



SAGA

THE 13TH INTERNATIONAL NURSING CONFERENCE

CONTINUOUS INNOVATION FOR SUSTAINABLE HEALTH AND CLIMATE RESILIENCE

PROCEEDING

THE 13TH INTERNATIONAL NURSING CONFERENCE

**CONTINUOUS INNOVATION
FOR SUSTAINABLE HEALTH
AND CLIMATE RESILIENCE**

PROCEEDING

FACULTY OF NURSING UNIVERSITAS AIRLANGGA

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THE 13TH INTERNATIONAL NURSING CONFERENCE

CONTINUOUS INNOVATION FOR SUSTAINABLE HEALTH AND CLIMATE RESILIENCE

PROCEEDING

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Hak cipta dilindungi undang-undang. Dilarang memperbanyak sebagian atau seluruh isi buku ini dalam bentuk apa pun, baik secara elektronik maupun mekanis, termasuk tidak terbatas pada memfotokopi, merekam, atau dengan menggunakan sistem penyimpanan lainnya, tanpa izin tertulis dari Penerbit.

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FOREWORD

The book is made as the ongoing effort to embrace rapid changes in our world. We need to prepare and leverage innovative approaches in dealing with social, economic, and environmental changes. Also, we have to help the population achieve sustainable health and improve climate resilience, mainly through nursing education, research, and practice.

This book covers the recent discussion made by nursing scholars in various topics including nursing education, community nursing, clinical nursing, management and leadership, research practice, as well as innovations for the COVID-19 challenge. It also covers discussion on nursing disaster management, non-communicable diseases, mental health and wellbeing, maternal and child health, tropical diseases, health law and policies, climate change, health-related issues, and sustainable development goals.

It has been more than two years since we live in the COVID-19 pandemic that we hope will end soon. To welcome the new era, nurses need to be active in advocating sustainable health and climate resilience for the better future. As the largest health workforce, nurses have pivotal roles in making changes with innovative strategies and actions. Nurses should realize that, with togetherness and collaborations, they are not only able to treat patients individually but also address problems in the society and environment. That is the spirit that we want to bring: *Continuous Innovation for Sustainable Health and Climate Resilience*.

We hope this book provides good contribution in increasing the quality of health care services and nursing scholarships. We thank our authors who have been willing to share their ideas and expertise to the readers. Thank you.

INC 13 COMMITTEE

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Husband involvement and self efficacy for satisfaction of IUDs contraception methods: A cross-sectional study

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ABSTRACT

Introduction: The effectiveness of the Intra-Uterine Device (IUD) contraception method is high. However, the prevalence of its use is still low. Husband involvement and self-efficacy theoretically can affect the satisfaction of IUD users. This study analyzed IUD contraception users' satisfaction based on their relationship with husband involvement and self-efficacy.

Methods: This research was conducted through a cross-sectional design. It uses simple random sampling; as many as 114 IUD users were chosen from the Public Health Center of Mojo Surabaya as the research sample. The independent variables were husband involvement and self-efficacy, while the dependent variable was the IUD users' satisfaction who were of their reproductive age. The instrument used in this study was questionnaires, and the data obtained were analyzed using Spearman Rho with a significance level of $\alpha < 0.05$.

Results: The result showed a relationship between husband involvement and satisfaction of IUD users ($p=0.000$ $r=0.414$). There was also a relationship between self-efficacy and IUD users' satisfaction ($p = 0.000$ and $r = 0.605$).

Conclusions: Husband involvement needs to be increased, and women's self-confidence in their reproductive age also needs to be improved to encourage their satisfaction and continuous use of contraception.

Keywords: family planning; contraception; husband; satisfaction; self-efficacy

INTRODUCTION

Family planning is one of the main preventive health service programs to control population growth to improve families' health and welfare (F. S. RA Hatcher, 2004). The implementation of family planning programs in Indonesia was declared quite successful. However, the execution was still experiencing obstacles (BKKBN, 2008). Based on Basic Health Research (2018), the prevalence of contraceptive use in Indonesia stated that 27.1% of Fertile Age Women in married status did not use Contraception, while the remaining 72.9% already used Contraception. However, Contraception is still dominated by short-term Contraception, especially 3-month injections, which reached 42.4%. IUD is the third most commonly used contraception method with 6.6% (MoH RI, 2019). Short-term Contraception is still the primary choice for couples, but on the other hand, the number of drop-out

users of short-term contraceptives such as pills and injections continues to increase (Parenteau S., 2007).

The government is currently promoting long-term contraceptive methods for a more extended period. IUDs are contraceptives used by 18% of reproductive-aged women in Asia and more than 40% in China (Joshi, Khadilkar and Patel, 2015). However, in East Java, long-term contraceptive users such as IUDs still lack since people prefer to use short-term contraceptive methods (BKKBN Indonesia, 2013). There are many reasons why acceptors do not use an IUD. Many women of their reproductive age lack understanding regarding the installation procedure and are afraid because they feel that an IUD is a surgical procedure (Eka R Gunardi, Adila RA Malik, Febby Oktavianti, Rory Meria, Fachreza Ardianto, 2017). Side effects of using an IUD also cause dissatisfaction due to menstrual patterns including spotting, heavy bleeding during menstruation, the occurrence of back pain in several people, and reduced sexual libido (Gottert et al., 2015). There are two kinds of obstacles to using contraceptives in the uterus: intrinsic and extrinsic; among the inherent inhibitors of long-term contraception use are psychology, locus control, and self-efficacy (Muanda et al., 2016).

Self-efficacy is a belief owned by someone who can affect the decision to choose and use an IUD. Patrilineal culture makes the husband the head of the family, an essential factor in decision-makers, affecting the IUD acceptor's satisfaction (Wiratama, Armini and Pradanie, 2020). Personal characteristics and self-efficacy indirectly affect health behaviour through perceptions of self-improvement, benefits, obstacles, and the effect of activities (Pender, 2011). The interpersonal result is the cognition of the behaviour, beliefs, or attitudes of others, where the primary source of interpersonal is the family and health service influencers (Armini, Kusumaningrum and Sari, 2019). The existence of sufficient motivation from the husband will make the wife feel satisfied in using IUD contraception so that the wife can consistently use IUD (Uddin, Pulok and Sabah, 2016).

The Family Planning Program is a responsibility between men and women as a couple. The husband's role in reproductive health is very influential on the maintenance of health, the survival of the mothers and children, and sexual behaviour that is healthy and safe for himself, his wife and his family (Muanda et al., 2016). A husband's participation in reproductive health can be realized by providing involvement in both material and psychology. An IUD is an effective contraceptive method for up to 10 years, depending on correct insertion, with only a 1% failure rate. The long-term contraceptive method of IUD has many benefits, including adequate long-term protection and rapid return to fertility.

When the usage is removed, safe to use after abortion and childbirth, safe to be used during breastfeeding, and suitable for women who want an estrogen-free contraceptive method (Joshi, Khadilkar and Patel, 2015; Sapkota, Rajbhandary and Lohani, 2017). There is a requirement to increase the number of family planning acceptors and reduce maternal mortality and morbidity. Improve the quality of family planning use, increase knowledge, involvement of husbands and wives' confidence in family planning, provide counselling services and choose the appropriate contraceptive method (Sonfield, Hasstedt and Gold, 2014; UNDESA, 2017). It is essential to decide what type of Contraception to use. The right choice will increase birth control success (Ayuningtyas, Oktaviana, Misnaniarti, & Al, 2015). The purpose of this study was to analyze the satisfaction of IUD contraception users based on its relationship with husband involvement and self-efficacy.

METHODS

Study Design

This study was conducted through correlational design with a cross-sectional approach.

Population, Samples and Sampling

The research population was women of reproductive age who used IUD contraceptives in the Public Health Center of Mojo Surabaya. There were 114 users chosen as the samples through a simple random sampling technique. For the homogeneity of the samples, the criteria were that the users must be those who live in the same house with their husbands, used IUD for more than three months, are multipara, and communicate orally and in writing well.

Instruments

The demographic data questionnaire identified the respondents' characteristics, including age, ethnicity, religion, education, occupation, income, and children. The husband involvement questionnaire included ten statements developed from the parameters of appreciation, informational, and instrumental involvement using a Likert scale with answer choices (always = 4), (often = 3), (rarely = 2), (never = 1). The self-efficacy questionnaire and IUD users' satisfaction are based on a Likert scale with answer choices of; strongly agree = 4, agree = 3, disagree = 2 and strongly disagree = 1. Ten questions were compiled based on the parameters ensuring that IUD is practical, users believe in the benefits of using IUD, and they are sure to keep using it.

The questionnaire on IUD contraception users' satisfaction is based on the parameters of service quality, the benefits of IUD over other types of Contraception, cost, reliability, conformity to specifications, and durability of the IUD contraception. The questionnaire included 14 statements. The instrument tested for validity and reliability on 20 respondents. In the validity test, the results of the r table for 20 respondents were 0.444. Regarding the reliability test, the question would be considered reliable if the value of Cronbach's alpha is higher than 0.6. In this study, the value of Cronbach's alpha was 0.760.

Procedure

The data were collected using a questionnaire consisting of demographic data, husband's involvement, self- efficacy, and IUD users' satisfaction. Cadres accompanied data collection during the integrated service post (posyandu) activities.

Data Analysis

Data were analyzed using the Spearman Rho statistical test with a significance level of $\alpha < 0.05$.

Ethical Clearance

The study protocol was reviewed by the Research Ethics Commission of the Faculty of Nursing of Universitas Airlangga. Researchers adhere to ethical principles in the research process, including respect for the respondents, provision of informed consent, maintenance of confidential information conveyed by the subject, and fair and beneficial research for IUD acceptors.

RESULTS

Women of reproductive age who became the research respondents were mainly between 33-49 years old. Adult with reproductive experience affects the decision to use Contraception. Most respondents were Muslim, with most education history being high school. A person's mindset and ability to absorb and synthesize are related to educational factors. Most respondents worked in the private sector. Most of the family's income was above the city minimum wage. Most women of reproductive age who used IUDs have three children, but some have five children. More than enough children show the time to terminate a pregnancy with an appropriate long-term contraceptive method.

Table 1 The characteristics of women's reproduction age as IUD users (n = 114)

Characteristics	Category	n	%
Age (years)	15-32	37	32.5
	33-49	77	67.5
Religiosity	Muslim	93	81.6
	Catholic	12	10.5
	Christian	9	7.9
Education	Elementary school	5	4.4
	Junior high school	42	36.8
	Senior high school	51	44.7
	Higher education	16	14.0
Occupation	Government employee	17	14.9
	Private sector	43	37.7
	Entrepreneur	25	31.9
	Midwife	29	25.4
Family income	≤ city minimum wage	18	15.8
	> city minimum wage	96	84.2
Number of children	≤ 2	47	41.2
	3	43	37.7
	4	18	15.8
	5	6	5.3

Table 2 Relationship between husband involvement, self-efficacy and satisfaction of IUD users on women at reproductive age (n = 141)

Variable	Satisfaction with IUD utilization				Total n	Spearman Rho
	Very satisfied		Satisfied			
	n	%	n	%		
Husband involvement						p=0.000 r=0.414
Proper	36	31.6	12	10.5	48	42.1
Sufficient	21	18.4	40	35.1	61	53.5
Insufficient	1	0.88	4	3.5	5	4.4
Self Efficacy						p=0.000 r=0.605
Proper	43	37.7	8	7.0	51	44.7
Sufficient	15	13.2	46	40.3	61	53.5
Insufficient	0	0	2	1.8	2	1.8

The results of bivariate statistical analysis between husband involvement and satisfaction of IUD users obtained $p = 0.000$ and $r = 0.414$, which means a relationship between husband involvement and satisfaction of the IUD users showing sufficient strength of the relationship and a positive direction. 31.6% of women of reproductive age felt that their husbands' involvement was in a good category, which was very satisfied with the use of IUD contraception. 4.4% of women of reproductive age whose husbands lack involvement, but 8.8% of them were very satisfied and 3.5% satisfied. The bivariate statistical analysis results between self-efficacy and satisfaction of the IUD users obtained $p = 0.000$ and $r = 0.605$, meaning that there was a relationship between self-efficacy and satisfaction of the IUD users,

showing sufficient strength of a relationship and a positive direction. There were 37.7% of women of reproductive age with good self-efficacy and were delighted with the use of IUD contraception. 1.2% of women at reproductive age lacked self-efficacy but felt satisfied with using IUD.

DISCUSSION

There was a significant relationship between the husband's involvement and IUD users' satisfaction, with sufficient strength and a positive relationship direction. Most respondents received good involvement from their husbands, who were very satisfied with using IUD contraception. The better the husband's involvement, the more satisfied the women of reproductive age who used the Contraception.

Involvement is information that someone cared for, valued, and loved becomes part of the communication network and shared obligations. Involvement is also interpreted as verbal and non-verbal information and tangible assistance in behaviour given to subjects in the social environment to provide emotional benefits and affect the recipient's behaviour (Gottert et al., 2015).

Satisfaction in using IUDs contraception requires involvement from the husband. Women of reproductive age need involvement to achieve satisfaction in using Contraception, which is the IUD. The husband plays an essential role in the selection of Contraception (Uddin, Pulok and Sabah, 2016). The form of husband involvement is in the form of accompanying the wife in family planning consultation and contraception installation and reminding the contraception control schedule.

The lack of a husband's attention regarding reproductive health and family planning results in insufficient involvement as a partner (Morgan and Datta, 2018). Husbands involved in contraceptive IUDs were directly involved in advising on Contraception used. The husband should accompany his wife to the place of contraception services and attend family planning counselling. On the other hand, a husband who was not involved in family planning has a shared understanding of family planning benefits for himself or the family; he only considers Contraception as a matter for the wife.

As a partner of contraception users, the husband contributes significantly to contraception satisfaction (Adams, Salazar, & Lundgren, 2013; Uddin et al., 2016). Husband's involvement can be in the form of information, emotional, instrumental, appreciation, and social involvement. Respondents with intense instrumental involvement work to have sufficient income to meet their health care needs. Users who get good involvement from their partners will be satisfied using IUDs. A husband's involvement can be an antecedent factor, which allows motivation to be implemented (Jatlaoui et al., 2016). The combination of husband involvement with the wife's strong willingness to determine contraception choice has proven effective in producing satisfaction.

Five respondents felt that their husbands were not involved, but one person was very satisfied, and four were satisfied with using IUD contraception. The independence of women in making decisions in choosing Contraception following their circumstances affects perceived satisfaction.

The family has a role in improving the mental status, anticipating socioeconomic changes, providing motivation, and giving advice to be more motivated to maintain health conditions (Sri Rezeki Amanda, Ni Ketut Alit Armini, 2021). Four respondents worked and earned a wage above the city minimum wage to meet basic and confident needs, which led to their satisfaction with using IUDs. The more a person's economic level, the more they become more responsive to perceive health problems (Nastiti, Pradanie and Sari, 2021).

There was a relationship between self-efficacy and satisfaction of the IUD users. Most respondents have good self-efficacy. Respondents with good faith can increase self-efficacy and are not worried about using IUDs. Self-efficacy becomes the background of someone controlling certain

conditions. Self-efficacy is the most important thing that affects the formation of self-motivation (Pender, 2011). Self-efficacy affects the level of goal achievement, commitment strength, and effort to increase motivation. IUD contraception's side effects are heard and felt by some users because it can cause anxiety, especially for users who have not yet experienced it (Adams, Salazar and Lundgren, 2013). The husband's involvement dramatically affects the use of IUD contraception [18]. The husband's involvement will align with self-efficacy in achieving satisfaction in using IUD contraception. The reproductive history of multipara respondents affects the experience and type of contraceptive information. These conditions are related to motivation, self-efficacy, and self-confidence, essential to contraceptive use (Reichwein et al., 2015). Self-efficacy plays a role in how women of reproductive age decide to use an IUD. If someone believes they cannot cope with stressful challenges, they will feel more anxious about facing them (Morgan and Datta, 2018). Someone with low self-efficacy will tend to focus on perceived inadequacies. Most respondents are Muslim, even though some are Catholic and Christian. Religious beliefs are not a barrier in Contraception but can be a consideration for deciding behaviour and obtaining satisfaction on the health aspects.

74.1% of users had good self-efficacy and were very satisfied with using IUDs. Respondents believe that an IUD is an effective Contraception. External factors can affect one's self-efficacy. Self-efficacy is very influential in a person's way of behaving in terms of health and confidence in using Contraception to achieve satisfaction and consistent use of Contraception (Switzer et al., 2015; Choiriyah, Armini and Hadisyatmana, 2020). The majority of respondents had an elementary school education. Education is a tool to improve themselves in carrying out community life. Education affects one's response to the situation at hand. Someone with higher education will respond more rationally to reproductive health information than those with low education (Jatlaoui et al., 2016). Information obtained from formal and non-formal education can have a short-term effect, resulting in increased knowledge and changes in attitudes and actions in using long-term Contraception, especially IUDs.

CONCLUSIONS

Women of reproductive age who obtain higher involvement from their husbands will feel more satisfied using IUDs. Good self-efficacy in women at reproduction age will increase satisfaction in using IUDs. Husband as a partner and the process of reproduction and self-efficacy are essential in achieving satisfaction in using IUDs on women at the reproduction age. Further research needs to be done through a qualitative approach about the husband's experience in the family planning program, especially the long-term contraceptive method of the IUDs.

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CONFLICT OF INTEREST

The author declares no conflict of interest in this research and publication.

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Effectivity consumption of dayak onion steep for blood sugar in patients with diabetes mellitus

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ABSTRACT

Introduction: The amount of glucose in the blood is set very tight in the body, glucose in the body has a function as a source of energy and is passed through the blood to the cells of the body. Increased blood sugar levels are called hyperglycemia. Metabolic disease with characteristics of hyperglycemia that occurs due to abnormalities of insulin secretion, insulin work, or both is called Diabetes Mellitus. The purpose of this research was to know the effect of consumption of Dayak onion on blood sugar levels in patients with diabetes mellitus.

Methods: This research design used Quasy Experiment design using a Pre-post test with the control group. Sampling technique was using probability with sampling technique simple random sampling consisting of 30 respondents Data collected through observation were analyzed using independent t-test and dependent t-test to know the difference of mean blood sugar level.

Results: The result of observation measurement of blood glucose level showed that there was an average difference before treatment was given 232.47 mg/dl and 161.20 mg/dl after being treated in the treatment group. The mean change of blood glucose level before and after in the treatment group of bawang Dayak was 71,27 mg/dl The result of Paired t- test show = 0.000 and = 0.005, so $P < \alpha$.

Conclusions: Dayak Onion brewing may be an additional alternative as a complementary therapy in treating blood sugar levels in Diabetes Mellitus.

Keywords: dayak onion steep , blood sugar level, diabetes mellitus

INTRODUCTION

According to the Endocrinology Association (Perkeni 2016). data in 2013 people with diabetes in Indonesia have reached 8,554,155 people and increased in 2015 to reach 9.1 million people, this has become one of the major health problems. The age of people with diabetes mellitus is getting younger starting from the age of 40-70 years. The prevalence of diabetes is dominated by diabetics who are undetected and do not want to take drugs as much as 73% while the rest who are detected to have glucose tolerance disorders are 10.2% (Fitri 2015). Based on interviews with people in Gemekan Village, Sooko District, Mojokerto Regency, most people do not understand a good diet, the frequent consumption of foods or drinks that contain a lot of sugar without knowing the maximum limit of sugar consumption per day, and low public awareness of exercise worsens conditions and increase the risk of diabetes mellitus.

Increased blood sugar levels can be influenced by various factors such as poor diet, frequent consumption of excessive amounts of sugar every day, and awareness to do moderately low exercise can be a factor in increasing blood sugar so that there is an increase in people with diabetes mellitus. If this problem is not addressed, the blood sugar level cannot be controlled, which will lead to an increase in people with diabetes mellitus. Diabetes that is left uncontrolled can cause complications including hypoglycemia, diabetic ketoacidosis, non-ketotic osmotic coma in acute complications, and chronic complications, kidney damage, hypertension, heart disease, and eye damage.

Non-pharmacological therapy is expected to help in controlling blood sugar levels. Herbs used as preparations to control blood sugar levels in diabetic patients that can be used are Dayak onion (*Eleutherine palmifolia* L. Merr) or other names Bawang hantu, or Bawang Sabrang which is believed by the people of Kalimantan to control blood sugar levels (Suparni, Ibunda 2017). According to Febrinda et al, 2014 The content of Dayak onions includes phytochemical compounds namely alkaloids, glycosides, flavonoids, phenolics, steroids, and tannins. The results of Andi Early Febrinda's research (2013) concluded that Dayak onion extract can prevent and provide protection for people with diabetes mellitus due to the content of alpha-glucosidase which can act as an anti-diabetic. damage to the pancreatic beta cells that produce insulin. The enzyme alpha-glucosidase is a carbohydrate-digesting enzyme that works in the intestines. As a result of this inhibition, the absorption of glucose from the intestine into the blood decreases and can suppress postprandial glucose levels.

This research purpose to identify differences in blood sugar levels before and after being given Dayak onion steeping in the group, identify differences in blood sugar levels before and after being given Dayak onion steeping in the control group. Identify differences in blood sugar levels after being given Dayak onion steeping in the control group and the treatment group.

METHODS

Study Design

The design in this study used a Quasy Experiment using a Pre-post test with a control group. This design used two groups, namely the group that was given the Dayak onion steeping and the group that was not given the Dayak onion steeping.

Population, Samples and Sampling

The population in this study was 33 sufferers, and the affordable population in this study was 30 people who met the researcher's criteria. Inclusion criteria in this study were patients with diabetes mellitus who had random blood sugar 200 mg/dl – 250 mg/dl. Exclusion criteria include: Respondents who suffer from hypotension, respondents who use other herbal medicines, and respondents who cannot participate in the intervention less than 5 times will be dropped out.

Sampling in this study uses simple random sampling. In this study, there are two variables used, namely the independent variable is the infusion of Dayak onions, and the dependent variable in this study the dependent variable is random blood sugar levels.

Procedure

Infusion of Dayak onions is a drink obtained by brewing 1 tablespoon of dried Dayak onions with 100 ml of water. The therapy is giving infusion of Dayak onion 1 x a day, in the morning and before going to bed at night before going to bed for 7 days with 100 ml of infusion of Dayak onion with a measuring instrument using SAK.

Data Analysis

Random blood sugar levels are blood sugar levels that can be done at any time without having to wait for the patient to fast blood sugar levels > 200 mg/dl blood sugar levels using a glucometer with peripheral blood samples taken from the tips of the middle, index or ring fingers on the left hand / right. After the data is obtained, data analysis is carried out by editing, coding, scoring Tabulating, and data analysis. After the data was collected through observation, then tabulated and grouped according to the variables studied to analyze the administration of Dayak onion steeping on the decrease in blood sugar levels in people with diabetes mellitus. with Paired t-test and independent t-test. This study uses SPSS with the conclusion that if p 0.05, then the research hypothesis is accepted, meaning that there is an effect of steeping Dayak onions on blood sugar levels in diabetes mellitus patient.

RESULTS

Blood sugar levels before and after the infusion of Dayak onions was given to the treatment group Table Blood sugar levels before and after being given infusion of Dayak onions in the treatment group. Blood sugar levels before and after being given Dayak onion steeping in the treatment group were analyzed using Paired t Test. From the results of the Paired test The t test shows the data that = 0.000 and = 0.005, so that < then there is a difference in the treatment group before being given Dayak onion steeping with the treatment group after being given Dayak onion steeping.

Table 1 Blood sugar levels before and after in the control group who were not given Dayak onion steeping

	Treatment group		p value
	Pre Test	Post Test	p = 0.000
Maximum	250	254	
Minimum	202	102	
Std. Deviation	15.79800	43.93468	
N	13	13	
	Control Group		p value
	Pre Test	Post Test	p = 0.281
Maximum	255	321	
Minimum	206	102	
Std. Deviation	14.86351	29.37411	
N	15	15	

Table 2 Blood sugar levels before and after in the control group who were not given Dayak onion steeping

	Treatment Group	Group Control	value
	Pre test		= 1,000
Maximum	250	255	
Minimum	202	206	
Std. Deviation	15.79800	14.86351	
N	13	15	

Table: 3 Changes in blood sugar levels before being given Dayak

onion steeping in the control group and the treatment group.

	Treatment Group	Group Control	p Nilai value
	Post test		p =
Maximum	255	321	0.000
Minimum	206	102	
Std. Deviation	14.86351	29.37411	
N	13	15	

Table 3.4 Changes in blood sugar levels after being given infusion of Dayak onions in the control group and the treatment group

DISCUSSION

Blood sugar levels in the treatment group before and after being given infusion of Dayak onions. The results of measuring blood sugar levels in the control group and the treatment before being given Dayak onion steeping showed a decrease that occurred in respondents after being given the Dayak onion steeping treatment. either without taking drugs or injecting insulin again. Dayak onions can be used as an anti-diabetic due to the presence of active compounds in Dayak onions, the active compound is eleutherinoside which acts to inhibit alpha-glucosidase. (Utami, prapti & Puspaningtyas, Ervira D 2013). The alkaloid content in Dayak onions is also a hypoglycemic agent that works through two main mechanisms, namely intrapancreatic and extrapancreatic (Arjadi & Susatyo 2014). Due to the presence of these active compounds, consumption of Dayak onions can reduce glucose levels in the body to within normal limits.

From the results of the Paired t test, the data shows that = 0.281 and = 0.005, so that > then there is no difference in the control group who were not given Dayak onion steeping either pre or post and even tended to increase blood sugar at the time of post.

Blood sugar levels that tend to increase in the control group are due to the absence of controlling blood sugar levels both in terms of unhealthy lifestyles and also the absence of herbal consumption that can help in lowering blood sugar levels. An increase in blood sugar levels that is not controlled is feared to worsen the patient's health condition and can lead to complications of other diseases.

The effect of infusion of Dayak onions on blood sugar levels in people with diabetes mellitus shows the results of the Independent t test that = 0.034 and = 0.005 so that < then H_0 is rejected and H_1 is accepted so that there is an effect of drinking water steeped in Dayak onions on sugar levels blood in patients with diabetes mellitus in Gemekan Village, Sooko District, Mojokerto Regency. According to Febrinda E Andi. 2014 The decrease in blood sugar levels in people with diabetes mellitus is influenced by an antidiabetic mechanism, namely the chemical compound eleutherinoside contained in the water extract of Dayak onion bulbs which can be proven in this study by inhibiting the activity of the alpha-glucosidase enzyme and inhibiting the rate of damage to pancreatic beta cells that produce insulin. The enzyme alpha-glucosidase is a carbohydrate-digesting enzyme that works in the intestines. As a result of this inhibition, the absorption of glucose from the intestine into the blood decreases and can suppress postprandial glucose levels. According to Ni Luh Indrawati and Razimin in the book "Bawang Dayak the magic tuber conquering various diseases". The content of active alkaloid compounds in Dayak onions can act as an anti-diabetic drug by controlling blood sugar levels and

optimizing the work of the pancreas organ. Each individual experiences a different response from other individuals as well as in giving Dayak onion steeping therapy with the aim of controlling blood sugar levels within limits, but there are also those who experience an increase in blood sugar levels, this could be due to the influence of lifestyle, diet, as well as physical and psychological conditions of people with diabetes mellitus.

CONCLUSION

There is a difference in the treatment group before being given Dayak onion steeping with the treatment group after being given Dayak onion steeping with the results of the Paired t test showing the data that = 0.000 and = 0.005. There was no difference in the control group that was not given Dayak onion steeping, both pre and post, and even blood sugar tended to increase at the post with the results of the Paired t test showing data that = 0.237 and = 0.005. There is an effect of drinking Dayak onion steeped water on blood sugar levels in people with diabetes mellitus in Gemekan Village, Sooko District, Mojokerto Regency with the results of the Independent t test showing data that = 0.000 and = 0.005 so that $< H_0$ is rejected and H_1 is accepted.

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Lifestyle and Stress Factors Related To Gastroesophageal Reflux Disease: A Systematic Review

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ABSTRACT

Introduction: In today's society, people's lifestyles that always want to be practical and lead to unhealthy habits makes the body susceptible to disease. Delaying meals makes stomach produce excess acid, This problem can lead to Gastroesophageal Reflux Disease (GERD). GERD occurs when stomach acid rises into the esophagus, which can irritate the lining of the esophagus. Lifestyle factors like eating habits, smoking, drinking alcohol, preference for high-fat and fried foods, and overeating are closely related to GERD. In addition, stress levels are also closely related to the prognosis of GERD which also affects the patient's quality of life. The purpose of this study was to determine the relationship between lifestyle factors and stress levels to GERD.

Methods: A systematic review with access to database Scopus with range of 2017-2022 regarding the relationship between lifestyle and stress levels to GERD. With the use of the Systematic Review Method, a systematic review and identification of journals can be carried out, which in each process follows the steps or protocols that have been set.

Results: Various literatures found that several risk factors associated with GERD by several studies found that eating habits, smoking, obesity and exercise habits as well as stress levels can cause GERD.

Conclusion: Education and monitoring of GERD needs to be given, especially regarding lifestyle changes and stress control so that it is expected to reduce the perceived symptoms of GERD.

Key words: Gastroesophageal Reflux Disease, GERD, Lifestyle, Stress

INTRODUCTION

The current lifestyle of people who always want to be practical and lead to unhealthy behavior habits makes the body susceptible to disease. Diseases are created from small habits such as delaying meal times to irregular eating patterns. Frequently delaying meals makes the stomach produce excess acid, thus triggering Gastroesophageal Reflux Disease (GERD). Lifestyle factors and eating habits such as smoking, drinking alcohol, preference for high-fat and fried foods, and overeating are closely related to GERD. In addition, it has been reported recently that mental disorders, especially anxiety and depression, are closely related to the prognosis of GERD, which seriously affects patients' quality of life¹.

Based on epidemiological data, the prevalence of GERD is estimated at 8-33% worldwide and this prevalence continues to increase every year. The prevalence of GERD in Asia ranges from 3 – 5%². In Indonesia, the prevalence of GERD is still not available with definite epidemiological data. However, at Cipto Mangunkusumo General Hospital, Jakarta, 22.8% of esophagitis cases were found from all patients who underwent endoscopic examination for dyspepsia indications³. The Ministry of Health noted that diseases related to the gastrointestinal tract occupied the top 10 diseases with the most sufferers in Indonesia. It is estimated that the number of sufferers reaches 4 million people in Indonesia.

Several risk factors have been correlated with GERD by several studies. These factors include; eating habits, smoking, obesity and exercise habits. The most common socio- demographic risk factors identified in GERD cases are age, high BMI, and male gender. In addition, lifestyle factors that can cause GERD are lack of exercise, the habit of eating midnight snacks, skipping breakfast, smoking and lack of sleep⁴. In addition, research conducted by Wang, Wang and Hu in 2021 showed that low levels of education, anxiety, depression, constipation, a history of hypertension, and a preference for consumption of sweet foods, noodles and sour foods were closely related to the onset of GERD. Depression is also related to the severity of symptoms and the impact of the disease on daily life¹. Because of the various problems that have been described above, researchers are interested in examining the relationship between lifestyle factors and stress gastroesophageal reflux disease (GERD) thru this systematic review.

MATERIALS AND METHODS

Types of research

The type of research to be carried out is a systematic literature review, which a research conducted by identifying, evaluating and interpreting all relevant results with a particular study, a particular topic, or a phenomenon of concern⁵. This review of the systematic review was compiled through an assessment protocol prepared for compilation according to the guidelines. This protocol includes the rationale and objectives of the assessment, study eligibility criteria, sources of information, search strategy to be used, study selection, and data collection process, results found, risk assessment method Bias. for individual studies and data aggregation. Systematic reviews were tagged according to the Priority Reporting Items for Systematic Review and Meta-analysis (PRISMA) guidelines.

Search Method

The preparation of a systematic review was carried out through a literature search from the Scopus database. The researcher identified the literature review using the Medical Subject Headings (MeSH) guide. The keywords used in the article search are “GERD”, “Lifestyle”, “Stress”, “Anxiety”, “Depression” with the publication year less than the last 5 years (2017-2022). The use of keywords is adjusted to Boolean Logic in adjusting the purpose of the systematic review. The articles used are full text in English.

Inclusion and Exclusion Criteria

The search for journal articles was used using inclusion criteria through the PICOT framework method (**Table I**). The population in the journal articles refers to patients with GERD. The intervention used is data collection through questionnaires and medical record. Compare in the article is to compare the results of filling out questionnaires for patients with GERD with lifestyle and stress

levels. The desired outcome is in the form of data. Analysis of the results of filling out the respondent's questionnaire. Time is from 2017 to 2022. The exclusion criteria for journal articles are articles that do not focus on GERD, do not have a year of publication less than 2017, not in English, not open access, and systematic review/literature review articles.

Selection Study

The study selection begins with applying the PRISMA guidelines which are applied through predetermined keywords. Then the selected keywords are entered into the Scopus database. Articles that appear are then carried out an inclusion and exclusion process. Several articles were selected again starting with the title and appropriateness of the abstract. If there are similar articles, they must be removed. Then 15 articles were found that matched the criteria.

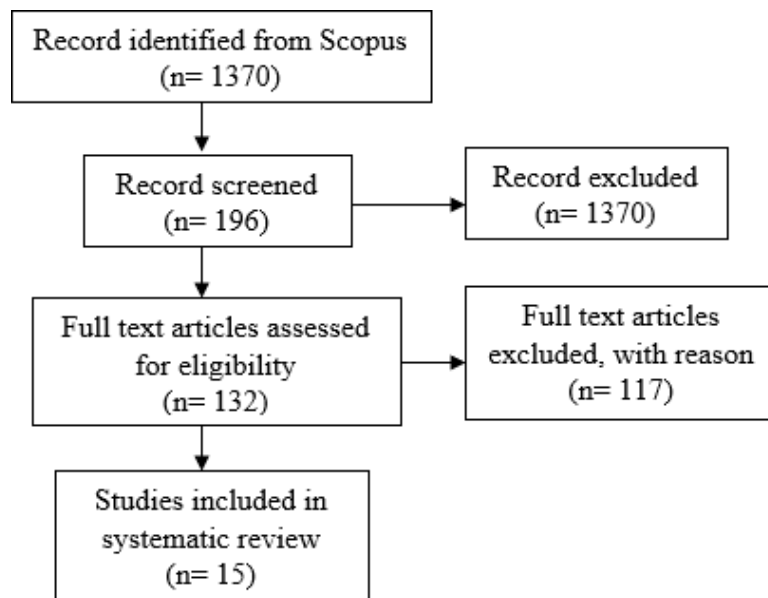
Data Extraction

Data extraction includes information related to article title, author, year of publication, study design, sample size, variables, interventions used, and analysis used which are listed in **(Table II)**

RESULTS

Study Selection

The total journal articles found were 1307 from Scopus. Then the articles were issued based on exclusion from journals that were more than 5 years old, not open access, so 196 journal articles were found. Then 196 journal articles were selected with types other than articles and in addition to English, 132 articles were found. Furthermore, 132 articles were adjusted according to the inclusion criteria. A total of 15 articles were selected for a systematic review.



Study of Characteristics

Articles on systematic reviews were published in 2017-2022, from 15 journal articles with a total of 56,379 respondents in this systematic review. Respondents who have GERD complaints, have an unhealthy lifestyle and have high stress levels. The studies obtained have met the inclusion criteria under study and assessed the similarities or differences in the results found based on the main review

of the resulting studies so that the findings of the research results listed in **(Table 2)**.

DISCUSSIONS

In this systematic review, the articles reviewed were 15 articles obtained through the Scopus database, which were selected according to the inclusion and exclusion criteria. The articles listed are in the range of 2017-2022 with a total of 54,543 respondents. The characteristics of respondents in this systematic review are respondents who have complaints of GERD, have an unhealthy lifestyle and have high stress levels.

Of the 15 articles analyzed, all of them discussed respondents with complaints of GERD, having an unhealthy lifestyle and having complaints of high stress. Several risk factors have been correlated with GERD by several studies. Lifestyle factors and eating habits such as smoking, drinking alcohol, preference for high fat and fried foods, and overeating are closely associated with GERD. In addition, it has been reported recently that mental disorders, especially anxiety and depression, are closely related to the prognosis of GERD, which seriously affects a person's quality of life. The results of this systematic review found that respondents who have an unhealthy lifestyle, high stress levels, coffee drinking habits, lack of exercise, drinking alcohol, abnormal BMI are closely related to the cause of GERD.

CONCLUSION

Gastroesophageal Reflux Disease (GERD) occurs when stomach acid backs up into the esophagus, which can irritate the lining of the esophagus. Lifestyle factors and eating habits such as smoking, drinking alcohol, preference for high-fat and fried foods, abnormal BMI, and overeating are closely related to GERD. In addition, stress levels are also closely related to the prognosis of GERD which also affects the quality of life.

Table I. PICOT Framework

PICOT Framework	Inclusion Criteria
Population	GERD patient
Intervention	Questionare
Compare	Comparison of the results of filling out questionnaires for respondents with different stress level and unhealthy lifestyle
Outcomes	Analysis of the results of filling out the respondent's questionnaire
Time	2017-2022
Language	English
Exclusion Criteria	The exclusion criteria for journal articles are articles that do not focus on GERD, do not have a year of publication less than 2017, not in English language and have a study design Systematic review/literature review.

Table II. Study Characteristic

No	Research Title, Author, Year	Research Model (Design, Sample, Variabel, Instrument, Analysis)	Results
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1.	Gastroesophageal reflux symptoms among Italian university students: epidemiology and dietary correlates using automatically recorded transactions 6	D: cross sectional S: 792 responden V: - Independen: Epidemiology - Dependen: Dietary I: interview with questionare thru web-survey A: bivariate and descriptive analysis	Female sex was more prevalent than male sex. In the set of students with GERD,the percentage of smokers was higher, and our results showed that when BMI tends to higher values the percentage of students with GERD tends to increase. When evaluating correlates with diet, we found, among all users, a lower frequency of legumes choice in GERD students and, among frequent users, a lower frequency of choice of pasta and rice in GERD students.
2.	Prevalence and risk factors of gastro-esophageal reflux disease among undergraduate medical students from a southern Indian medical school: a cross-sectional study 7	D: cross sectional S: 358 responden V: - Independent: Prevalence - Dependent:Risk factor I: The interview used a questionnaire without giving intervention to the research subjects. A: chi square, and t test with software package for analysis (Stata/ IC 12.1 for Windows, StataCorp LP, College Station, Texas, USA).	while about one-third of undergraduate medical students had varying degree of symptoms suggestive of reflux disease, about 5% had GERD. Frequent consumption of carbonated beverages and tea or coffee was associated with GERD.
3.	Study on the relationship of depression, anxiety, lifestyle and eating habits with the severity of reflux esophagitis 1	D: cross sectional S: 689 partisipan V: - Independen: Reflux esophagitis - Dependen: - Depression - Anxiety - Lifestyle	Many lifestyle factors and eating habits were correlated with the onset of RE. Notably, sleeping on a low pillow was positively correlated with RE severity, and depression was positively related to the severity of symptoms and patients' quality of life.
No	Research Title, Author, Year	Research Model (Design, Sample, Variabel, Instrument, Analysis)	Results
		- Eating habits I: Interviews used a questionnaire by comparing the research subjects who were given intervention to the research subjects who were not given treatment A: t-test, Mann-Whitney, chi-square, spearman and linier ordinal regression thru SPSS versi 22.0 app	
4.	Effects of Life style factors on the symptoms of gastro esophageal reflux disease: A cross sectional study in a Pakistani population 4	D: Cross sectional S: 2000 responden V: - Independen: gastro esophageal reflux disease - Dependen: lifestyle I: The interview used a questionnaire without giving intervention to the research subjects A: independent t-test and chi-square	Lifestyle factors particularly less physical activity, late evening meals, inadequate sleep, smoking and post dinner lying were found to be associated with GERD symptoms.

