, the assurance of the quality of the work environment such as an adequate number of staff, appropriate working hours and adequate rest so that the implementation of a safety culture remains effective.
7	Shu-Hui Yang, et al, 2017	D : retrospective analysis of IHT S: 206 patient safety events V: Patient safety incidents I: reporting system		The primary outcome measures the incidence rate of IHT-related patient safety events, human failure modes, and types action is an insecure level.
8	Nadin Yousef ¹ and Farah Yousef ² , 2017	D: <i>Six sigma</i> approach (Define, Measure, Analyze Implement, Control) S: the amount of 6.7 of the 100 doses of drugs given V: patient safety incident I: Recommended use of medication guides		These behavioral remedies can be efficient at improving handwritten prescriptions and reducing the consequences of errors associated with medication doses being less than global standards; as a result, it improves patient safety.
9	Kumbi et all, 2020	D: <i>Cross Sectional study</i> S: as many as 518 health service providers V: Patient safety culture I: by using interviews		Factor analysis showed that working hours per week, participation in patient safety programs, reporting of adverse events, open communication, teamwork within the hospital, organizational learning and exchange of feedback about errors were among the factors significantly associated with patient safety culture.
10	Maryam Amiri, et al, 2018	D: Descriptive statistical data analysis S: A total of 60 nurses and 20 supervisors V: Patient safety culture I: By conducting a pamphlet workshop.		Significant improvement was observed in 5 of the 12 dimensions in the experimental group, however, dimensions such as non-punitive response to errors and reported events did not increase significantly.



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ISBN 978-623-95759-0-8