5.	<p>Association between Lifestyle and Gastroesophageal Reflux Disease (GERD) with sleep quality, depression and anxiety in a cohort study of Chinese Adults</p> <p>8</p>	<p>D: Cross sectional S: 37.442 V: - Independen: gastro esophageal reflux disease - Dependen: lifestyle</p> <p>I: The interview used a questionnaire without giving intervention to the research subjects</p> <p>A: chi-square thru Stata 1.0 app</p>	<p>Suspected GERD is very common in individuals undergoing health examinations. Unhealthy lifestyles are closely related to the high incidence of suspected GERD. GerdQ scores can play a role in screening for GERD.</p>
6.	<p>The association between gastroesophageal reflux disease (GERD) with sleep quality, depression and anxiety in a cohort study of Australian men</p> <p>9</p>	<p>D: Cross sectional S: 1.612 laki-laki usia 35-80 tahun V: Independen: GERD Dependen: - Sleep quality - Depression - anxiety</p> <p>I: The interview used a questionnaire without giving intervention to the research subjects</p> <p>A: chi-square and t-test thru SPSS versi 22.0 app</p>	<p>we observed a strong independent association between GERD, anxiety and current depression, the latter appearing to be partly mediated by poor sleep quality. Patients presenting with GERD should have concurrent mental health assessments in order to identify potential confounders to the successful management of their symptoms.</p>
7.	<p>Lifestyle intervention for gastroesophageal reflux disease: a national multicenter survey of lifestyle factor effects on gastroesophageal reflux disease in China</p> <p>10</p>	<p>D: Cross sectional S: 1518 responden V: - Independen: gastro esophageal reflux disease - Dependen: lifestyle intervention</p> <p>I: The interview used a questionnaire with giving intervention to the research subjects</p> <p>A: t-test and mann-Whitney. thru SPSS 20.0 app</p>	<p>Lifestyle interventions can improve medication efficacy in GERD patients.</p> <p>Numerous habits, including fast eating, eating beyond fullness, and eating very hot foods, were associated with GERD pathogenesis. The present results may be useful as a reference for preventive education and treatment.</p>
8.	<p>Psychometric properties of a Korean version of the Perceived Stress Scale (PSS) in a military sample</p>	<p>D: self-report scale S: 373 responden V: Independen: Korean version of the Perceived Stress Scale (PSS) - Dependen: Psychometric properties</p> <p>I: The interview used a questionnaire without</p>	<p>The results provided evidence that a 10-item Korean version of the Perceived Stress Scale was a reliable and valid scale to measure perceived stress in military samples.</p>
No	Research Title, Author,	Research Model (Design, Sample, Variabel, Instrument,	Result

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Year	Analysis)	s
11	giving intervention to the research subjects A: analysis with CTT and Rasch RSM	
9.	Risk of GERD with Diabetes Mellitus, Hypertension and Bronchial Asthma – A Hospital based Retrospective Cohort Study D: Retrospective Cohort Study S: 164 responden V:	The present study found an increased risk of GERD development amongst patients suffering from hypertension and bronchial asthma, but not with diabetes mellitus.
12	- Independent: gastroesophageal reflux disease	
13	- Dependent: Diabetes Mellitus, Hypertension and Bronchial Asthma I: medical record A: chi square	
10.	Personal, academic and stress correlates of gastroesophageal reflux disease among college students in southwestern Saudi Arabia: A cross-section study D: Cross sectional S: 2878 responden V:	GERD is a prevalent problem among college students in southwestern Saudi Arabia as it affects about one third of the students. Considering high prevalence of GERD, associated daily life impacts, young age of the studied subject and the risk of future complications, this condition could represent a challenging health and economic problem. The risk of GERD is higher among; males, smokers, former smokers, non-health care colleges students and subjects exposed to high perceived stress.
14	- Independent: gastroesophageal reflux disease - Dependent: Personal, academic and stress I: The interview used a questionnaire without giving intervention to the research subjects A: Chi square test with SPSS app ver 22	
11.	Gastro-oesophageal reflux disease symptoms and associated risk factors among medical students, Saudi Arabia D: Cross sectional S: 197 responden V:	GERD symptoms were common in medical students of King Abdulaziz University, Saudi Arabia. Family history was found to be a significant predictor of GERD symptoms. Effective educational strategies for groups with significant risk factors of GERD need to be implemented.
15	- Independent: Gastro-oesophageal reflux disease symptoms - Dependent: associated risk factors I: The interview used a questionnaire without giving intervention to the research subjects A: analysis with Mann whitney u test, Kruskal wallis H test and Spearman rho correlation rank	
12.	Assessment of lifestyle of patients with chronic gastritis D: Descriptive S: 150 responden V:	unhealthy patient's life style as exercise, stress, alcohol intake and beverages containing caffeine were among patients' life style.
16	- Independent: Chronic gastro-oesophageal reflux disease - Dependent: Assessment of lifestyle I: The interview used a questionnaire without giving intervention to the research subjects A: analysis with chi-square	
13.	Prevalence of gastro-esophageal reflux symptoms: an Italian cross-sectional survey focusing on knowledge and attitudes towards D: Cross sectional S: 599 responden V:	A high prevalence was reported, consistently with the worldwide increasing trend. Despite overall knowledge was high, specific gaps were

lifestyle and nutrition.	<ul style="list-style-type: none"> - Independent: Gastro-oesophageal reflux disease symptoms - Dependent: knowledge, attitudes, lifestyle awareness campaigns targeted to less known aspects must be planned. <p>I: Interviews using online questionnaires through social media without giving intervention to research subjects</p>
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No	Research Title, Author, Year	Research Model (Design, Sample, Variabel, Instrument, Analysis)	Results
<p>A: analysis with multivariable regression models with software SPSS ver 25</p>			
14.	Gastroesophageal reflux disease and its related factors among women of reproductive age: Korea Nurses' Health Study	<p>D: Cohort study</p> <p>S: 118 responden</p> <p>V:</p> <ul style="list-style-type: none"> - Independent: Gastroesophageal reflux disease - Dependent: GERD related factors, reproductive age <p>I: The interview used a questionnaire without giving intervention to the research subjects</p> <p>A: chi-square, andt-test with SPSS app ver 22.0</p>	Smoking, BMI, and depression were associated with GERD. To reduce this risk among female nurses, intervention strategies are required to help nurses maintain a normal weight and manage their depression.
15.	Associations between Lifestyle Habits, Perceived Symptoms And Gastroesophageal Reflux Disease in Patients Seeking Health Check-Ups	<p>D: cross-sectional</p> <p>S: 5653 responden</p> <p>V:</p> <ul style="list-style-type: none"> - Independent: Gastroesophageal Reflux Disease - Dependent: Lifestyle Habits, Perceived Symptoms <p>I: Data collection through respondents' medical records</p> <p>A: statistic descriptive and Inferential statistics thru SPSS app ver 20</p>	age, sex, waist circumference, Areca catechu chewing habit, sleep disorders, otolaryngology symptoms, and hepatobiliary and gastrointestinal symptoms were significantly associated with GERD. In this study, our results can be used as a reference for public health care and clinicians. Because most GERD cases can be controlled and prevented by lifestyle modifications, health professionals should always obtain a detailed history regarding symptoms and lifestyle habits associated with GERD.

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Climate and Asthma: Literature Review

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ABSTRACT

Introduction: Climate change has an impact on human health, one of which is triggering the recurrence of asthma. Asthma affected an estimated 262 million people in 2019 and caused 46.1000 deaths. Prevalence of asthma in Indonesia is 2,4% and the recurrence rate of asthma for all ages is 57.5% in 2018. The purpose of this study was to find out the description of previous research regarding the relationship between climate or air pollution with asthma incidence.

Methods: This research type was literature review. Article as reference searched in google scholar with key word “variasi iklim” and “asma” and google search engine with key word; “asma” and “ispu”; and also with “asma” and “ispu and “meteorolgi”. Inclusion criteria are quantitative research in journal or scientific work about asthma that use secondary data from meteorology, climatology and geophysics agencies (Baden Meteorology dan Geophysical) or air pollutant standard index data (Indeks Standar Pencemar Udara) as independent variable and the research located in Indonesia. Exclusion criteria were literature article. Final result for the article; google scholar found 19 article and 2 article that meet inclusion criteria and from google search engine that found 2 articles that meet inclusion criteria, four article use as literature review in this research.

Result: Climate variable that use in selected article are temperature, humidity, rainfall, wind direction and wind speed and sun radiation. Three from five research explain that was no correlation between temperature, humidity and rainfall with incidence of asthma, other article explain that there were correlation between Air Pollution Index or “*Indeks Standar Pencemar Udara*” with respiratory disorders diseases (Upper Respiratory Tract Infections/URI, asthma, and pneumonia). One article explain there were correlation between nitrogen dioxide with asthma.

Conclusion: Correlation between climate and air pollution is vary in the article reference of this study, although the relationship between climate and pollution with asthma is not clear it still needs attention on this problems sectoral collaboration need to tackle this issue and more research about asthma focusing on climate and pollutant parameter needed in long term period and in much more area in Indonesia to identify this issue, this can be done by maximizing the utilization of existing secondary data.

Keyword: climate, climate variation, meteorology, air pollution index, ISPU, asthma

INTRODUCTION

Climate change has an impact on human health, one of which is triggering the recurrence of

asthma (D'Amato *et al.*, 2020). Asthma is a major Non Communicable disease (NCD) affecting both children and adults (WHO, 2022). The prevalence of asthma in 2019 was 262 million people (rate 3.415 per 100.000 people) and suffered by as many as 127 million men and 136 women. Asthma caused 461.000 deaths (5,8 per 100.000 people) 214.000 men and 247.000 women. Incidence of asthma was 37 million people (504,3 per 100.000 people) (Vos *et al.*, 2020; WHO, 2022). Asthma responsible for 21,6 million (237,6 per 100.000 people) disability-adjusted-life years (DALYs) which contribute 20,8% of the total DALYs of respiratory diseases. DALYs is the number of years lost to ill health, disability or death attributed to asthma. The magnitude of the asthma problem can be seen from its ranking among other diseases based on the number of DALYs (standardized by age group) in 2019; asthma is ranked 19th among 30 diseases in group of age 0-9 year (DALYs:0,5%) and the highest number of asthma DALYs is the age group 10-24 year with DALYs value is 1,3% (ranked 27th). Prevalence of asthma is high in countries with a high Socio-demographic Index (SDI) while asthma mortality is high in countries with a low-middle Socio-demographic Index (SDI) (Vos *et al.*, 2020). Through this scientific evidence, it can be seen that although asthma does not occupy the top position when compared to other diseases, if it is not treated with good management when a relapse occurs it will have an impact on death, as stated by WHO that asthma is often under-diagnosed and under-treated, particularly in low-and middle-income countries and it can be more risk for asthma death (WHO, 2022).

Effect on asthma in life like; people with under-treated asthma can suffer sleep disturbance (Ali *et al.*, 2021; Mastronarde *et al.*, 2008), tiredness during the day and poor concentration (WHO, 2022). Asthma sufferers and their families may miss school and work with financial impact on the family and wider community. In United States in 2008, asthma caused 10,5 million missed days from school and 1,4 missed days from work for caregivers, the estimated total cost of lost of productivity resulting from missed school or work days is US\$ 3,8 billion per year and premature death US\$2,1 billion per year (Centers for Disease Control and Prevention (CDC), 2011; Walter *et al.*, 2015).

According to a 2011 European study, estimated total cost of asthma was €19,3 billion among people aged 15-64 years. A study conducted in the Asia Pacific region reported that the direct and indirect cost of asthma per person ranged from US\$184 in Vietnam to US\$ 1189 in Hongkong in 2000. A Canadian study showed that C\$184 loss of productivity during one week was attributed to asthma in 2012. In Australia AU\$655 million was spent on asthma for 2008-2009 (GINA, 2014; Walter *et al.*, 2015). If symptoms are severe people with asthma may need to receive emergency health care and they may be admitted to hospital for treatment and monitoring and in the most severe cases asthma can lead to death (WHO, 2022).

Asthma is caused by several risk factors that can be classified as host factors (genetic predisposition, atopy, airways hyper-responsiveness, gender, race or ethnicity) that predispose individuals to protect them from developing asthma and environmental factors (indoor allergens like; domestic mites, animal allergens, fungi, molds yeast, outdoor allergen like pollens, outdoor and indoor pollution, weather change, sulfur dioxide, extreme emotional expression and others) that influence the susceptibility to the development of asthma in predisposed individuals, precipitate asthma exacerbations and/or cause symptoms to persist (GINA, 2004). Among the existing risk factors, weather and air pollution as risk factors for asthma need more attention. Weather change which is a climate-forming element and air pollution as risk factors of asthma need to receive important attention at this time due to climate change that occurs and becomes the focus of the global world to overcome, climate change is the 13th of the 17th Sustainable Development Goals (SDGs) goals (SDGs, 2017) but research about climates, air pollution and asthma is very rare especially in middle-low income countries. Indonesia as part of a country in Asia and part of the global world also needs to

pay attention to this problem. In Indonesia, the prevalence of asthma was 2.4% with the recurrence rate for all ages was 57.5% in 2018 (Kementerian Kesehatan RI, 2019; Faisal & Yunus, 2019). Indonesia consist of 34 provinces, asthma prevalence based on doctor's diagnosis at all ages in three province with the highest prevalence of asthma; DI Yogyakarta (4,5%), Kalimantan Timur (4,0%) and Bali (3,9%) and three province with low in prevalence; Sumatera Utara (1,0%), Nusa Tenggara Timur (1,5%) and Sulawesi Barat (1,5%) and Jakarta as nation's capital (2,6%). The highest prevalence by age group was; 75+ (5,1%), 65-74 (4,5%), 55-64(3,4%), slightly higher in women (2,5%) than in men (2,3%), based on education level, those who do not or never attended school as high as collage graduate in prevalence (3,0%), based on employment status the highest prevalence of asthma occurs in people who do not work (3,1%) and prevalence in urban (2,6%) was bigger than rural (2,2%). Provinces with the highest proportion of asthma recurrence in the last 12 months in all age group namely Aceh (68,9%), Sumatera Barat (66,2 %) and Bengkulu (65,2%) (Kementerian Kesehatan RI, 2019, p. 116). This study aim to find out the description of previous research regarding the relationship between climate or air pollution with incidence of asthma (Kementerian Kesehatan, 2018).

METHODE

This research type was literature review. Article as reference searched in google scholar with key word "variasi iklim" and "asma" and google search engine with key word; "asma" and "ispu"; and also with "asma" and "ispu and "meteorologi" in google search engine. Inclusion criteria are quantitative research in journal or scientific work about asthma that use secondary data from meteorology, climatology and geophysics agencies (Baden Meteorology dan Geophysical) or air pollutant standard index data (Indeks Standar Pencemar Udara) as independent variable and the research located in Indonesia. Exclusion criteria were literature article. Final result for the article; google scholar found 19 article and 2 article that meet inclusion criteria and from google search engine that found 2 articles that meet inclusion criteria, four article use as literature review in this research.

RESULT

Asthma is a long-term condition affecting children and adults. The air passages in the lungs become narrow due to inflammation and tightening of the muscles around the small airways. This causes symptoms: cough, wheeze, shortness of breath and chest tightness. These symptoms are intermittent and are often worse at night or during exercise. Other common "triggers" can make asthma symptoms worse. Triggers vary from person to person but can include viral infection (colds), dust, smoke, fumes, change in the weather, grass and tree pollen, animal fur and feathers, strong soaps and perfume (World Health Organization, 2022). Weather change and out door air pollution are some of risk factor for asthma (GINA, 2014). Weather and climate have similarities in terms of their constituent elements such as temperature, humidity and precipitation. Weather is the state of atmosphere, including temperature, atmospheric pressure, wind, humidity, precipitation and cloud cover and climate is all weather condition for particular location averaged over about 30 years, weather is influenced by latitude, altitude and local regional geography (National Geographic Society, 2022).

Climate or climate change can affected on health, Patz, J.A. et al (2000) in the study identified five categories of health outcomes that are most likely to be affected by climate change because they are associated with weather and/or climate variables: temperature-related morbidity and mortality; health effects of extreme weather events (storms, tornadoes, hurricanes, and precipitation extremes); air-pollution-related health effects; water- and foodborne diseases; and vector- and rodent-borne diseases. This study concluded that the levels of uncertainty preclude any definitive statement on the direction of potential future change for each of these health outcomes, although we developed some

hypotheses. Other theory that explains about impact climate on public health state by Centers for Diseases and Prevention (CDC), its state that one of climate change along with air pollution can cause asthma incidence (CDC, 2021). This study try to find some research that can explain correlation in climate and/or air pollution and asthma incidence. After search article for references, it was found that there were four articles that matched the inclusion criteria, as can be seen in the table below.

Table 1. References Study about Climate, Air pollution and Asthma (Use Meteorology and/or Air Pollutant Standard Index Data)*

No.	Title	Author, Source & years	Aims of Study	Research Area	Methodology	Variable	Reference
1	Relationship of Climate, Air Pollutant Standard Index (ISPU) and Asthma/Bronchitis Attacks in DKI Jakarta in 2002-2003 (Ecological Study of Time Trends in 5 General Hospital in DKI Jakarta)	Dewi Utami Iriani Thesis University of Indonesia (2004)	Finding relationship between parameters of PSI with asthma attack and bronchitis	DKI Jakarta	Design study: Ecological Study Statistic analysis: Time trends analysis	<ul style="list-style-type: none"> ▪ Dependent variable; Asthma bronchitis ▪ Independent variable: <u>Climate variable</u>; sun radiation, humidity, temperature, wind direction and wind speed <u>Pollutant</u>; PM10, SO2, O3 and NO2 	1
2	Increasing Air Pollution Index and Respiratory Problems in Pekanbaru	Asep Hermawan, Miko Hananto, Doni Lasut Ecological Health Journal (Jurnal Ekologi Kesehatan) (2016)	Determine the relationship of the increase in air pollution index (API) and the cases of respiratory problems in Pekanbaru City in (July-october 2015).	Pekanbaru	Design study: Cross-sectional Statistical analysis: Spearman rho correlation	<ul style="list-style-type: none"> ▪ Dependent variable; Respiratory problems (Upper Respiratory Tract Infections/URI, asthma, and pneumoni) ▪ Independent variable: <u>Climate</u>; no climate variable in this study <u>Pollutant</u>; value of ISPU 	2
3	Relationship between Climate Variations and Evidence of Asthma in The City of Semarang 2011-2015 (Case Study in	Rani Novianis Rizky Saputri, Budiyono and Suhartono	The purpose of this research was to analyze the relationship between	Semarang	Design study: Cross-sectional Statistical analysis: Rank spearman	<ul style="list-style-type: none"> ▪ Dependent: Incidence of asthma ▪ Independent: <u>Climate</u>; Temperature, humidity and rainfall <u>Pollutant</u>; No pollutant variable in this study 	3

	The Working Area of Bandarharjo Health Center, Semarang City)	Journal of Public Health (Jurnal Kesehatan Masyarakat –JKM) UNDIP (2016)	climate variabilities are the incidence of asthma in Puskesmas Bandarharjo Semarang during 2011-2015.				
4	Relationship between Suspended Particulate Matter (SPM) Concentration of Ambient Air and Weather Conditions with Asthma Event	Esti Numala, Budiono, Suhartono Journal of Public Health (Jurnal Kesehatan Masyarakat –JKM) UNDIP (2018)	<i>The study aimed to analyze the relationship between concentration of SPM and weather conditions with the asthma incidences aged 45-65 years old in West Semarang district during 2015-2017</i>	Semarang Barat	Design study: observational analytic approach with time-based ecological design Statistical analysis: Time-series and correlation analysis	<ul style="list-style-type: none"> ▪ Dependent: Asthma incidence ▪ Independent: <u>Climate</u>: Temperature, humidity and rainfall <u>Pollutant</u>: No pollutant variable in this study 	4

*) continue on table. 2, result table

The result for the fourth article can read as follow in this table.

Table 2. Result and Conclusion of Reference Study

**about Climate, Air pollution and Asthma
(Use Meteorology and Air Pollutant Standard Index Data)**

Reference & Research Area		Result & Conclusion
1		<u>Result:</u> <ul style="list-style-type: none"> ▪ Sun radiation with O₃ and PSI : positive correlation
(DKI Jakarta)	▪	▪ Humidity with PM ₁₀ , SO ₂ , O ₃ , NO ₂ and PSI : negative correlation
	▪	▪ The temperature have positive correlation with PM ₁₀ , SO ₂ , O ₃ and NO ₂ : positive correlation
	▪	▪ The wind direction with PM ₁₀ , SO ₂ , O ₃ ,NO ₂ and PSI: negative correlation
	▪	▪ NO ₂ with asthma attack and bronchitis : positive correlation
	▪	▪ O ₃ with asthma attack and bronchitis: negative correlation
	▪	▪ Trend analysis: the result of time trend analysis in 3 months perihod show that the trend pattern of asthma/bronchitis attack visit doesn't follow the trend pattern of PSI parameters
		<u>Conclusion:</u> It is conclude that the temperature and humidity of Jakarta still comfort for human with enough radiation intensity. Wind direction is South East and in slow speed. All PSI parameters still under treshold limit value and most of the air condition of Jakarta in 2002-2003 is still in the middle category.
2		<u>Result:</u> API value have significant correlation (p=0.000) with all respiratory problems (ISPA, asthma and pneumonia) in all lag (lag 0-lag7 with p-value <0,05)
(Pekanbaru)	▪	▪ API with ISPA : highest correlation at lag – 0 correlation=0,779, p-value=0,000
	▪	▪ API with asthma: highest correlation at lag – 0 correlation=0,237, p-value=0,000
	▪	▪ API with pneumonia: highest correlation at lag – 0 correlation=0,436, p-value=0,033
		<u>Conclusion:</u> Tendency to increase ISPU in Pekanbaru City follows trend of increasing cases of ARI, asthma, and pneumonia on the same day (lag time 0)
3		<u>Result:</u> <ul style="list-style-type: none"> ▪ Temperature with incidence of asthma: negative correlation (r=-0,151) and didn't significant (p- value=0,251)
(Semarang)	▪	▪ Humidity with incidence of asthma: positive correlation (r=0,146) and didn't significant (p- value=0,264)
	▪	▪ Rainfall with incident of asthma: positive correlation (r=0,118) and didn't significant (p-value=0,369)
		<u>Conclusion:</u> The research concluded that there was no correlation between climate variations with the incidence of asthma and increased incidence of asthma was negatively correlated with an air temperature enhancement in Puskesmas Bandarharjo in Semarang during 2011-2015
4		<u>Result:</u> <ul style="list-style-type: none"> ▪ SPM with asthma incidence: positive correlation and didn't significant (r=0,101; p-value=0,558)
(West Semarang)	▪	▪ Temperature with asthma incidence: positive correlation and didn't significant (r=0,196; p-value=0,323)
	▪	▪ Humidity with asthma incidence: positive correlation and didn't significant (r=0,106; p-value=0,540)
	▪	▪ Rainfall with asthma incidence : positive correlation and didn't significant (r=0,596; r=0,091)
		<u>Conclusion:</u> the research concluded that there was no significant correlation between SPM and weather conditions with asthma incidences aged 45-65 years old.

DISCUSSION

Description of climate in Indonesia as follow, Indonesia's climate is largely hot and humid with rainfall occurring mostly in low-lying areas and mountains regions experiencing cooler temperatures. The cities of Jakarta, Ujung Pandang, Medan, Padang and Balikpapan have an average minimum temperature of 22,8°C and a high of 30,2°C. Humidity in big city like Jakarta varies between 61% to 95% and average rainfall amounts to 218,4 millimeters (mm) per month. The "wet" season occurs between November and April, leaving May through October typically dry. Indonesia experiences drier conditions during El Nino events and wetter conditions during La Nina events. Indonesia lies across the range of the Inter-Tropical Convergence Zone (ITCZ). Strong ascending motion, overcast skies, strong squalls, heavy rainfall and sever local thunderstorms with variable intensities are characteristic of this zone (The World Bank Group, 2021).

Result from this study shows that correlation between climate, air pollution with asthma incidence was vary. Same with the theory that climate change was uncertainty and can't be predicted (Patz et al, 2000). References study vary in area and time it can't compare because its differences but still can picture as generally about the description between climate, air pollution and asthma condition especially in the country.

Study that located in Jakarta shows that climate factor and air quality in Jakarta is still comfort and under threshold limit (Iriani, 2004). The other article references that located in Pekanbaru concluded that tendency to increase ISPU in Pekanbaru City follows trend of increasing cases of ARI, asthma its show with the correlation and significant in p-value although have not strong correlation in asthma incidence if compare with ISPA (Hermawan, Hananto and Lasut, 2016). The other two study that located in Semarang concluded climate and so Suspended Particulate Matter (SPM) didn't have correlation with asthma incidence (Saputri, Budiyono, Suhartono, 2016; Nurmala, Budiyono, & Suhartono, 2018) its not significant in correlation because there's much factor contribute in the link between climate and asthma incidence and in the term of climate study its need long observation period to see its correlation like minimum 10 years, theory state minimum 30 years observation (National Geographic Society, 2022).

Most of article reference used ecology as study design, there's advantages in limitation in ecology study. Adventeges in ecology study is low cost and convenience, ecology study inexpensive and take little time because various secondary data sources. Ecology study partuculary relevant when evaluating the effects of social processes or population intervention such as new programs, policies or legislation. Limitation in ecology study, the major limitation of ecologic analysis is ecologic bias, its can't interpreted association to reflect biological affect at individual level. In ecologic data (aggregate) there's a missing information on join distribution. Its can't estimating exposure effects in individual level (Morgenstern, 2008).

In addition to environmental factors, it is also necessary to pay attention to the general problems that occur in management in Indonesia as described by Global Initiative for Asthma (GINA), some of obstacles faced in Indonesia in overcoming the problem of asthma are lack of awareness and health worker expertise in the diagnosis and management of childhood asthma; this can lead to underdiagnoses and inadequate treatment of asthma children. Poor access to asthma medicines worsens the problem. Inhaled bronchodilators and corticosteroids are expensive and although national insurance covers some medicines availability is limited in most district hospitals. Asthma education and written asthma action plans are not part of asthma management in Indonesia (The Global Asthma Report, 2018).

CONCLUSION

Correlation between climate and air pollution is vary in the article reference of this study, although the relationship between climate and pollution with asthma is not clear it still needs attention on this problems sectoral collaboration need to tackle this issue and more research about asthma focusing on climate and pollutant parameter needed in long term period and in much more area in Indonesia to identify this issue, this can be done by maximizing the utilization of existing secondary data.

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THE EFFECT OF COMBINATION A SLOW DEEP BREATHING WITH MUSIC THERAPY IN ANXIETY LEVEL AND BLOOD PRESSURE AT HYPERTENSION PATIENTS: A LITERATURE REVIEW

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ABSTRACT

Background: The prevalence of hypertension in West Java province has reached 39.60% (percent). The data from West Java Provincial Health Office in 2018 hypertension is the 3rd most a disease suffered of public with a total 790,382 people, its created new problem for hypertension patients. The appearance are new problems related to hypertension patients can causes emotional mental disorders as anxiety. Non-pharmacological measures In hypertensio patients that can help lower blood pressure is a slow deep breathing maneuver (Slow Deep Breathing). **Objective:** to determined the decrease in anxiety levels and blood pressure of hypertensive patients who were given slow deep breathing and music therapy. **Research method:** The research discusses two therapies and the databases used in conducting this literature review are PubMD, Google Scholar, and EBSCO. The keywords used are "Slow Deep Breathing OR Music Therapy AND Anxiety OR Blood Pressure in Hypertension Patients". The inclusion criteria taken were articles published in full text and open access, in the period 2017-2022, using experimental, cross-sectional and case studies as articles discussed the effect of slow deep breathing with music therapy in anxiety and blood pressure in hypertensive patients with mean age 61 years. **Results:** The search of article is results found 105 articles in the Pubmd, Google Scholar, and EBSCO databases. The characteristics of the respondent's age are in the range of 61 years. From the 10 selected articles, research on slow deep breathing and music therapy can be affect anxiety level and blood pressure of hypertensive patients. **Conclusions and Suggestions:** based on the results of research that slow deep breathing and music therapy can reduce anxiety causes by hypertension, this research can be used as a reference for to do the next research.

Keywords: *Anxiety, Blood pressure, Music Therapy, Slow Deep Breathing*

INTRODUCTION

Hypertension is an important global public health problem because of its high frequency and serious complications. It is estimated that nearly one billion people are affected by hypertension worldwide and this figure is predicted to increase to 1.5 billion by 2025 (Ping et al., 2018). Nearly 1 billion people worldwide have high blood pressure. Hypertension is one of the leading causes of premature death worldwide. WHO (World Health Organization) global Estimates that non-communicable diseases cause about 60% of deaths and 43% of them worldwide, In 2020 around 1.56 billion adults will live with hypertension. Hypertension kills nearly 8 billion people every year in the world and nearly 1.5 million people every year in the East-South Asia region. About a third of adults in South- East Asia suffer from hypertension (WHO, 2015).

Hypertension or high blood pressure is often referred to as "the silent killer because it is often

without complaints. Hypertension is the main single contributor to heart disease, kidney failure, and stroke in Indonesia. Based on the Basic Health Research (Riskesdas 2018) the prevalence of hypertension in Indonesia is 34.1%. This has increased compared to the prevalence of hypertension in Riskesdas 2013 which was 25.8%. The prevalence of hypertension in Indonesia obtained through measurements at the age of more than 18 years was 34.11%, the highest prevalence was in South Kalimantan at 44.13% followed by West Java at 39.60%, East Kalimantan at 39.30% and West Kalimantan at 29, 4% (Riskesdas, 2018). The estimated number of hypertension cases in Indonesia is 63,309,620 people, while the death rate in Indonesia due to hypertension is 427,218 deaths. Uncontrolled hypertension can make blood vessels narrow and cause several complications, such as myocardial infarction, coronary heart disease, congestive heart failure, and stroke. The longer a person suffers from hypertension, it will require more treatment accompanied by the risk of complications that can shorten life. Hypertension can develop for years without symptoms and real complaints, this condition will cause anxiety in hypertension. (Irma et al., 2021).

So it is necessary to have early prevention so as not to cause new problems for people with hypertension. The emergence of new problems related to the state of self of people with hypertension can cause emotional mental disorders in the form of anxiety. Anxiety is an emotional condition with a feeling of discomfort in a person, and is a vague experience accompanied by feelings of helplessness and uncertainty caused by something that is not clear (Annisa & Ildil, 2016) characterized by feelings of tension, fear, and accompanied by physiological changes such as pulse, respiration, and blood pressure, anxiety experienced by hypertensive patients will actually worsen their hypertension condition, anxiety will stimulate the secretion of Adenocortico Tropic Hormone (ACTH) and the hormone cortisol, thus causing an increase in blood pressure (Irma et al., 2021)

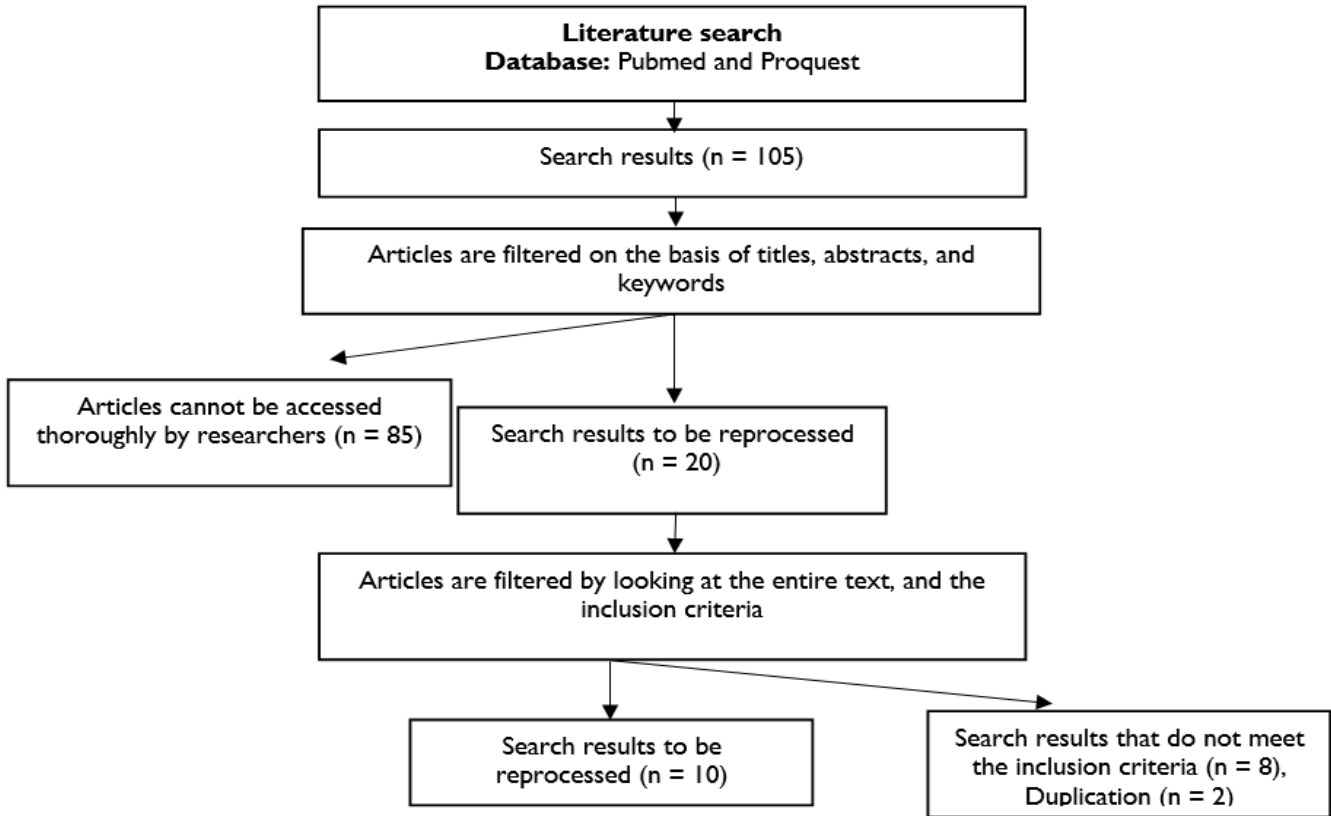
Based on the background above, the researcher wanted to see whether the effect of the combination of Slow Deep Breathing intervention and music application on anxiety levels as well as a decrease in blood pressure has not been known through a literature study. So it is necessary to analyze the effect of the combination of Slow Deep Breathing with music on anxiety levels and blood pressure in clients with hypertension.

METHODS

This study uses a literature review study in the early stages of researchers developing research questions, the next stage is choosing the most relevant terms and article search databases to answer research questions. At the beginning of the search, the reviewer deliberately searched widely to take as many articles as possible to get relevant articles. Furthermore, the reviewer specializes in searching for several research journals published through electronic databases such as Pubmed, Proquest. Using keywords and document selection, this literature search is Slow Deep Breathing OR Music Therapy AND Anxiety OR Blood Pressure in Hypertension Patients. The search results obtained articles according to keywords, as many as 105 articles were obtained in the Pubmed database.

The next stage is the reviewer selects articles based on the inclusion criteria specifications. The inclusion criteria taken were articles published in full text and open access, in the period 2017 – 2022, articles had DOI, used experimental, cross sectional and case studies research and articles discussed the effect of slow deep breathing with music therapy on anxiety and blood of hypertensive patients. After adjusting for keywords, inclusion criteria, as well as title and abstract screening, 10 articles answered the research questions. After finding 10 articles that deserve to be analyzed, then the author presents the articles in tabular form

STAGES OF LITERATURE REVIEW with PRISMA



RESULTS

No	Author (Year), Title	Research Design, Sample, Setting	Instrument	Result
1.	Decreasing in blood pressure with music therapy (vivaldi-the four season) in elderly patients with hypertension in PST Glenmore Banyuwangi (Raharjo, Rahmawati dan Rahardjo, 2020)	This study uses a pre-experimental method with a one group pre-test-post-test design approach which was carried out on 53 elderly.	Vital sign measuring tools (tensimeter, stethoscope)	These results show that there is a difference before and after classical music therapy was given to the elderly with hypertension . So it can be concluded that giving music therapy to people with hypertension will help in lowering blood pressure
2.	The impact of music guided deep breathing exercise on blood pressure control - A participant blinded randomised controlled study (Ping et al., 2018)	This study used an experimental method with a pre test post test approach with control group design which was carried out on 87 patients	Vital sign measuring tools (tensimeter, stethoscope)	There was a significant reduction in systolic and diastolic blood pressure from baseline 8 weeks in both groups. The decrease in mean systolic blood pressure (SBP) in the control group was 10.5mmHg compared to 8.3mmHg (p<0.001).
3.	Management of Physiotherapy to Lower Blood Pressure in the Elderly with Hypertension Using Slow Deep Breathing and Swedish Massage Therapy Methods in A. Yani Pura Village (Pertiwi et al., 2021)	This study uses a case study method (case study) conducted on 35 patients	Vital sign measuring tools (tensimeter, stethoscope)	From the results of the research that has been described, it can be seen that after being evaluated every week in every meeting using a sphygmomanometer, there was a decrease in systolic and diastolic blood pressure. Previously, the patient's blood pressure was at 140/100 mmHg, but after therapy there was a decrease in blood

pressure to 110/70 mmHg.

<p>4. Effectiveness of Deep Breathing Relaxation Techniques and Music Therapy in Reducing Anxiety Levels among Preoperative Patients</p>	<p>This study uses a quasi-experimental pretest post-test method with a non-equivalent group conducted on 42 patients.</p>	<p>Anxiety levels were measured using the State-Trait Anxiety Inventory (STAI) questionnaire instrument.</p>	<p>It was found that the average difference in anxiety levels in the intervention was 16.41 with $p = 0.000$, while the mean difference in control anxiety levels was 6.38 and $p = 0.000$. In conclusion, deep breathing relaxation techniques and music therapy are effective in reducing anxiety levels in preoperative patients.</p>
<p>(M. Mulki et al., 2020)</p>			
<p>5. Effect of Classical Music Therapy on Blood Pressure Reduction in Hypertension Patients at Hospital (Manurung et al., 2020)</p>	<p>This study used a pseudo-experimental method (Sok Experimental) which was carried out on 31 patients</p>	<p>Vital sign measuring tools (tensimeter, stethoscope)</p>	<p>Based on the t-test and Chi-Square analysis, it was found that classical music had an effect on reducing blood pressure in patients with hypertension (p value = 0.000). Then the decrease in blood pressure in patients with hypertension.</p>
<p>6. The Effectiveness of Classical Music and Al-Qur'an Music Therapy for Hypertension Patients in Middle Adult Age in Sibela Public Health Center Surakarta (Sinatrya, 2018)</p>	<p>This study uses a quasi-experimental design method with the two groups in pre and post test design method which was carried out on 32 patients</p>	<p>Vital sign measuring tools (tensimeter, stethoscope)</p>	<p>The results of the systolic p value of 0.005 ($p < 0.05$) means that there is a significant difference.</p>

<p>7. The Effectiveness of Warm Water Soak Therapy on Feet and Classical Music Therapy on Blood Pressure of Hypertensive Clients at Puskesmas Ijen Bondowoso.</p>	<p>This study used a pre-experimental design method with a pre-post test only design approach which was carried out on 40 people</p>	<p>Vital measuring tools (tensimeter, stethoscope)</p>	<p>sign tools</p>	<p>Based on the average value, it is known that the warm water soak therapy on the feet has a mean, systolic value (150 mmHg) and a mean diastolic value (89.67 mmHg), while the average systolic value in classical music therapy (154.5 mmHg) and a diastolic mean value (89.67 mmHg). the average diastolic value of classical music therapy (92 mmHg) so that from the average results of warm water soaking on the feet it is more effective in lowering blood pressure</p>
<p>(T. Online et al., 2020)</p>				
<p>8. Effect Of Slow Breathing Training For A Month On Blood Pressure And Heart Rate Variability In Healthy Subjects (Naragajan, 2014)</p>	<p>This study uses a pre-experimental method with a one-group pre-test-post-test design approach which was carried out on 16 people</p>	<p>Vital measuring tools (tensimeter, stethoscope)</p>	<p>sign tools</p>	<p>Resting MAP decreased significantly from 82.33 ± 3.40 to 79.17 ± 3.64mmHg (P < 0.01)</p>

9.	Acute Effect of Slow Deep Breathing Maneuver on Patient with Essential Hypertension Stage I and 2 (Wiharja et al., 2016)	This study uses the Cross-sectional method which was carried out on 40 people.	Vital sign measuring tools (tensimeter, stethoscope)	systolic blood pressure decreased from 148.04+5.82 mmHg to 138.15+5.9 mmHg with $p < 0.05$, and diastolic blood pressure decreased from 85+5.05mmHg to 78.47+5.46mmHg. This study proves that there is a relationship between maneuvers and a decrease in systolic and diastolic blood pressure.
10	The Effect of Music Therapy on Lowering Blood Pressure in the Elderly with Hypertension (Awalin et al., 2021)	This study uses a quasi-experimental design method with the two groups in pre and post test design method which was carried out on 30 people.	Vital sign measuring tools (tensimeter, stethoscope)	Music therapy decreased systolic blood pressure (with a difference in mean SBP before and after -2,629) and diastolic blood pressure (with a difference in mean blood pressure before and after -1,112) also experienced a significant decrease in heart rate ($p < 0.0001$)

DISCUSSION

Based on the results of a literature search, the research was conducted with the aim of knowing the effect of music therapy on reducing blood pressure in the elderly with hypertension. As a step to prevent and manage hypertension, pharmacological and non-pharmacological methods can be used. The non-pharmacological method that can be intervened in this research is classical music. This research method uses a pre-experimental design with a one-group pre-test-post-test design approach. Samples were taken using a total sampling technique of 53, namely the elderly living in the Tresna Werdha Social Panti Banyuwangi. The research process was carried out in the following stages, before the introduction of music therapy, blood pressure measurements were carried out. After the results of the initial blood pressure measurement, the elderly were given music therapy treatment for 30 minutes. After the intervention, measurements were taken (posttest). Blood pressure measurement using Omron brand digital sphygmomanometer. Data analysis used Wilcoxon test with P value < 0.05 . Wilcoxon analysis test results obtained P or Asymp. Sig. (2-tailed) = 0.000, $p < 0.05$.

The results of this study indicate that there is a difference before and before classical music therapy is given to the elderly with hypertension. So it can be concluded that presenting music therapy

to people with hypertension will help in lowering blood pressure, so that music therapy (Vivaldi-the four season) becomes a non-pharmacological solution both in service and independent treatment. (Raharjo, Rahmawati and Rahardjo, 2020). Meanwhile research conducted by (Ping et al., 2018; Pertiwi et al., 2021)) stated that there was a significant decrease in systolic and diastolic blood pressure from the initial 8 weeks in both groups. The mean decrease in systolic blood pressure (SBP) in the control group was 10.5mmHg compared to 8.3mmHg ($p<0.001$) in the intervention group. The decrease in diastolic blood pressure (DBP) in the control and intervention groups was 5.2 mmHg ($p<0.001$) and 5.6 mmHg ($p<0.001$), respectively. The absolute difference in SBP reduction from baseline at IG & CG was -2.2 (95%CI: -7.8 to 3.5) and DBP was -0.4 (95%CI: -2.9 to 3.6). However, the reduction in blood pressure between the two groups was not significant.

Anxiety is an emotional response to subjective individual judgments, which are influenced by the subconscious and the cause is not known specifically. Anxiety is a term that is very familiar with everyday life which describes a state of worry, anxiety, fear, restlessness accompanied by various physical complaints. Anxiety is different from fear. Fear is an assessment of a threatening stimulus and the object is clear (Dalami, Suliswati, & et al., 2014) this is supported by research (M. Mulki et al., 2020) deep breathing relaxation techniques and music therapy are effective in reducing anxiety levels in prenatal patients. operation. This research was conducted with the aim of overcoming the level of anxiety by using deep breathing relaxation techniques and music therapy. With the Quasy Experiment research method and using a non-equivalent control group pre-test-post-test design. It was carried out on 42 respondents divided into 2 groups, the intervention group (N=21) by giving a combination of the effectiveness of deep breathing relaxation techniques and music therapy while the control group (N=21) with music therapy.

The use of music as a therapeutic medium has also experienced a significant development in recent years. At the 62nd annual conference of the American Heart Association 2008, a study was presented which suggested that listening to classical music can lower blood pressure in people with hypertension. Music therapy given to the elderly ranges from 20 minutes, this is in accordance with research conducted by (M. Mulki et al., 2020), the results showed that there were significant differences between the intervention group and the control group after giving treatment. In the intervention group, the Combination Effectiveness of Deep Breathing Relaxation Technique which was performed for 15 minutes and Music Therapy for 20 minutes on the reduction of anxiety levels in moderate and severe preoperative patients, significantly reduced anxiety levels with p value = 0.000. However, there is a difference in the value of the level of anxiety after the treatment. The mean value of the difference in anxiety levels in the intervention was 16.41 with p value = 0.000, while the mean difference in control anxiety level was 6.38 with p value = 0.000.

The results of a previous study conducted by Kow Fei Ping at Pulau Pinang Hospital, Malaysia conducted a study on the effects of Slow Deep Breathing in combination with music to lower blood pressure. Slow Deep Breathing and music therapy interventions are non-pharmacological interventions and nurses' independent actions. Seeing the benefits that can be obtained from Slow Deep Breathing interventions and music therapy supported by previous research (Naragajan, 2014), this is also supported by research conducted by (Wiharja et al., 2016) that Slow Deep Breathing combination of music therapy can be combined with health education to obtain the expected therapeutic goals in the health facility area. The results showed that systolic blood pressure decreased from 148.04+5.82 mmHg to 138.15+5.9 mmHg ($p<0.05$) and diastolic pressure decreased from

85+5.05 mmHg to 78.47+5.46. mmHg ($p < 0.05$). This study showed that there was an association between maneuvers and a decrease in systolic and diastolic blood pressure ($p = 0.000$, in the analytical study T-Test).

CONCLUSION

Based on the literature study, it can be concluded that there is an effect of slow deep breathing and relaxation music on blood pressure, from 10 articles all of them state that there is an effect of slow deep breathing and relaxation music on hypertension and level of anxiety.

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Outcome expectancies and task self-efficacy correlate with tuberculosis patient's adherence to taking medication

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ABSTRACT

Introduction: Medication adherence is one meaningful way to support the success of Tuberculosis (TB) treatment. Dropout or improper treatment will lead to medication resistance. This research aims to determine the correlation between outcome expectancies, task self-efficacy, and patients' adherence to taking TB medication.

Methods: This was a descriptive correlational study. The population was 209 TB patients recorded in the Bima regency. Multi-stage random sampling was used as the sampling technique. The independent variable is the outcome expectancies and task self-efficacy, while the dependent variable is adherence to TB medication. Data were obtained using a questionnaire and analysed using the Rho Spearman test with a <0.05 significance level.

Results: The result showed that the outcome expectancies and task self-efficacy correlate with TB patient's adherence in taking medication ($p=0,024$ $r=0,157$; $p=0,000$ $r=0,459$).

Conclusions: It was concluded that as high as patients' outcome expectancies and task self-efficacy, the patients' adherence to taking TB medication is increasing. Nurses should be more active in providing counselling so TB patients become adhere to their medication.

Keywords: outcome expectancies, task self-efficacy, medication adherence, tuberculosis

INTRODUCTION

Tuberculosis (TB) is a serious infectious disease that mainly affects the lungs (Jilani *et al.*, 2022). Taking medication for 6 months is the proper way to ensure the TB bacteria are killed (Zahroh, 2016). Patient adherence to medication is critical to the success of TB treatment (Yusmaniar and Kurniawan, 2020).

WHO stated that treatment failure, discontinuation of treatment or improper treatment would cause *Mycobacterium tuberculosis* to become resistant (WHO, 2010; Soeroto *et al.*, 2021). Most patients feel better and healthier after 1-2 months of regular medication, so they decide stop it by themselves or become lazy to consume it. Some of them felt the side effect of TB medication, so they did not adhere to it and dropped out of treatment (Pameswari, Halim and Yustika, 2016). Other reasons include economic factors, distance from health facilities, and forgetfulness (Nezenega, Perimal-Lewis and Maeder, 2020).

Indonesia is making a steady progress towards eliminations of TB, with a goal of reducing TB incidence to 65 per 100,000 population by 2030. By 2020, the number of people fell ill with drug-resistant TB were 24,000 people (WHO, 2021).

Adherence to treatment, especially medication, is essential to control TB. WHO recommends 85% treatment success rate for all TB cases as an indicator of TB control (Akanbi *et al.*, 2019). The incidence of TB in Indonesia is 185 848 cases with a cure rate of 131,003; the completeness rate of treatment is 13 707 (9.47%), and the treatment success rate is 144,710 (77.86%) (Kementerian Kesehatan RI, 2017). In West Nusa Tenggara Province by 2018, there were 6 583 TB cases, with a cure rate of 3 602 (82.67%); complete treatment of 2 076 (31.54%) and a success rate of 5 678 (86.25%). In Kabupaten Bima, there were 526 TB patients, with a cure rate of 352 (79.46%); complete treatment of 162 (30.80%) and a success rate of 514 (97.72%) (Seksi Pengendalian Penyakit Dinas Kesehatan Propinsi NTB, 2018). Non-adherence to anti-TB medication was identified as the possible cause of treatment failure (Iweama *et al.*, 2021). It is also may lead to the uncontrolled spread of TB infections, the occurrence of adverse drug reactions, morbidity, and drug resistance (Adane *et al.*, 2013).

Patients with strong motivation five times more adhered to TB medication than those with low motivation (Zefania, 2019). Motivation is an intense desire from within. Motivation has long been viewed as a critical factor that increase patients' adherence to medication (Sukartini, Widianingrum and Yasmara, 2020). Maintaining health is a strong motivation that influences patients' behaviour to adhere to their medication to cure their disease (Pameswari, Halim and Yustika, 2016).

Health Action Process Approach (HAPA) is a socio-cognitive approach to health behaviour which shows that health behaviour is a process of the motivational and volitional phases. Risk perception, outcome expectancy, and task self-efficacy from actions in the motivational phase can shape intentions (Schwazer, 2008). Task self-efficacy and outcome expectancies are the main variables to motivate change in the HAPA model. HAPA will help TB sufferers to form a motivation that comes from the view of outcome expectancies and task self-efficacy to change views and improve medication adherence for TB patients, as well as explain how sufferers can refrain from risky behaviour. The aim of this study is to examine the correlation between outcome expectancies and task self-efficacy with medication adherence among TB patients.

METHODS

Study Design

This study used a correlational study design with a cross-sectional approach.

Population, Samples and Sampling

This research was conducted in seven health care center (Pusat Kesehatan Masyarakat-Puskesmas) across Bima Regency, West Nusa Tenggara. It includes Puskesmas Sape, Lambu, Wawo, Wera, Ambalawi, Woha and Sanggar. The sample used in this study were TB patients undergoing treatment for the last three months. As many as 209 respondents were collected by using the multi-stage random sampling technique.

Instruments

The independent variables in this study were outcome expectancies and task self-efficacy, while the dependent variable was medication adherence. The researcher used a questionnaire and the form of TB 01 as the instruments. The outcome expectancies questionnaire was adopted from Pinheiro et al. (2002) in Lestari (2018), consisting of 11 question items (5 questions about positive effects on health and 6 questions about the negative effects of taking medication on TB patients). Task self-efficacy was measured using a self-efficacy questionnaire adopted from Makhfudli (2016) which consists of 25 items questions with a Likert scale of 1-5. Outcome expectancies and self-efficacy questionnaires have been tested for validity and reliability. The results of the reliability test of the outcome expectancies questionnaire showed a Cronbach alpha value of 0.892, and the self-efficacy questionnaire showed a Cronbach alpha value of 0.953, so the questions on the questionnaire were declared reliable.

Procedure

Respondents willing to participate in the study were asked to sign an informed consent. The local nurses accompanied researchers to collect the data door to door. Consent was gathered from the respondents before the data collection after briefly explaining the research.

Data Analysis

Bivariate analysis using Spearman Rho (level of significance of 95%) will be performed to determine the correlation between outcome expectancies, task self-efficacy, and medication adherence among TB patients. Variable with a p-value of 0.05 was significantly correlated with medication adherence.

Ethical Clearance

This research was reviewed and granted by the ethics committee of the Faculty of Nursing, Universitas Airlangga.

RESULTS

Table I showed the demographic characteristics of the respondents. Many of the respondents were aged >50 years old (66; 31.6%). Half of them were male (116; 55.5%). Many of them graduated from high school (74; 35.4%). Most of them work as farmers (70; 33.5%). Most respondents earn <Rp. 1,000,000 per month (127; 60.8%). See table I.

Table I Demographic characteristics of the respondents (n=209)

Characteristics	Category	n	%
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The 13th International Nursing Conference

Age	18-28	42	20.1
	29-39	57	27.3
	40-50	44	21.1
	>50	66	31.6
Sex	Male	116	55.5
	Female	93	44.5
Level of Education	Not finished	24	11.5
	Elementary school	68	32.5
	Junior high school	37	17.7
	Senior high school	74	35.4
	Higher education	6	2.9
Occupation	Unemployed	48	23.0
	Farmer	70	33.5
	Farm worker	49	23.4
	Civil servant	3	1.4
	Sel-employed	39	18.7
Monthly Income	< 1.000.000 IDR	127	60.8
	1.000.000 – 1.500.000 IDR	70	33.5
	> 1.500.000 IDR	12	5.7

Table 2 The correlation between outcome expectancies, task self-efficacy, and medication adherence among TB patients

Variables	Medication Adherence				Total		p	r
	Non-adherence		Adherence		n	%		
	n	%	n	%				
Outcome Expectancies								
Moderate	42	20.1	119	56.9	161	77	0.024	0.157
High	4	1.9	44	21.1	48	23		
Total	46	22	163	78	209	100		
Task Self-efficacy								
Moderate	40	19.1	86	41.1	126	60.3	0.000	0.459
High	6	2.9	77	36.8	83	39.7		
Total	46	22	163	78	209	100		

Most respondents had moderate outcome expectancies (161; 77%), moderate task self-efficacy (126; 60.3%), and adherence to TB medication (163; 78%). Table 2 shows that 56.9% of respondents had moderate outcome expectancies, and 56.9% adhered to TB treatment. The statistical analysis showed a significant correlation between outcome expectancies and medication adherence ($p < 0.05$). The correlation coefficient (r) of 0.157 indicates that the outcome expectancies and medication adherence have a weak correlation. The higher a person's outcome expectancies, the medication adherence will increase.

Table 2 also shows that 41.1% of respondents have sufficient task self-efficacy and 41.1% adhere to treatment. The statistical analysis showed a significant correlation between task self-efficacy and medication adherence. The correlation coefficient (r) of 0.459 shows that the task self-efficacy and medication adherence variables have a moderate relationship. The correlation (r) is positive, which means that the higher a person's task self-efficacy, the adherence to taking medication will also increase.

DISCUSSION

In this study, most respondents had moderate outcome expectancies of as much as 77%. These conditions caused by most respondents believed that by taking TB medication, they would recover from TB. In contrast, they also perceived that the side effect of TB medication is uncomfortable, making them struggle to adhere to it. In addition, the TB medication also disrupts their daily schedule, such as taking medicine from the health facilities.

The statistical analysis showed a significant correlation between outcome expectancies and medication adherence among TB patients. This finding is similar to the previous study. Higher outcome expectancies also increase the effectiveness of treatment and cure rate (Muna and Soleha, 2014; Lestari, 2018).

The researcher also found that some respondents had high outcome expectancies but did not adhere to TB medication. It can happen as most of the respondents were aged >50 years old. Yuda (2019) states that at the age of 17-45, the motivation to recover from a disease is still high, while at the age of 45-65, sufferers tend to surrender to the situation they feel.

Most respondents complain that TB medication can interfere with their routine, especially when the schedule for taking it coincides with eating and sleeping time. So, they tend to not adhere to the medication. It can happen as many of the respondents works as a farmer. Working as farmers will make them spend all day or night in the fields, so they forget to take their medication. In addition, the side effects of taking TB medication hinder their ability to work, so they tend not to consume medication when working. Many of respondents were male. Previous study found that female pay more attention to health than male (Ek, 2015). Fitri (2018) also stated that patients who work tend to be non-adherent in treatment compared to those who do not work.

In this study, most of the respondents had moderate task self-efficacy. Most respondents believe they can visit health workers or centres but are unaware of TB symptoms. So, many of them visit health centres if their condition is weak. Respondents are also confident about completing TB treatment but unconfident in dealing with its side effects. Respondents were not sure they could prepare a special place to dispose of phlegm, although they believed that they could stay away from other people when coughing or expelling phlegm. It can happen as respondents were unable to prepare a sputum container. Most of the respondents earn less than Rp. 1,000,000 per month makes it difficult

for them to meet their daily needs. Logen (2015) states that high-income people spare a small portion of their income for their health. Meanwhile, low-income people use their monthly income to fulfil their daily needs.

Statistical test results show task self-efficacy is related to adherence to TB medication. Novitasari (2017) states that patients with good self-efficacy have 11 times the opportunity to experience medication adherence compared to those with low efficacy. Some respondents with moderate task self-efficacy do not adhere to the TB medication. Some did not come or tell the doctor when they reduced or stopped taking their medication. So, even though they have good task self-efficacy, respondents should be given counselling and information about TB treatment to maintain their medication adherence.

Task self-efficacy in this study leads to a person's belief in implementing obedient behaviour towards TB treatment. Experience and health information from health workers is a source of forming task self-efficacy. In addition, activities at the health care centre, such as drug supervisor (Pengawas Minum Obat-PMO) and counselling, can increase TB patients' task self-efficacy.

Researchers also found respondents with high task self-efficacy but did not adhere to medication. One's level of education can influence it. Some of the respondents who did not comply were respondents who did not attend school and graduated from elementary school. Makhfudli (2016) stated that as a person's level of education is higher, it is easier for them to understand new information, so their knowledge will be increased. Educational background affects a person in thinking and acting. High education will motivate patients to comply with taking TB drugs (Fitri, 2018). It also found that most respondents could not cope with the side effects of the TB medication. The perceived side effects will make the respondent stop medication because they feel the medicine harms his body. Ali (2019) stated that respondents who experienced anti-TB medication side effects tended to be 4 times less compliant than those who did not. It can happen as most of the respondents were a farmer. Almost half of the respondents are farmers who have to spend part of their time in the fields, so nurses find it challenging to provide health education about the side effects of TB medication directly.

However, the present study had several limitations. First, data were collected using a cross-sectional approach, making it difficult to determine a cause-effect relationship. Second, too many questions on the questionnaire make respondents bored, which increases the probability of information bias.

CONCLUSIONS

It can be concluded that outcome expectancies and task self-efficacy correlate with medication adherence among TB patients. Regarding this present study, nurses can be more active in providing counselling and increasing the intensiveness of the drug supervisor program (PMO) for TB patients so that the outcome expectancies and task self-efficacy of TB patients are increased, and their adherence to TB medication can be increased.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding this article's publication.

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Correlation between Self-Acceptance and Quality of Life in Patients with Type 2 Diabetes Mellitus

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ABSTRACT

Introduction: The problem that often occurs in patients with Type 2 Diabetes Mellitus (T2DM) is the decline in quality of life. Increasing self-acceptance can improve the quality of life in T2DM patients. This study aimed to analyze the relationship between self-acceptance and quality of life in T2DM patients.

Methods: This study used an observational-analytic design with a cross-sectional approach. As many as 84 T2DM patients were involved by a consecutive sampling technique. Data collection was conducted using the Unconditional Self-Acceptance Questionnaire (USAQ) and Diabetes Quality of Life (DQOL) questionnaire. *Data analysis was performed by the Spearman rank correlation test with a significance level of 0.05.*

Results: The result showed that the median value of self-acceptance was 124 (*min-max=77-139*). The median value of quality of life was 49 (*min-max=29-60*). There was a moderate positive correlation between self-acceptance and quality of life in T2DM patients (*p-value: 0.001; r: 0.540*). The higher the level of self-acceptance, the better the quality of life.

Conclusion: This study suggests the importance of assessing the aspect of self-acceptance to improve the quality of life in T2DM patients.

Keywords: Self-acceptance, quality of life, type 2 diabetes mellitus

INTRODUCTION

Diabetes Mellitus (DM) has a negative impact on the patient's quality of life due to emotional changes, limited conditions, and poor acceptance process (Silva *et al.*, 2018). Research by Chaidir, Wahyuni and Furkhani (2017) showed that 47 of 89 DM patients (52.8%) had a poor quality of life. A study by Alfian, Herlyanie and Purwantini (2018) revealed that 63 of 82 DM patients (76.8%) had a poor quality of life supported by high patient glucose levels. Research in Jember showed that 69 of 146 T2DM patients (47.3%) had poor quality of life (Azila, 2016).

The low quality of life causes reduced self-control, worsening blood glucose control, increasing the risk of complications and the onset of DM symptoms. Quality of life measures an individual's ability to overcome physical problems and maintain long-term health and well-being (Jain, Shivkumar and

Gupta, 2014). One of the efforts to improve the quality of life is through good self-acceptance. The stage of self-acceptance is closely related to how DM patients adapt to problems with their physical condition (Bieñ *et al.*, 2015). Self-acceptance in DM patients affects the behavior that individuals raise in overcoming the issues of their condition. High self-acceptance in DM patients will show better well-being and quality of life and impact good self-management, significantly impacting the HbA1c value (Schmitt *et al.*, 2018). Self-acceptance contributes 48.7% to the motivation of the patient's recovery in dealing with their condition's problems. The purpose of self-acceptance for people with DM is that individuals accept their shortcomings and can overcome their emotional states such as anger, depression, and guilt (Sofiyah, 2016).

The research by Yan, Marisdayana and Irma (2017) showed that 66.2% of 77 DM patients had low self-acceptance. After being diagnosed with type 2 DM, individuals said they lacked confidence, felt different from others, and were easily offended by other people's criticism of their condition. The contribution of self-acceptance to enthusiasm in dealing with problems with the physical condition of DM patients was still low at 48.771% (Hasan, Lilik and Agustin, 2013). The Schmitt *et al.*, (2018) study indicated that 135 DM patients (22.3%) had low self-acceptance. This condition results in individuals having four times the risk of being in poor glucose control and the risk of complications.

Good self-acceptance efforts in chronic diseases such as DM make individuals highly aware of their health problems. The existence of self-acceptance facilitates adaptation in individuals to find inner peace for a better quality of life and reduces the risk of disease-related complications (Silva *et al.*, 2018). This study aimed to analyze the relationship between self-acceptance and quality of life in type 2 DM patients.

METHODS

Study Design

The design of this research was analytic observational with a cross-sectional approach. This study analyzed the relationship between self-acceptance and quality of life in type 2 diabetes mellitus patients.

Population, Samples, and Sampling

The population of this study was type 2 diabetes mellitus patients who visited the Internal Medicine Unit of Level III Baladhika Husada Hospital, Jember, East Java. The average number of visits by type 2 DM patients per month from January to September 2018 was 197 people. The sample in this study was type 2 DM patients who visited the Internal Medicine Unit of Level III Baladhika Husada Hospital Jember and met the criteria. The inclusion criteria were: being diagnosed with type 2 DM; DM duration > three months; able to communicate well; aged between 20-79 years old; willing to be respondents in the study. The exclusion criteria were: type 2 DM patients who have physical limitations such as blindness, deafness, and physical disability; type 2 DM patients with cognitive impairment such as Alzheimer's, dementia, and other cognitive disorders (through the Mini-Mental State Examination [MMSE] assessment), and type 2 DM patients with comorbidities such as stroke or heart disease or discomfort conditions that do not allow them to participate in the study. The sample calculation used G*power with effect size: 0.30, error probability: 0.05, power (1- β error probability): 0.80, obtained as many as 84 respondents as a sample. The sampling technique was consecutive sampling.

Instruments

The Unconditional Self-Acceptance Questionnaire (USAQ) was used to measure self-acceptance. This questionnaire was translated and modified by Widiastuti and Yuniarti (2017). The validity test result was $r=0.335-0.737$, while the reliability test result using Cronbach's alpha was 0.923 (Widiastuti and Yuniarti, 2017). The questionnaire contains 21 questions with four indicators, namely individuals accepting themselves unconditionally (6 items), individuals realizing that humans have weaknesses (5 items), individuals realizing positive and negative things within themselves (5 items), individuals realizing themselves as valuable persons (5 items). The total score of the questionnaire is between 21-147, while the score for each indicator is between 1-7. The higher the value, the better the self-acceptance of type 2 DM patients.

The Diabetes Quality of Life (DQOL) questionnaire measured quality of life. The DQOL questionnaire was translated and tested for validity and reliability by Chusmeywati (2016). The validity test was $r=0.600$. Cronbach's alpha's reliability test was 0.676 (Chusmeywati, 2016). The instrument consists of 12 questions divided into two indicators: the satisfaction patients felt regarding the disease and its treatment (7 items) and the impact felt by patients due to DM (5 items). The total score range is between 12-60, while the score for each indicator is between 1-5. The higher the value, the better the quality of life for type 2 DM patients.

Procedure

Data collection was carried out in the internal medicine unit of the Level III Baladhika Husada Hospital Jember. The researcher coordinated with nurses at the Internal Medicine Unit of Level III Baladhika Husada Hospital Jember regarding the determination of samples. Next, the researcher explained the aims and objectives of the study to the respondents and asked for approval from the consent form if they were willing to participate in the study. MMSE assessment was conducted on respondents aged >60 years old. After that, the researcher explained to the respondents how to fill in the demographic data, USAQ, and DQOL questionnaires. If the respondents had filled out the questionnaire, the researcher checked the completeness of the respondent's answers.

Data Analysis

Data analysis used the Spearman-rank test with a significance value of 0.05.

Ethical Clearance

This research was conducted after obtaining approval from the Research and Community Service Institute of the University of Jember (No: 4644/UN25.3.1/LT/2018) and Level III Baladhika Husada Hospital Jember (No: B/614/XI/2018).

RESULTS

Characteristics of Respondents

Table 1 reveals that the median value of the respondent's age was 60 years, ranging between 35-77 years. The range of illness duration was 1-27 years with a median of 5 years. The number of females (69%) was more than males (31%). The most common educational background was Junior High School (23.8%). Most of the respondents were married (77.4%) and housewives (52.4%).

Table 1. Characteristics of respondents.

Characteristics	n (%)	Median (min-max)
Age (years old)	-	60 (35-77)
Diabetes Duration (years)	-	5 (1-27)
Gender		
Male	26 (31%)	-
Female	58 (69%)	-
Education Level		
None	11 (13.1%)	-
Elementary School	18 (21.4%)	-
Junior High School	20 (23.8%)	-
Senior High School	19 (22.6%)	-
University	16 (19%)	-
Marital status		
Single	1 (1.2%)	-
Married	65 (77.4%)	-
Widow	18 (21.4%)	-
Employment status		
Housewife	44 (52.4%)	-
Farmer	2 (2.4%)	-
Civil servant	13 (15.5%)	-
Entrepreneur	17 (20%)	-
None	3 (3.6%)	-
Private employee	5 (6%)	-

Self-Acceptance

Table 2 shows the mean value of self-acceptance was 120.42 with a median value of 124 (min-max= 77-139). The highest mean value (5.87) was in the indicator of individuals realizing themselves as valuable persons. While the lowest mean value (5.65) was in the indicator of individuals accepting themselves unconditionally.

Table 2. Self-Acceptance of respondents

Variable	Mean	Median	Min-max
Self-acceptance	120.42	124	77-139
Individuals accept themselves unconditionally	5.65	5.67	3.17-6.67
Individuals realize that humans have weaknesses	5.71	6	3.20-6.80
Individuals realize positive and negative things within themselves	5.71	5.8	3.80-7
Individuals realize themselves as valuable persons	5.87	6	4-7

Quality of Life

Table 3 indicates the mean value of quality of life was 48.80 with a median of 49 (min-max=29-60). Patients' satisfaction regarding the disease and its treatment had a higher mean value (4.09) than the indicator of the impact felt by patients due to DM (4.03).

Table 2. Quality of life of respondents

Variable	Mean	Median	Min-max
Quality of life	48.80	49	29-60
Satisfaction felt by patients regarding the disease and its treatment	4.09	4.07	2.17-5
The impact felt by patients due to DM	4.03	4.10	1.20-5

Correlation between Self-acceptance and Quality of Life in Type 2 DM Patients

Table 4 shows a positive moderate correlation between self-acceptance and quality of life in Type 2 DM patients (p-value = 0.001, r = 0.540). A positive correlation indicates the higher the value of self-acceptance, the better the quality of life.

Table 3. Correlation between Self-acceptance and Quality of Life in Type 2 DM Patients

Variable	Quality of life	
Self-acceptance	r	0.540
	p value	0.001

DISCUSSION

Self-Acceptance of Type 2 DM Patients

The basic concept of comprehensive management of the chronic disease is the self-acceptance of disease conditions. Self-acceptance is used as a form of adaptation to find inner peace, a better quality of life, and reduce the risk of disease complications (Silva *et al.*, 2018). This study showed that the mean value of the respondents' self-acceptance was 120.42. This value was close to the maximum score of the USAQ questionnaire (147); this indicates that respondents had good self-acceptance. Yhani and Karyono (2014) research also revealed a high self-acceptance score from 40 patients with type 2 DM.

Self-acceptance can be influenced by age, gender, marital status, and DM duration. In this study, the average age of the respondents was 58.58 years. High self-acceptance scores in middle adulthood are because they have a lot of experience in the past. From experience, they can think better about changes in their health and accept their condition (Yhani and Karyono, 2014). The research of Shallcross *et al.* (2013) explained that increasing a person's age is associated with experiences that encourage better self-acceptance. Regarding gender, there were more female respondents than male respondents in this study. Women have good self-acceptance because women are more open in identifying themselves with others. This condition makes family and friends help and support changes in their condition so that individuals are more accepting of their situation (Mathew *et al.*, 2012). Most respondents in this study were married. Married people tend to be able to accept themselves because they have someone who is trusted to share problems about their condition and who is considered capable of providing support in all conditions (Okwaraji *et al.*, 2017). About the length of DM duration, the results revealed that the average DM duration in this study was 7.08 years. Individuals suffering from type 2 DM between 1 to 7 years show effective coping, thereby increasing the individual's self-acceptance value. This condition is also caused by the longer suffering from type 2 DM so that individuals can understand their situation and carry out independent care (Shayeghan *et al.*, 2016).

The results disclosed that the indicator of individuals realizing themselves as valuable persons had a higher average value than other indicators. High self-esteem individuals affect self-acceptance because even though individuals make mistakes and experience failures, individuals still feel like valuable people. This condition will impact the management of type 2 diabetes (Widodo, Bahari and Halis, 2015). On the other hand, individuals with low self-esteem only focus on negative aspects and spend little time thinking positively (Okwaraji *et al.*, 2017). Individuals who have low self-esteem are prone to depression; the impact of depression is that individuals feel worthless, incompetent, and inadequate (Orth and Robins, 2013). Based on this study's results, the aspect where individuals realize themselves as valuable persons is crucial to increasing the self-acceptance of type 2 DM patients.

The indicator that had the lowest average value was that the individuals accept themselves unconditionally. This indicator relates to the factor of identification with people who have good self-adjustment, self-respect, positive social attitudes, and a stable self-concept. A low value on this indicator could be due to a lack of social support for patient condition changes. Social support affects the increase in control of people with type 2 diabetes because they need support from others. According to Shao *et al.* (2017) social support can encourage behavioral changes to disease conditions, positive mental and emotional changes in oneself, and strengthen beliefs and self-confidence, impacting physical health.

Quality of Life of Type 2 DM Patients

Quality of life is an individual's perception of his condition in living life in the context of the culture and value system they adhere to and related to their goals, expectations, standards, and concerns. Quality of life consists of various multidimensional aspects such as physical health, psychological state, level of independence, social relationships, personal beliefs, and environment (World Health Organization, 1997). The results of this study revealed that the average quality of life was quite good at 48.80, closer to the maximum value of the DQOL questionnaire of 60.

Quality of life can be influenced by age, gender, marital status, and DM duration. The average age of respondents in this study was 58.58 years. Increasing age can improve the quality of life; individuals in old age have gone through a period of change in their lives, so they tend to evaluate their lives with positive behavior (Wahyuni and Anna, 2015). Regarding gender, the number of female respondents in this study was more than males. According to Rantung, Yetti and Herawati (2015) gender is related to the quality of life in type 2 DM patients. Women are more interested in their health status, which affects self-care behavior that will impact normal glucose levels to improve their quality of life.

In terms of marital status, most of the respondents in this study were married. Study by Wahyuni and Anna (2015) showed a relationship between marital status and quality of life. This is associated with support from partners in carrying out consistent care such as monitoring diet, support for physical activities and sports, treatment support, and helping to obtain information so that it affects the quality of life of type 2 DM patients. Research by Tamara *et al.* (2014) disclosed that as many as 41 married people (89.1%) have a better quality of life. This is because marriage positively impacts health because of the partner's attention. Patients with marital status have higher self-esteem and are a source of adaptive coping to stressors so that their quality of life is better. In this study, the average length of DM duration was 7.08 years. The longer an individual suffers from type 2 DM, the better the quality of life. This condition is influenced by the aspect of the patient's condition acceptance generated by high spirituality and facing illness by surrendering to God more (Wahyuni and Anna, 2015).

The patient's satisfaction indicator has a higher value than the impact felt by the patient. Based on research conducted by Retnowati and Satyabakti (2015), aspects of satisfaction felt by type 2 DM patients include relationships with family and the existence of sufficient and quality free time to make the quality of life high for individuals. The indicator of impact has a low value due to the perceived impact related to sexual disorders, feeling limited by the rules for consuming food, not understanding the condition of the disease, often experiencing physical symptoms such as pain, and feeling worried about the emergence of disease complications.

The Correlation between Self-Acceptance and Quality of Life in Type 2 DM Patients

One aspect that can affect the quality of life in type 2 DM patients is the self-acceptance of the disease. The existence of self-acceptance contributes to better self-motivation, goal achievement, and overcoming disease difficulties (Bień *et al.*, 2015). This study indicates a moderate positive correlation between self-acceptance and quality of life in type 2 DM patients. It means that the higher the value of self-acceptance, the higher the quality of life.

Type 2 diabetes mellitus will be experienced by patients throughout their life and requires ongoing treatment to maintain normal glucose levels. Ongoing special needs such as undergoing pharmacological therapy, positive lifestyle changes, monitoring glucose levels, and concerns about disease complications affect patients' quality of life with type 2 diabetes (Yudianto, Rizmadewi and Maryati, 2008). Quality of life is an individual's perception of well-being, including physical, psychological, social, and spiritual conditions (Zurita-Cruz et al., 2018). According to Kumar and Krishna (2015), the existence of a good quality of life in type 2 DM patients will positively impact treatment management efforts to prevent disease complications. Laoh and Tampongangoy (2015) explains that a good quality of life can facilitate the treatment process for type 2 DM because there is a high awareness of health. Quality of life is one of the main goals of self-care in patients with type 2 diabetes. If blood glucose levels can be appropriately controlled, physical complaints due to acute and chronic complications of type 2 diabetes can be avoided.

Each individual has their way of improving the quality of life, one of which is self-acceptance. Self-acceptance is a condition in which individuals can actualize themselves by accepting all the advantages and disadvantages that exist within themselves (Bernard, 2013). The self-acceptance stage is a crucial stage related to the relationship between patients and type 2 DM. Good self-acceptance in chronic diseases such as type 2 DM makes individuals highly aware of the health problems they experience (Silva et al., 2018). High self-acceptance helps individuals in various ways which include facilitating individuals in adjusting to their disease conditions, giving individuals a sense of security, increasing self-confidence to live, actively participating in type 2 DM treatment, having an optimistic and hopeful attitude towards life, and able to overcome difficulties in dealing with the disease (Bień et al., 2015).

In this study, it was found that there was a significant relationship between self-acceptance and quality of life in type 2 DM patients. Type 2 DM patients with high acceptance can improve their quality of life. Type 2 DM patients use self-acceptance to adapt to their disease to find inner peace to enhance a better quality of life and reduce the risk of complications. The moderate relationship between self-acceptance and quality of life indicates that self-acceptance plays a significant role in influencing the quality of life in type 2 DM patients.

CONCLUSIONS

There was a moderate positive correlation between self-acceptance and quality of life in type 2 DM patients. The higher the level of self-acceptance, the better the quality of life. Assessing the aspect of self-acceptance is required to increase the quality of life in patients with type 2 DM.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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The Effectiveness of Mobile Health for Glycemic Control of Type 2 Diabetes Mellitus: Systematic Review

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ABSTRACT

Introduction: Diabetes Mellitus is a complex disease that occurs due to impaired insulin effect, so it requires continuous treatment. mobile health aims for glycemic control. Mobile health is an approach to health through devices such as cell phones, personal digital assistants, monitoring devices and other electronic devices.

Method: systematic review using database scopus, science direct, Prequest, EBSCO, literature review taken from 2014 to 2021 and found 22 articles using keywords: Mobile Health, Diabetes Mellitus, Glycemic Control, Self-Management. Based on inclusion criteria full text, English and open access. Assessment in journal quality using JBI. The title, abstract, full text and methodology were assessed as the eligibility.

Results : Based on the results of a review of 22 articles using a randomized control trial design. The results show that mobile-phone text messaging can significantly improve glycemic control with type 2 diabetes mellitus. Mobile health is effective for the management of type 2 diabetes.

Conclusion: Mobile health provides a method to improve glycemic control and self-care management in patients with type 2 Diabetes Mellitus

Key Words: Mobile Health, Diabetes Mellitus, Glycemic Control, Self-Management

Backgroud

Diabetes mellitus (DM) is a non-communicable disease worldwide. The World Health Organization in 2013 estimated that more than 422 million people were affected by DM, and about 1.6 million deaths were found (WHO, 2018). Sixty percent of total DM occurs in the Asian region, where increasing urbanization and socioeconomic transition are contributing factors. According to total estimates, 87.5% had uncontrolled type 2 DM.

Indonesia has a prevalence of DM in the adult population of 6.2%, i.e. 10.6 million in 2019. This prevalence is higher in women (7.7%) than in men (6.5%). The majority of DM patients in Indonesia have poor glycemic control and long-term complications (WHO, 2018). Digital interventions affect attitudes, knowledge, and reinforcement. Knowledge of blood glucose levels can change patients' attitudes about the importance of self-monitoring, and strengthen self-monitoring behavior (Harte et al., 2022)

In terms of the management of type 2 diabetes mellitus and its complications, international and national guidelines recommend that diabetes self-management education and support (DSMES) be provided for people with T2DM after diagnosis. According to the guidelines, DSSMEs are defined as "ongoing processes of facilitating the knowledge, skills, and abilities needed for diabetes self-care as well as providing ongoing support to sustain self-management gains (Tanaka et al., 2020)

Managing diabetes mellitus and adhering to strict medication and lifestyle advice is a difficult task for the patient. M-health is an innovation for monitoring, monitoring, and management of chronic health conditions, involving medication management, dose adjustment, and tracking blood sugar levels. Cellular management to comply with medication and lifestyle modification. Mobile applications can assist patients by providing nutritional advice, estimating carbohydrate content, maintaining blood sugar levels and providing appropriate warnings, and providing alerts for drug intake. M-Health (mobile health) is an approach to clinical or public health through mobile devices such as smart phones, personal digital assistants, monitoring devices, and other wireless electronic devices.

This study was used to determine the effect of mobile reminders on opportunistic screening for diabetes for outpatients. The specific objectives are: 1. Outpatients who meet the requirements for diabetes mellitus examination in hospitals or health centers. 2. to compare receiving mobile reminders and those not receiving mobile reminders. 3. to determine screening to identify patients with diabetes mellitus.

The M-health intervention might improve glycemic control in patients with diabetes mellitus. Cellular or Internet blood glucose monitoring can improve glycemic control. Therefore, the aim of this study was to systematically review and meta-analyze randomized controlled trials assessing the use of social networking services via mobile and web-based tools, as compared to standard care, in managing glycemic control in patients with diabetes. This study attempts to assess the impact of mobile applications for lifestyle modification and medication management of diabetic patients on blood glucose levels.

Method

The literature search process was carried out in the last 10 years of research (2011 -2021) in English selected from several electronic databases indexed by the Scopus database, science direct, Prequest, EBSCO and writing article search results following appropriate protocols and rules using Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) checklist and flow chart.

Design Study

The design used is a study that meets the requirements of the RCT

Sample

Samples were those who had been diagnosed with type 2 diabetes in the past 5 years attending

an outpatient department, on oral medication with access to a mobile phone, and able to read text messages. All patients provided written informed consent at the time of enrollment.

Intervention

Text messages were sent to patients with diabetes at random in the pre-test stage using snowball sampling. Feedback from participants led to adaptation of the text message content, and the message was finally selected. Participants in the intervention group received text messages at random, once daily over a 6-month period, that is, each patient received text messages twice during the follow-up period. Like Taking medication on time will help keep your blood sugar under control and avoid complications.

Instrument

The instruments used were interviews and questionnaires containing questions about social demographics (age, gender, religion, education, marital status, occupation, income, number of families, family income, property owned), self-management behavior (tobacco use, medication adherence), physical activity and diet), health-seeking behavior (type of doctor visited during the past year, number of visits, distance traveled for consultation and health expenditure), drug use, health care use and costs among others. The examination includes blood pressure measurements, anthropometric measurements, and laboratory measurements of blood samples

Data analysis

Statistical analysis was performed using SPSS 22 (IBM Corp. Armonk, NY, USA). Data from participants who completed the trial were only considered. Data are reported as mean \pm standard deviation. Homogeneity and normality tests help guide the actual statistical methods used. Statistical heterogeneity was assessed by the I² test, while the HbA1c end point was used to confirm the visual analysis of the Funnel plots. RCT in patients on non-insulin insulin therapy and metaregression Analyzes were performed to explore possible moderators of HbA1c reduction. Analyzes were performed using Review Manager (Rev-Man), Version 5.3 (Copenhagen: The Nordic Cochrane Center, Cochrane Collaboration, 2014), and Comprehensive Meta-analysis V2 (Biostat Inc., NJ, USA).

Inclusion and Exclusion Criteria

The inclusion criteria of the article were the Mobile Health intervention carried out for glycemic control in *Diabetes mellitus* article taken is the last 10 years with a systematic review method Randomized Control Trial. The purpose of the study was to determine the effect of Mobile Health using a smartphone for glycemic control. The search results obtained 20 selected articles from the 489 articles found.

Table 1.1: PICOT Framework

PICOT Framework	Inclusion Criteria	Exclusion Criteria
Population	Study focuses on Type 2 Diabetes Mellitus patients	Articles that are not full text, do not focus on Type 2 Diabetes Mellitus patients
Intervention	Educational Mobile Health therapy using a smartphone for glycemic control of Type 2 Diabetes Mellitus	Not in accordance with education using M-Health smartphones for glycemic control of Type 2 Diabetes Mellitus
Outcomes	Lowering blood glucose in patients with Type 2 Diabetes Mellitus	-
Time	2014-2021	Exceeded the specified time limit
Study Design	RCT	Not using a systematic review design, RCT
Language	English	Using a language other than English

Search Strategy

The literature search was carried out in September 2021. The strategy used to find articles was using the PICOS framework. Articles identified by the keyword “*Mobile Health*” AND “Diabetes Mellitus” OR “*Mobile Health*” AND “Glycemic Control,”AND“Self-Management”and doing restrictions in 2014-2021 in English and full text articles, so as to get relevant articles.

Study Selection

The article search process was carried out by three independent reviewers. Articles that have been obtained from an electronic database, then duplicated removal is done, the title and abstract of the article are filtered for eligibility. The full text of each selected article that met the inclusion criteria was taken for further examination. Relevant articles that met all inclusion criteria were included in the systematic review. The stages of the process of searching for research data are contained in the following table:

Table 1.2 Stages of the Article Search Selection Process

No.	Process Stage	Destination
1.	Identify research questions	Transforming health problems into research questions
2.	Develop a systematic review research protocol	Provide guidance in conducting a systematic review
3.	Set the location of the research results database as the search area (Scopus, science direct, Proquest, EBSCO)	Provide search area boundaries for relevant research results
4.	Selection of relevant research results	Collecting research results that are relevant to the research question
5.	Selection of quality research results	Exclusion and inclusion of research that will be included in a systematic review based on quality
6.	Extract data from individual studies	Extract data from individual studies to obtain important findings
7.	Synthesis of results by meta-analysis method	Synthesize the results with meta-analysis techniques
8.	Presentation of results	Write the research results in a systemic review report document

As already mentioned, the data collection of research results using a systematic review method is through searching on the internet (Scopus, science direct, Proquest, EBSCO). The difficulty in finding data is how to obtain data on the results of these studies, because many studies have not been published.

Results And Analysis

The total number of articles identified was 2991 articles. Then the duplicates were removed and the remaining 65 articles were for feasibility review. Articles screened based on title identification obtained 11 articles. The full text article feasibility test left 11 research articles for review. After identifying there are all articles using quasi-experimental. The following table shows the search results for each database, including Scopus, Science Direct, PubMed and Google Scholar.

Table 1.3 Search Results From Each Database

No.	Databases	Results	By Title
1.	Scopus	253	3
2.	Science Direct	883	5
3.	Proques	1799	2
4.	EBSCO	56	1

Based on the table above, the search results from each database include Scopus with 3 articles, Science Direct with 5 articles, Proques with 2 articles and EBSCO with 1 article. The articles reviewed were 11 articles. Weaknesses in this search results only use 4 databases.

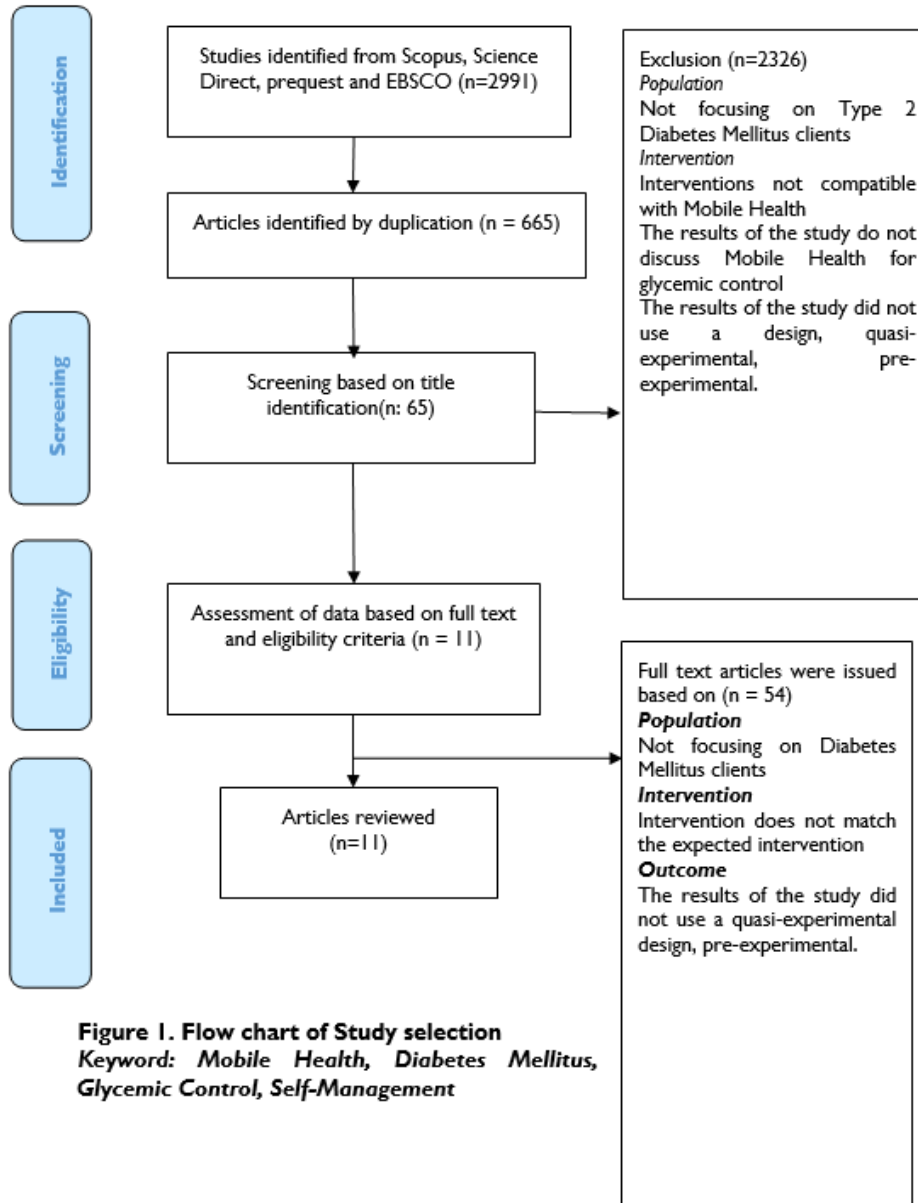


Figure 1. Flow chart of Study selection
 Keyword: *Mobile Health, Diabetes Mellitus, Glycemic Control, Self-Management*

Bias Risk

Table 3.2: Assessment of risk of bias using the JBI critical appraisal checklist for quasi-experimental studies

No	Author, Year	Clarity between cause and effect	Homogeneity of subjects between 2 groups	Participants included in the comparison who received similar treatment/treatment other than the exposure or intervention of interest	Is there a control group
1.	(Huang, et all. 2021)	✓	✓	✓	✓
2.	(Esmailpour-BandBoni, et al., 2021)	✓	✓	✓	✓
3.	(Shariful Islam, et all.2020)	✓	✓	✓	✓
4.	(Duruturk & zköslü,2019)	✓	✓	✓	✓
5.	(Guner &Cosansu, 2020)	✓	✓	✓	✓
6.	(Rough,et al., 2021)	✓	✓	✓	✓
7	(Kumar,et all.2015)	✓	✓	✓	✓
8	(D. Sunil Kumar, et al. 2021)	✓	✓	✓	✓
9	(Harte, et al, 2022)	✓	✓	✓	
10	(Ultimate,et all.2021)	✓	✓	✓	✓
11	(Carolan-Olah& Sayakhot,2019)	✓		✓	✓

Table 3.2 Study Characteristics

No	Author, Year	Design	Number of Respondents
1	(Huang, et all. 2021)	Randomized Controlled Trial	14respondent
2	(Esmailpour-BandBoni, et al., 2021)	Randomized Controlled Trial	66respondent
3	(Shariful Islam, et all.2020)	Randomized Controlled Trial	236 respondents
4	(Duruturk & zköslü,2019)	Randomized Controlled Trial	50respondent
5	(Guner &Cosansu, 2020)	Randomized Controlled Trial	100respondent
6	(Rough,et al., 2021)	Randomized Controlled Trial	63 respondents
7	(Kumar,et all.2015)	Randomized Controlled Trial	667respondent
8	(Sunil Kumar et al., 2021)	Randomized Controlled Trial	300respondent
9	(Harte, et al, 2022)	Randomized Controlled Trial	106 respondents
10	(Ultimate,et all.2021)	Randomized Controlled Trial	60 respondents
11	(Carolan-Olah& Sayakhot,2019)	Randomized Controlled Trial	110respondent

In this study the design used is an experimental study. Experimental research is a systematic research method that seeks to find the effect of a certain treatment given on variables to other variables without being given treatment under controlled conditions. Experimental research is one

type of quantitative research that is very strong in measuring causal relationships. Experimental research has two elements, namely the existence of a (control) group and an experimental group. The group that was given the treatment was called the experimental group and the group that was not treated was called the control group. Both groups were as homogeneous as possible or had the same characteristics. (Sugiyono, 2018).

Results

Table 1

Group × Characteristic	Intervention	Control	Pvalue
Age (years)	66.78 ± 5.07	65.34 ± 4.06	0.256 ^a
Gender			
Male	13 (46.4)	15 (46.9)	0.972 ^c
female	15 (53.6)	17 (53.1)	
Marital status			
Married	18 (64.3)	20 (62.5)	0.461 ^b
Widowed	6 (21.4)	4 (12.5)	
Single	1 (3.6)	5 (15.6)	
Divorced	3 (10.7)	3 (9.4)	
Educational level			
Illiterate ^d	14 (50.0)	17 (53.1)	0.908 ^b
Elementary	8 (28.6)	10 (31.3)	
Guidance school	2 (7.1)	1 (3.1)	
high school	1 (3.6)	2 (6.3)	
Diploma	3 (10.7)	2 (6.3)	
Occupation			
Farmer	9 (32.1)	11 (34.4)	0.660 ^b
housewife	8 (28.6)	11 (34.4)	
Retired	5 (17.9)	7 (21.9)	
Laborer	6 (21.4)	3 (9.4)	
Complementary therapy use			
Yes	22 (78.6)	28 (87.5)	0.491 ^b
No	6 (21.4)	4 (12.5)	
Types of diabetes treatment			
Oral drugs	19 (67.9)	23 (71.9)	0.735 ^c
Insulin	9 (32.1)	9 (28.1)	

Table 2

Time × Group	before	After	PValue	Mean Difference
Control	8.08 ± 0.65	7.90 ± 0.74	0.019	e0.18 ± 0.47
Intervention	7.95 ± 0.66	7.20 ± 0.82	<.001	e0.74 ± 0.60
Pvalue	0.431 ^a	0.001 ^b	<0.001 ^b	

^aResults of the independent-sample t test.

In-group comparisons showed that compared with baseline, HbA1C levels decreased significantly in the intervention and control groups ($P < 0.05$; Table 2). However, the amount of decline in the intervention group was significantly greater than that in the control group ($P < 0.001$).

The comparison between groups revealed that there was no statistically significant difference between the groups regarding the mean pretest HbA1C level ($P 0.431$). However, the mean posttest HbA1C level in the intervention group was significantly lower than the control group ($P < 0.001$; Table 2).

Discussion

Computer-based technology is one of the innovative in the health sector. Tele-rehabilitation which brings health services away through the use of electronic communication systems is a continuity treatment for patient care and health care. Exercise awareness which is an important step for disease

management in addition to follow-up complications, glycemic control, blood pressure, lipidemia, weight and diet can be achieved through tele-rehabilitation procedures. Diabetes education is provided with interactive seminars, video conferences and phone calls and patients are encouraged to do exercises (Duruturk & Özköslü, 2019)

Mobile health is applied to health management in patients with gestational diabetes mellitus. Mobile health can be used to assess its acceptability, user satisfaction, adherence or its effect on weight gain, glycemic control and pregnancy outcomes. Cellular health management has benefits for the prevention of maternal diabetes in the postpartum (Huang Feiling et al, 2021). Text messaging may be a valuable addition to standard medication for diabetes care in low-resource settings and is predicted to lead to overall savings in health system costs. (Islam et al., 2020)

Telenursing is nursing care through information technology, such as telephones, computers, and the Internet. Telephone-based telenursing on glycosylated hemoglobin (HbA1C) in adults. A 3-month telephone-based telenursing program using the Ministry of Health's Diabetes Mellitus Educational Materials demonstrated that telephone-based telenursing is an effective strategy for the management of type 2 diabetes in older adults with type 2 diabetes mellitus (Esmaeilpour-BandBoni et al., 2021)

Telenursing is one of the management of complications, glycemic control, blood pressure, lipidemia, weight and diet. Diabetes education is provided with interactive seminars, video conferences and phone calls and patients are encouraged to do exercises. Patient with physiotherapist one of Telenursing therapy. Telenursing in type 2 DM patients for glycemic control, complications and quality of life of diabetic patients. Tele-medicine applications have improved glycemic control, quality of life and decreased hemoglobin (Hb) A1c values (Duruturk & Özköslü, 2019)

Nursing Implications

The role of nurses as educators/educators is a role that provides knowledge, information, and skills training to patients, patient families and community members in efforts to prevent disease and improve health, in this case nurses can use their role as educators to increase patient and family knowledge. Education using smartphones is a form of innovation so that health education is not boring, more interesting and easy to accept. Knowledge of patients and families will increase so that the anxiety experienced will be reduced.

In addition, nurses can also carry out their role as care givers. The nurse's role as a care giver is a role in providing nursing care with a problem-solving approach in accordance with the nursing method and process. (mHealth) may be an effective and relatively inexpensive approach in the treatment of chronic diseases such as diabetes, coronary heart disease, depression, smoking, hypertension, and others.

Conclusion

Diabetes Mellitus can have a serious impact on physical and mental health and quality of life. Text messaging is a valuable addition to standard medication for diabetes care in low-resource settings and is predicted to lead to overall savings in health system costs. Studies with longer follow-up and larger samples are needed to draw reliable conclusions.

Telenursing is the delivery of nursing care through information technology, such as telephones, computers, and the Internet. Effects of telephone-based telenursing on glycosylated hemoglobin (HbA1C)

in older adults with type 2 diabetes. 3-month telephone-based telenursing program using Diabetes Education Materials Phone-based telenursing is an effective strategy for the management of type 2 diabetes in older adults with type 2 diabetes mellitus.

Limitation

The limitation of this study is a pre-test and post-test control group intervention study to evaluate the impact of diabetes education and SMS reminders on metabolic control and disease management in patients with type 2 DM using a mobile phone.

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Factors Affecting Stress Level among Elderly: A Systematic Review

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ABSTRACT

Introduction: The increasing number of elderly around the world will cause quite complex problems both physically and also psycho-social. The most common psychosocial problem among the elderly is stress. This study's aim is to review factors affecting stress levels among the elderly.

Methods: A systematic review was conducted to investigate factors affecting stress levels among the elderly. Studies are obtained from Google Scholar, Europe PMC, Science Direct, and PubMed databases for cross-sectional, case-control, and cohort studies, published between 2015 and 2021, using subject headings and synonyms as keywords: elderly, elder, older age, factor affecting, predisposing or influencing factor and stress. Moreover, JBI (Joanna Brings Institute) was used as a quality evaluation of the journals. Next studies were extracted and analyzed by thematic analysis.

Results: The search identified 1.754 relevant studies, and 20 studies have met the criteria. From the 20 journals obtained, there are 8 journals that discuss biological factors that affect stress levels among the elderly such as alcohol consumption, disease, decreased sleep quality, age, and gender, and 3 journals that discuss psychological factors such as loneliness and emotional control. The majority of the journal (11 journals) found that sociocultural factors are influencing stress levels among the elderly such as psycho-social problems, social support, psycho-spiritual actions, and discrimination.

Conclusion: Based on the results of the systematic review, it can be concluded that there are various factors that affect stress levels among the elderly, but the majority previous studies obtained that sociocultural factors are the most often influence stress levels among aging people.

Keywords: predisposing factor; stress; elderly; systematic review

INTRODUCTION

The quality of health services and awareness of the importance of healthy living for each individual, in general, are increasing, this has an impact on increasing life expectancy, so it is estimated that by 2050, 1 in 6 people in the world will be over 65 years old, this figure is increasing rapidly compared to 2019. The extension of life expectancy will be a revolution for citizens in every country. In general, all countries in the world will experience this transition, in which the chances of surviving to the age of 65 years will increase, from less than 50% as happened in Sweden in the 1890s, to more

than 90% as it is today occurs in countries with the highest life expectancies. This change is also reflected in social changes, where the elderly group forms a growing demographic group in society. The proportion of elderly people makes up more than one-fifth of the total population in 17 countries today, and the Department of Economics and Social Affairs Population Division projections through the end of the century suggest that this will occur by 2100 for 155 countries, covering 61% of all world population (UN, 2019 ; PBB, 2020; UN DESA Population Division, 2020).

The increase in life expectancy on the other hand raises its own problems considering that the elderly are certain to experience various declines physically, mentally, and socially. In old age, there will be a process of gradual loss of tissue to perform its function in meeting the needs of life. As people get older, it is likely that a person also experiences problems such as physical, mental, spiritual, and socio-economic. Several studies also show that along with increasing age there is also an increase in facts related to the risk of death, health status, decreased ability to perform the type and level of activity, productivity, and other socio-economic characteristics of the elderly group which have also changed significantly. These changes are often perceived as triggers for stress in the elderly so that they become aggravate the health conditions of the elderly themselves (Eliopoulos, 2018; European Commission, 2021; PBB, 2020 ; Lin et al., 2021).

With changes in lifestyle and social roles, the elderly are a vulnerable group who have a high risk of various mental health problems (Yang et al., 2020). WHO (2021) states that depression and dementia are common health problems associated with aging in addition to various physical health problems such as chronic diseases. More than 20% of the elderly suffer from mental disorders or neurological disorders (excluding headache disorders) (Fang et al., 2019). According to previous research, the increasing number of elderly people in Indonesia will cause quite complex problems both physical and psychosocial problems (Selo, Candrawati, & Putri, 2017). The most common psychosocial problem in the elderly is stress. In general, people who experience stress feel feelings of worry, pressure, fatigue, fear, depression, anxiety, and anger (Santosa, Ikhsan, & Pratama, 2016). A report by the China Aging Development Foundation in 2018 showed that 63% of Chinese elderly people often feel lonely, with 62% experiencing frequent stress or depression (China Aging Development Foundation, 2018). In addition, previous studies have shown that mental disorders play a major role in suicide attempts in rural China, and almost all suicide perpetrators are elderly people with known mental disorders or a history of previously untreated stress (Liu, B. P et al. 2018; Hockey, M. et al. 2022).

Stress in the elderly and its related factors have become an interesting discussion in previous studies. The results of several systematic reviews published in the period 2000 state that there is no consistent pattern across studies for age differences in the occurrence of anxiety, depression, or distress. The most common trend found was for an initial rise across age groups, followed by a drop. Two major factors producing this variability in results were age biases in the assessment of anxiety, depression, stress, and the masking effect of other risk factors that vary with age. When other risk factors were statistically controlled, a more consistent pattern emerged, with most studies finding a decrease in anxiety, depression, and distress across age groups. This decrease cannot be accounted for by the exclusion of elderly people in institutional care from epidemiological surveys or by selective mortality of people with anxiety or depression (JORM, A. 2000). Meanwhile, other systematic reviews reveal that bereavement, sleep disturbance, disability, prior depression, and female gender appear to be important risk factors for depression among elderly community subjects (Cole & Dendukuri, 2003).

Along with changes in health services for the elderly, social and economic arrangements in society, as well as values in the family cause changes to the incidence of stress in the elderly and the

factors that influence it. As a problem that is most often experienced by the elderly group and its impact is very detrimental, it is necessary to periodically update information related to the factors that trigger stress in the elderly on a regular basis based on the latest literature. Based on this background, the main purpose of this systematic review is to describe the factors that cause stress in the elderly based on a review of the latest research results.

METHODS

Study Design and Literature Search Strategy

The research design used in this study is a systematic review. The literature search strategy and selection criteria are as follows: In obtaining references in this study, the researchers did this by searching for journals from several search sites used, including Google Scholar, Europe PMC, Science Direct, and Pubmed. Based on the title studied, namely the factors that influence stress levels in the elderly based on literature studies, so to get the desired journal, the researcher uses keywords as described in table 1 below

Table 1. Keywords used during Literature Search

	P-E-O	Sinonim
	P : Elderly	Boolean : OR Elder, older adult
Keyword 1	E :Predisposing Factors Boolean : AND	
Keyword 2	O : Stress	

Selection Criteria, Screening and Quality Evaluation

The topic studied in this study is the factors that influence stress levels in the elderly based on literature studies. In this study, data filtering was carried out to select journals in accordance with the following provisions: Journals with the last 5 years (2016-2021), reputable international journals, accessible full text, cross-sectional research design, cohort, case-control, and case reports. . In this study, quality assessment uses JBI critical appraisal tools. The assessment process must include a level of information that matches the predetermined assessment criteria, and at least meets the criteria of more than 50% (Aromataris & Munn, 2020). In general, the flow of the literature search and screening process is as described in figure 1 below.

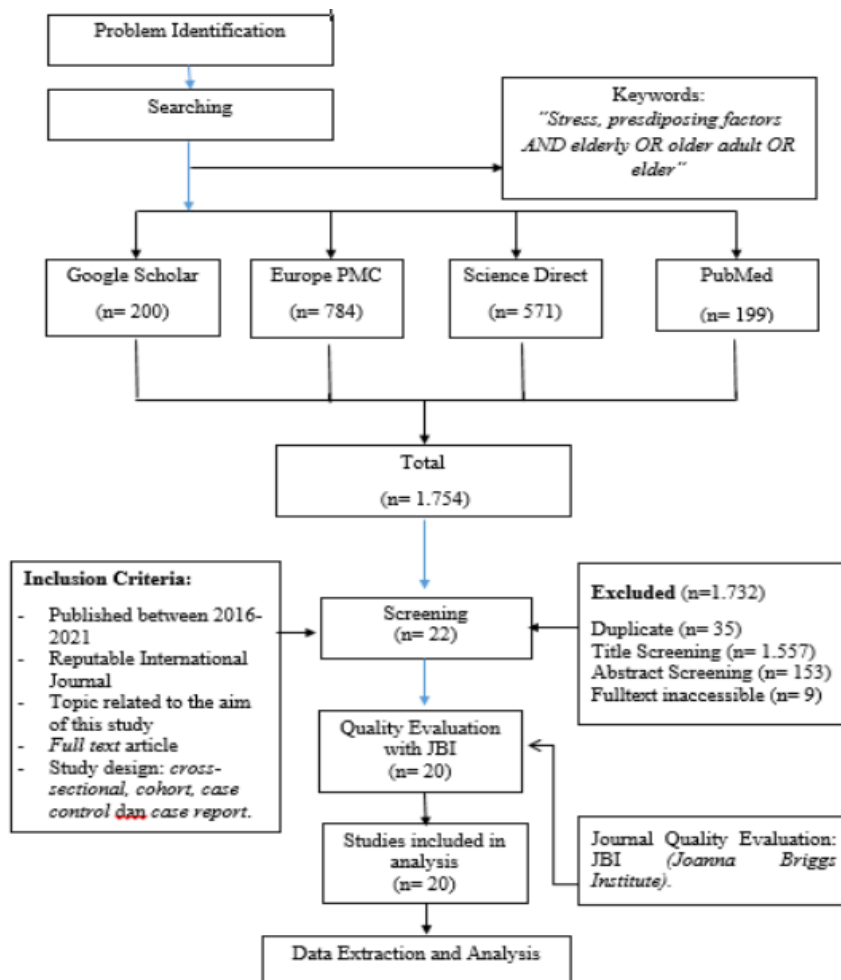


Figure1: PRISMA Study Flow

Data Extraction and Analyze

This study involved extracting data related to the population related exposures, and outcomes (PEO components). To standardize this process and increase the validity of the results, researchers will compile data extraction tables and classify the data collected from research results based on research identities which include: title, year, author, country, research objectives JBI scores, research methods, and research results (Saltikov, 2012). Furthermore, the data analysis process is carried out using thematic analysis to saturate the information obtained from selected research journals. The results of data extraction and JBI score assessment areas presented in table I below:

Table I. Data Extraction and Quality Assessment Table

No	Title, Author, Year of Published and Country	Purpose of and quality of the study	Method	Result
1.	Stress and associated risk factors among the elderly: across-sectional study from rural area of Thailand (Seangpraw, Auttama, Kumar, Somrongthong, Tonchoy, & Panta, 2020) Thailand	This study aims to determine the level of stress and related factors in the elderly living in rural Thailand. Quality Score = 75%	Design: Cross-sectional study Sample: 403 elderly people with an average age of 68 years Instruments: Questionnaire of socioeconomic characteristics, Suangprung stress test-20, stress management score 10 items. Analysis: stepwise linear regression and descriptive.	Stress was significantly associated with alcohol and illness. Factors that can affect stress in the elderly are alcohol and disease.
2.	Prevalence and factors associated with depression, anxiety and stress symptoms among older adults: A cross-sectional population-based study (Thapa, Visentin, Kornhaber, & Cleary, 2020) Australia	To estimate prevalence and factors associated with depression, anxiety and stress symptoms. Quality Score = 75%	Designs: Cross-sectional study Samples: 794 elderly with an average age of 71.1, 52.1% male, 47.5% unable to write and read 61% married, and 47.1% working in agriculture. Instruments: Instrumental Activities of Daily Living; Multidimensional Scale of Perceived Social Support; Questionnaire about social activities; Questionnaire about family Analysis: multivariate model; stratified logistic regression.	Factors that were positively related to stress were perceived health status, adverse life events, receiving a pension, working in agriculture compared to non-employment and number of chronic conditions. Factors that were negatively related to stress were having a foreign job compared to agriculture as the main source of household income, receiving social support, being native to the upper caste group (Brahmin/ chhetri), and participation in social activities.
3.	Perceived Stress and Sleep Quality in Midlife and Later: Controlling for Genetic and	To investigate common disturbances as mediators and cognitive/emotional control as moderators of the	Designs: Cross-sectional Samples: 1161 participants with an age range of 34-84 years. There are 296 twins.	Generalized disorders mediate the relationship between stress and sleep while emotional/cognitive control protects the impact of stress on generalized disorders. The variation in

<p>Environmental influences</p> <p>(Hu, Visser, & Kaiser, 2019)</p> <p>USA</p>	<p>stress–sleep relationship and to estimate the influence of genes and the environment on these mechanisms.</p> <p>Quality Score = 75%</p>	<p>Instruments: The Pittsburgh Sleep Quality Index</p> <p>Analysis: Pearson correlation; ACE models; Structural equation models.</p>	<p>The sleep quality 7.69% was explained by genetic and family factors and 8.26% was explained by individual-specific factors. Emotional/cognitive control only moderated the individual-specific relationship between stress and sleep.</p>
<p>4. Factors affecting psychological stress of elderly in urban Bangladesh</p> <p>(Uddin, Kabir, & Islam, 2019)</p> <p>Bangladesh</p>	<p>To assess the psychological stress of urban elderly living in Sylhet district, Bangladesh.</p> <p>Quality Score = 62.50%</p>	<p>Designs: Cross-sectional</p> <p>Samples: 390 respondents aged 60 years and over. 72.56% male, and 27.44% female; 94.10% are married</p> <p>Instruments: interview using a structured questionnaire about stress, socio-demographic and socio-economic characteristics</p> <p>Analysis: Logistic regression analysis</p>	<p>Gender, religion, age, income, blood pressure, exercise, and sleep patterns are significant factors associated with psychological stress in the elderly.</p>
<p>5. Psychological Distress and Social Functioning in Elderly Spanish People: A Gender Analysis</p> <p>(Matud & Garcia, 2019)</p> <p>Spain</p>	<p>To determine the relationship between sex with psychological disorders and social function in the elderly.</p> <p>Quality Score = 75%</p>	<p>Designs: Cross-sectional</p> <p>Samples: 589 men and 684 women from the general Spanish population aged between 65-94 years.</p> <p>Instruments: GHQ-28; Life Events Questionnaire; Chronic Stress Questionnaire; Coping Styles Questionnaire; York Self-Esteem Inventory; Social Support Scale</p> <p>Analysis: Hierarchical multiple regression analysis</p>	<p>Women scored higher than men on psychological distress, chronic stress, emotional coping and instrumental social support, while men scored higher than women on self-esteem and rational coping. Psychological distress was significantly associated in women and men with poorer social functioning, which was also lower in the elderly and in women with lower self-esteem.</p>
			<p>Psychological disorders have a considerable impact on the social functioning of the elderly, and gender is a relevant factor in the psychological distress experienced and its predictor.</p>

6.	<p>Factors influencing perceived health status among elderly workers: occupational stress, frailty, sleep quality, and motives for food choices</p>	<p>This study aims to determine work stress, vulnerability, sleep quality, and food choice motives as key factors influencing perceptions of health status in elderly workers.</p>	<p>Designs: Cross-sectional Samples: 175 participants consisting of 144 women and 31 men with an average age of 72.76 Instruments: Korean Occupational Stress Scale Short-Form (KOSS-SF); Korean Frailty Index (KFI); Pittsburgh Sleep Quality Index (PSQI); Food Choice Questionnaire (FCQ); Perceived health status was assessed using a 3-item Questionnaire Analysis: Pearson's correlation analysis and multiple regression analysis; multivariate linear regression</p>	<p>Job stress, fragility, and sleep quality scores showed significant negative correlations with perceived health status.</p> <p>In contrast, the 5 food choice motives (health, weight control, price, sensory attractiveness, and mood) were positively correlated with perceived health status.</p> <p>Linear regression analysis showed that job stress, vulnerability, and food choice motives based on sensory attractiveness were significant influencing factors for perceived health status.</p>
<p>(Ha & Kim, 2019)</p>	<p>Quality Score = 75%</p>	<p>South Korea</p>		
7.	<p>Loneliness, Stress, and Depressive Symptoms Among the Chinese Rural Empty Nest Elderly: A Moderated Mediation Analysis</p>	<p>To explore the relationship between loneliness, perceived stress, and depressive symptoms in the elderly in China.</p>	<p>Designs: Cross-sectional Samples: There were 603 participants consisting of 283 men and 320 women with an average age of 73.61 years. Instruments: The Loneliness Scale ULS-6; Chinese Perceived Stress Scale (CPSS); Derived Center for Epidemiological Studies Depression Scale (CES-D); SOC Scale Analysis: SPSS version 21.0; AMOS version 22.0; χ^2/df, the root mean square error of approximation (RMSEA); values of comparative fit index (CFI); goodness of fit index (GFI); normed fit index (NFI); incremental fit index (IFI); Hayes' PROCESS macro</p>	<p>Perceived stress mediates the relationship between loneliness and depression. Symptoms, and SOC act as moderators in this mediation model. The mediating effect of perceived stress was significant only if the SOC was lower. The results emphasize the importance of perceived stress in older adults. SOC is a protective factor with respect to depressive symptoms, and improvement of SOC should be a focus of health promotion with the elderly.</p>
<p>(Huang, et al., 2019)</p>	<p>Quality Score = 87, 5%</p>	<p>China</p>		

8.	<p>The Relationship Between Religious and Psychospiritual Measures and an Inflammation Marker (CRP) in Older Adults Experiencing Life Event Stress</p> <p>(Ironson, Lucette, Hylton, Pargament, & Krause, 2018)</p> <p>USA</p>	<p>To determine the effect of spirituality, religion on the elderly and CRP on the elderly who have experienced stressful life events.</p>	<p>Designs: Cross-sectional Samples:643 with an average age of 66.10 consisting of 59 women and 41% men Instruments: Religious Services Attendance; Prayers; Religious Meaning; Religious Hope; General Meaning in Life; General Hope/Optimism; Peace Four; Health Behavior Control Variables; Social Support; Biological and Demographic; C-Reactive Protein (CRP); Analysis: Hierarchical regression; SPSS version 21.0; logistic regression.</p>	<p>The presence of religious services may provide protection in older adults who experience a stressful event because it is significantly associated with lower CRP, which is associated with illness.</p>
9.	<p>Disentangling the Stress Process: Race/Ethnic Differences in the Exposure and Appraisal of Chronic Stressors Among Older Adults</p> <p>(Brown, Mitchell, & Ailshire, 2018)</p> <p>Los Angeles</p>	<p>To examine racial/ethnic differences in stress load using an integrating framework exposure to chronic stress with an assessment of how</p> <p>Stress is considered distracting.</p>	<p>Designs: Cross-sectional Samples:6567 participants consisting of 54% women, 46% men with an average age of 66.3 Instruments: Researchers measured total chronic stress exposure using a calculation of the number of chronic stressors reported to be experienced by respondents (range: 0-7); and also create a stress rating scale; Questionnaire about socio-demography Analysis: Poisson regression models; logistics models; ordinary least squares (OLS).</p>	<p>Seniors of black and Hispanic descent report more exposure to chronic stress than whites and are two to three times more likely to experience financial stress and housing-related stress.</p> <p>Socioeconomic factors fully explain Hispanic-white differences in stress exposure, but black-and-white differences persist. Despite experiencing more stressors, U.S.-born blacks and Hispanics were less likely to feel irritated by exposure to stress than whites. Hispanics born in the US were less bothered by relationship-based stress specifically, while blacks were less upset across all stress domains in the fully adjusted model.</p>
10.	<p>A study to assess stress related</p>	<p>To assess stress-related problems among elderly</p>	<p>Designs: Cross-sectional Samples:60 elderly consisting of 30 men and 30</p>	<p>The most significant finding was that 100% of women and 86.6% of men in this</p>

<p>problems among Geriatric Men and Women in a selected rural area in Hassan district</p>	<p>men and women in a rural area of Hassan district.</p>	<p>women with an age range of 64 -> 73 years. Instruments: The DASS 42 Analysis: Test T Value; Chi Square</p>	<p>study belonged to the age group between 64-73 years. 43% of women and 23.4% of men experienced mild to moderate levels of anxiety and only 6.7% of men with mild stress, 6.6% of women with moderate to severe stress, and 6.7% of men and 3.3% of women with severe stress.</p>
<p>(Thomas, 2017)</p>			
<p>India</p>			
<p>11. Factors Influencing the Prevalence of Mental Health Problems among Malay Elderly Residing in a Rural Community: A Cross Sectional Study</p>	<p>To determine the prevalence of mental health problems (depression, anxiety, and emotional stress) and related factors in the elderly in Malaysia.</p>	<p>Designs: Cross-sectional study Samples:230 respondents consisted of 92 men and 138 women aged 60 and over. Instruments:DASS-21 Analysis: Chi Square; Multiple Logistics Regression.</p>	<p>Significant stress-depression factors were single elderly, living with family, and poor general health status. Living with family was the only significant factor for anxiety.</p>
<p>(Manaf, Mustafa, Rahman, Yusof, & Aziz, 2016)</p>			
<p>Malaysia</p>			
<p>12. Structural Equation Modeling to Assess Discrimination, Stress, Social Support, and Depression among the Elderly Women in South Korea</p>	<p>To find out the relationship and conceptual model of discrimination, stress, support, and depression among the elderly in South Korea.</p>	<p>Designs: Cross-sectional Samples: 207 elderly aged 65 years and over. Instruments: Stress recognition scale, Multi-dimensional Scale of Perceived Social Support, Geriatric Depression Scale Short Form (GDS-SF). Analysis: Descriptive statistics; T test; Analysis of variance; Scheffe test; Structural equation modeling</p>	<p>There was a significant effect of discrimination on stress, support on stress and stress on depression. In addition, two significant indirect effects were observed between discrimination and depression, and between support and depression. For each indirect effect, the intermediate factor is stress. In addition, there was no direct effect between discrimination and depression or support.</p>
<p>Quality Score = 75%</p>			
<p>(Lee & Kim, 2016)</p>			
<p>South Korea</p>			
<p>13. Common stress factors faced by elderly in Deoli</p>	<p>To find out the common stress factors faced by the elderly in the</p>	<p>Designs: Cross-sectional study Samples:200 elderly people aged 60 years and</p>	<p>The elderly are more stressed from psychosocial problems than physical problems. They mostly</p>

<p>area of Wardha District (Sourabh, S, N, A, L, & V, 2016) India</p>	<p>Deoli area of the Wardha district Quality Score = 75%</p>	<p>over consisting of 70 men and 130 women. Instruments: Stress factors are checked based on physical stress and psychosocial stress in the elderly. Analysis: Descriptive statistics; Microsoft Excel</p>	<p>suffer from limited physical activity (78%), back pain (66%) and joint pain (54%), sleep disturbances (88%), decreased social life (88%), poor concentration (76%), and dependence. financial (50%).</p>
<p>14. Superoxide imbalance triggered by Vall6Ala-SOD2 polymorphism increases the risk of depression and self-reported psychological stress in free-living elderly people (Ijung, et al., 2019) Brazil</p>	<p>To suggest that the risk of depression and psychological stress in the elderly may be influenced by the superoxide-hydrogen peroxide imbalance triggered by the Vall6Ala-SOD2 SNP. Quality Score = 100%</p>	<p>Designs: Case-control study Samples:612 elderly with an age range of 60-82 years. It consists of 115 group D diagnosed with depression and 497 group C as the control group. Instruments: interview using the Geriatric Depression Scale-15 (GDS-15) to diagnose depression in the elderly and also the elderly's perception of psychological stress. Analysis: Chi-Square test; Fisher test; Analysis of variance (ANOVA); Logistic regression</p>	<p>The VV-SOD2 genotype significantly increased the risk of depression and psychological stress in elderly subjects, regardless of sex/gender, age, and previous illness and health indicators (risk of depression = 1.842, 1.109–3.061 95% CI, p = .018) . VV subjects also had a higher daily intake of antidepressants, anxiolytics, and anti-inflammatory drugs than the A-allele subjects.</p>
<p>15. How are neuroticism and depression related to the psychophysiological stress response to acute stress in healthy older people? (Puig-Perez, Villada, Pulpulos, Hidalgo, & Salvador, 2016) Spain</p>	<p>To analyze the effects of neuroticism and depression on the psychophysiological responses of healthy elderly people who are exposed to stress or not. Quality Score = 80%</p>	<p>Designs: case control Samples:71 elderly with an age range of 55-76 years consisting of 36 elderly with stress conditions and 30 elderly with non-stress conditions. Instruments: Eysenck personality questionnaire-revised, Beck depression inventory (BDI), Positive and negative affect (PANAS), State-Trait Anxiety Inventory (STAI). Analysis: Statistical analyses; ANOVA; Moderation regression analysis</p>	<p>Neuroticism is not associated with a physiological stress response. However, depression was associated with higher cortisol responses and lower HR reactivity under stressful conditions. In summary, emotional states such as depressed mood appear to amplify the stress response to cortisol and reduce the cardiovascular response, whereas more stable dispositions such as neuroticism do not affect the stress response in the elderly.</p>

16.	<p>COVID-19 Pandemic: Age-Related Deference's in Measures of Stress, Anxiety and Depression in Canada</p> <p>(Nwachukwu, et al., 2020)</p> <p>Canada</p>	<p>Psychopathologic al relationships in different age groups during the COVID-19 pandemic in Canada.</p> <p>Quality Score = 88.89%</p>	<p>Designs: Cohort Study</p> <p>Samples:8267 respondents consisting of 909 aged 25 years, 2939 aged 26-40 years, 3431 aged 41-60 years, 762 aged 60 years and 226 ages who were not identified.</p> <p>Instruments: Perceived Stress Scale (PSS), the Generalized Anxiety Disorder 7-item (GAD-7) scale and the Patient Health Questionnaire-9 (PHQ-9).</p> <p>Analysis: ANOVA; Welch F Test; Games-Howell post hoc test</p>	<p>There were 8267 people who completed the survey, providing a response rate of 19.4%. The mean scores on the PSS, GAD-7, and PHQ-9 scales were highest among those aged = 25 and lowest among those aged > 60 years.</p>
17.	<p>Factors increasing the risk for psychosocial stress among Korean adults living in rural areas: using generalized estimating equations and mixed models</p> <p>(Nam, et al., 2017)</p> <p>Korea</p>	<p>To analyze the distribution of the psychosocial well-being index among adults living in two rural communities in Korea and to examine its relationship to lifestyle variables such as sleep duration, regular exercise, and sedentary time.</p> <p>Quality Score = 72.73%</p>	<p>Designs: Cohort Study</p> <p>Samples: 3631 participants with an age range of 40-73 years consisting of 41.8% men and 58.2% women.</p> <p>Instruments: Psychosocial Well-being Index-Short Form (PWI-SF) and conducted a survey on lifestyle measurements such as sleep duration, exercise, and sedentary behavior.</p> <p>Analysis: ANOVA; Chi-Squared test; Paired t-test; RM-ANOVA; post-hoc Bonferroni correction</p>	<p>The PWI-SF high-risk group was found in 18.9% of participants from baseline and 15.5% from follow-up data. The odds ratio for the high-risk group PWI-SF was 1.503 (95% CI 1.241 - 1.821) in the short sleep duration group and 1.327 (95% CI 1.136 - 1.550) in the irregular exercise group. A stratified analysis by occupation showed that medium and long sedentary time in the white-collar group (managers, professionals, clerks, and entrepreneurs) increased the risk for the high-risk group for PWI-SF.</p>
18.	<p>Air pollution and self-perceived stress and mood: A one-year panel study of healthy elderly persons</p>	<p>To examine the relationship between NO2 exposure and perceived stress and mud in the elderly.</p> <p>Quality Score = 75%</p>	<p>Designs: Panel/ Longitudinal study</p> <p>Samples:20 participants consisting of 10 men and 10 women, with an age range of 58-76 years.</p> <p>Instruments: Perceived Stress Scale (PSS), Positive and Negative Affect</p>	<p>Short-term exposure to air pollution can cause non-pathological mood changes in a healthy elderly population.</p>

	(Nuyts, Nawrot, Scheers, Nemery, & Casas, 2019)		Schedule (PANAS), Radiello diusive samplers. Analysis: SAS 9.4; Mixed-effects regression models; log-transformed	
	Belgium			
19	Factors affecting psychological distress among Asian American and non-Hispanic White older adults (Paek et al., 2019)	To examine factors affecting psychological distress in older adults Asian Americans and non-Hispanic Whites using survey data in a population-based study Quality Score = 85%	Designs: Descriptive exploratory – cross sectional Samples: adults aged between 65 and 84 years who classified themselves as Asian American (n= 1,417) or non-Hispanic White (n= 9,170). Respondents with missing values on psychological distress (n=110) or with a mixed ethnic background (n= 21) were excluded from the analysis Instruments: Psychological distress was measured using the K6 scale (Kessler et al., 2002) Analysis: Multivariate logistic regression analyses	The result revealed that disability, poor/fair health, and neighborhood environmental factors, such as unsafe neighborhoods and low social cohesion, were significantly associated with psychological distress in both ethnic groups. People aged between 65 and 69 years, women, non-homeowners, and those living at less than 200% of the federal poverty level had increased odds of psychological distress among the non-Hispanic Whites. For Asian Americans, physical inactivity was associated with an increased rate of psychological distress.
	USA			
20	Impact of Multimorbidity on Symptoms of Depression, Anxiety, and Stress in Older Adults: Is There a Sex Difference? (Lin et al., 2021)	to assess the impact of multimorbidity on depression, anxiety, and stress symptoms and identify whether there is a sex difference in these associations Quality Score = 85%	Designs: cross-sectional study Samples: 3,250 participants aged 60 years and older Instruments: Depression, anxiety, and stress were measured using the Chinese version of the 21-item Depression, Anxiety, and Stress Scale (DASS-21) and Self-made Questionnaire About Chronic Diseases Analysis: Multiple linear regression	Multimorbidity is strongly associated with depression, anxiety, and stress symptoms. In addition, the positive relations between multimorbidity and depression, anxiety, and stress symptoms are stronger for older female than male adults
	China			

RESULTS

General Information of Studies

Based on the results of a review of 20 journals related to factors that affect stress levels in the elderly, the most journals were in 2019 as many as 8 journals (40%). While the research design used was cross-sectional as many as 15 journals (75%). And based on the continent, most journals came from Asia as many as 10 journals (50%).

Tabel 2. General Characteristic of Studies

Category	N	%
Year of Published		
2016	4	20
2017	2	10
2018	2	10
2019	8	40
2020	3	15
2021	1	5
Total	20	100
Study Design		
Cross-Sectional	15	75
Case-Control	3	15
Cohort Study	2	10
Total	20	100
Continent		
Afrika	2	10
Amerika	6	30
Asia	10	50
Australia	1	5
Eropa	1	5
Total	20	100

Result of Data Analysis

In the process of taking notes, the researcher found several key terms needed. Then Identify the theme and its description. This can be seen in Table 3 below.

Table 3. Code – Theme and Description

Code	Theme	Description
Alcohol Disease Decreased sleep quality Age Gender	Biological Factor	There are 9 journals that discuss biological factors that affect stress levels in the elderly.
Lonely Emotion control	Psychological Factors	There are 3 journals that discuss psychological factors that affect stress levels in the elderly.
Income and employment status. Social support Psychospiritual action. Discrimination Pollution Dependency	Socio-Cultural Factors	There are 10 journals that discuss socio-cultural factors that affect stress levels in the elderly

Based on table 3 above, it is known that there are 9 journals that discuss biological factors that affect stress levels in the elderly such as alcohol consumption, disease, decreased sleep quality, age, and gender. Psychological Factors Affecting Stress Levels in the Elderly, there are 3 journals that discuss psychological factors that affect stress levels in the elderly such as loneliness. Socio-Cultural Factors Affecting Stress Levels in the Elderly, there are 10 journals that discuss socio-cultural factors that affect stress levels in the elderly such as income and work status, social support, psychospiritual actions, discrimination, pollution, and dependence.

DISCUSSION

Biological factors that can increase stress levels in the elderly include heredity, nutrition, and health (Muhith & Sitoyo, 2016). In the literature review that has been carried out, there are 6 journals that discuss biological factors that can increase stress levels in the elderly. Based on Seangpraw, Auttama, Kumar, Somrongthong, Tonchoy, & Panta (2020) shows that alcohol consumption can affect stress levels in the elderly. Stressed elderly usually prefer alcohol to relax mentally. A study showed a positive relationship between stress and drinking alcohol, especially in the elderly population. While consuming alcohol can worsen the health conditions of the elderly (Hongthong, Somrongthong, & Womgchaiya, 2016).

Previous research has shown that disease can also affect stress levels in the elderly (Seangpraw, Auttama, Kumar, Somrongthong, Tonchoy, & Panta, 2020). This is following other studies which state that the number of chronic conditions suffered by the elderly can increase stress levels the elderly

(Thapa, Visentin, Kornhaber, & Cleary, 2020). This is also in line with research that proves that superoxide imbalance triggered by the Val16Ala-sOD2 polymorphism which is a genetic factor in chronic disease can increase the risk of stress in the elderly (Ijung, et al., 2019).

Several studies indicate that there is a significant relationship between the gender of the elderly and psychological stress, where stress scores in women are higher than in men (Udin et al, 2019; Matud et al, 2019). However, this finding is in contrast to research from Manaf et al (2016) which showed that there was no significant relationship between gender and stress scores. This difference is possible due to several factors such as too few samples. Concerning stress, gender is an important variable related to emotional coping styles when experiencing psychological stress. Women show higher stress than men because their coping styles are more emotional and less rational and their self-esteem is lower (Matud & García, 2019).

Several studies have shown that there is a significant relationship between age and psychological stress. The average stress score in the elderly over 60 is the lowest compared to younger participants (Uddin et al. 2019; Nwachukwu et al. 2020). In contrast, Thomas (2017) and Manaf et al. (2016) stated that there is no significant relationship between age and stress scores. The difference in these results is because the samples taken are small and in certain areas so they cannot be generalized. The increasing age of the elderly will experience system changes that often cause problems in health conditions (Azizah, 2011). In addition, the elderly will also experience changes in body organs so they tend to be prone to diseases, especially chronic diseases, and it stimulates stress in the elderly (Rahman S., 2016).

The elderly can also experience a decrease in sleep duration which can affect stress levels (Nam, et al., 2017). This is in accordance with the research of Udin et al. (2019) which shows that the elderly who have poor sleep patterns are more stressed than the elderly who have good sleep patterns. This shows that a good sleep pattern is an important factor in reducing stress in the elderly, but in general, as the elderly get older, sleep duration generally decreases. Short sleep duration can cause fatigue and mood disorders that are at risk of increased stress which affects health (Magee, Caputi, & Iverson, 2011). One study reported that having 5 hours of sleep or less increased the risk of stress by 1.9 times (Lee M-S, 2015).

Based on the review of several previous studies, there are 3 journals that discuss psychological factors that can increase stress levels in the elderly. Loneliness can increase stress levels, which affect stress levels in the elderly. This is in line with research by Huang et al. (2019) which shows that loneliness is positively related to perceived stress. So the higher the perceived loneliness, the higher the stress level. Likewise, Christiansen et al. (2016) showed that this loneliness can affect stress thereby worsening health conditions. Loneliness is an unpleasant emotional state that results from a reduction in desirable social contacts (Peplau & Perlman, 1982). For example, the elderly separated from their families or lost their partners. Loneliness in the elderly is at risk of increased stress which affects health conditions (Hawkey, 2010).

According to Hu, Visser & Kaiser's research (2019), emotional control mediates the relationship between perceived stress and general distress. Emotional control is a variable that helps block or attenuate perceived stress and general distress. Individuals who have a high level of control do not show that they have stress. So increasing individual emotional control can be a tool to manage stress and maintain better psychological and physiological health.

The majority of studies discussed in this systematic review revealed that socio-cultural factors influence the stress levels of the elderly. Sourabh et al. (2016) stated that the majority of the elderly experience stress caused by psychosocial problems compared to physical problems such as sleep

disturbances and poor concentration. The decline in social life, dependence on others, financial dependence, feeling a loss of respect from children and grandchildren, as well as dependence on other family members, are felt to be more likely to cause stress in the elderly. In line with this statement, Thapa et al. (2020) and Uddin et al. (2019) have proven that there is a relationship between income and work status on elderly stress. Economic conditions are the most influencing factors for stress in the elderly. Although other studies have proven otherwise, there is no relationship between income and work status on stress in the elderly (Thomas, 2017; Manaf et al. 2016).

Moreover, discriminatory treatment can also increase stress in the elderly (Lee & Kim, 2016). The elderly are a group that often experience discrimination and tend not to have social rights (Wood G, 2008). This is also consistent with research that proves that black, white, and Hispanic races experience different stress exposures. Blacks and Hispanics report two to three times more exposure to chronic stress than whites, especially stress related to financial and housing stresses (Brown, Mitchell, & Ailshire, 2018). Next, there are 4 studies that discuss factors that can reduce stress levels in the elderly such as social support and psychospiritual actions. Based on Lee and Kim (2016), there is a significant influence between social support and stress levels in the elderly. This is in accordance with Thapa et al. (2020) which shows that receiving social support can reduce stress. In other words, social support for the elderly can overcome stress in the elderly.

Religious and psychospiritual actions significantly help the elderly cope with stress (Ironson, Lucette, Hylton, Pargament, & Krause, 2018). This is in accordance with research (Uddin, Kabir, & Islam, 2019) that there is a relationship between religion and stress. Elderly who have religious activities may have positive health behaviors, low-stress lifestyle, greater social bonds and support, high self-esteem or self-confidence, effective coping strategies, positive emotions, and healthy beliefs (Ellison, 1998). . So that the elderly can take advantage of these activities in dealing with stress. Exposure to air pollution can also affect stress levels. Unfortunately, based on (Nuyts, Nawrot, Scheers, Nemery, & Casas, 2019) the elderly who are exposed to short-term pollution are not associated with stress levels, but the pollution can affect mood changes in the elderly. This is due to the lack of observed samples.

CONCLUSIONS

Based on the results of a systematic review, it can be concluded that there are factors that can affect stress levels in the elderly which can increase and decrease stress levels the elderly. Biological factors that affect stress levels in the elderly such as alcohol consumption, disease, decreased sleep quality, age, and gender. While psychological factors that affect stress levels in the elderly such as loneliness, and emotional control. As well as socio-cultural factors that affect stress levels in the elderly such as income and employment status, social support, psychospiritual actions, discrimination, pollution, and dependence.

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CONFLICT OF INTEREST

Hereby as the main researcher, my name: Nur Lailatul Masruroh state that there is no conflict of interest in this research.

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Occupational Stress towards Caring Behavior of Nurses in the Intensive Care Unit (ICU) during Pandemic Covid-19

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ABSTRACT

Introduction: The emergence of occupational stress in the intensive care unit (ICU) during pandemic covid-19 will impact nurses' physiological, psychological, and performance. The psychological condition of nurses may influence the caring behavior of nurses towards patients. This study aimed to determine the relationship between occupational stress and the caring behavior of nurses in the ICU.

Methods: This study was a cross-sectional research, conducted in a hospital in Lumajang District, East Java, Indonesia. There were twenty-eight nurses as the study sample obtained by a total sampling technique. The research instruments used Expanded Nursing Stress Scale (ENSS) and caring Behavior Inventory-24 (CBI-24). The data analysis using Kendall-Tau with 95 % CI.

Results: The results showed that most nurses experienced occupational stress with a median of 81 (min-max: 1-141) and caring behavior with a mean value of 132,11 (\pm SD: 4,864). There was a significant relationship between work stress and nurses' caring behavior ($p = <0.001$, $r = -0.636$, $\alpha: 0.05$). The correlation coefficient was -636, which means a strong relationship with a negative relationship between nurse work stress and nurses' caring behavior. Therefore, if the Nurse's work stress is low, the Nurse's caring behavior will be good, and vice versa.

Conclusions: The work stress will decrease the nurses' caring. Hence, it is crucial in managing the ICU's condition to reduce nurses' stress. Besides, nurses are expected to handle their stress to optimize their caring behavior.

Keywords: Occupational stress, caring behavior, Intensive Care Unit (ICU), Nurse

INTRODUCTION

Work stress is a phenomenon that often occurs in employees, so it can affect work productivity (Sucipto, 2013). Nurses, especially ICU nurses, may also experience stress (Badri, 2020). The high work stress on nurses can lead to moral distress, which is a situation where other people

believe the nurse can do the right thing, but the nurse is unable to take that action (Ettings et al., 2015).

The American National Association for Occupational Health (ANAHO) explains that work stress among nurses ranks first out of forty occurrences of work stress in the world (Fuada et al., 2017). The Indonesian National Nurses Association (PPNI) (2011) conducted a study with the results that 50.9% of nurses in Indonesia experienced work stress with symptoms of frequent dizziness, tiredness, heavy workload causing reduced rest time, and inadequate income (Febriani, 2019). Based on the Ministry of Health of the Republic of Indonesia, in 2014, it was stated that the number of nurses in Indonesia was 237,181 people, so the percentage of nurses' work stress in Indonesia was relatively high (Herqutanto et al., 2017).

Based on the results of research by Melaer (2007) showed, data from 230 ICU nurses, 54 nurses (24%) experienced Post Traumatic Stress Disorder (PTSD), while 121 general nurses who experienced Post Traumatic Stress Disorder were 17 nurses (14%). In a study conducted by Jusniar (2012) on ICU nurses at Dharmasis Cancer Hospital Depok with 33 respondents, 22 nurses experienced moderate work stress.

Nurses on duty in the Intensive Care Unit (ICU) have heavy duties and responsibilities. In dealing with critical patient conditions, mental, physical, and knowledge strength and high skills are needed (Badri, 2020). The condition of patients who require total care requires nurses to observe patients frequently, so ICU nurses must be nimble and prepared (Nur'aini, 2007).

Other research (Badri, 2020) states that nurses in the ICU must strictly observe patients and perform total care for patients during working hours. Besides, not all nurses master the Intensive Care Unit (ICU) competencies. This condition triggers stress on nurses who work in the Intensive Care Unit (ICU) (Badri, 2020). The emergence of work stress in ICU nurses will impact their physiological, psychological, and performance effects (Lestari, 2017).

Caring is an interpersonal relationship between nurses and patients who show empathy, concern, and security by nurses (Anggoro et al., 2019). Caring behavior aims to provide nursing care by paying attention to the patient's emotions, maintaining patient safety, and maintaining patient self-esteem by holistically accepting what is in the patient (Engebretson et al., 2014). Nurses are required to have a caring attitude toward patients in providing health services, especially in carrying out nursing care, because the caring behavior shown by nurses will give a feeling of comfort, security. They can motivate patients to recover quickly (Marrison and Burnard, 2009).

In the current phenomenon, most nurses only focus on nursing tasks that focus on the patient's physiological aspects or medical actions (Marrison and Burnard, 2009). According to Watson 1979 caring focuses on Human Science and Human Care based on ten factors, namely (1) building humanistic-altruistic values, (2) providing hope and trust, (3) increasing sensitivity to self and others, (4) building relationships, trust each other and help each other, (5) Receive and increase awareness of feelings in both good and bad situations, (6) Apply systematic methods in finding solutions to problems, (7) Increase knowledge and share information, (8) Provide support, protection, and change mental, physical states, sociocultural, and spiritual for the better, (9) Assist in meeting basic human needs, and (10) Appreciate existential power and phenomenology (Nurachman, 2001).

The hospital is a health service facility, which of course, must provide good quality health services for the community. Based on Law No. 44 of 2009, the hospital is a health service facility that provides outpatient, emergency, inpatient, and intensive care services. Regional General Hospital (RSUD) dr. Haryoto Lumajang is a referral hospital structurally under the auspices of the Regent and the Lumajang District Health Office. Based on researcher interviews with several families of patients treated in the Intensive Care Unit (ICU), most of them answered that they chose the Regional General Hospital (RSUD) dr. Hayato because it is a referral hospital that has complete facilities compared to other hospitals in Lumajang Regency.

Research conducted in the ICU of RSUD RAA Soewandi Pati (2017) revealed that as many as 15 nurses (75%) had good caring behavior, three nurses (15%) had good enough caring behavior. The rest (10 %) showed poor caring behavior. Furthermore, the cause of the negative caring behavior could occur due to the high psychological pressure on nurses because it was related to nursing care. Intensive care and total care for critically ill patients may cause work stress for ICU nurses (Wulan, Emma Setiyo, 2019). The coronavirus disease (COVID-19) pandemic has exposed nurses to conditions that threaten their health, well-being, and ability to work. Based on the problems and exposure to the background above, the authors are interested in conducting research titled "The Relationship between Nurse Work Stress and Nurse Caring Behavior in Patients in the Intensive Care Unit (ICU) Hospital in Lumajang Regency."

METHODS

Study Design

The research design used was an analytical observational study with a cross-sectional approach. This approach is a type of research approach where data collection on the dependent and independent variables is obtained at one time. The research takes place at the Hospital in Lumajang Regency from December 29, 2021, to January 05, 2022.

Population, Samples, and Sampling

The research sample used in this study was nurses who work at the Intensive Care Unit (ICU) RSUD Dr. Haryoto, Lumajang Regency, East Java, Indonesia with the total number of sample as 28 nurses. Sampling was obtained through a non-probability sampling technique with saturated sampling/total sampling based on inclusion and exclusion criteria. The inclusion criteria were: 1) The nurse at the ICU of RSUD Dr. Haryoto Lumajang with the Length of work at the hospital at least 3 months, and 2) Willing to be a research respondent. While the exclusion criteria were: 1) nurse on leave, or 2) nurses who were continuing their studies.

Instruments

The instrument used is a nurse's job stress questionnaire, namely the Expanded Nursing Stress Scale (ENSS), consisting of 57 questions, and a caring behavior questionnaire, namely the Caring Behavior Inventory-24 (CBI-24), consisting of 24 questions.

Procedure

The distribution of questionnaires to respondents was carried out directly. The researchers themselves collected data by giving job stress and caring behavior questionnaires to ICU nurses. The

researcher conveyed the aims and objectives of the study, and explained how to fill out the questionnaire.

Data Analysis

The data analysis method used the non-parametric Kendall Tau test with 95 % of CI to determine the significance of the two variables, the level of correlation (Correlation coefficient), and the direction of the relationship between the two variables.

Ethical Clearance

This research has met the ethical approval with No. 140/UN25.1.14/KEPK/2021 from the Ethical Board Faculty of Nursing, University of Jember

RESULTS

The results of this study displayed on the tables below.

Table I. Characteristics of Respondents (n=28)

Characteristics	Frequency (n)	Percentage (%)
Gender :		
Male	8	28,6
Female	20	71,4
Employment Status:		
Civil servant	18	64,3
honorary employee	10	35,7
Education Level :		
Nursing Diploma	10	35,7
Bachelor of Nursing (Nurse)	18	64,3
Total	28	100
Characterisrics		
	Median	Min-max
Age (years)	37.5	28-49
Working Period (months)	71	20-216

Research obtained the results that most of nurses were woman (71.4%), and the rest were male nurses as many as eight people (28.6%). There are two groups of employment status, namely civil servants and honorary. It is known that there are 64.3% of civil servant nurses and 35.7% of honorary

nurses. Besides, most of nurses were graduated from Bachelor of Nursing (64.3 %). The age of the respondents ranged from 28 to 49 years, with the length of work from 20 - 216 months (18 years) with an average nurse working period of 87 months or seven years.

Table 2. Means and Indicators of Work Stress of ICU Nurses (n=28)

Variable	Median	Min-Max
Work stress	81	1-141

Table 3 Means and Indicators of the Expanded Nursing Stress Scale (ENSS) Questionnaire

Indikator	Median
Death and Dying	1,53
Conflict with Doctor	1,49
Treatment Vagueness	1,45
Not Enough Preparation	1,40
Problems with Supervisor	1,37

Table 3 showed that the work stress of ICU nurses out of a total of 28 nurses, had a median value of 81 (min-max: 1-141), with the highest median of stress indicator was death and dying (med: 1.53).

Table 4 Means of Caring Behavior of ICU Nurses (n=28)

Variable	Mean	SD
Caring behavior	132,11	4,86

Table 5 Means of the Indicators of the Caring Behaviors Inventory-24 Questionnaire (CBI-24)

Indicator	Mean
Professional knowledge and skills	5,9
Acknowledging Human Existence	5,57
Concern for What Others Experience	5,53
Responding With Respect	5,47
Creating Positive Relationships	5,28

Table 4 shows that the ICU nurse at RSUD Dr. Haryoto Lumajang Regency, on the caring behavior indicator, has a mean value of 132.11 (SD: 4.864), with the highest indicator is professional knowledge and skills, with an average value of 5.9 (Table 5)

Table 6 Analysis of the Relationship between Nurse Work Stress and Nurse Caring Behavior (n=28)

Variable	p	R
Work stress	0,000	-0,636
Caring behavior		

Table 6 showed the results of the Kendall's tau correlation test with a significance value of 0.001 ($< \alpha: 0.05$) or H_a was failed to be rejected. It means there is a relationship between nurse work stress and the caring behavior of nurses in patients in the Intensive Care Unit (ICU) Hospital in Lumajang Regency

DISCUSSION

Research obtained the results that most of nurses at the ICU RSUD dr. Haryoto Lumajang were woman (71.4%), and the rest were male nurses as many as eight people (28.6%). Women dominate the difference in sensitivity between men and women because they have a higher level of sensitivity than men (Anggoro et al., 2019). There are two groups of employment status, namely civil servants and honorary. It is known that there are 64.3% of civil servant nurses and 35.7% of honorary nurses. The nurse's employment status influences the rewards obtained so that it can be a motivation for nurses to improve their performance. Rewards in non-financial forms are also needed by a nurse because nurses will feel more valued to increase their caring behavior of nurses to patients (Supriatin, 2015).

The research results showed that most ICU nurse education in RSUD Dr. Haryoto is SI (64.3 %). Nurses with a high level of education will have broader knowledge than someone with a low level of education because different thinking processes impact a person's intellectual maturity to act in decision making (Kumajas et al., 2014). Nurses who have a high level of education can more easily understand their roles and carry out their responsibilities. Nurses will continue to behave caringly to patients (Kumajas et al., 2014).

The study results showed that the age of the respondents ranged from 28 years to 49 years, so it can be said that the respondents had entered the adult phase. In this phase, mental strength, the ability to think and understand a condition, has been maturely formed (Jannah et al., 2021). The age of the nurse has a strong influence on the caring behavior carried out on the patient. The older the nurse, the more responsible and experienced in doing a job will affect nurse performance, especially in caring behavior (Anggoro et al., 2019).

The data presented from the study results indicate the working period of the ICU nurse at a Hospital at Lumajang Regency, 20-216 months (18 years) with an average nurse working period of 87 months or seven years. Nurses with a working period of more than five years already have good knowledge to make the right decisions about their work (Sumarni, 2016). In line with research conducted by Supriatin (2015) which shows that there is a relationship between tenure and caring behavior of nurses with a p-value of 0.001 ($p\text{-value} < 0.05$), this occurs as seen in senior nurses who are used as role models by young nurses because they are increasingly The longer the nurse works, the more skilled and caring behavior will be.

The work stress of ICU nurses at the Hospital at Lumajang Regency, out of a total of 28 nurses, had a median value of 81 with a minimum value of 1 and a maximum value of 141 (table 3). Research conducted by Badri (2020) showed that most ICU nurses experienced severe work stress. The occurrence of work stress on nurses is caused by a high workload so that nurses cannot complete their duties correctly. Wollah (2017) states that work stress experienced by ICU nurses is caused by nurses' intrapersonal conflicts, lack of support from administrators and heads of care, ineffective communication patterns, monitoring and planning of staff, interdisciplinary politics in superiors such as doctors and managers, ethical issues related to the dying of the patient.

The caring behavior showed in the Table 4 has a mean value of 132.11 (SD: 4.864). Of the five indicators of caring behavior (Table 5), it was found that for most ICU nurses at the Hospital, the highest indicator is professional knowledge and skills, with an average value of 5.9. This happened because most of the nurses in the study were bachelor nursing, so they had better skills and knowledge in providing professional nursing care. Nurses with relevant skills and knowledge will be most consistent in caring (Aupia et al., 2018). According to Qomariah (2017), nurses with relevant skills and knowledge will also show an excellent, caring character. Factors included in nurses' ability include understanding of work, understanding tasks or procedures in carrying out work, understanding how to carry out tasks, appreciating duties, job responsibilities, and understanding of challenges in carrying out a task.

The statistical analysis showed that there is a relationship between nurse work stress and the caring behavior of nurses in patients in the Intensive Care Unit (ICU) Hospital in Lumajang ($p: 0,01$; $R: -0.636$, $\alpha:0.05$). The correlation coefficient value is -0.636 , which means the degree of relationship between the two variables is a strong correlation. The direction of the relationship between the two variables is negative, meaning that if the nurse's work stress is low, the nurse's caring behavior will be good. If the nurse's work stress is high, the nurse's caring behavior will be less good. This results relevant with the study by Murtono et al., (2019). Patients who are treated in the Intensive Care Unit (ICU) are patients with critical conditions who require total care so that they require intensive observation, long-term resuscitation measures, and definitive therapy to maintain vital functions such as the airway, breathing, circulating, brain, and other organ functions (Badri, 2020). Nurses on duty in the Intensive Care Unit (ICU) must have the ability to think critically to make clinical decisions in dealing with conditions in patients. Sources of work stress for Intensive Care Unit (ICU) nurses, such as workload and high work risk for nurses, difficulties in carrying out nursing care or taking action on patients with critical conditions, will have an impact on nurses' physical and psychological work stress (Vanchapo, 2020). Distress that nurses may experience is characterized by the emergence of dysfunctional organs that impact the quality of health services, including caring behavior (Olender, 2017). The Health Belief Model (HBM) Theory reveals that changes in a person's behavior are obtained from individual beliefs about the problem (Rachmawati, 2019). This theory is also related to work stress experienced by nurses in the Intensive Care Unit (ICU). Work stress experienced by nurses is a cognitive problem that impacts caring behavior that must be shown to patients. Work stress experienced by nurses on duty in the ICU requires good cognitive behavior so that in providing total care to patients in the Intensive Care Unit (ICU), nurses do their duties sincerely, not feeling burdened, and still think positively about what has been done in providing care can improve the health status of patients and improve the quality of life of nurses so that nurses can still perform caring behavior well despite experiencing work stress.

CONCLUSION

To conclude, there is a significant relationship between nurse work stress and the caring behavior of nurses in patients in the Intensive Care Unit (ICU), with a strong correlation and a negative relationship direction. This study has limitation on the number of sampling. Therefore, we suggest to do another study based on this issue with the larger sample size. Besides, it is also important to find the best strategy to reduce the work status in nurses and to improve their caring behavior in the pandemic era.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest’.

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Streptokinase For STEMI In The COVID-19 Era, A Literature Review

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Background

STEMI is the first cardiovascular problem because it causes high hospitalization and mortality rates and is a critical, life-threatening and time-sensitive emergency that requires immediate management with reperfusion therapy and percutaneous coronary artery intervention (PCI). The aim of this study was to identify the effectiveness of streptokinase fibrinolytic in STEMI patients during the COVID-19 pandemic.

Method

Research literature review Search data taken from pub med, scopus, scine directly identified 183 articles. After finding the inclusion / exclusion criteria, there were 6 cohort studies, 1 cross sectional study, 2 observational studies. Data taken from 2019-2022

Results

Of the 10 articles used in this literature review, it was found that during the COVID-19 pandemic the therapy that was often used was streptokinase or fibrinolytic, compared to PCI.

Conclusion

Streptokinase during a pandemic is more often an alternative in the management of STEMI, this is related to the risk of transmission to officers as well as the golden period of STEMI disease.

Key words: COVID-19, Fibrinolytic, STEMI (ST-elevation myocardial infarction), Streptokinase.

Introduction and background

Acute coronary syndrome (ACS) is the first cardiovascular problem because it causes high hospitalization rates and high mortality rates. Acute myocardial infarction with ST segment elevation or STEMI is an indicator of the incidence of total coronary artery inclusion. This event requires revascularization to restore blood flow and myocardial reperfusion as soon as possible. Medically using a fibrinolytic agent or mechanically through primary percutaneous coronary intervention (Perki, 2018) ST Elevated Myocardial Infarction (STEMI) is usually a critical, life-threatening and time-sensitive

emergency that requires immediate management with reperfusion therapy and percutaneous coronary artery intervention (PCI)(nour 2020)

Cardiovascular disease is the leading cause of death worldwide and is responsible for 30.0% of deaths, with 21.0% due to ischemic heart disease. Morbidity secondary to acute myocardial infarction (AMI) is responsible for significant changes in the patient's quality of life, which affects a person's personal, family, social and professional life (Claudia, 2021).

Fibrinolytics act as thrombolytics by activating plasminogen to form plasmin, which degrades fibrin and then breaks up the thrombus. The benefits of thrombolytic drugs for the treatment of myocardial infarction are well known. Included in this class of drugs include streptokinase, urokinase, alteplase, and anistreplase.

Streptokinase and alteplase have been shown to reduce mortality. Reteplase and tenecteplase are also suggested for myocardial infarction; both are given by intravenous injection (tenecteplase is given by bolus injection). Thrombolytic drugs are indicated in all patients with acute myocardial infarction. In such patients the benefits of treatment outweigh the risks. Research shows that patients experience the greatest benefit with changes in ECG results in the form of ST segment elevation (STEMI) (especially in patients with anterior infarction) and in patients with bundle branch block. Patients should not refuse treatment with thrombolytics on the grounds of age alone because the mortality rate in this group is high and the reduced risk of death is similar to that of the younger patient group.(<https://pionas.pom.go.id/ioni/bab-2-system-cardiovascular-0/28-fibrinolitik>)

Overview

Method

Search literature in pub med, scopus, scine direct identified with words and using key words, namely Acut Coronary Syndrome, COVID-19, Fibrinolytic, STEMI (ST-elevation myocardial infarction), Streptokinase

Using inclusion criteria

1. STEMI diagnosis
2. Treatment with fibrinolysis
3. Journal published from 2019-2022
4. In the covid-19 pandemic
5. Types of observational studies, clinical trials, cross studies sectional
6. Open access

Exclusion criteria

1. Animal study
2. Meta analysis, systematic reviews and case reports

Pub med	44
STEMI diagnosis	44
Treatment with fibrinolysis	44

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Journal published from 2019-2022	44
In the covid-19 pandemic	44
Open access	34
Review , case report , meta analysis	6
Scopus	63
STEMI diagnosis	63
Treatment with fibrinolysis	44
Journal published from 2019-2022	63
In the covid-19 pandemic	63
Open access	59
Review , case report , meta analysis	8
Scine direc	123
STEMI diagnosis	123
Treatment with fibrinolysis	123
Journal published from 2019-2022	123
In the covid-19 pandemic	123
Open access	53
Review , case report , meta analysis	46

Table I. Total number of articles after applying inclusion and exclusion criteria

RESULTS

A total of 185 articles were obtained from pub med, scopus, scine direct with the keywords COVID-19, Fibrinolytic, STEMI (ST-elevation myocardial infarction), Streptokinase. Open access articles (n=113) and after checking duplicates were obtained (n=98), and after going through the inclusion and exclusion criteria of the final article (n=10). The article was taken from 2019-2022 during the COVID-19 pandemic

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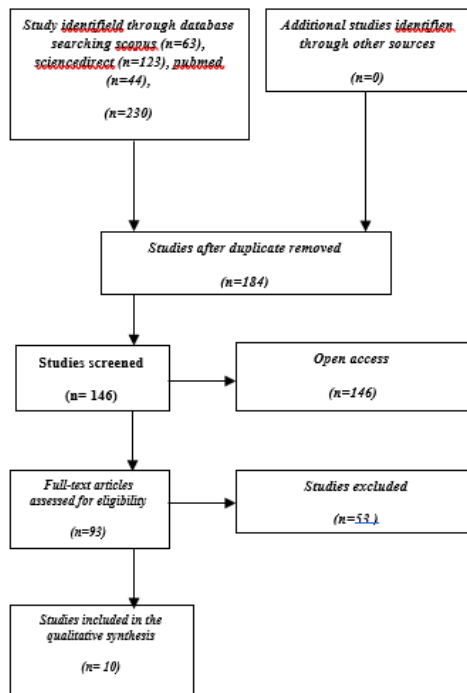


Figure 1. Flow chart of literature search adopted from PRISMA 2009 Flow Diagram

DISCUSSION

During the COVID-19 epidemic, fibrinolysis in patients with acute STEMI is safe, effective and easy to apply. Therefore, it is recommended as a top priority for patients with acute STEMI with an indication for fibrinolysis. On the basis of prevention and control of COVID-19 transmission, including personal protection of medical personnel, the duration of myocardial ischemia can be shortened by optimization with fibrinolytic measures (Wei F, 2020). Our results provide insight into trends in the current era with respect to the use of fibrinolytic therapy as a reperfusion modality for STEMI. Among STEMI patients receiving fibrinolysis, the presence of pneumonia, which is a common manifestation of COVID-19, was independently associated with increased in-hospital mortality, (Golomb & Stone, 2020)

Fibrinolysis therapy in combination with deferred PCI reduces ischemia time and has a similar rate of adverse in-hospital clinical outcome compared to patients undergoing primary PCI during the COVID-19 pandemic. (Nan et al., 2021). The first strategy of fibrinolysis during the COVID-19 pandemic was associated with lower rates of timely coronary reperfusion and increased rates of recurrent ischemia, cardiogenic shock, and exacerbated heart failure. However, the NACE in the hospital remains the same as in 2019. (Leng et al., 2021)

Fibrinolysis as a reasonable alternative to STEMI treatment during the COVID-19 pandemic. (Wang et al., 2020) During the COVID-19 outbreak, we found a longer DTD time for

primary angioplasty, but late TIMI 3 flow attainment and in-hospital mortality were similar compared to before the outbreak. Thus, primary angioplasty should remain the standard of care for STEMI during the COVID-19 outbreak.(Dharma, S. 2021)

Despite significant social restrictions imposed in Melbourne, the number of ACS treated with PCI and 30 day outcome. similar to the pre-pandemic period. DTBT was significantly longer during the COVID-19 pandemic period, possibly reflecting infection control measures, which have conclusively improved over time. (Ramzy et al., 2022).decreased primary PCI procedures for STEMI and increased overall symptom-to-hospital and door-to-balloon times for patients with STEMI. Restructuring healthcare services during COVID-19 has not had a negative impact on outcomes in hospitals.(Kwok et al., 2020). Due to the COVID-19 outbreak, it is likely that there will be an increase in out-of-hospital deaths and long-term complications for STEMI patients due to treatment(Mafham et al., 2020)

CONCLUSION

The purpose of this study was to review the first management of STEMI (ST-elevation myocardial infarction) patients during the COVID-19 period in addition to the installation of cardiac catheterization (PCI), namely Fibrinolytic or streptokinase action which is one of the other options for handling this case. The first strategy of fibrinolysis during the COVID-19 pandemic was associated with lower rates of timely coronary reperfusion and increased rates of recurrent ischemia, cardiogenic shock, and exacerbated heart failure.

ACKNOWLEDGMENTS

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DECLARATION OF INTEREST

The authors report no conflict of interest whatsoever.

Table 2.Selected study data with literature review

No	Title,Author, years	Study Design/ Design	Participant/ sample	Variable	Intervention	Instrument	Analysis	Time

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1	Fibrinolysis is a reasonable alternative for STEMI caring for the COVID-19 pandemic(Wang et al., 2020)	Cross sectional	17 patients	Covid,, STEMI, fibrinolysis, PCI	Initial assessment, hospital assessment, and follow-up 30 days after reperfusion therapy. Next, we recorded and analyzed the main time points as well as the pre-procedural, procedural, and post-procedural characteristics of the patients who were diagnosed. receiving PPCI treatment.	SPSS	T-test if normally distributed and Mann-Whitney U test for abnormal distribution. Categorical variables were summarized as percentages and compared using the 2test or Fisher's exact test, as appropriate. For all tests, two-sided P values < 0.05 were considered statistically significant. Analysis was performed using IBM SPSS version 22.0	January 23 to 20 March 2020
2	Analysis on the efficacy and safety of fibrinolytic therapy in patients with acute ST-segment elevation myocardial infarction during the COVID-19 epidemic, Wei F, 2020	retrospectively analyzed	7	COVID-19; Myocardial infarction ; Thrombolytic therapy	Observation	SPSS	The first 2 patients were treated according to routine medical procedures and the time from the first ECG to fibrinolysis was 201 and 106 minutes, respectively. After optimization of the fibrinolytic process, the time from the first ECG to fibrinolysis of the last 5 patients was 42, 46, 51, 43 and 54 minutes, respectively, which was significantly shorter than before optimization.	29 February 2020 to 3 April 2020
3	Trends and Outcomes of Fibrinolytic Therapy for STEMI,(Golomb & Stone, 2020)	Cohort	738,206	Fibrinolytics, STEMI	National Inpatient Sample Database (NIS) (2011 to 2017)	National Inpatient Sample Database (NIS) (2011 to 2017)	SPSS software (IBM SPSS Statistics for Windows, version 25.0, Armonk, New York)	2020
4	Performance of Primary Angioplasty for STEMI during the COVID-19 Outbreak Dharma, S.2021	Cohort	141 year 2019 70 Year 2020	primary angioplasty, performance measures , COVID-19 outbreak	The primary outcome measures were primary PCI performance as defined by door-to-device time (DTD), and final TIMI 3 flow attainment after PCI. Secondary outcomes included symptom-to-PCI onset time of hospital admission, total ischemic time, and hospital death	JAC registry electronic dataset	Patient characteristics and study outcomes between two admission times (during and before the COVID-19 outbreak) were compared using the Mann-Whitney ANDA test for continuous variables and the chi-square or Fisher test for categorical variables.	April 2021
5	COVID-19 pandemic and admission rates for and management of acute coronary syndromes in England,(Mafham et al., 2020)	Cohort	2522	covid 19, management of acute coronary syndromes	Analyzes are recorded in the Patient Care database that Receives Secondary Use Services	Secondary Uses Service Admitted Patient Care(SUSAPC) database	The analysis was made using Rversion 3.6.3	January 2019- 24 may 2020

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6	COVID-19 Pandemic Impact on Percutaneous Coronary Intervention for Acute Coronary Syndromes: An Australian Tertiary Center Experience,(Ramzy et al., 2022)	Cohort	984 patients	COVID-19 Pandemic Acute coronary syndrome Percutaneous coronary intervention	a discontinuous time series analysis comparing the 8-week pandemic period (11 March 2020–10 May 2020) with the 12 month pre-pandemic period (11 March 2019–10 March 2020).		DTBT was significantly longer during the pandemic than the pre-pandemic period (118.1 min, 95% CI 1.6–34.5, p = 0.03) and increased over time (estimated slope: -0.76, 95% CI -1.62 to a 0.10).	July 2021
7	ST-segment elevation myocardial infarction:Management and association with prognosis during the COVID-19 pandemic in France, Guillaume Bonne, 2021	observational retrospective	6306	STEMI, covid, mechanical complications		SPSS	more mechanical complications were observed (0.9% vs 1.7% (P=0.029) leading to a significant improvement in our primary scoring criteria 112 patients (5.6) in 2019 vs 129 (7.6%) in 2020 (P= 0.018).	2019 2020
8	Impact of COVID-19 on percutaneous coronary intervention for ST-elevation myocardial infarction (Kwok et al., 2020)	retrospective cohort	34.127	covid-19, PCI, ST-elevation	Statistical analysis was performed on Stata/MP V.16.0	SPSS	mean time from symptom to hospital showed improvement after lockout (150 (99-270) vs 135 (89-250) minutes, p = 0.004) and longer door-to-balloon time after lockout (48 (21-250) 112) vs 37 (16-94) min, p < 0.001).	APRIL 2020-MAY 2020
9	Fibrinolysis Therapy Combined with Deferred PCIversus Primary Angioplasty for STEMI PatientsDuring the COVID-19 Pandemic: PreliminaryResults from a Single Center,(Nan et al., 2021)	retrospective study	126	ST elevation myocardial infarction , fibrinolysis therapy, percutaneous coronary intervention, coronavirus disease	independent sample T-test or Mann – Whitney test	The Statistical Package for the Social Sciences version 22.0(SPSS Inc., Chicago, IL) and PSM was conducted with EmpowerStats 2.20	DTN was significantly shorter than DTB (25.8 ± 4.2 versus 61.1 ± 10.7, p = 0.000) before PSM. DTN was significantly shorter than DTB (26.9 ± 4.2 versus 64.9 ± 23.6, p = 0.000)	2020
10	Impact of the shift to a fibrinolysis-first strategy on care and outcomes of patients with ST-segment–elevation myocardial infarction during the COVID-19 pandemic—The experience from	Cohort	164 patients in 2020 240 patients in 2019	COVID-19ST-segment-elevation myocardial infarction FibrinolysisPrimary percutaneous intervention	Continuous variable comparisons were performed by the Student's T-test, the Mann–Whitney U test, or the Kruskal–Wallis independent sample test. Categorical values are described using	SPSS	in 2019, P < 0.001), and had a longer median door-to-balloon time (175 [121,213] minutes vs. 115 [83, 160] minutes in 2019, P = 0.009). Patients were more likely to undergo elective PCI (86 [52.4%] vs 28 [11.6%] in 2019, P < 0.001). Hospital NACE was similar between 2020 and 2019 (14 [8.5%] vs. 25 [10.4%], P = 0.530), while more patients developed secondary	2019-2020

	the largest cardiovascular-specific center in China(Leng et al., 2021)			onNet adverse clinical events	frequency and percentage and compared using the Chi-square test or test Fisher's exact		outcomes in 2020 (20 [12.2%] vs. 12 [5.0%] in 2019, P = 0.009).	
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Intervention Supporting Self-Management in Chronic Obstructive Pulmonary Disease Patients: A Systematic Review

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ABSTRACT

Introduction: Self-management is crucial in caring for chronic obstructive pulmonary disease (COPD) patients. Various self-management support interventions have been developed to facilitate adequate self-management of COPD. The objective of this review was to identify, describe and assess the evidence regarding the self-management intervention program its effects on self-management outcomes among COPD patients.

Methods: The four databases, Google Scholar, Europe PMC, Science Direct, and PubMed, were searched using a systematic strategy using the keywords: COPD, chronic obstructive pulmonary diseases, COAD, chronic obstructive airway disease, self-management, educational programs, interventions, lung capacity, quality of life. The study eligibility criteria were Randomized Control Trial studies, published between 2015 and 2021, with language restriction only published in English. The JBI (Joanna Brings Institute) tools evaluated study quality.

Results: 422 studies were screened, and 22 studies that met the criteria were extracted. The review identifies three interventional grouped methods to enhance self-management among COPD patients, including face-to-face individual education, peer-group health education, and mobile health education. Most studies suggest that self-management programs increased lung capacity, exercise capacity, and health-related quality of life compared to patients receiving standard care.

Conclusion: Self-management programs in COPD patients provide the ability to manage the disease to improve their quality of life.

Keywords: Self Management program; Chronic obstructive pulmonary disease; Exercise Capacity; Lung Capacity; Quality of Life.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a preventable and treatable lung disease characterized by persistent airflow limitation and generally progressive in nature, associated with an exaggerated chronic inflammatory response in the airways and lung parenchyma due to noxious gases or particles (Vogelmeier et al., 2017). According to the Global Initiative, COPD is a disease that ranks fourth as the cause of death in Indonesia. COPD ranks first in the pulmonary disease group in Indonesia with morbidity (35%). The increase in the incidence of COPD is due to aging of the population and exposure to risk factors.

COPD sufferers in addition to experiencing decreased lung function also experience extrapulmonary disorders and often experience disturbing symptoms such as shortness of breath, loss of appetite, activity limitations that prevent patients from carrying out daily activities, causing dependence on people around and of course greatly affecting the quality of life. . To be able to avoid COPD recurrence, understanding the disease and how to prevent COPD recurrence is an important basis for a person, so to deal with it, self-management strategies are needed, especially in primary care. Self-management interventions (non-pharmacological) have been developed in the chronic care model by optimizing the active role of the patient to achieve adequate coping behaviors and have compliance in managing their disease and being able to take action against exacerbating symptoms (Sánchez-Nieto et al., 2016). The form of health coaching intervention is a patient-centered team-based care model, nurses facilitate joint decision making and equip patients with knowledge, skills and confidence to manage patient conditions (Willard-Grace et al., 2020). Management program interventions are also self-management interventions that can be carried out by patients in managing their illness to improve health status. So that this systematic review aims to determine the understanding of the forms of interventions that support self-management programs and the effects of self-management programs on COPD patients.

METHODS

This is a systematic review by synthesizing narratives of the main findings of self-management program interventions in patients with COPD. This review is based on PRISMA's guidelines on writing systematic review reports (Moher et al., 2009). The process used to carry out a systematic review is that the reviewer looks for several research journal articles published through electronic databases. The electronic databases used include: PubMed, Science Direct, Europe PMC, Goggle Scholar. The inclusion criteria in this study were (a) written in English in the last 6 years (2016-2022), (b) using a quantitative study design with a randomized control trial (RCT) (c) adult patients 30 years, diagnosed with COPD, FEV1/ FVC , 70%, participants were excluded if they had heart disease, tuberculosis and psychiatric disorders. (d) examined interventions that support self-management in COPD patients. Keywords: COPD, chronic obstructive pulmonary diseases, COAD, chronic obstructive airway disease, self-management, educational programs, interventions, lung capacity, quality of life. All included studies were assessed for methodological quality using the JBI (Joanna Brings Institute) instrument. (JBI, 2014). The articles obtained in the search process are then selected based on the inclusion and exclusion criteria shown in.

Tabel I Inclusion and exclusion criteria with PICOS

Criteria	Inclusion	Exclusion
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Population	COPD	Not COPD
Intervention	there is an intervention	Not intervention
Comparisons	comparison	No comparison
Outcome	Interventions that support self-management in COPD patients	Not relevant to supportive interventions in COPD patients
Study Type	Randomized Control Trial	mixed method, a quasi experimental design, Systematic or literature reviews, qualitative research
Publication Type	Peer reviewed original studies Non peer-reviewed	Peer reviewed original studies Non peer-reviewed
Publication Years	2016 - 2022	Pre 2016
Language	Bahasa Inggris	Bukan Bahasa Inggris

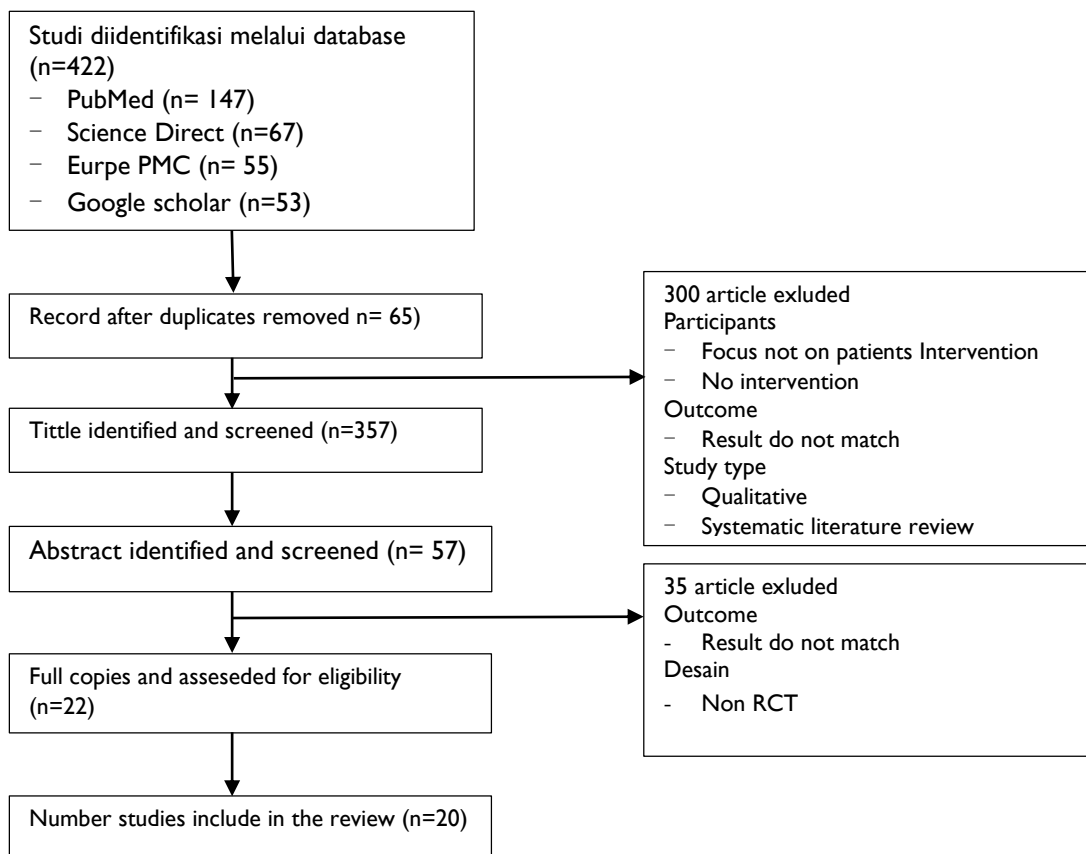


Fig. 1. PRISMA diagram adapted from Moher et al. (2009).

No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
1.	(Jolly et al., 2018)	RCT	577	6-12 week Health coaching by telephone	Group and individual	Nurse	Usual Care	<ol style="list-style-type: none"> 1. Health related quality of life (SGRQ) 2. Dyspnea MRC dyspnoea scale 3. Aktivitas fisik (International Physical Activity Questionnaire) 4. Psychological (Hospital Anxiety and Depression Scale) 5. self efficacy (Stanford self efficacy scale) 	Based on the results of the study, there was no difference in the total SGRQ-C score at 12 months (mean difference 1.3, 95% confidence interval 3.6 to 0.9, P=0.23). Compared with patients in the usual care group, at six months of follow-up, the intervention group reported greater physical activity, more had received treatment plans (44%).v 30%, antibiotic rescue packages (37%v29%), and examination of inhaler technique (68% v55%).
2	(Stenlund et al., 2019)	RCT	144	3-12 month Web-based COPD implementation	Group and individual	Nurse	Usual care	<ol style="list-style-type: none"> 1. Physical activity level (accelerometer) 2. Quality of life(HRQoL) 3. COPD Assessment test 4. Congestion : mMRC 	Based on the results of the study, there were differences in physical activity between the intervention group and the control group at follow-up (3 and 12 months), there were differences related to dyspnea, quality of life and other COPD assessments.

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of Management	self Mode	Provider			

No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
3.	(Ding et al., 2019)	RCT	100	6 Month MHealth COPD.	Group and individual	6 Month MHealth COPD. Nurse	Usual care	<p>Primer outcome</p> <ol style="list-style-type: none"> 1. Quality of life and symptoms of COPD : CAT <p>Seconder outcome</p> <ol style="list-style-type: none"> 1. Knowledge of COPD = lung foundation Australia questionnaire 2. Treatment compliance : TAI Questionnaire 3. COPD Planning : Diary 4. Smoking : Diary 5. Physical Activity : GPAQ 6. Exacerbation rate: diary 7. Utilization of health services: visits 	Based on research results The Data Monitoring Committee (DMC), which consists of four clinical investigators who were not directly involved in the study, will evaluate safety throughout the trial. DMC will be independent of trial sponsors and competing interests. The DMC will convene every 3 months (with additional meetings if needed) to review the risk and severity of any adverse events or incidents reported. The DMC will assess the severity of adverse events and/or incidence, and provide recommendations if necessary. If there are substantial differences in rates of serious adverse events (including death) or hospitalizations between the MH-COPD and UC-COPD groups, the DMC will investigate the potential reasons for the differences. If significant side effects are caused by the MHCOPD program, the DMC will recommend stopping the trial early.

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result	
				Duration of self Management	Mode	Provider				
4.	(Zhang et al., 2020).	RCT	208	3,6,12,dan Month	24	Group and individual	Nurse	Usual care	<p>1. mMRC, modified Medical Research Council (dyspnea scale).</p> <p>2. CAT, COPD Assesment Test.</p> <p>3. 6MWD, 6-minute walking distance</p> <p>4. CSMS, COPD Self Management Scale</p>	<p>Based on the results of the study At the end of 24 months, 85 (81.7%) in the treatment group and 89 (85.6%) in the control group</p> <p>patients in the treatment group had lower readmission, time, and day rates at 6 and 12 months and for 12-24 months. Regarding costs for 2 years, the program achieves a medical savings of CN¥3,655.94 per patient per year, and every 1 spent on the program results in a savings of 3.29. Patients in the treatment group achieved improvements in FEV1, predicted FEV1%, exercise capacity, and self-management. It also achieves a reduction in dyspnea symptoms and an increased impact of COPD on quality of life.</p>
5.	(Zakrisson et al., 2020)	RCT	202	3 tahun		Group and individual	Nurse	Usual Care	<p>Quality from the Patient's Perspective (QPP) questionnaire</p>	<p>Based on the results of this study: Participants in the intervention group were more satisfied with the QPP domain “personal attention,” regarding both “perceived reality” (p = .021) and “subjective importance” (p = .012). This form of PRISMS increases patient satisfaction with the quality of care regarding personal attention, which is an important factor in patient</p>

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
				Health coaching				4. Days of activity reduces 5. Demography questions 6. Demonstrations of inhaler technique 7. Exacerbation History 8. Generalized anxiety disorder (GAD) Scale 9. Morisky Medication adherence scale 10. Med concordance 11. Patients assessment of Chronic Illness Care (PACIC) 12. Patients Health Questionnaire (PHQ-8) 13. Satisfaction with provider and clinic (SPC) 14. Self Efficacy (SE) Scale 15. Smoking 16. Spirometry	underserved patients with moderate to severe COPD.

No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
								17. Trust in Physician (TIP) scale 18. Visits to ED, hoospitalizations, urgent care	
8.	(Aboumat ar et al., 2019)	RCT	240	6 Month Combined transition program and long-term self-management support	Group and individual	Nurse	Usual Care	St George's Respiratory Questionnaire (SGRQ)	Based on the results of the study there was a change in the participants' health-related quality of life as measured by the St George's Respiratory Questionnaire (SGRQ) at 6 months after discharge (score, 0 [best] to 100 [worst]; difference of 4 points clinically significant).
9.	(Ozoglu Aytac et al., 2020)	RCT	90	4 week Inhaler drug education	Group and individual	Nurse	Usual care	1. Respiratory function test 2. COPD and Asthma Fatigue scale (CAFS) 3. Visual Analogue Scale	Based on the results of the study after 4 weeks of inhaler drug education, the average CAFS score decreased to 35.32 to 14.36, the average score of dyspnea severity decreased to 4.76 to 2.50, and respiratory function Accepted November 4, 2019 Keywords: COPD Dyspnea Fatigue Inhaler drug therapy Patience education test means score increased to forced expiratory volume in 1 second (FEV1) = 58.83 25.48, forced vital capacity (FVC) = 59.04 19.19, and FEV1/FVC = 88, 39 21.59 in the intervention group (p < 0.05). No change was observed in patients in the

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
10	(Bourne et al., 2017)	RCT	150	5 Month	Group and individual	physiotherapists, respiratory nurses, occupational therapist	Usual care	<ol style="list-style-type: none"> 1. BCKQ, Bristol COPD Knowledge Questionnaire. 2. CAT, COPD Assessment Test. 3. CRQ-SR, Chronic 	<p>control group except for FEV1 and mean FVC score ($p > 0.05$). Conclusion: These results indicate that inhaler medication education can improve fatigue, dyspnea severity, and respiratory function tests in COPD patients. I</p> <p>Based on the research results of the study</p> <p>Power calculations were based on primary outcomes at 6 months. To detect a mean \pm SD between groups of a difference of 2.5 ± 5.0 in the change in CAT at 80% power, 60 individuals per group ($\alpha = 0.05$, two tails) were needed. In anticipation of a possible 25% switching rate, the total sample size was</p>
						and health psychologists		<ol style="list-style-type: none"> 4. EQ-5D, European Quality of Life-5 Dimensions. 5. ESWT, endurance shuttle walking test. 6. ISWT, incremental shuttle walking test. 	<p>increased to 75 per group (150 total). Evidence suggests that SPACE for COPD (C) packets are effective when delivered individually.</p>

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
								7. HADS, Hospital Anxiety and Depression Questionnaire. 8. PAM, Patient Activation Measure	
11	(Johnson-Warrington et al., 2016)	RCT	78	3 Month A Self-management Program of Activity, Coping, and Education 13 for COPD (SPACE for COPD)	Group and individual	Nurse	Usual care	1. CRQ, Chronic Respiratory Questionnaire 2. ISWT, Incremental Shuttle Walk Test 3. ESWT, Endurance Shuttle Walk Test 4. HADS, Hospital Anxiety and Depression Scale 5. PRAISE, Pulmonary Rehabilitation	Based on the results of the study Seventy-eight patients were recruited (n = 39 for both groups). No differences were found in readmission rates or mortality at 3 months between the groups. Ten control patients were readmitted within 30 days compared with five patients in the intervention group (P .005). Both groups significantly improved exercise tolerance and Chronic Respiratory Based on the results of the study Questionnaire (CRQ-SR) results, with differences between groups approaching statistical significance for the CRQ-dyspnea and CRQ-emotions, supporting the intervention. The "Ready for Home" survey revealed that patients who received the intervention reported feeling better able to manage their lives to cope with COPD, knew when to seek help about feeling unwell, and took

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
								Adapted index of Self-efficacy 6. BCKQ, Bristol CO 7. PD Knowledge Questionnaire	more prescribed medication, compared to usual care.
12	(Wang et al., 2020)	RCT	78	12 months Mobile health application	Group and individual	nurse	Usual care	1. COPD-Assement test 2. COPD Self management Scale 3. Physical activity 4. Smoking behaviours	Based on the result of the study Thirty-five participants in the intervention group and 33 in the control group completed the study. Compared to the control group, participants in the intervention group showed statistically significant improvement in the COPD -Assessment -Test scores (P<0.01) and in all domain of the COPD Self management scores (P<0,01) at 12 th 12 monts. Improvements in the COPD assessment-test scores by 4.3 and 0.3 units, and in the total scores of the COPD self managements scale total scores by 23.01 and 2.28 units, respectively, were observed in the intervention and control group, respectively over the 12 months study period. Meanwhile, the mobile health application programme also improved participants exercise and smoking cessation behavior

No	Author /Year	Study Design	Sample	Intervention	Control	Outcome	Result		
				Duration of self Management				Mode	Provider
13	(Chang & Dai, 2019)	RCT	60	3 month motivating, self-learning, reflecting, action plan verbalizing, and action taking (MSRAA) flipping education program of self-management.	Group and individual	Nurse	Usual care	1. COPD-Q, Disease knowledge 2. PRAISE, Self-efficacy 3. PAM, Patient activation level 4. CAT, COPD Assasement Test	Based on the result of the study The results showed that patients who received the flipping self-management education program had a statistically significant improvement in their disease knowledge.
14	(Willard-Grace et al., 2020)	RCT	282	9 months Health training	Goup and individual	Nurse	Usual care	Medication adherence	Based on the result of the study initial adherence and inhaler technique were uniformly poor and did not differ by study group. At 9 months, health-trained patients reported a greater number of adherence days compared to usual care patients (6.4 vs 5.5 days; adjusted P=.02) and were more likely to use their controller inhaler as prescribed for 5 of 7 days. last (90% vs 69%; adjusted P=.008). They were more than 3 times more likely to demonstrate perfect technique for all inhaler devices (24% vs 7%; adjusted P = .01) and mastery of critical measures (40% vs 11%; adjusted P < .001).

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
15	(Jiménez-Reguera et al., 2020)	RCT	44	12 Month mHealth web-based platform (HappyAir)	Group and individual	Nurse	Usual care	<ol style="list-style-type: none"> 1. respiratory physiotherapy adherence self-report (CAP FISIO) questionnaire. 2. adherence to physical activity (Morisky-Green Test), 3. quality of life (Chronic Obstructive Pulmonary Disease 4. Assessment Test, St. George's Respiratory Questionnaire, 5. EuroQOL-5D), 6. exercise capacity (6-Minute Walk Test), 	Based on the result of the study In total, 44 patients were recruited and randomized in the control group (n=24) and HappyAir group (n=20). Eight patients dropped out for various reasons. The CAP FISIO questionnaire results showed an improvement in adherence during follow-up period for the HappyAir group, which was statistically different compared with the control group at 12 months (56.1 [SD 4.0] vs 44.0 [SD 13.6]; P=.004) after pulmonary rehabilitation.

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
								lung function.	
16	(Farmer et al., 2017)	RCT	166	12 month Platform EDGE	Group and individual	Nurse	Usual Care	St. George's Respiratory Questionnaire for COPD (SGRQ-C).	Based on the result of the study a total of 166 patients were randomized (110 EDGE, 56 usual care). All patients were included in an intention to treat analysis. The estimated difference in SGRQ-C at 12 months (EDGE-usual care) was -1.7 with a 95% CI of -6.6 to 3.2 (P=.49). The relative risk of hospital admission for EDGE was 0.83 (0.56-1.24, P=.37) compared with usual care. Generic health status (EQ-5D, EuroQol 5-Dimension Questionnaire) between the groups differed significantly with better health status for the EDGE group (0.076, 95% CI 0.008-0.14, P=.03). The median number of visits to general practitioners for EDGE versus usual care were 4 versus 5.5 (P=.06) and to practice nurses were 1.5 versus 2.5 (P=.03), respectively.
17	(Aboumar et al., 2020)	RCT	190	12 week The strategies were 'Health Care Professional (HCP)'	Health Care Professional Plus Peer	Nurse	Health Care Professional	St. George's Respiratory Questionnaire (SGRQ)	-

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
				and 'HCP Plus Peer' support	(HCP Plus Peer)				
18	(Lopez-Lopez et al., 2020)	RCT	66					<ol style="list-style-type: none"> 1. LCADL, The London chest Activity of Daily Living Scale 2. FIM, Functional Independence Measure . 	Based on the result of the study all treated groups show improvements in all outcomes, being significant in the case of all total scores of health-related quality of life and functionality($p < 0.05$) between Physical Therapy group and Self-Management group. At 3 months, health-related quality of life shows reductions in all subscores in Control Group and Physical Therapy groups, while Self-Management
								<ol style="list-style-type: none"> 3. Spirometry 4. Handgrip dynamometry 5. 5STS, five times sit to stand test 	group shows minimal maintenance of the values
19	(Çevirme & Gökçay, 2020).	RCT	51	3 month EBIP The impact of an education-based	Group and individual	Nurse	Usual care	baseline dyspnea index (BDI), pulmonary function test (PFT), the self-care management process in chronic illness Original	Based on the result of the study the study was completed with a total of 40 COPD patients. The effect of the EBIP training program on BDI, PFT, and SCMP-G scores in the intervention group was statistically proven ($p < 0.05$)

No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
20	(Bourbeau et al., 2016).	RCT	354	24 month Intervention program The COPD patient Management European Trial (COMET)	Group and individual	Nurse	Usual care	Article (SCMP-G) scale and body mass index (BMI) levels of anxiety and depression using the Hospital Anxiety and Depression Scale; and health status using the St George's Respiratory Questionnaire and the 15D health-related quality of life questionnaire. Other measurements included spirometry, echocardiography, 6-minute walk test, and body mass index, airflow obstruction, dyspnea, and exercise capacity	Based on the result of the study significant reduction in acute care hospital admissions for exacerbations 39.8% in the intervention group compared with the usual care group (P=0.01), in emergency department visits by 41.0% (P=0.02), and in unscheduled doctor visits by 58.9% (P=0.003)

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
21	(Dritsaki et al., 2016)	RCT	184	30 – 45 minute SPACE self management programme of	Group and individual	Nurse, phsioterapist	Usual care	index; adherence to oxygen therapy, and respiratory rate Quality-adjusted life years (QALYs)	Based on the result of the study the mean difference in costs between usual care and SPACE FOR COPD programme was £27.18 (95% confidence interval (CI); £122.59 to £68.25) while mean difference in QALYs was 0.10 (95% CI; 0.17 to 0.02).
				activity coping and education					The results suggest that the intervention is more costly and more effective than usual care. The probability of the intervention being cost-effective was 97% at a threshold of £20,000/QALY gained. We conclude that the SPACE FOR COPD programme is cost-effective compared to usual care
22	(Thom et al., 2018)	RCT	192	9 Month Health coaching	Group and individual	Nurse	Usual care	1. COPD-related quality of life	Based on the result of the study Of 192 patients enrolled, 158 (82%) completed 9 months of follow-up. There were no significant differences

No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
								<p>2. dyspnea subscale of the Chronic Respiratory Disease Questionnaire.</p> <p>3. self-efficacy for managing COPD,</p> <p>4. exercise capacity (6-min walk test),</p> <p>5. COPD exacerbations. Additional outcomes were COPD symptoms, lung function (forced expiratory volume in 1 s percent predicted)</p> <p>6. smoking status, bed</p>	

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No	Author /Year	Study Design	Sample	Intervention			Control	Outcome	Result
				Duration of self Management	Mode	Provider			
								days owing to COPD, 7. quality of care (Patient Assessment of Chronic Illness Care), 8. COPD knowledge, 9. symptoms of depression (Patient Health Questionnaire)	

Of the 22 selected articles identifying three group intervention methods to improve self-management among COPD patients,

1. Face-to-face individual education

Research results from 22 articles on management programs that emphasize direct education (Beatrice Huang, 2017; David H Thom, 2018; Rachel Willard, 2020) emphasize that health education has been shown to be effective for moderate to severe COPD patients compared to usual care to improve quality of life. COPD patients. A Self-Management Program of Activity Coping and education SPACE for COPD, this consists of written educational information and a home exercise program (consisting of a daily walking-based aerobic program and three weekly resistance training using free weights on the upper and lower limbs) . The goal of the SPACE for COPD (C) program is to support people with COPD in managing daily tasks, minimizing symptom burden, causing behavioral changes that promote health and promote emotional well-being. SPACE FOR COPD has resulted in clinical improvements (exercise performance, disease knowledge and anxiety) and a significant increase in HRQoL (in terms of QALYs) compared to usual care so that this program is quite cost effective for treatment. (Melina Dritsaki, 2016; Vicky Johnson, 2016; Laurene, 2016). La Borne, 2017).

Another form of intervention is self-learning, reflecting, action plan verbalizing, and action taking (MSRAA). This educational approach is adapted from the 'flipping literature class' this allows patients to study self-management booklets themselves and discuss with team.(Yi Yang Chang, 2019). In the self-management program, according to Hanan Aboumatar, combining transition and long-term self-management support resulted in significantly greater visits to inpatient and emergency departments related to COPD. The training provided positive outcomes in the intervention group, led to decreased levels of fatigue and severity of patients' dyspnea, and had positive effect on their respiratory function tests (Aidi Zhang, 2020; Zakrison, 2021; Kristina Luhr, 2018; Sema ozoglu, 2019; Laura Lopez, 2018)

2. Peer group health education

A self-management intervention comparing the effectiveness of two strategies to support patients with COPD. The strategy is 'Health Care Professional (HCP)' and 'HCP Plus Peer' support. Peer support is provided by COPD patients who have quit smoking, completed an acute pulmonary rehabilitation program, and meet the requirements to become peer supporters (Hanan Aboumataro, 2020)

3. Mobile health education

Self-management interventions through extensive patient coaching by healthcare professionals to improve self-management (e.g., develop skills to better manage their illness), e-health platforms for reporting frequent health status updates, rapid intervention when needed, and oxygen therapy monitoring (Jean Bourbeau, 2016), the mHealth web-based platform is also designed to improve adherence in COPD patients (Begona Jimines, 2020; Hang Ding 2019; LiangHongWang, 2020)). Andrew farmer, 2017 also developed a tablet computer-based self-management support and monitoring system that is fully automatically connected to the Internet (EDGE, self-management and support proGrammE) to improve quality of life and clinical outcomes. Another form of self-management intervention is web-based COPD. proposed by Tobias Stenlund where this media aims to evaluate the short-term and long-term effects on groups of people with COPD in the context of

Primary Health Care (PHC). The education-based intervention program (EBIP) is carried out in 3 stages only for the intervention group: i) hospital education; ii) home visits + education; iii) telephone monitoring and guidance to help reduce dyspnea and improve chronic self-care management. (Ayse cevime, 2020; Kate Jolly, 2018).

DISCUSSION

The results showed that self-management programs reduced patient readmissions to hospital and ER visits, lower medical costs and improved health outcomes. The main element contributing to the savings comes from the reduction in hospitalization costs (Zhang et al., 2020). According to WHO, to achieve quality health services must be safe, effective, timely and efficient, fair and people-centred. Monitoring the quality of care requires professional responsibility, and the effectiveness of the quality of care. The use of the PRIMIS form to organize and structure the care of COPD patients can be one way to determine the quality of care (Zakrisson et al., 2020).

The collaborative nursing model has improved quality of care and adherence to treatment in populations with complex conditions and other comorbidities. This model aligns with the proposed model for collaborative care in COPD which includes as access core principles, teamwork, disease management and care coordination. Health coaching discusses each of the pillars of this model, providing a point of contact to facilitate access, additional time from new team members who play an important role in activating patients as core team members (teamwork); proactive review of treatment plans and preventive care to improve disease management; and active coordination of care between primary care, special care and inpatient care.(Willard-Grace et al., 2020).

The importance of self-management is widely recognized, and opportunities must be maximized from the time of diagnosis to more severe disease. Opportunities to improve self-management skills should be embedded in pulmonary rehabilitation programs. In the future, there may be opportunities to explore the value of the SPACE for COPD (C) program alongside rehabilitation, or alternatives for those who are unwilling or unable to attend. However, for those with milder disease, there is no provision for a supported structured self-management program in the UK. Evidence suggests that SPACE for COPD (C) packages are effective when delivered individually. Studies examine their effectiveness as a group-based intervention in the community, as an alternative to supported self-management strategies, which are important in enabling patient choice. (Dritsaki et al., 2016)(Johnson-Warrington et al., 2016)(Bourne et al., 2017).

A self-management support intervention that involves “collaborating in helping patients acquire and practice the skills needed to implement a disease-specific medical regimen, change their health behavior to adapt their role for optimal functioning, improve day-to-day control of their disease, and improve their well-being”, has been shown in clinical trials to improve health-related quality of life among patients with COPD. However, it remains unclear which self-management support strategies used in healthcare settings with highly diverse patient populations are most effective in engaging, motivating, and enabling patients to successfully follow recommended treatments, adopt desired health behaviors, and achieve desired outcomes. . improved health outcomes. In this study, selected patients with COPD and their family caregivers act as peer support, providing peer-to-peer support to help study participants manage COPD independently and minimize its impact on their quality. (Aboumatar et al., 2019).

This study demonstrates the development of an integrated mHealth treatment plan after pulmonary rehabilitation, which uses a web-based application that can be accessed by mobile devices and involves the support of a therapeutic educator (coach) on a regular basis. It has been shown to be effective in increasing patients' adherence to their self-care and treatment plans and consequently their state of health and attitudes, with the resultant change in their perception of the disease and their involvement in their care, key factors for achieving positive health outcomes. Internet-based web-based applications and telehealth can serve as a means to change and reinvent the way patients and healthcare professionals interact. However, this study demonstrates the initial development and evaluation of the new mHealth web-based platform in a reduced sample, which limits the generalizability of our results (Jiménez-Reguera et al., 2020).

CONCLUSION

Self-management programs in COPD patients can provide patients with skills in managing their disease so they can take appropriate action when their condition worsens. Self-management programs also increase the confidence in patients to be able to manage their chronic diseases, through continuous self-management programs will have an effect on increasing lung capacity, physical capacity and quality of life. Subsequent research is to determine the impact or effect of self-management programs in order to look at the overall and integrated self-management program on the patient's ability to carry out long-term self-management programs after being discharged from the hospital and to measure the factors that hinder the implementation of an effective self-management program.

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CONFLICT OF INTEREST

Hereby as the main researcher, my name: Titik Agustyaningsih state that there is no conflict of interest in this research.

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EFFECT OF MUROTTAL AL-QUR'AN ON STRESS AND BLOOD SUGAR AMONG TYPE II DIABETES MELLITUS PATIENTS: A LITERATURE REVIEW

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ABSTRACT

Introduction: Diabetes mellitus is a chronic condition in which there is an increase in blood glucose. Management of lowering blood sugar levels requires a combination of pharmacological and non-pharmacological for independent treatment. The study is aimed to reveal the effect of murottal Al-Qur'an on stress levels and blood sugar levels in type II diabetes mellitus patients based on empirical studies in the last five years.

Methods: Search journals or articles using databases indexed by Scopus, ProQuest, Garuda, ResearchGate. The keywords used are diabetes mellitus, murottal Al-Qur'an, stress, blood glucose. The number of samples in the reviewed articles was 189 patients with stress levels and 197 patients with blood sugar in diabetes mellitus patients aged 18-84 years.

Results: A total of 11 articles discuss the effect of murottal Al-Qur'an on stress levels and blood sugar levels. Murottal Al-Qur'an is effective in reducing stress levels and blood sugar levels in type II diabetes mellitus patients. There was a significant reduction in stress levels in the post-test intervention group. Whereas the examination of blood sugar levels showed that there was a significant decrease in blood sugar in the post test of the intervention group and the control group there was an insignificant decrease.

Conclusion: There is an effect of murottal Al-Qur'an intervention on the intervention group that can reduce stress and blood sugar levels, by helping individuals form perceptions other than fear, namely the belief that any stressor can be handled well with God's help.

Keywords: Diabetes mellitus; Murottal Al-Qur'an; stress; Blood Glucose

INTRODUCTION

Diabetes Mellitus is a chronic condition where there is an increase in blood glucose levels because the pancreas cannot produce enough insulin or the body cannot use insulin effectively (International Diabetes Federation, 2019). Diabetes mellitus can also cause complications in body parts and can increase the risk of premature death, complications that occur such as hypertension, stroke, kidney failure, visual impairment, and leg amputation (WHO, 2016).

The incidence of diabetes in the world is increasing. The global prevalence in 2015 there were 415 million cases of people suffering from diabetes mellitus, while in 2017 it increased to 425 million cases, and increased again to 463 million cases in 2019 (International Diabetes Federation, 2019). More cases of diabetes mellitus sufferers are in low- and middle-income countries than in high-income

countries (WHO, 2016). In 2019 Indonesia was ranked seventh in the prevalence of people with diabetes in the world, as many as 10.7 million. The Health office recorded as many as 114,514 diabetes mellitus patients throughout 2019. Previous data obtained by researchers showed that there were 3,674 diabetes mellitus patients from October to December 2019 spread over five health centers with the highest number of diabetes mellitus sufferers in Surabaya (Dinkes Kota Surabaya, 2019).

Stress occurs because of a person's inability to cope with the threats faced by the mental, physical, emotional and spiritual of humans which at one time can affect the human's physical health.. Stress conditions that are not handled properly will disrupt physiological conditions as well, namely stimulating the hypothalamus to secrete corticotropin releasing factor (CRF), which stimulates the anterior pituitary gland to produce adrenocorticotrophic hormone (ACTH), then ACTH stimulates the anterior pituitary to produce glucocorticoids, especially cortisol. An increase in cortisol will affect an increase in blood glucose carrying out gluconeogenesis, protein and fat catabolism (Smeltzer *et al.*, 2015).

Individual emotional problems that are often experienced by diabetes mellitus patients will cause stress to the healing process, with the individual's attitude forming poor self-acceptance then having low self-esteem and personal well-being (Rehman and Kazmi, 2015), so that psychoreligious interventions based on murottal Al-Qur'an is very suitable to be used as a spiritual factor that has a positive effect.

Several previous studies have proven the benefits of reducing stress and anxiety from psychoreligious therapy, especially with the murottal Al-Qur'an method. Research conducted Yulianti and Armiyati (2018) shows that the combination of deep breathing relaxation and murottal Surah Ar-Rahman can reduce blood sugar while in Type II diabetes mellitus patients. However, the effect of murottal Al-Qur'an on stress levels and blood sugar levels in Type II diabetes mellitus patients has not been widely studied and cannot be explained scientifically until now. Therefore, it is necessary to summarize the literature that aims to determine the benefits of murottal Al-Qur'an on stress levels and blood sugar levels in Type II diabetes mellitus patients.

METHODS

The protocol in this study used The Center for Review and Dissemination and the Joanna Briggs Institute Guideline as a guide in assessing the quality of the summarized studies. The strategy used to find articles in this study uses the PICOS framework.

Keywords in this literature review are adjusted to Medical Subject Heading (MeSH). The keywords used are 'Murottal Al-Qur'an' or 'Holy Quran' and 'stress' or 'stress level' and 'Blood Glucose' and 'NIDDM' or 'Diabetes mellitus' or 'Type 2 Diabetes Mellitus'. The study designs taken in this literature review are quasi-experimental studies, randomized control and trial, cross-sectional studies, published in the 2015-2020 range, in English and Indonesian.

The data used by researchers in this study is secondary data. Secondary data obtained from research obtained not from direct observation, but obtained from the results of research that has been done by previous researchers. Sources of secondary data obtained in the form of reputable journal articles both nationally and internationally with a predetermined theme. The literature search in this literature review uses four databases with high and medium quality criteria, namely Scopus, ProQuest, Garuda and ResearchGate.

In four databases, researchers found 244 articles that matched these keywords. The search results that have been obtained are then checked for duplication, it was found that there were 26 similar articles that were removed and the remaining 218 articles. The researcher then conducted a screening based on the title (n = 218), abstract (n = 43) and full text (n = 11) which was adjusted to

the theme of the literature review. The assessment based on the feasibility of the inclusion and exclusion criteria was obtained as many as 11 articles that could be used in the literature review. The whole search process can be seen in figure 1.

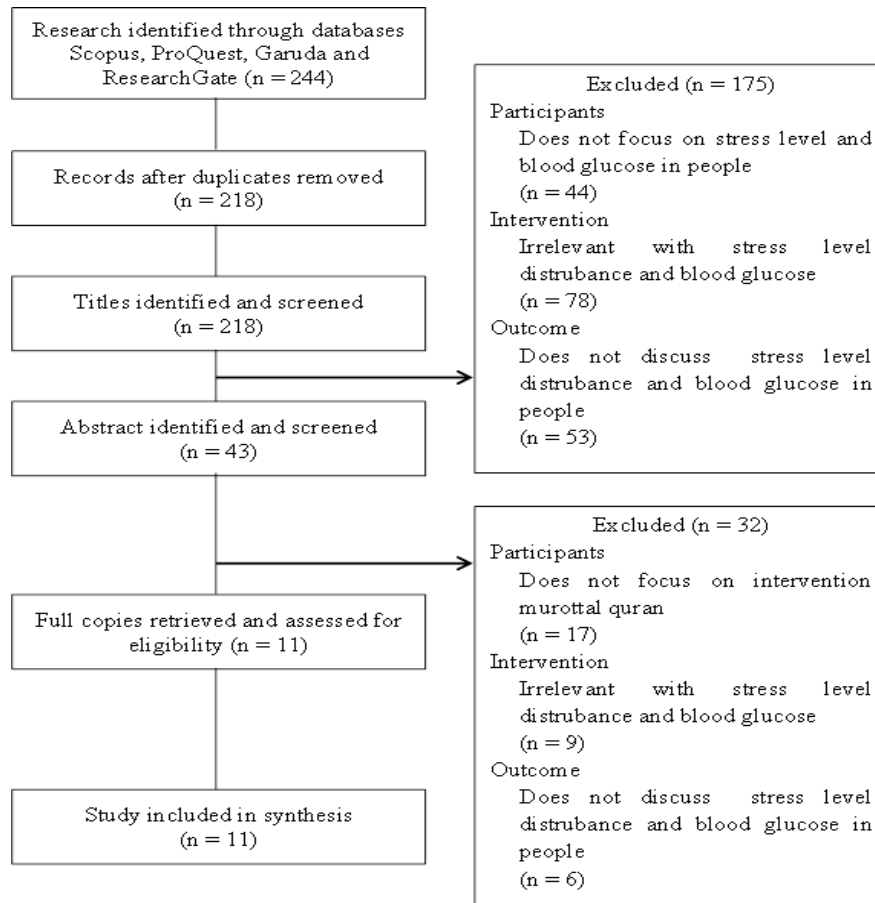


Figure 1: Murottal Al-Qur'an on Stress and Blood Sugar Among Type II Diabetes Mellitus Patients PRISMA Study Flow Diagram.

RESEARCH RESULT

Of the 11 studies that met the criteria for a literature review, ten literatures were obtained with a quasi-experimental research design and one literature with a randomized controlled trial design. Based on these results, a critical appraisal was carried out using The JBI Critical Appraisal Tools. Quasy experimental studies were assigned a total quality score of seven to eight out of nine points on the checklist. The randomized controlled trial was assigned a total quality score of ten out of thirteen points on the checklist. The results of the study assessment of the eleven articles achieved a score of more than 50% so that they met the Critical Appraisal criteria for which data analysis would then be carried out.

Table 1: Summary of Study Characteristics of Murottal Al-Qur'an on Stress and Blood Sugar Among Type II Diabetes Mellitus.

Author	Year, Volume, Number	Journal Name	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research Result	Database
(Yadak and Aziz, 2019)	2019, Vol 58, No.1	Journal of Religion and Health	The Effect of Listening to Holy Quran Recitation on Weaning Patients Receiving Mechanical Ventilation in the Intensive Care Unit : A Pilot Study	D: Randomised Controlled trial (RCT) S: 55 respondent (23 control group and 32 intervention group) V: Holy Quran Recitation , Weaning Patients Receiving Mechanical Ventilation I: Zung Self-Rating Anxiety Scale A: Independent sample t test and Chi-square test	The results of this study indicate that listening to the recitation of the Qur'an shows a positive effect and increases physiological parameters and reduces stress.	Scopus
(Amir et al., 2018)	2018, Vol 54, No.4	Folia Medica Indonesia	Dhikr (Recitation) And Relaxation Improve Stress Perception And Reduce Blood Cortisol Level In Type 2 Diabetes Mellitus Patients With ADM	D: Quasy-experimental design S: 28 respondent (14 control group and 14 intervention group) V: Dhikr (Recitation) And Relaxation, Stress Perception And Reduce Blood Cortisol Level I: Depression, Anxiety, Stress Score Questionnaire A: Independent t-test	The results of the study stated that recitation of the Koran and relaxation increased the perception of stress so that the hypothalamic pituitary adrenal (HPA) produced a balanced level of the hormone cortisol. Cortisol in a balanced level can improve various metabolic processes.	ProQuest

Author	Year, Volume, Number	Journal Name	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research Result	Database
(Alatas, 2015)	2015, Vol 3, No.1	Journal ProNers	The Effects Of Murottal Surah Ar-Rahman Therapy On The Scores Of Wound Assessment (MUNGS) And Stress Assessment (DASS) In Patients With Diabetes Mellitus At The Kitamura Clinic Pontianak	<p>D: Quasy-experimental design</p> <p>S: 16 respondent</p> <p>V: Murottal Surah Ar-Rahman, The Scores Of Wound Assessment (MUNGS) And Stress Assessment (DASS)</p> <p>I: MUNGS dan Depression, Anxiety, Stress Score Questionnaire</p> <p>A: Paired t test and Wilxocon test.</p>	The results of this study indicate that there is an effect of Surah Ar-Rahman murottal therapy on stress scores by providing a relaxing effect and there is no effect of Surah Ar-Rahman murottal therapy on wound scores.	Garuda
(Astuti and Purnama, 2019)	2019, Vol 9, No.2	Indonesia Nursing Scientific Journal	Pengaruh Membaca Al-Qur'an Terhadap Kadar Glukosa Darah pada Pasien Diabetes	<p>D: Quasy-experimental design</p> <p>S: 35 respondent</p> <p>V: Membaca Al-Qur'an, Kadar Glukosa Darah</p> <p>I: Observation and checking blood sugar (Blood glucose meter)</p> <p>A: Paired sample t Test</p>	The results of this study indicate that reading the Qur'an using visualization and multimedia systems can have an influence on changes in blood glucose levels in respondents because by perceiving and reading continuously it can have the effect of relaxation techniques to relieve boredom, fatigue, depression and stress.	Garusda

Author	Year, Volume, Number	Journal Name	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research Result	Database
(Sartika, Lidya and Doni, 2020)	2020, Vol 15, No.1	Jurnal Sehat Mandiri	Efektifitas terapi Murottal Al-Qur'an Terhadap Kadar Gula Darah	<p>D: Quasy-experimental design</p> <p>S: 32 respondent (16 control group and 16 intervention group)</p> <p>V: Terapi Murottal Al-Qur'an , Kadar Glukosa Darah</p> <p>I: Observation and checking blood sugar (Blood glucose meter)</p> <p>A: Paired sample t Test</p>	The results of this study indicate that the sound stimulation of the murottal will increase the release of endorphins. This release will cause relaxation, so that the levels of cortisol, epinephrine-norepinephrine, dopamine and growth hormone in the serum will decrease. In this relaxed state, the respiratory rate becomes slower, deeper thinking, emotional control, and better metabolism.	Garuda
(Rahmatia et al., 2020)	2020, Vol 11, No.1	Jurnal Media Keperawatan	The Effect Of Benson And Murottal Al-Qur'an Relaxation Therapyin Towards Reduction Of Blood Sugar In Elderly With Dm Type 2 In Type 2 Level At Jongaya Health Center Area Makassar	<p>D: Quasy-experimental design</p> <p>S: 36 respondent (18 control group and 18 intervention group)</p> <p>V: Benson And Murottal Al-Qur'an, Blood Sugar In Elderly With Dm Type 2 In Type 2 Level</p> <p>I: Glukometer dan lembar observasi</p>	The results of this study indicate that there is a significant effect between Benson therapy and Murottal Al-Qur'an on reducing blood sugar levels.	Garuda

Author	Year, Volume, Number	Journal Name	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research Result	Database
				A: Paired sample t-test dan wilcoxon		
(Asiyah and Istikhomah, 2019)	2019, Vol 3, No.2	Journal of Health Science and Prevention	Effectiveness of Murottal Therapy in Reducing Anxiety in Diabetics	D: Quasy-experimental design S: 15 respondent V: Murottal Therapy , Anxiety in Diabetics I: anxiety scale A: T test	The results of this study indicate that listening to the recitation of the verses of the Qur'an with tartil will get peace of mind and can reduce stress hormones, activate natural endorphins, increase feelings of relaxation, and distract from fear, anxiety and tension.	Reaserce gate
(Safitri, Nashori and Sulistyarini, 2017)	2017, Vol 9, No.1	Jurnal Intervensi Psikologi	Relaxation With Dhikr to Decrease Stress Among Type II Diabetes Patients	D: Quasy-experimental design S: 15 respondent (7 control group and 8 intervention group) V: Relaxation With Dhikr, Stress I: Interview, observation and scale.	The results of this study indicate that there is a decrease in stress levels in the experimental group when compared to the control group. Based on these results, it can be concluded that the relaxation of the remembrance of the verses of the Qur'an in patients with type	Reaserce gate

Author	Year, Volume, Number	Journal Name	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research Result	Database
				A: Independent t test	II diabetes mellitus is effective in reducing stress.	
(Purwasih et al., 2017)	2017, Vol 13, No.2	Jurnal Ilmiah Kesehatan Keperawatan	Relaksasi Benson Dan Terapi Murottal Surah Ar-Rahmaan Menurunkan Kadar Glukosa Darah Penderita Diabetes Melitus Tipe 2 Di Kecamatan Maos	D: Quasy-experimental design S: 60 respondent (30 control group and 30 intervention group) V: Benson Dan Terapi Murottal Surah Ar-Rahmaan, Glukosa Darah Penderita Diabetes Melitus Tipe 2 Di Kecamatan Maos I: Surah Ar-Rohman murottal CD, Benson relaxation VCD, blood sugar check tool, and observation sheet A: Wilcoxon dan Mann-Whitney	The results showed that Benson relaxation in the control group could significantly reduce fasting blood glucose levels. The result of this decrease is because the respondents did this relaxation technique correctly and according to the instructions. In addition, respondents also regularly take antihyperglycemic drugs according to doctor's recommendations	Reaserce gate
(Habiburrahman et al., 2018)	2018, Vol 8, No.2	Jurnal Ners Indoneia	Efektivitas Terapi Dzikir Terhadap Kadar Glukosa Darah Pada Penderita Diabetes Melitus Tipe II	D: Quasy-experimental design S: 34 respondent (17 control group and 17 intervention group) V: Terapi Dzikir, Glukosa Darah I: Glucometer and observation sheet	The results showed that dhikr therapy has a relaxing effect that will inhibit the production of hormones that can increase blood glucose levels by suppressing cortisol, inhibiting glucose metabolism (gluconeogenesis) and suppressing the release of glucagon	Reaserce gate

Author	Year, Volume, Number	Journal Name	Title	Method (Design, Sample, Variable, Instrument, Analysis)	Research Result	Database
				A: Dependent t Test and Independent t Test	converting glycogen in the liver into glucose.	
(Nisbah et al., 2020)	2020, Vol 2, No.1	Psychiatry Nursing Journal	The Effect of Dzikir on Stress and Random Blood Sugar in Patients with Diabetes Mellitus	D: Quasy-experimental design S: 60 respondent (30 control group and 30 intervention group) V: Dzikir, Stres and Gula Darah Acak I: Diabetes Distress Scale (DDS) Questionnaire and Glucometer A: Wilcoxon Signed Rank Test and Mann Whitney Test	The results show that dhikr and prayer reduce stress and anxiety by helping individuals form perceptions other than fear, namely the belief that any stressor can be dealt with well with God's help.	Reaserce gate

Respondents in the study were patients with diabetes mellitus problems from various countries. the gender characteristics of the respondents obtained that the majority were female, and most of the respondents in the study found that the majority were in the age range > 45 years.

Based on the characteristics of the selected research respondents with the stress level, the number of respondents (n = 189) was obtained. where the results of the decrease in the level of severe stress in respondents from pre-test to post-test in the intervention group from 67 respondents (58.26%) to 1 respondent (0.87%) and the results obtained after the intervention respondents experienced no stress amounted to 25 respondents (21.74%. While in the control group, only 4 respondents experienced a decrease in stress levels from severe stress to moderate stress levels and there was no significant decrease in stress levels.

Table 2: Characteristics of Respondents Stress Level

Penelitian	Characteristics (n)
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Continuous Innovation for Sustainable Health and Climate Resilience

	Stress Level	Pre Interventi on	Pre Control	Post Interventio n	Post Control
(Yadak <i>et al.</i> , 2019)	Normal	0	0	0	0
	Low	0	0	0	0
	moderate	0	0	32	0
	Hight	32	23	0	23
	Very Hight	0	0	0	0
(Amir <i>et al.</i> , 2018)	Normal	0	0	0	0
	Low	0	0	0	0
	moderate	0	0	14	0
	Hight	14	14	0	14
	Very Hight	0	0	0	0
(Alatas <i>et al.</i> , 2015)	Normal	0		7	
	Low	3		3	
	moderate	5	-	5	-
	Hight	6		1	
	Very Hight	2		0	
(Asiyah <i>et al.</i> , 2019)	Normal	0		13	
	Low	0		2	
	moderate	7	-	0	-
	Hight	8		0	
	Very Hight	0		0	
(Safitri <i>et al.</i> , 2017)	Normal	0	0	0	0
	Low	0	0	8	0
	moderate	7	7	0	7
	Hight	1	0	0	0
	Very Hight	0	0	0	0
(Nisbah <i>et al.</i> , 2020)	Normal	0	0	5	0
	Low	0	0	0	0
	moderate	24	23	25	27

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	Hight	6	7	0	3
	Very Hight	0	0	0	0
	Normal	0	0	25	0
	Low	3	0	13	0
Total	moderate	43	30	76	34
	Hight	67	44	1	40
	Very Hight	2	0	0	0

While the characteristics of the selected research respondents with blood sugar levels obtained the total number of respondents (n = 197). where the results of a decrease in blood sugar levels in all selected research articles were obtained, it was found that 5 articles experienced a significant decrease in blood sugar in the intervention group, as in the study Astuti and Purnama (2019) where from 35 respondents in the intervention group, 24 respondents experienced a decrease in blood sugar levels. blood with an average of 196.57 mg/dl and a minimum value of 110 mg/dl and a maximum of 200 mg/dl. However, there was a decrease in blood sugar levels at the same time in the control group as in the study Sartika, Lidya and Doni (2020) which showed the decrease in blood sugar levels obtained was more in the intervention group, namely 121.5 mg/dl compared to the decrease in blood sugar levels in the control group, namely only 44.37 mg/dl.

Table 3: Characteristics of Respondents Blood Sugar Levels

Study	Blood Sugar Level (Mean, min-max)				Results
	Pre intervention	Post Intervention	Pre Control	Post Control	
	(mg/dl)	(mg/dl)	(mg/dl)	(mg/dl)	
(Astuti et al., 2019)	236,77 (>200)	196,57 (110-200)	-	-	From 35 respondents in the intervention group, 24 respondents experienced a decrease in blood sugar levels
(Sartika et al., 2020)	295,44 (137-500)	173,94 (124-270)	271,06 (94-500)	226,69 (115-422)	The decrease in blood sugar levels obtained was more in the case group, namely 121.5mg/dl than the decrease in blood sugar levels in the control group, which was only 44.37mg/dl.
(Rahmatia et al., 2020)	266,17 (189-397)	214,00 (150-264)	252,17 (187-458)	244,67 (187-386)	from 36 respondents in the intervention and control groups experienced a decrease in blood sugar levels, but the intervention group experienced a very

Study	Blood Sugar Level (Mean, min-max)				Results
	Pre intervention	Post Intervention	Pre Control	Post Control	
	(mg/dl)	(mg/dl)	(mg/dl)	(mg/dl)	
(Purwasih et al., 2017)	243,57 (-)	177,27 (-)	179,20 (-)	155,43 (-)	From 60 respondents in the intervention and control groups experienced a decrease in blood sugar levels, but the intervention group experienced a very significant decrease.
(Habiburrahman et al., 2018)	175,65 (139-215)	167,06 (136-201)	159,88 (123-203)	151,35 (126-206)	From 34 respondents in the intervention and control groups experienced a decrease in blood sugar levels, but the intervention group experienced a very significant decrease.

DISCUSSION

The Effect of Murottal Al-Qur'an on Stress Levels

Based on research Asiyah and Istikhomah (2019), it is explained that murottal Al-Qur'an therapy is effective for reducing stress levels in people with type II diabetes mellitus. Listening and reading the holy verses of the Qur'an, can cause enormous physiological changes. In general, they feel a decrease in stress, anxiety, depression, sadness, and a feeling of calm. The recitation of the Qur'an has a significant effect of up to 97% in causing peace of mind and healing disease (Asiyah and Istikhomah, 2019). Research (Alatas, 2015) explains that listening to spiritual sounds, especially listening to the holy verses of the Qur'an (murottal) is very good for health. Murottal Al-Qur'an, one of which uses Surah Ar-Rahman with a slow tempo, is a tempo that is in line with the human heartbeat, so that the heart will synchronize its beat according to the sound. In addition, Surah Ar-Rahman murottal therapy is also a therapy without side effects that is safe and easy to do. Murottal therapy is more effective than listening to music in reducing stress, even this therapy has an influence on the stability of vital signs (Alatas, 2015).

Based on research conducted by Alatas (2015) found that there was a murottal effect of Surah Ar-Rahman (p value = 0.000), where from 16 respondents the median stress score before Surah Ar-Rahman murottal therapy was 11.50 and has a min-max value of 8.00-17.00. And the median stress score after being given murottal Surah Ar-Rahman therapy is 8.00 and has a min-max value of 6.00-16.00. The results of this study are in line with research Asiyah and Istikhomah (2019) which obtained a significant value of $0.000 < 0.005$, which means that there is an effect of murottal Al-Qur'an on reducing stress levels in people with diabetes mellitus.

Remembering Allah will make the body feel calm so that it suppresses the work of the sympathetic system and activates the work of the parasympathetic system. A positive emotional response from the murottal influence of the Qur'an runs through the body and is received by the brain stem. After being formatted with brain language, it is then transmitted to one of the impulses to the hypothalamus to secrete GABA which functions as a controller of emotional responses, and inhibits

or reduces the activity of neurons or nerve cells, CRH and other neurotransmitters that produce cortisol and other stress hormones. Then there will be a process of homeostasis and repair of the disturbed neurotransmitter system, eliminating negative thoughts, creating a sense of optimism in yourself and bringing up positive thoughts. All protectors in the human body work with obedience to worship, draw closer to Allah and are good at being grateful so that an atmosphere of balance is created from the neurotransmitters in the brain (Nisbah et al., 2020).

Recitation of the Qur'an physically contains elements of sound, Sound can reduce stress hormones, activate natural endorphins, increase feelings of relaxation, and distract from fear, anxiety and tension, increase the body's chemical system so that it slows and lowers blood pressure, breathing, heart rate, pulse and brain wave activity (Asiyah and Istikhomah, 2019). With murottal therapy, the quality of one's awareness of God will increase whether people know the meaning of the Qur'an or not. This awareness will lead to total submission to God. In this state, the brain is in alpha waves, which are brain waves with a frequency of 7-14Hz. This is a state of optimal brain energy and can relieve stress and reduce it (Asiyah and Istikhomah, 2019). In a calm state, the brain can think clearly and can contemplate the existence of God. This will form a positive coping or expectation in the patient.

The level of mental and psychological acceptance of recitation differs from subject to subject depending on the level of strength of their beliefs and their religious education (Yadak and Aziz, 2019). Muslim patients generally believe in the healing power of the Qur'an. If someone is sincere and solemn in reading the Qur'an, he will get peace of mind, so that the perception of stress will be positive and the stress response will be balanced.

The Effect of Murottal Al-Qur'an on Blood Sugar Levels

Murottal Al-Qur'an reduces blood sugar levels in patients with type II diabetes mellitus. Physiologically, reading the Qur'an therapy will affect changes in body cells, electromagnetic fields, and provide a relaxing effect for the body. Therapy provides a relaxing effect that will inhibit the production of hormones that can increase blood glucose levels by suppressing cortisol, inhibiting glucose metabolism (gluconeogenesis) and suppressing the release of glucagon converting glycogen in the liver into glucose. (Astuti and Purnama, 2019). Research conducted Astuti and Purnama (2019) showed that there was an effect of therapy on reading the Qur'an on blood sugar levels with a significance value of 0.000 ($p < 0.05$), in this study it was found that from 35 respondents, an average GDS of 110 –200 mg/dl as many as 24 respondents, respondents with GDS> 200 mg/dl 11 respondents. This study is in line with research (Sartika et al., 2020) where there is an effect of murottal Al-Qur'an on blood sugar levels (p value = 0.008), which in this study shows that the average (mean) blood sugar level when the respondent in the initial control group before the intervention was 271.06 mg/dl and after the murottal intervention was 226.69 mg/dl.

Based on research Rahmatia et al. (2020) explains that after murottal Al-Qur'an therapy, blood sugar levels in respondents are getting better because when someone is heard murottal Al-Qur'an, the harmonization of beautiful murottal Al-Qur'an chants will enter the ear in the form of sound (audio), vibrate the eardrum, shake the fluid in the inner ear and vibrate the hair cells in the cochlea and then pass through the cochlear nerve to the brain and create an imagination of beauty in the right brain and left brain. This will have an impact on comfort and a change in feeling so that you feel a calming sensation. This change in feeling is because murottal can reach the left region of the cerebral

cortex. The hypothalamus is an area that regulates some of the vegetative functions and endocrine functions of the body such as aspects of emotional behavior, the auditory pathway is transmitted to the reticular formation as a channel for impulses to autonomic fibers. These nerve fibers are sympathetic and parasympathetic nerves. These two nerves can affect the contraction and relaxation of organs. This relaxation can reduce blood glucose levels in diabetic patients by suppressing excess production of hormones that can increase blood glucose levels, namely epinephrine, cortisol, glucagon, ACTH, corticosteroids, and thyroid (Rahmatia *et al.*, 2020).

Dhikr therapy in the form of murottal Al-Qur'an can reduce blood glucose levels in patients with type II diabetes mellitus. Reading of sound stimulation on murottal with a slow tempo (<60 beats/minute) and harmony will increase the release of endorphins (Habiburrahman, Hasneli and Amir, 2018). The release will cause relaxation. So that the levels of cortisol, epinephrine-norepinephrine, dopamine and growth hormone in the serum will decrease. In this relaxed state, the respiratory rate becomes slower, deeper thinking, emotional control, and better metabolism (Sartika, Lidya and Doni, 2020). the effect of reading the Qur'an will be permanent and long lasting when done regularly and continuously, because through reading the Qur'an it becomes a means in helping patients to communicate with their Lord, this is because the fulfillment of spiritual needs is highly expected for patients as a means of approaching their Lord for a place to complain and surrender that only Allah is the most healer.

Limitations of the Literature Review

There are several limitations to this literature review. Several studies reported that the intervention for murottal patients was the surah contained in the Qur'an, but several other studies reported that the intervention used was only the murottal Qur'an without an explanation of the surah used. Another limitation relates to the conduct of the studies which were not conducted in all countries. Therefore, the results of this study should be further confirmed by conducting more studies on different populations from other countries.

CONCLUSION

Based on the results of the study, it can be concluded that the reading of sound stimulation in murottal Al-Qur'an with a slow tempo (<60 beats/minute) and harmony will increase the release of endorphins. The release will cause relaxation, reducing stress. In this relaxed state, the rate of breathing becomes slower, deeper thinking, emotional control, and better metabolism. Listening, reading and understanding the contents of the Qur'an can bring peace of mind and healing of disease and can draw closer to the creator. This is because through reading the Qur'an and listening using visualization with a multimedia system can bring up optimism, eliminate negative thoughts and bring up positive thoughts.

Murottal Al-Qur'an is effective for reducing stress levels in type II diabetes mellitus patients, with murottal, the quality of one's awareness of God will increase whether people know the meaning of the Qur'an or not. This awareness will lead to total submission to God. Remembering Allah will make the body feel calm so that it suppresses the work of the sympathetic system and activates the work of the parasympathetic system. A positive emotional response from the murottal influence of the Qur'an runs through the body and is received by the brain stem. Then transmitted to one of the impulses to the hypothalamus to secrete GABA which serves as a controller of emotional responses, and inhibits or reduces the activity of neurons or nerve cells, CRH and other neurotransmitters that

produce cortisol and other stress hormones. In an optimal and calm state of brain energy, it can relieve stress and the brain can think clearly and then contemplate the existence of God.

Murottal Al-Qur'an is effective in reducing blood sugar levels in patients with type II diabetes mellitus. Murottal can also provide a relaxing effect that will inhibit the production of hormones that can increase blood glucose levels. In this relaxed state, the breathing rate becomes slower, deeper thinking, emotional control, and better metabolism, so that it can lead to optimism, eliminate negative thoughts and bring up positive thoughts. In addition, a decrease in the hormone cortisol in diabetes mellitus patients will cause a decrease in blood sugar levels.

CONFLICT OF INTEREST

This comprehensive summary or literature review is written independently, so there is no conflict of interest in its writing.

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Integrated Lecture and Discussion on Mothers' Behaviour Toward Initial Management of Rabies

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ABSTRACT

Introduction: Rabies is an important animal-borne disease in Indonesia with potentially fatal outcome. Initial management following animal bite may alter prognosis of the disease. This study aims to evaluate the effect of an integrated lecture and discussion (ILD) on mothers' knowledge and attitude toward initial management of rabies related to dog bite.

Methods: This is a quasi-experimental study with pre-and post-test design conducted at district Merti Jaya, West Kalimantan Province. Two groups were formed; intervention group who received ILD related to rabies initial management, and control group who were given leaflet of the disease. The outcomes measured were knowledge and behavior of mother at the end of study.

Results: There were 72 participants with equal number in both groups. Age, education and employment status were similar between the groups. There was a significant increase on mother's knowledge in intervention group after ILD (Mean±standard deviation, Pretest 12.3±1.7, Posttest 14.0±0.9, P < 0.05). This was also seen in control group (Pretest 11.6±1.9, Posttest 12.8±1.4, P < 0.05). However, significant improvement was not seen in mother's attitude (all P value > 0.05).

Conclusions: Integrated lecture and discussion may improve mothers' knowledge pertaining rabies initial management. Further development in information delivery need to be done to alter mothers' attitude toward rabies.

Keywords: *Integrated Lecture, Mother's Behaviour, Rabies, Health Care*

INTRODUCTION

Rabies remains a global health problem and the distribution of the disease vary widely including in Indonesia. Rabies imposes a major public health problem because it almost always followed by death after the onset of clinical symptoms (Tanzil, 2014). Every year, there are about 50,000 people died from rabies of which around 55% of the mortality occurs in Asia and over 40% in Africa (Dzikwi, Ibrahim and Umoh, 2012). In Indonesia, of the 80,403 cases of rabies transmitting animals from 25 provinces, there were 131 cases of rabies infection reported each year. Of those, Ministry of Health reported 118 death (Kemenkes RI, 2014). In West Kalimantan Province, there were 12 death cases due to rabies infection reported in 2016. The rabies transmitting animals in Indonesia are mostly dog

(98%), with minority cases were transmitted from cat or monkey bite (2%). According to the local health authority of Kabupaten Sintang, West Kalimantan, 4 peoples died from rabies in the area in 2016.

Rabies (or Lyssa) is caused by Rabies virus which belong to genus *Lyssavirus*, family *Rhabdoviridae*. Rabies can be transmitted through saliva or the bite of animals infected with rabies. Within two weeks after entering human body through bite wound, the virus can still be found in the infected wound before transmitting to the posterior ganglion of the spinal nerve. The virus can then continue to infect the brain and replicating. The latter phase could induce acute encephalitis or meningoencephalitis. The average incubation period of the disease is between 2 – 3 months. The period may be as early as 7 days or could be latent for up to one year. The clinical manifestations of rabies vary between patient, but the fatal outcome may be present as early as two weeks after the onset with up to 100% mortality in the unvaccinated patients (Tanzil, 2014).

Mothers have a very important role in maintaining the health of family members. Mother's behavior is also influenced by several factors, such as age, education, culture, and tradition. External factors such as access to healthcare facilities and the attitude of health workers toward the mother may also alter the behavior. There are several education methods that can be used to improve the awareness and knowledge of rabies disease (Mendrofa, 2014). Special discourse on the specific health topics followed by integrated discussion may provide the mothers with the real condition and immediate action in responding to the bite of rabies transmitting animal. In this study, we evaluate the effect of an integrated lecture followed by discussion specifically designed for rabies disease on mothers' behavior toward the initial management of rabies disease.

METHODS

In this study, we used quasi-experimental research design with pre-and posttest questionnaire. The design seeks to assess the causal relationships of ILD onto mothers' behavior by involving the control and experimental group. The population is all mothers living in Merti Jaya Village, Tempunak subdistrict, Sintang district, West Kalimantan Province as many as 237 people. Determination of the sample size was done using purposive sampling technique yielding 72 respondents (36 control groups and 36 intervention groups) from the population.

Participants were included in the study if they were age 18-59 years, able to read and write (literate), were at risk of having family members contracted with rabies, and have not received training on first aid following rabies-transmitting animal bite. The mothers were excluded from the recruitments if they were at sick condition and did not give consent to participate in the study.

The intervention group was given lecture in the topics of rabies disease, mechanism of transmission, signs and symptoms of animals with rabies and in human after animal bite, and first aid following the animal bite. The lecture was given for all participants in 40-minute session in day 1 followed by 50-minute small-group (6-7 participants) intensive discussion in day 2. Control group was given only leaflet with the information similar to those in intervention group lecture without subsequent discussion. Both group were asked to fill in the questionnaires at the beginning and at the end of the study to assess knowledge and behavior.

The independent variables in this study were integrated lecture and discussion (ILD) and the dependent variable was mother's behavior (knowledge and attitude) in the first aid management of rabies-related dog bites. The instruments used were questionnaires adopted from the research by Mendrofa (Mendrofa, 2014) and Liu *et al* (Liu *et al.*, 2017). The adopted questionnaires have been modified by authors to fit the local condition and culture of the intended population. Ethical clearance

has been obtained from Ethics Committee of Faculty of Nursing, Universitas Airlangga with the certificate number of No. 547-KEPK. Data were collected using standardized format throughout the study and then tabulated. Statistical analyses were done using Wilcoxon Signed Rank Test with significance level $\alpha \leq 0.05$ and Mann-Whitney U Test with significance value of less than 0.05 considered to be statistically significant.

RESULTS

Table I summarizes the demographic characteristics of all participants in this study. Both groups have the same number of participants with similar number of participants in each age group. Most participants in both groups were working as farmers or housewives with minority of them were self-employed. About 53% of participants in intervention group and 47% had dog at their home with 16.7% and 13.9% have experienced dog bite at least one time in the group respectively.

Table I Data on demographic characteristics of intervention group and the control group.

No	Demographic of respondents	Intervention		Control	
		<i>n</i>	%	<i>n</i>	%
1.	Age				
	Age 18-25 years old	4	11.1	7	19.4
	Age 26-35 years old	14	38.9	14	38.9
	Age 36-59 years	18	50	15	41.7
2.	Employment				
	Farmers / Planters	24	66.6	20	55.5
	Housewife	10	27.8	15	41.7
	Self-employed	1	2.8	1	2.8
	Pastor	1	2.8	0	0
3.	Education (latest graduated)				
	Elementary School	22	61.1	27	75
	Junior high School	7	19.4	6	16.7
	High School	6	16.7	2	5.5
	Diploma/Bachelor	1	2.8	1	2.8
4.	Have dog				
	Yes	19	52.8	17	47.2
	No	17	47.2	19	52.8
5.	History of family bitten by a dog				
	Yes	6	16.7	5	13.9
	No	30	83.3	31	86.1
6.	The frequency of dog bites				
	Never				
	Yes: at least 1 time	30	83.3	31	86.1
		6	16.7	5	13.9

#. This table includes the basic demographic characteristics of participants in the study and divided into two group of interest.

Table 2. Knowledge of mothers.

No	Knowledge	Intervention Group				Control Group			
		Pre		Post		Pre		Post	
		n	%	n	%	n	%	n	%
1.	Good	30	83.3	36	100	21	58.3	30	83.3
2.	Enough	4	11.1	0	0	11	30.6	6	16.7
3.	Less	2	5.56	0	0	4	11.1	0	0%

#. This tables summarizes the knowledge of mothers before and after the study (ILD implementation) contrasting the two group of interest.

*. *Wilcoxon Sign Rank Test* $p = 0.023$; *Wilcoxon Sign Rank Test* $p = 0.002$; *Mann-Whitney* $p = 0.002$

Before the ILD administration, intervention group had more than 90% participants with at least enough knowledge on rabies initial management. The similar rate was also found in control group with 89.6% of their respondents. There was a significant increase of mother’s knowledge intervention group after ILD (Mean±standard deviation, Pretest 12.3 ± 1.7 , Posttest 14.0 ± 0.9 , $P < 0.05$). This was also seen in control group (Pretest 11.6 ± 1.9 , Posttest 12.8 ± 1.4 , $P < 0.05$). The breakdown score can be seen in table 2.

Mann Whitney test results in two unpaired groups showed that there was a significant difference of knowledge level between treatment group and control group that is $p = 0,002$ where $\alpha < 0,05$.

Table 3. Mother’ attitude.

No	Attitude	Intervention Group				Control Group			
		Pre		Post		Pre		Post	
		n	%	n	%	n	%	n	%
1.	Positive	21	58.3	27	75	21	58.3	19	52.8
2.	Negative	15	41.7	9	25	15	41.7	17	47.2

#. This tables summarizes the attitude of mothers before and after the study (ILD implementation) contrasting the two group of interest.

*. *Wilcoxon Sign Rank Test* $p = 1.000$; *Wilcoxon Sign Rank Test* $p = 1.000$; *Mann-Whitney* $p = 0.000$

Mothers’ attitude towards the initial management of rabies is shown in table 3. Overall, there was no statistically significant differences between the pre-and posttest score in both groups. However, the number of participants with positive attitude toward rabies management increased in the intervention group from 58.3% before the implementation of ILD to 75% at the end.

Mann Whitney test result in two unpaired groups showed that there was a significant difference in the attitude of the respondents between the treatment group and the control group, $p = 0.000$ where α is <0.05 .

DISCUSSION

Our study evaluated the effect of an integrated lecture on rabies and its management toward mothers' knowledge and behavior following animal-transmitting rabies bite. The main of this study shows that there is increase in mothers' knowledge after implementation of integrated lecture and discussion (ILD). The increasing knowledge through various media and this method is in accordance with research conducted (Abu Farha *et al.*, 2018) (Herbert, Riyaz Basha and Thangaraj, 2012). The results of this study on ILD method contradict the results of Bintari's study (Retno Bintari, 2016) which states that the increase in knowledge is significantly greater through the leaflet medium than by giving lectures. The common site of dog bites (in legs and hands) was also in accordance with research results from Khazaei *et al.* (Khazaei *et al.*, 2014) which says that many animal bites occur in the feet (48.1%) and hands (40.6%). According to Notoatmodjo (Notoatmodjo, 2011), one of the factors affecting knowledge is education. Knowledge is also closely related to education where it is expected that a person with higher education will be more knowledgeable. With higher education, it will facilitate a person in receiving information and through education level, a person will tend to get the exercises, tasks and activities associated with cognitive abilities that are expected to change the behavior and mindset more positive.

According to Astutik (Astutik, 2015) in his research suggested that many factors can affect knowledge such as age and experience. In accordance with the opinion Notoatmodjo (Notoatmodjo, 2011) that personal experience can also be used as an effort to acquire knowledge and level of knowledge and influenced by the learning process. This is shown by the results of the post-test above. Most of the respondents were primary school graduates and were able to answer the questions well, although the majority of respondents were graduated from high school and junior high school. Women who have become mothers will be drawn to learn from reliable sources outside of formal education institutions because of the instinct to protect their family. The other factors that may also influence mother's attention were the remoteness of the area that was rarely given counseling and information from health authorities and experts.

When a person gets a lot of information then he or she tends to have a wider knowledge. By means of information through counseling (ILD), the more information received, the more knowledge will be gained. The learning process itself is influenced by the condition of the participant's intelligence, comprehension, memory, and motivation. Communication through counseling is important to build self-concept, self-actualization, survival, and to gain happiness.

The results of the discussion on the treatment group found that the patients were traditionally given herbs on bite wounds, some were washed only with water and some were taken to the nearest health worker. Various ways of handling animal bite wounds are also found by Salve *et al.* (Salve *et al.*, 2015) in India, for example with pasta spreads, warm oil, antiseptics and washing wounds with water. Dog bites are mostly found in the legs and hands. This is in accordance with research from Khazaei *et al.* (Khazaei *et al.*, 2014) which states that many animal bites occur in the foot (48.1%) and hands (40.6%).

According to Lawrence Green cited by Notoatmodjo (Notoatmodjo, 2011), one of the factors that influence human behavior from the health perspective is knowledge as the predisposing factors.

A person's behavior can be determined by person's knowledge, attitudes and beliefs. A person can act positive for his needs, and act negatively if he/she cannot meet his needs.

Notoatmodjo (Notoatmodjo, 2011) said that respondents' positive attitudes are also influenced by other factors of Lawrence Green's theory of reinforcing factors: including attitude and behavior of community leaders, religious leaders, attitudes and behavior of officers including health workers. Support from health personnel is able to make the attitude of mother to be positive. Respondents who have been given lectures and integrated discussions by health workers felt confident and believed in the information provided by health workers and had a strong encouragement and support from the officer to change the attitude.

According to Waryana (Waryana, 2016) flip-charts could influence attitudes, knowledge and or skills. The advantages of flip-charts also include durability, easy-to-use, and attractability. In addition, the advantage of these tools that they do not require electricity and they were very helpful and in supporting the delivery of information at Merti Jaya Village considering the local electricity limit.

CONCLUSIONS

Integrated lecture and discussion may improve mothers' knowledge pertaining rabies initial management. Further development in information delivery need to be done to alter mothers' attitude toward rabies.

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CONFLICT OF INTEREST

The Author(s) declare(s) that there is no conflict of interest

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Effect of Spiritual Nursing Intervention Integrating Islamic Prayer on Preoperative Anxiety Levels of Fracture Patients

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ABSTRACT

Introduction: In a closed fracture case, the patient will experience a higher level of anxiety because the operation is necessary. They can also experience anxiety due to the waiting time for the operation in relation to the order of the operating schedule. This study was conducted to determine the effect of spiritual nursing intervention in relation to preparing fracture patients for surgery and their preoperative anxiety levels.

Methods: A quasi-experimental design was used. The study was conducted using 32 preoperative fracture patients in hospital as the sample. The data collection tools included the characteristics of the respondents and their level of anxiety, which was measured using the Hamilton Anxiety Rating Scale (HAM-A). The Islamic spiritual assistance service was given to the intervention group twice in the treatment room on the day before the operation with a booklet and in the surgery preparation room before the surgery itself. The Mann-Whitney U test was used for the anxiety comparisons between the intervention and control group and the Wilcoxon test was used for comparisons within one group.

Result: The anxiety level of the preoperative close fracture patients was lower in the experimental group than in the control group ($P < 0,05$).

Discussion: As a result of this study, it was determined that a spiritual nursing intervention provided to preoperative patients with fractures who were to undergo surgery reduced their anxiety levels. Nurses should use spiritual nursing interventions integrating Islamic prayers to reduce the preoperative anxiety of Muslim patients.

Keywords: spiritual, preoperative anxiety, fracture

Introduction

Surgery is an experience that is difficult to forget. It is feared by almost everyone (Medeiros, Oshima and Forones, 2010; Joyce M. Black, 2014) and most patients experience preoperative anxiety before elective surgery (Jawaid *et al.*, 2007). In a closed fracture case, the patient will experience a higher level of anxiety because the operation is necessary. They can also experience anxiety due to the waiting time for the operation in relation to the order of the operating schedule.

Anxiety is a subjective feeling experienced by someone, especially because of new experiences, including in the patients who are to experience invasive actions such as surgery (Arakelian, Laurssen and Öster, 2018). Preoperative anxiety is a response to the anticipation of an experience that the patients can consider to be a threat to their role in life, bodily integrity and even life itself (Potter & Perry, 2013; Arakelian, Laurssen and Öster, 2018). There are various causes of fear and anxiety in patients who will be having closed fracture surgery actions including a fear of physical changes (disability), a fear of facing the operating room, a fear of dying during the anesthetic and a fear that the operation will fail (Kozier & Erb's, 2016; Arakelian, Laurssen and Öster, 2018). An impact that might arise if the pre-surgery patient's anxiety is not immediately treated is that the patient cannot concentrate and understand the event, which results in the patient not being cooperative with the procedure. Arakelian research show that patients losing control the body, the patients described having palpitations and high blood pressure in the moment before the induction of anesthesia (Arakelian, Laurssen and Öster, 2018). In such conditions, an intervention is needed in order to reduce this anxiety (Liddle, 2012).

The nurses understand that patients who are to undergo surgery and anesthesia can have peri-operative anxiety (Wennström *et al.*, 2011). Reducing preoperative anxiety in patients is a routine part of nursing care (Liddle, 2012). The needs of patients who experience pre-closed fracture anxiety are not only focused on their physical health, but their needs also include their psychological, social and spiritual health. The spiritual needs that are fulfilled can reduce suffering and have a positive effect on the recovery of the client's physical health (Stanley *et al.*, 2011) (Yong *et al.*, 2011). Spiritual nursing is an element of quality health care conducted by showing affection to the client so then a relationship of trust is formed. Islamic spiritual assistance services in preoperative patients are an intervention that is a spiritual service aimed at patients who experience anxiety. It aims to improve the patient's emotional intelligence, meaning that the patients are able to interpret their conditions, surrender to it and realize that whatever happens in their life is a blessing from God (Allah). The clients can improve their coping methods that can reduce the intensity of the client's anxiety. This spiritual service assistance emphasizes on the guidance of Zikr (remembrance of Allah) and Doa (supplicatory prayers before the operation), while teaching Tawakkal (Reliance to Allah) (Yusuf Qardawi, 2004; Hanin Hamjah and Mat Akhir, 2014). An optimal spiritual nursing intervention is perceived to be related to the limbic system, before it then propagates to the hypothalamic neurons which will decrease the corticotrophin-releasing hormone. This is followed by a decrease in ACTH production by the anterior pituitary neurons which finally are responded to by the adrenal cortex with a decrease in cortisol. This results in a decrease in anxiety (Kozier & Erb's, 2016).

The assessment conducted by nurses on the psychological and spiritual aspects of the clients can be used to find any problems that exist (Liddle, 2012). Fractures are associated with an increased risk of suicide, especially in patients with a low income level, who are unmarried, who have a low education level and who have mental disorders that are simultaneously shared such as anxiety and

mood disorders(Chang, Lai and Yeh, 2018). Interference in the spiritual dimension can cause depression in the client(Stanley *et al.*, 2011). The client's behavior, if his spiritual needs are not fulfilled, can cause the clients to experience spiritual distress(Vergheze, 2008; Velosa, Caldeira and Capelas, 2017). The anxiety that comes will be responded to using coping mechanisms, spiritual intelligence and physiological mechanisms that work in the prefrontal cortex. This affects the level of anxiety(Moeini *et al.*, 2014; Patriquin and Mathew, 2017). Interventions in patients with closed fractures pre-surgery are carried out to provide Islamic spiritual service assistance. The aim of the study was to examine the impact of Islamic spiritual assistance services on peri-operative patients with closed fractures.

Methods

This quasi-experimental research study was conducted at X hospital in Indonesia. The sample of study included 32 Muslim patients who underwent surgery between November and December 2016. Sample criteria were include: (1) preoperative closed fracture patients, (2) they had never had an operation previously and (3) they were aged over 18 years old. The exclusion criteria was follows: (1) patients who experienced a decrease in consciousness and who were uncooperative, (2) patients with chronic illness or psychological illness and (3) patients who had multiple fractures. The research was approved by the Health Research Ethics Committee X University (No. 251-KEPK).

The form included questions on the patient's socio-demographic characteristics. This form was prepared according to the literature by the researchers and consisted of five items including information such as the patient's sex, age, occupation and the type of surgery. Each form was completed by one of the researchers during an interview with the patients, which took place in the ward pre-surgery and in a room 2 days before the surgery, lasting approximately 30 minutes on the day before the surgery.

Hamilton Anxiety Rating Scale (HAM-A)

Hamilton's anxiety rating scale was developed by Max R Hamilton in 1959(HAMILTON, 1959). The scale was designed to assess the severity of a patient's anxiety. Each of the items contains a number of symptoms that tie into both the physical and psychological aspects(HAMILTON, 1959; Vaccarino *et al.*, 2008; Sun *et al.*, 2009). We translated this questionnaire into Indonesian and then modified it. We tested the validity and reliability on 10 people who underwent elective surgery at Muhammadiyah Hospital, Indonesia. Concerning how to assess the questionnaires, the respondents were able to choose to answer more than one item. The selected answer was given a value of 1, while the unselected one was numbered 0. Indicating a person's anxiety was done using the following criteria: score <6: no anxiety; score 6-14: mild anxiety; score 15-27: moderate anxiety and score > 27: severe anxiety. The highest score was 70 and the lowest was 0. 1 day before the surgery and 30 minutes before the surgery; this took approximately 10 to 15 minutes.

Islamic Spiritual Assistance Service

This is a form of intervention given by the nurses through teaching activities and surrendering in order to improve emotional intelligence. The patient is able to interpret his condition, surrender and realize that whatever happens in his life is a gift from Allah. The instrument used in the independent variables in this study was SAP, which explains the prayer guide before surgery, the motivation to strengthen the patient's faith and teaching the patient to surrender. This instrument was developed by researchers based on a Muslim guide book by Yusuf Qardhawi (Qardhawi, 2003; Yusuf Qardawi,

2004), Saiful Anwar al Batwy (Al Batawy, 2012), Dadang Hawari (Hawari, 2008), Ghoffar (Ghoffar, 2006) and Abdul Muhdi (Abdul Muhdi Abdul Hadi, 2006), assisted by 2 experienced nurses in the field of spiritual nursing. The Islamic spiritual assistance service was given to the intervention group twice in the treatment room on the day before the operation with a booklet and in the surgery preparation room before the surgery itself.

Data collection procedure

On the first day, the population of the closed fracture patients to be operated on, according to the inclusion criteria, were included as the sample. The sample was divided into 2 groups, consisting of an intervention group and a control group with the distribution carried out by random allocation. The two groups were provided with information on informed consent, with the researcher providing information in advance about the purpose and objectives of the study. The researcher asked for their willingness to be involved in the research by asking them to fill in the consent sheet prepared by the researcher. The sample was then given a questionnaire (pre-test) by filling out their demographic data and the HAM-A scale anxiety questionnaire (Hamilton Anxiety Rating Scale). The sample of the intervention group was given first intervention in the form of Islamic spiritual assistance services by teaching them about prayers pre-operation and teaching them resignation and by giving booklets, lectures and offering them the chance for questions and answers for 60 minutes in the preoperative room by the researchers. They were assisted by 2 nurses who were trained by the researchers to facilitate the research process.

On the second day, the intervention group was moved to the preparation room for 2 hours before the operation. They were then given a further intervention with 60 minutes of spiritual service assistance in the operation preparation room. Furthermore, 30 minutes before the operation, the two groups of samples were measured as part of an evaluation (post-test) by filling out the HAM-A scale questionnaire given when the patient was waiting for their turn by the nurse. The descriptive statistics performed (percentage and frequency) were calculated and significance tests were additionally carried out. The data was processed using SPSS 16 software for Windows. The Mann-Whitney U test was used for the anxiety comparisons between the intervention and control group and the Wilcoxon test was used for comparisons within one group.

Result

The descriptive statistics related to the respondent such as age, gender, education, occupation and surgery type in both the intervention and control groups has been summarized in Table I. The majority (65.6%) of the patients participating in the study were in the age group of 18 to >45 years, where the majority were male (n=21) and 34.4% (n=11) were female. There were no statistically significant differences between the experimental and control groups in relation to the identifying demographic characteristics of the respondent.

Table I. Characteristics – the demographics of the closed fracture clients pre-operation

Characteristic	Intervention Group		Control Group		χ^2	P	Total(N=32)	
	N	%	n	%			n	%
Age								
18-25 y.o	4	25	3	18.8	15.567	.076	7	21.9

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26-35 y.o	2	12.5	5	31.3			7	21.9
36-45 y.o	6	37.5	7	43.8			13	40.6
> 45 y.o	4	25	1	6.3			5	15.6
Gender								
Male	9	56.3	12	75			21	65.6
Female	7	43.8	4	25	0.085	.771	11	34.4
Education								
Primary School	6	37.6	1	6.3	11.621	.071	7	21.9
High school	8	50	13	81.3			21	65.6
University and higher	2	12.5	2	12.5			4	12.5
Occupation								
Unemployed	4	25	2	12.5	11.068	.271	6	18.7
Private	5	31.3	4	25			9	28.1
Self-employed	6	37.5	7	43.8			13	40.6
Civil Servant	1	6.3	3	18.8			4	12.5
Surgery Type								
Femur Fracture	6	37.5	5	31.3	14.520	.486	11	34.4
Tibia Fracture	4	25	7	43.8			11	34.4
Antebrachii Fracture	1	6.3	2	12.5			3	9.4
Humerus Fracture	3	18.8	2	12.5			5	15.6
Clavicula Fracture	1	6.3	0	0			1	3.1
Pedis Fracture	1	6.3	0	0			1	3.1

χ^2 , Chi-square Test

Table 2. Comparison of the anxiety levels of patients pre-closed fracture surgery

Assessment Time	HAM-A Level				P Value ^f
	Intervention Group (n=16)		Control Group (n=16)		
	n	%	n	%	

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Pre	Mild	1	6.3	0	0	0.00
	Moderate	11	68.8	13	81	
	High	4	25.0	3	19	
Post	Mild	9	56.3	0	0	
	Moderate	7	43.8	15	93.8	
	Severe	0	0	1	6.3	
P Value*		0.001		0.157		

*Wilcoxon

†Mann-Whitney U test

A comparison of the experimental and control groups has been provided in Table 2 regarding the level of anxiety with a HAM-A score of the preoperative closed fracture patients. The preoperative anxiety level of the respondents in the experimental group was overall significantly lower than that of the control group (P, .05). The level of the post-test anxiety scores was mild 9, moderate 7 and severe 0 in the intervention group and mild 0, moderate 15 and severe 1 in the control group. The difference was statistically significant (U 0.00; P<0.05). In the intervention group, the anxiety level (mild 1, moderate 9, severe 4) decreased significantly pre-test compared to the post-test (mild 9, moderate 7, severe 0; W 0.001; P <0.05).

Discussion

In the preoperative period, spiritual nursing care significantly affects patient anxiety. In this context, the impact of Islamic spiritual assistance service is important. The most important result from the giving of spiritual assistance is that it can reduce dangerous complications and symptoms that can delay the implementation of the operation such as increased blood pressure, breathing and even bleeding (Arakelian, Laurssen and Öster, 2018). In this study, the level of preoperative anxiety of closed fracture patients after the Islamic spiritual assistance service intervention was mild. The testimonies of the respondents who carried out the intervention mostly said that there were differences after the intervention. The respondents said that after the intervention, they felt more confident, optimistic, peaceful and resigned to everything that was to and could happen, as it was God's will. This is in line with the study of Hamjah et al, which found that prayers, zikr (remembrance to Allah) and tawakkal (reliance on Allah) have positive implications (Hanin Hamjah and Mat Akhir, 2014). Prayer helps to bring in a sense of tranquility as well as being the mark of a slave in relation to his creator (Hanin Hamjah and Mat Akhir, 2014). Praying will lead to self-confidence, a sense of optimism (healing hope), calm, peace, and feeling God's presence, to which then the body responds by secreting hormones that are perceived in the limbic system and then propagated to the hypothalamic neurons. This will cause a CRH (corticotrophin-releasing hormone) decrease. This is followed by a decrease in ACTH production by the anterior pituitary neurons which are responded to by the adrenal cortex with a decrease in cortisol. This results in a decrease in anxiety (Kozier & Erb's, 2016).

The results of this study indicate that in the intervention group, the Islamic Spiritual Assistance service provides a significant effect on anxiety reduction (Table 2). Similarly, Yoon and Park showed that a spiritual nursing intervention could significantly reduce situational anxiety in the experiment group compared to the control group ($t = -5.99$; $P < 0.01$) (Yoon and Park, 2002). Another quasi-experimental study comparing the effects of a spiritual care program on the level of anxiety in patients with leukemia showed that the score of anxiety was significantly lower in the experimental group than in the control group ($P < 0.01$) (Moeini et al., 2014). Puig et al. conducted a spiritual intervention on women with cancer and found significantly lower scores of anxiety in the experimental group than in the control group (Puig et al., 2006). Other studies showed contradictions; Ikedo et al. reported no significant difference in the scores of anxiety following the implementation of a spiritual care program (Ikedo et al., 2007). The differences in the cultural and religious characteristics of the study populations, the type of spiritual care program, the sample size and the type of disease might have been responsible for such an inconsistency.

Spiritual assistance is more permissible for all groups, especially people who have a religion, in contrast to reducing anxiety with distractions using music, pictures and aromatherapy that suits everyone of different tastes. The results of this study cannot be generalized because this study was conducted in only one hospital and the respondents were all Muslim. The effectiveness of the intervention may vary according to the patient's religion, society and culture. The intervention time of one to two days before the operation is the optimal time, so then it can best affect the results. Limitations can include the type of surgery and gender.

Conclusions

The results of the study show that the Islamic spiritual assistance provided by nurses in patients in the preoperative condition decreases their anxiety. Before the intervention was carried out, the patient was afraid of his own thoughts, had difficulty sleeping and was worrying if the operation was going to fail. After being given the Islamic spiritual assistance service, the patients felt confident, optimistic, peaceful and resigned that all of what happens is the will of God and that God will give the best.

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The effect of health education through telemedicine on adolescent knowledge levels about reproductive health: A systematic review

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ABSTRACT

Introduction: Adolescence is a transition period from children to adults. Adolescents have a distinctive nature in the form of great curiosity, love adventure and challenges and tend to dare to take risks without careful consideration. Problems that often occur in adolescents include sexuality problems, unwanted pregnancies and abortions, infection with sexually transmitted diseases, and drug abuse. One of the causes of this problem is the lack of adolescent knowledge about reproductive health. Therefore, it is necessary to provide adequate reproductive health education for adolescents. But during this pandemic, education through telemedicine is considered safer as an effort to control the Covid-19 pandemic.

Methods: A systematic review was conducted to examine the effectiveness of health education through telemedicine on adolescent knowledge levels about reproductive health. The study examined 7 articles were obtained from the sciencedirect, pubmed and Google Scholar with a Randomized Controlled Trial or Quasi experimental research design. The article was published between 2016 and 2022, and the articles were evaluated by Joanna Briggs Institute (JBI) to examine the quality of article. Furthermore, research was explored and analyzed by Thematic Analysis.

Results: It was found that 22 journals showed a significant increase in the level of knowledge among adolescents about reproductive health, measured by before and after questionnaire

Conclusion: Based on literature, health education through telemedicine has proven to be effective in increasing the level of adolescent knowledge about reproductive health.

Keyword: *telemedicine, reproductive health, adolescent*

Background

Adolescence is a period of transition or transition from children to adults. The World Health Organization (WHO) defines adolescents as individuals with an age range of 10-19 years, while based

on the Regulation of the Minister of Health of the Republic of Indonesia in 2014, the age range of adolescents is 10-18 years. The National Population and Family Planning Agency (BKKBN) defines youth as unmarried individuals aged 10-24 years (Nurhayati et al., 2017).

Adolescence is a period of rapid growth and development both physically, psychologically, and intellectually. The characteristics of teenagers who have a great curiosity, love adventure and challenges and tend to dare to take risks without careful consideration (Qomariah, 2020). One of the problems that occur during adolescence is the problem of sexuality, unwanted pregnancy (KTD) and abortion, infection with sexually transmitted diseases (STDs), and drug abuse (Hamzah & Hamzah, 2021).

Adolescence is one of the most rapid development periods in the course of human life. The process of biological maturation generally precedes psychosocial maturity in adolescents. The development of the pre-frontal cortex, which is responsible for executive function, decision making, organization, impulse control and future planning, occurs more slowly than the development of the limbic system, which is responsible for pleasure and reward processing, emotional responses and sleep regulation. This causes teenagers to tend to be interested in exploring and experimenting without considering the consequences (Sariyani et al., 2020). Therefore, adolescents are one of the age groups that tend to be at risk of experiencing the adverse effects of free sex or free sex.

Data from the National Family Planning Coordinating Board (BKKBN) in 2010 noted that 51% of Indonesian teenagers had had sexual intercourse. Data from the Indonesian Child Protection Commission (KPAI) noted that as many as 32% of adolescents aged 14-18 years in 3 major cities in Indonesia (Jakarta, Surabaya, Bandung) had sexual intercourse before marriage, and proved that 62.7% of adolescents lost their virginity while still sitting in junior high school, and 21.2% of them had forced abortions (KPAI, 2013).

The high prevalence of sexual intercourse before marriage in adolescents is caused by several factors, and the most dominant factor is the lack of knowledge of adolescents about the dangers of free sex. Other factors that influence the incidence of free sex, namely the permissive attitude of adolescents, easy access to pornographic media and parenting patterns are factors that cause pregnancy in adolescents. (Gems & Indriani, 2021). Therefore, efforts are needed to overcome adolescent problems regarding free sex, one of which is by providing health education to increase the level of adolescent knowledge about reproductive health.

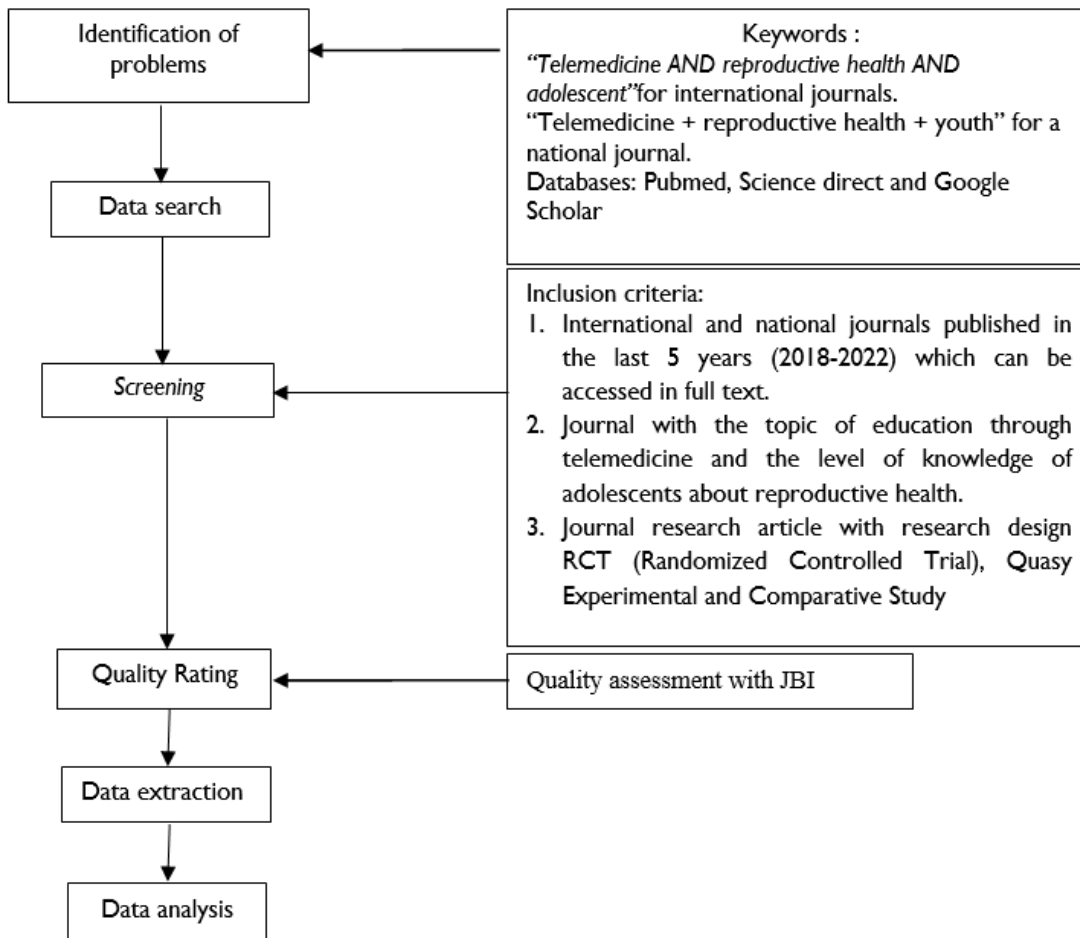
In connection with the Covid-19 pandemic, the public is not recommended to congregate with many people or implement physical distancing, and follow health protocols. Educational activities can be carried out online or using telemedicine as an alternative that is considered the safest to prevent virus transmission for both researchers and respondents. Based on a study conducted by Yessi Andriani et al in 2020, providing education on reproductive health to adolescents online still shows a significant effect on the level of knowledge of adolescents to be higher. Therefore, researchers are interested in conducting a literature study on the effect of telemedicine on changes in the level of knowledge about reproductive health in adolescents. The purpose of this review is to determine the effect of education through telemedicine on changes in the level of awareness of adolescents about reproductive health based on literature studies.

Method

Research design is a research design that is structured in such a way by researchers from the beginning to the end of the study so that they can obtain solutions to the problems raised. The research design covers the planning strategy to the implementation of the research. Research design refers to the research method or type of research that is used as a guide to achieve research objectives (Nursalam, 2015; Setiadi, 2013)

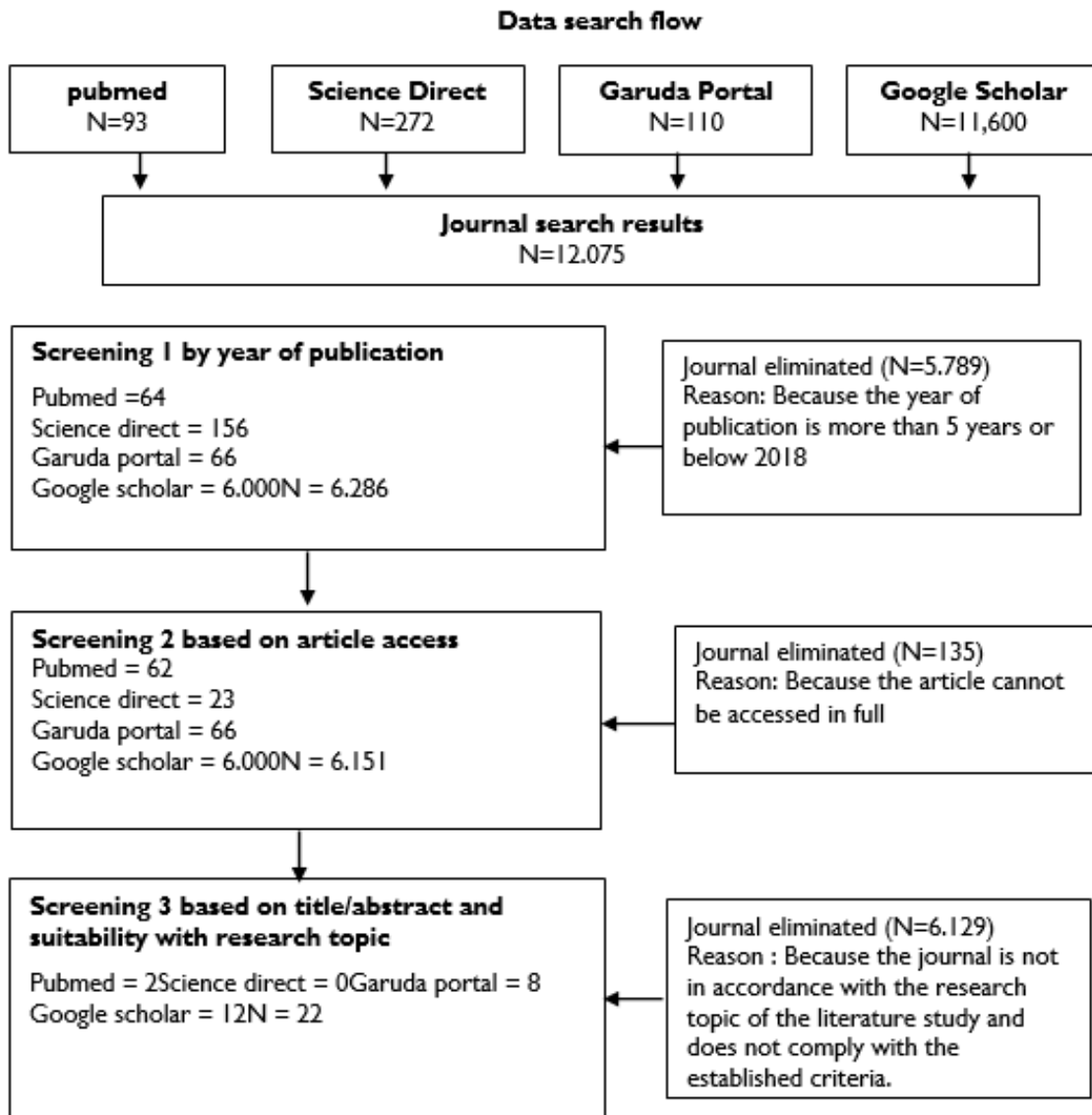
The design that will be used in this research is a literature review. This research method is a research that explores data, theories, information and research results from reports of research results that have been carried out. The data obtained from each literature are extracted to compare the results according to the problems or objectives raised in the study. The stages of this literature study are as follows:

1. Problem identification is carried out to find out problems or phenomena that need to be immediately resolved. Based on Burns (2000) in Siyoto & Sodik (2015) There are several things that need to be considered in problem identification, namely: essential, which means that the issues raised occupy the most important order among the existing problems.
2. Data search, used as study material in this research, comes from reliable and easily accessible databases such as Pubmed, Science direct, Garuda portal and research.
3. *Screening*, the criteria determined in this study were international journals, journals with the topic of providing education through telemedicine and the level of adolescent knowledge about reproductive health, and journal research articles with Randomized Controlled Trial (RCT), Quasy Experimental, and Comparative Study research designs.
4. *Quality Assessment*, using a checklist instrument that has been published by the Joanna Briggs Institute (JBI) according to the type of research conducted by each literature. The type of checklist instrument that will be used is the assessment of a randomized controlled trial (RCT) and a quasi experimental study.
5. *Data extraction*, carried out by identifying the identity of the study, the results of the study quality assessment score, population, intervention to the results of the study.
6. *Data analysis*, so that the information presented in the research report becomes clear and easily understood by the reader (Surahman et al., 2016). Data analysis was carried out by calculating the frequency distribution (percentage) and the average value of effectiveness seen from the relationship value or p value of the influence of education through telemedicine on the level of knowledge of adolescents about reproductive health.



Results

The journal presented mentions reproductive health services for adolescents, theory of behavior as the basis for the consul method, in addition to the telemedicine program as an alternative in support to prevent the spread of covid. There are 22 articles analyzed in terms of Methods (Design, Sample, Variables, Instruments, Analysis) and research results.



In addition, of the 22 journals that have been reviewed, all journals have several different methods but have an effect on the health of adolescents. There is a significant relationship between several methods of telemedicine with adolescent knowledge about reproductive health. In addition, several methods have also provided effectiveness in accelerating adolescents in knowing the importance of reproductive health, even during the Covid-19 pandemic.

No. Article	Method used	Effectiveness
1	mhealth app	<input type="checkbox"/>
2	mhealth app	<input type="checkbox"/>
3	Webinar	<input type="checkbox"/>
4	Social media	<input type="checkbox"/>
5	Telenursing	<input type="checkbox"/>
6	Application Against Rome	<input type="checkbox"/>
7	Audio visual	<input type="checkbox"/>

8	Motivational protection theory	<input type="checkbox"/>
9	Early marriage education	<input type="checkbox"/>
10	Audio visual	<input type="checkbox"/>
11	Leaflets and audiovisuals	<input type="checkbox"/>
12	Literacy via SMS message	<input type="checkbox"/>
13	Videos	<input type="checkbox"/>
14	GEV (Games, Education, Visualization)	<input type="checkbox"/>
15	Mobile media	<input type="checkbox"/>
16	Stragem with eudiovisual	<input type="checkbox"/>
17	Audiovisual media	<input type="checkbox"/>
18	Animation media	<input type="checkbox"/>
19	Internet electronic media	<input type="checkbox"/>
20	comic module	<input type="checkbox"/>
21	Android educational app	<input type="checkbox"/>
22	Android educational app	<input type="checkbox"/>

Discussion

Telemedicine

Telemedicine is the use of information and communication technology combined with medical expertise to provide health services, ranging from consultation, diagnosis and medical treatment, without being confined to space or carried out remotely. Telemedicine is the practice of healthcare using audio, visual and data communications, including treatment, diagnosis, consultation and treatment as well as the exchange of medical data and remote scientific discussions. Tedicine is also commonly referred to as telehealth, e-Health, mHealth or mobile health.

Based on the above understanding, we can understand that the scope of telemedicine is quite broad, including the provision of remote health services (including clinical, educational and administrative services), through the transfer of information (audio, video, graphics), using telecommunication devices (audio- interactive two-way video, computers, and telemetry) involving doctors, nurses, patients and others. In simple terms, telemedicine has actually been applied when there is a discussion between two doctors discussing a patient's problem over the phone (Jamil et al., 2015; Sari & Wirman, 2021).

Reproduction

According to the 1994 International Conference on Population and Development (ICPD) in Mursit (2018) Reproductive health is a healthy condition physically, mentally and socially as a whole, not merely free from disease or disability related to the system, function, and process, reproduction. The scope of reproductive health services consists of maternal and child health, family planning, prevention and treatment of sexually transmitted infections including HIV/AIDS, adolescent reproductive health, prevention and management of abortion complications, infertility prevention and treatment, reproductive health of the elderly, early detection of urinary tract cancer. reproduction and other reproductive health such as sexual violence, female circumcision and so on.

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), reproductive health education is an education developed with an age-appropriate, culturally sensitive and comprehensive approach that includes programs that contain accurate, realistic and non-

judgmental scientific information. Comprehensive reproductive health education provides opportunities for adolescents to explore their own values and attitudes as well as practice decision-making, communication and risk reduction skills in all aspects of sexuality.

Teenager

Adolescence is a period of transition or transition from children to adults. The World Health Organization (WHO) defines adolescents as individuals with an age range of 10-19 years, while based on the Regulation of the Minister of Health of the Republic of Indonesia in 2014, the age range of adolescents is 10-18 years. In contrast to the two definitions above, the National Population and Family Planning Agency (BKKBN) defines youth as individuals aged 10-24 years who are not married.(Nurhayati et al., 2017).

The Relationship of Telemedicine Methods with Adolescent Knowledge

All publications state that there is a substantial relationship between the use of telemedicine and adolescent knowledge. According to the researchers, the results showed that there was such a relationship, namely an increase in using the method to adolescent knowledge and the method in the form of the application was deemed effective in increasing adolescent knowledge about reproductive health. In addition, good cooperation is needed from health workers, youth, schools and family members to improve the quality of life and adolescent knowledge about reproductive health and avoid negative things. In addition, the school also accompanies adolescent students and provides counseling about the importance of knowing reproductive health in order to improve the health and welfare of adolescents.

The limitation in this literature study is that the researcher only analyzes previous research journals so that they cannot prove directly to the intended respondents about the various systems and methods in telemedicine.

CONCLUSION

Based on the research results published in 22 publications related to the problems mentioned above, there is a substantial relationship between the telemedicine method and adolescent knowledge about reproductive health. Most of the support from several parties was provided in the form of instrumental, informational, assessment, and emotional support, such as the provision of materials and transportation, providing advice and suggestions, providing related information, and providing support and attention, according to the findings of this study. When compared with face-to-face methods in the form of counseling and other methods, adolescent knowledge is still low and is considered less effective and less in maintaining adolescent privacy.

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LITERATURE STUDY DATA EXTRACTION

No	Article title, author, year	Journal Site	Method (Design, Sample, Variable, Instrument, Analysis)	Research result
1.	Assessing the reach and effectiveness of mHealth: evidence from a reproductive health program for adolescent girls in Ghana, BioMed Central Public Health Slawa Rokicki and Gunther Fink (2017)	Pubmed NCBI	D: - S:498 adolescent girls aged 14-24 years in 22 secondary schools in Accra, Ghana, divided into 2 groups, namely intervention (n=205) and control (n=293) V: Adolescents' level of knowledge and interest in engaging in mHealth I: Scoring of youth answers on the mHealth quiz. A: Poisson regression model, logistic regression	It was found that 81% of adolescents were involved in the mHealth program and it was proven effective in increasing knowledge about sexual and reproductive health among adolescent girls in Ghana.
2.	<i>Effect of mHealth tool on knowledge regarding reproductive health of school going adolescent girls: a before-after quasi-experimental study</i> Tanima Ahmed (2020)	Pubmed NCBI	D: Quasy experimental – pre and posttest design S: 400 female students aged 14-19 who have a mobile phone to access mHealth V: the level of knowledge of adolescents about reproductive health I: pre and posttest questionnaires A:Paired t-test	1. The use of the mHealth tool has proven to be effective in increasing the level of knowledge of adolescent girls about reproductive health with the results of data analysis showing p value < 0.00 2. The average level of knowledge of students has increased from 44.71 to 70.8 after using the mHealth tool.
3.	Adolescent Reproductive Health Education During the Covid-19 Pandemic in Tabanan Regency in 2020 Made Dewi Sariyani, Kadek Sri Ariyanti, Rini Winangsih, Cokorda Wif Mita Pemayun (2020)	Google Scholar	D: Pre and post test design S:205 high school students in Tabanan Regency with an age range of 15 to 17 years V: the level of knowledge of adolescents about reproductive health I: Questionnaire on reproductive health knowledge Participants are given a pretest when registering as an online education participant, then a posttest is given as an evaluation at the end of the education process A:-	1. There was an increase in the level of adolescent knowledge after online education related to reproductive health and the maturity of adolescent reproductive organs was carried out in Tabanan Regency. 2. The level of knowledge about reproductive health with the criteria of "know" has increased from 78% at the pretest to 98% at the posttest.

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4.	The Effect of Health Counseling With Social Media on Students' Knowledge Levels About Reproductive Health Hamza B, St. Rahmawati Hamzah (2021)	Google Scholar	D: pre-experiment with one group pretest and posttest design S:40 students of grade II IPA 5 at SMA Negeri 5 Wajo. V: level of knowledge, regarding reproductive health I: Questionnaire on reproductive health A:paired t-test	1. There is an increase in knowledge about adolescent reproductive health after online education through WhatsApp groups, videos and leaflets on reproductive health is carried out with a value of $p = 0.00$ 2. The average level of knowledge of students increased from 11.72 to 20.22 after education.
5.	Providing Health Education Through Telenursing to Increase Knowledge and Prevention of Pathological Leucorrhoea in Adolescents Yessi Andriani, Maidaliza, Rinona Iverta Alvaensi (2020)	Google scholar	D: Quasy experimental with pre and posttest design S:22 female students at SMK Negeri 2 Bukittinggi. V: level of knowledge regarding the prevention of pathological vaginal discharge I: questionnaire A:Paired test	There is an effect of providing health education through telenursing on the prevention of vaginal discharge between before and after. The average value of knowledge and prevention of pathological vaginal discharge increased from 27.18 to 33.82.
6.	Increasing Adolescent Knowledge and Attitudes About Reproductive Health Through Health Education in the Form of Adolescent Reproductive Health Nursing Service Applications (Lawan Roma) in Middle School Working Area of Bawen Health Center Semarang Regency Tina Mawardika, Dian Indriani, Liyanovitasari (2019)	Google scholar	D: Quasy experimental – pre and posttest design S: The population in this study were all students in the junior high school (SMP) working area of the Bawen Health Center as many as 1508 adolescents, with a sample of 36 adolescents divided into 2 groups, namely intervention ($n = 18$) and control ($n = 18$) with inclusion criteria have a smartphone. V: the level of knowledge of adolescents about reproductive health I: questionnaire A:T-test independent	1. There is an increase in knowledge about reproductive health after being given health education with a value of $p = 0.012$ 2. There was an increase in reproductive health attitudes with p value = 0.001.
7.	The Effectiveness of Health Education Using Audio Visual Media on Increasing Adolescent Knowledge About Pre-Marriage Sex at SMA Negeri I Tuntang	Google Scholar	D: quasy experiment with group pre-post test design. S: The research population of class X and XI students of SMA Negeri I Tuntang was 602 students, the sampling technique with Stratified Random Sampling technique was 86 respondents.	1. The level of knowledge about premarital sex increased, namely before being given education by 12.77 to 27.18 after being

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Meta Indriani (2019)		<p>V: the level of knowledge of adolescents about premarital sex and prevention of pathological vaginal discharge</p> <p>I: Knowledge questionnaire about premarital sex and prevention of pathological vaginal discharge</p> <p>A: Wilcoxon test</p>	<p>given education ($p = 0.0001$).</p> <p>2. The level of knowledge regarding the prevention of pathological vaginal discharge increased from 18.55 to 33.82 after being given education ($p=0.0001$).</p>
<p>8. <i>Effect of education based on protection motivation theory on adolescents' reproductive health self-care: a randomized controlled trial</i></p> <p>Marjan Havaei, Leili Salehi, Mahnaz Akbari-Kamrani, Mitra Rahimzadeh, Sara Esmaelzadeh-Saeieh</p> <p>(2019)</p>	Google scholar	<p>D: Randomized controlled trial</p> <p>S: 90 female students living in the dormitories of the Aborz University of Medical Sciences in Iran.</p> <p>V: Education, motivation theory, reproductive health self-care</p> <p>I: Protection Motivation Theory Questionnaire</p> <p>A: Fisher's exact test, standard deviation.</p>	<p>1. The theory of protective motivation that influences reproductive health self-care includes: reproductive and sexual knowledge, knowledge about STDs and HIV, young women's perceptions of premarital sex, understanding and behavior of young women in interacting with men, interaction of young women with their families, barriers to discourse adolescents with their parents about sexual problems and the maintenance of reproductive and menstrual health.</p> <p>2. Short-term adolescent sexual education programs are more focused on reproductive health outcomes (contraception, knowledge and awareness about AIDS and STDs as well as encouraging self-control and the use of contraception and condoms).</p> <p>3. Interventions in the field of adolescent sexual and reproductive health including education and provision of contraceptive methods influence contraceptive use and reduce</p>

				<p>unwanted pregnancies</p> <p>4. The results of research on adolescent reproductive health indicate that students feel most of the barriers to reproductive and sexual health, and thus most students think that education and health services are inadequate.</p> <p>5. Discussion and talk about sexual issues is very limited at home and in the community because it is taboo, and most girls are afraid to talk about sexual and reproductive health.</p> <p>6. 96.6% of girls have access to social networks, and 63.3% report that they watch porn. Due to communication technology, it is easy to access all kinds of true and false information via Internet, satellite, cell phone, etc.</p>
9.	<p><i>One household, two worlds: Differences of perception towards child marriage among adolescent children and adults in Indonesia</i></p> <p>Heribertus Rinto Wibowo, Muliani Ratnaningsiha, Nicholas J Goodwina, Derry Fahrizal Ulumb, Emilie Minnick</p> <p>(2021)</p>	<p>Google scholar</p>	<p>D: Cross sectional</p> <p>S: 1,004 respondents consisting of 500 parents and 504 adolescents aged 13-15 years</p> <p>V: Perception toward child marriage, parent, reproductive health.</p> <p>I: For adolescents at school: data was collected through questionnaires. The questionnaire used paper, whilst for the parent/caregiver survey, data collectors used the mWater Surveyor App on tablets.</p> <p>A: Mann Whitney U-test, Kendall's Tau-b test, Pearson's Correlation test.</p>	<p>1. 29.6% of parents and 33.4% of adolescents strongly agree/agree/slightly agree that marrying a girl can help protect family honor/reputation</p> <p>2. Marriage is sometimes used as a means to escape poverty and rise to a higher social status. Approximately 23.2% of parents and 26.0% of adolescents strongly agree/agree/slightly agree that marrying a young girl can help solve financial problems in the family</p>

3. Approximately 57.8% of parents and 53.6% of adolescents strongly agree/agree/slightly agree that parents will look down on adolescent girls if they become pregnant before marriage. There are different perceptions regarding unwanted pregnancy, with stronger support for child marriage as a solution from parents compared to adolescents.
 4. Approximately 25.8% of parents and 26.0% of adolescents strongly agree/agree/disagree that a girl is ready to marry after starting menstruation, 26.0% of parents and 26.6% of adolescents agree that physical changes in appearance are a sign that a daughter is ready for marriage.
 5. Approximately 25.2% of parents and 29.4% of adolescents strongly agree/agree/slightly agree that early marriage of girls can help prevent sexual violence, assault, and harassment.
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10.	<i>Audio-visual media to improve sexual-reproduction health knowledge among adolescent</i>	Google Scholar	D: Quasy experimental - pre and post intervention S: 153 junior high school students grades 1-3 at SMP Negeri 4 Ngoro-oro, Patuk, Gunungkidul, Yogyakarta V: the level of knowledge of adolescents about reproductive health I: Education is carried out with educational videos containing sexual health education for adolescents with a duration of about 20 minutes. To keep the respondents focused during the intervention, the researcher asked some questions about the educational material. n gave simple questions to the respondents. A: Wilcoxon test	Adolescents who received education through audio-visual media experienced an increase in the average level of knowledge about reproductive health from 34.4 to 35.83 with p value = 0.000
	Sitti Nur Djannah, Sulistyawati Sulistyawati, Tri Wahyuni Sukei, Surahma Asti Mulasari, Fatwa Tentama (2020)			
11.	<i>The Effect of Health Promotion Using Leaflets and Audio-Visual on Improving Knowledge and Attitude Toward the Danger of HIV/AIDS Among Adolescents</i>	Google Scholar	D: Quasy experimental – pre and posttest design S: 53 adolescent students at Imelda private vocational high school, Medan V: The level of knowledge and attitudes of adolescents about the dangers of HIV/AIDS I: Respondents were given interventions in the form of health education about HIV/AIDS through leaflets and audio-visual media. Questionnaires were given before and 2 weeks after the intervention to measure changes in the level of knowledge and attitudes of adolescents after being given an intervention in the form of education through audiovisual media and leaflets. A: Wilcoxon test	1. The provision of health education through leaflets and audiovisual media proved effective in increasing the knowledge and attitudes of adolescents about the dangers of HIV/AIDS with p value = 0.00. 2. Before being given the intervention, 3.8% of adolescents had a good level of knowledge about the dangers of HIV/AIDS, 79.2% moderate, and 17% poor. After being given the intervention, the knowledge level of adolescents increased to 60.4% good and 39.6% adequate and there were no adolescents with poor knowledge levels. 3. Prior to the intervention, 5.7% of adolescents had good attitudes
	Yafrinal Siregar, Kintoko Rochadi, Namora Lubis (2019)			

				about the dangers of HIV/AIDS, 79.2% were moderate, and 15.1% were poor. After being given the intervention, the attitude value of adolescents increased to 60.4% good and 39.6% enough and there were no adolescents with poor knowledge levels.
12.	<i>Effect of Mobile HEalth Edication on Sexual and Reproductive Health Information among Female School-going Adolescents od Rural Thailand</i> Premyuda Narkarat, Surasak Taneepanichskul, Ramesh Kumar, Ratana Somrongthong (2021)	Google Scholar	D: A comparative cross-sectional study with pre-post design S: 128 students from 2 different schools with the same ratio, and randomly divided into 2 groups with similar ratio, control (n=64) and intervention (n=64) V: literacy scores on sexual health. I: the intervention group received treatment in the form of sending messages or SMS regarding sexual health literacy, once a week on a regular basis for 24 weeks. While the observation group did not receive special treatment. A: Chi-square, one way ANOVA, independent t-test	1. The average value of changes in adolescent literacy scores regarding sexual health in the treatment group experienced a significant increase with the results of data analysis showing the p value = 0.00. 2. The observation/control group did not experience a change in literacy scores regarding sexual health compared to the control group with the results of data analysis showing a p value of 0.103 to 0.521.
13.	<i>Comparison of Adolescent Knowledge About the Impact of Pregnancy on Adolescents Before and After Reproductive Health Education is Given through Video Media</i> Firda Thursyana, Puspa Sari, Merry Wijaya (2019)	garuda portal	D: Quasi experimental with one group pre and post-test design S: 52 students of SMAN Jatinangor with an age range of 17-19 years. V: Independent: reproductive health education through video media. Dependent = knowledge level of adolescents about the impact of pregnancy.	1. There is a difference in adolescent knowledge before and after being given health education through videos about the impact of teenage pregnancy with a p value of 0.000. 2. The level of knowledge in the "good" category increased from 19.2% before to 94.2%.

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I: Questionnaire				
A: kolmogorov-smirnov and Wilcoxon uji test				
14.	Development of Games, Education, and Visualization (GEV)-Based Physical Education Learning Models to Increase Adolescent Reproductive Health Knowledge Rifqi Festiawan, Ngadiman, Indra Jati Kusuma, Panuwun Joko N, Kusnandar (2019)	garuda portal	D: Research and Development (RnD) S: The limited trial was conducted on 28 8th grade students of SMP Negeri 2 Purwokerto, the large scale trial was conducted on 90 8th grade students at SMP Negeri 1,2 and 8 Purwokerto. V: the level of knowledge of adolescents about reproductive health I: Questionnaire A:quantitative descriptive analysis	1. The physical education learning model which consists of three stages including case studies, education and visualization developed in this study is feasible to be used as a learning model for junior high school students through expert assessment. 2. The physical education learning model developed has a high level of effectiveness to increase students' knowledge and awareness about reproductive health.
15.	Utilization of Mobile Electronic Media as A Means of Adolescent Reproductive Health Education at SMP 8 Cirebon City Yeni Fitrianiingsih, Dewi Vimala (2019)	garuda portal	D: Quasi experiment – one group pre and posttest design. S:50 students of SMP Negeri 8 Cirebon City V: the level of knowledge of adolescents about reproductive health I: Pre and posttest questionnaires. - There were 3 times counseling sessions, then they were given a Micro SD so that they could play at home which contained knowledge about Adolescent Reproductive Health which consisted of 3 videos, namely adolescent reproductive organs, adolescent psychology, and the consequences of early marriage. - Evaluation is done by giving a questionnaire of 35 questions True or false, - At the end of the activity, a Peer Extension Organization was formed, and they were tried to do counseling to their peers A: -	1. Students with a "good" level of knowledge increased from the pretest by 38% and at the posttest by 76% 2. Students with "sufficient" knowledge level decreased from 54% at pretest and 24% at posttest 3. Students with "less" knowledge level decreased from 8% pretest to 0% at posttest.

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16.	The Effect of Health Education with Stratagem Method with Audiovisual Media on Adolescent Reproductive Health Knowledge	garuda portal	D: quasi-experimental design approach to non-equivalent control group.	<ol style="list-style-type: none"> 1. The level of knowledge in the audiovisual strategy group increased with a value of $p = 0.014$. 2. Respondents with "good" knowledge increased from 6.7% to 20%. Respondents with "sufficient" knowledge level increased from 66.7% to 80%. Respondents with "less" knowledge level decreased from 26.7% to 0%. 3. There was no increase in the level of knowledge in the lecture group with $p = 0.083$. 4. Respondents in the lecture group did not meet the "good" category with a score of 0% before and after health education. Respondents with "sufficient" knowledge level increased from 66.7% to 80%. Respondents with a low level of knowledge decreased from 33.3% to 20%.
	Reza Riyady Pragita, Retno Purwandari, Lantin Sulistyorini (2018)		S: 30 people were divided into 2 equal groups, namely the treatment of strategic education through audiovisual (n=15) and control who received education through lectures (n=15)	
			V: Independent = health education strategy method with audiovisual media. Dependent = knowledge level of adolescent reproductive health	
			I: Questionnaire about adolescent reproductive health knowledge	
			A: Wilcoxon and Mann Whitney	
17.	The Effect of Audiovisual Health Education on Adolescent Reproduction on Knowledge of Premarital Sexual Behavior	Garuda Portal	D: Quasi experiment with non-aquivalent control group design	<ol style="list-style-type: none"> 1. There is an effect of providing health education through audiovisual about adolescent reproductive health on knowledge of premarital sexual behavior with p value = 0.00. 2. The pretest results of the treatment group stated that 2% had a poor level of knowledge, 98% was sufficient and 0% was good. Posttest results show 100% of
	Gusti Ayu Indah Puspa Ranni, R. Tri Rahyuning Lestari, Niken Ayu Merna Eka Sari (2020)		S: 94 respondents were taken using a stratified random sampling technique, divided into 2 groups equally, namely treatment (n=47) and control (n=47).	
			V: the level of knowledge of adolescents regarding premarital sexual behavior	
			I: a questionnaire to measure the knowledge of adolescent sexual behavior in knowing and understanding premarital sexual problems in	

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			<p>adolescents with interpretations of less, enough and good.</p> <p>A: Wilcoxon Signed Rank Test</p>	<p>respondents have a good level of knowledge.</p> <p>3. The results of the pretest in the control group showed that 51% of respondents had poor knowledge levels, 49% were sufficient and 0% were good. The posttest results showed 4% with poor knowledge level, 68% sufficient and 28% good.</p>
18.	<p>The Effect of Adolescent Reproductive Health Education through Animation Media on Changes in Knowledge and Attitudes in Junior High School Students at the Nurul Jadid Islamic Boarding School</p> <p>Yusri Dwi Lestari, Herawati, Lutfia Permatasari, Nur Hamidah (2021)</p>	<p>garuda portal</p>	<p>D: Quasi Experimental Design with pretest-posttest control group design</p> <p>S: 100 7th grade junior high school students at Pondok Nurul Jadid. Divided into 2 groups equally, namely treatment (n=50) and control (n=50).</p> <p>V: Independent = health education through animated media. Dependent = the level of knowledge and attitudes of adolescents about reproductive health.</p> <p>I: Pre and posttest questionnaires regarding adolescent reproductive health knowledge and attitudes</p> <p>A: T-test independent</p>	<p>1. There is an effect of providing adolescent reproductive health education through animation media on changes in the level of adolescent knowledge about reproductive health with $p = 0.001$.</p> <p>2. There is an effect of providing adolescent reproductive health education through animation media on changes in adolescent attitudes about reproductive health with $p = 0.001$.</p>
19.	<p>The Effect of Health Education on Reproductive Health through Internet Electronic Media on the Knowledge Level of Young Women in Bolaang Mongondow Regency, North Sulawesi</p> <p>Rosy M. Sambowa, Rina M. Kundreb, Maria Lupita Nena Meo (2021)</p>	<p>garuda portal</p>	<p>D: Quasi Experiment with one group pretest posttest research design</p> <p>S: 44 students at private Vocational Schools in Boolang Mongindow Regency with inclusion criteria willing to be respondents and exclusion criteria for students infected with the Covid-19 virus</p> <p>V: Independent = adolescent reproductive health education through internet electronic media.</p>	<p>1. Health education about reproductive health through internet electronic media has proven to be effective in increasing the level of knowledge of young women about reproductive health with a p value of 0.000.</p> <p>2. After being educated through the internet electronic media, students with "bail"</p>

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			<p>Dependent = level of knowledge of adolescents about reproductive health.</p> <p>I: The questionnaire adopted from Mursit's research (2018) which consists of the following components: understanding, adolescent sexual growth & development, anatomy of the female reproductive organs, the process of pregnancy, STI, HIV/AIDS and unwanted pregnancy in adolescents.</p> <p>A: Wolcoxon test</p>	<p>knowledge levels increased from 34.1% to 65.9%.</p>
20.	<p>Development of a Reproductive Health Education Comic Module on Increasing Adolescent Knowledge and Attitudes About the Impact of Premarital Sex at SMA N 2 Singaraja, Buleleng Regency, Bali Province</p> <p>Ni Ketut Ayu Wulandari, Luh Ayu Purnami, Agus K. Rubaya, Made Yos Kresnayana (2020)</p>	<p>garuda portal</p>	<p>D: Quasi Experiment with pretest-posttest design with control group design</p> <p>S: The experimental group population was 405 with proportional random sampling method, obtained a sample of 87 people and the control group with a population of 181 obtained a sample of 70 people.</p> <p>V: Independent = health education with comic modules (treatment) and leaflets (control).</p> <p>Dependent = level of knowledge and youth about reproductive health.</p> <p>I: The research instrument uses comic modules, leaflets and questionnaires that have been developed by researchers</p> <p>A: T-test independent and Manova Test</p>	<p>1. The experimental group (comic module) was more influential in increasing adolescent knowledge about reproductive health compared to the control group (leaflet) with $p < 0.01$</p> <p>2. The experimental group (comic module) was more influential in improving adolescent attitudes about reproductive health compared to the control group (leaflet) with p value < 0.01</p>
21.	<p>The Effect of Lecture Methods and Android-Based Application Methods on Adolescent Reproductive Health Knowledge (Dinengsih & Hakim, 2020)</p>	<p>Google Scholar</p>	<p>D: quasi-experiment using a non-equivalent control group design</p> <p>S: 60 10th grade students at SMAN 73 Jakarta which were divided into 2 equal groups, namely control (n=30) and intervention (n=30)</p> <p>V: knowledge level of reproductive health in adolescents</p>	<p>1. There is a significant difference in changes in the level of knowledge between the Android Application Method group and the Lecture Method group with p value = 0.000.</p> <p>2. The Android application method is better with a</p>

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		I: questionnaire The control group received lecture-based education treatment, the intervention group received educational treatment using the android application method. A: Wilcoxon test and paired sample test	mean rank of 40.28 in increasing adolescent knowledge about adolescent reproductive health compared to the lecture method with a mean rank of 20.72
22.	The Effectiveness of Android-Based Applications to Increasing Knowledge of Adolescents on Reproductive Health (Ichwan et al., 2020)	D: Quasi experiment with group control S: 90 students at SMAN 1 Jakarta were divided equally into 2 groups, namely 45 respondents from the control group and 45 respondents from the intervention group. V: level of knowledge about reproductive health in adolescents I: Questionnaire A: Paired T-Test, Wilcoxon Test and Mann Whitney	1. There is a significant difference in the level of knowledge of reproductive health in adolescents in the two groups with p value = 0.00 2. The average level of knowledge in the control group is 29.99 while in the intervention group is 61.01

The Behavior Stroke Prevention with Stroke Incidence during the COVID-19 Pandemic

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ABSTRACT

Introduction: The COVID-19 pandemic in Indonesia shows an existence drop in total stroke patients, this shows that the impact of COVID-19 on the epidemiology of stroke is multifactorial. Other research show there is a connection Between incidence of stroke, and factors prevention risk of stroke with COVID-19. Difference results study the show factor the risk that affects the incidence of stroke, it is possibly related to an infection that alone or consequences social from COVID-19 pandemic. The connection between Behavior Stroke Prevention with Stroke Incidence during the COVID-19 Pandemic.

Methods: The research design is a descriptive correlation with a retrospective approach. The population in the study is whole patients who come to neurosurgery. A Sample of 72 people was recruited by a purposive sampling technique. the variables studied are Behavior Stroke prevention and the incidence of stroke. The instrument for collecting data uses the modified Questionnaire from the study before. Data analysis was done by the Chi-Square test.

Results: Results show that behavior stroke prevention (activity physical, behavior smoking, pattern eating, rate stress, drinking drugs regular, and regularly control) exists in connection with stroke during the COVID-19 pandemic. Variable show p-value < 0.05 for everything.

Conclusions: There is a relationship connection between Behavior Stroke Prevention with Stroke Incidence during the COVID-19 Pandemic. Behavior stroke prevention that has been done by routine before the pandemic should be maintained although needs modification.

Keywords: Behavior; Cerebrovascular Accident; COVID-19; Medical-Surgical Nursing; Prevention.

INTRODUCTION

Stroke patients in Indonesia every year could occur among 500.000 inhabitants, where about 25% experience death, and the rest experience disability (Puspitasari, 2020). Province West Java has a number The highest incidence of stroke during the COVID-19 pandemic was 16.6% (Permatasari, 2020). Studies conducted in China and Europe on patients with taking care stay that there are around

2.5% to 6% of stroke events in COVID-19 patients (Kurnianto *et al.*, 2020). Study results from preliminary showing the existence enhancement prevalence visit stroke patients during the COVID-19 pandemic (2019- 2021). Visit stroke patients in 2019 were 341 patients, in 2020 it increased by 10.3%, and in August 2021 an increase by 9.8% (Adityas, 2021).

The study previously shows that there is a connection Between the incidence of stroke, stroke and other factors prevention risk of stroke with COVID-19 (Scutelnic and Heldner, 2020). The impact of the incidence of the stroke itself experienced a drop in health could be seen from aspects state physical, psychological, social, and economic patient. in terms of physical stroke can result in happening paralysed extremity body, face not symmetrical, vision disturbed, trouble swallowing, disturbance sensations, and problems speaking (Astriani *et al.*, 2019). Then, the possible consequences caused by a stroke from aspects psychological that is the existence of different attitudes, anxiety, shock, reaction rejection, emotion, stress, and depression (Sumbogo, Sulisno and Darwati, 2015). In terms of economy Stroke sufferers also experience enough impact big where stroke survivors productive no can carry on his career forgot income in live his family, while for life social stroke sufferers do not could donate thoughts and lack activities in the community (Wardhani and Martini, 2014). Plus with the situation pandemic at the moment, this could worsen problems in stroke patients with Upgrade risk Dead if infected with the COVID-19 virus (Asmaria, Yessi and Hidayati, 2019).

Studies on other differences previously show an existing drop-in total stroke patient in 2020 compared to 2019 (Friedlich, Newman and Bricker, 2021). This result shows the impact of COVID-19 on The epidemiology of stroke is multifactorial, namely: the incidence of stroke can related to risk factors or consequence social from the COVID-19 pandemic (Friedlich, Newman and Bricker, 2021). The current COVID-19 pandemic changes the pattern of life sufferers' stroke risk for To do treatment controlled or activity routine (Maryuni, Nugroho and Rahman, 2021). Change behavior could influence the condition of his health so that easily caught recurrent stroke or diseases other such as COVID-19 (Asmaria, Yessi and Hidayati, 2019). Change the aggravated with condition economic downturn, disruption psychological as condition stress, pattern eat not controlled and limited activity in society (Asmaria, Yessi and Hidayati, 2019).

Changes during the COVID-19 pandemic are a necessary adaptation to behavior stroke prevention. Behavior possible prevention done during a pandemic is to stay home just avoid it, crowd, try activity physical 30 minutes/ day, set a pattern to eat, stop smoking, control stress, regular drink medicine and stay in control routine to service health (Kemenkes RI, 2021). Behavior stroke prevention is done as a step prevention of stroke during the pandemic which aims to own behavior that can avoid stroke as early as maybe. The introduction of early stroke prevention possible to society is very important for lower number the incidence of stroke and reducing the resulting disability (Wardhani and Martini, 2014).

The description shows still there are different results from studies previously related behavior stroke prevention in the future COVID-19 pandemic with stroke incidence. Problem to The incidence of stroke is very widespread and requires proper prevention during a pandemic. Pandemic time makes all groups age start from age productive until with age carry on susceptible caught stroke (Kurnianto *et al.*, 2020). state this requires an existing study with the title " Relationship " Behavior Prevention Stroke with Stroke Incidence during the COVID-19 Pandemic in the Medical-Surgical Nursing Poly".

METHODS

Study Design

Research design is a descriptive correlation with a retrospective approach to analyzing effects (strokes) identified moment this, and behavior stroke prevention identified there is or no exposure that occurs at the time then. The research statement is there is a relationship between Behavior Prevention Stroke with Stroke Incidence during the COVID- 19 Pandemic.

Population, Samples and Sampling

The population in this study is all patients who come to the neurology department. Sample 72 people were recruited with a purposive sampling technique that is divided Becomes a group of patients suffering from stroke and a group of patients who do not suffer a stroke. Criteria sample taken is aged between 25- 60 years, have an android cell phone, are not pregnant, and do not take oral contraceptives. The data was collected for 3 months, i.e June until August 2021 at the neurology polyclinic Medirossa Cikarang hospital.

Instruments

Questionnaire behavior stroke prevention, and modifiable stroke incidence from a study previously Questionnaire activity physical activity smoking, diet, stress level, regularity control, and regularity drink drug modified from the study before. Questionnaire Modified stroke incidence from study Yusnabeti. Modification questioner that has tested its validity and reliability show results good ($r > 0.25$ and Alpha-Cronbach 0.712).

Procedure

Behavior data retrieval stroke prevention is taken from secondary data namely medical records patient. Data on the incidence of stroke was collected using an online questionnaire, where suitable patients will be sent Google Forms links related to the questionnaire, including informed consent.

Data Analysis

The data is analyzed by looking at the frequency and percentage. Main data analysis with Chi-Square. test with a level meaning 0.05.

Ethical Clearance

The research procedure has been tested and declared ethically feasible by the Health Research Ethics Commission, Faculty of Nursing, Airlangga University on 09 February 2022 with number certificate ethics no. 2428-KEPK. The ethical principles applied to this study include, among others, that participants were given information and filled out informed consent before data collection. They have the right to data confidentiality by using names and initials.

RESULTS

The results of data collection indicate that the characteristics of respondents who control for neurology at Medirossa hospital are as follows (e.g. Table I). The patient gender is more than half our men in every group. Research subjects in both groups show entry into adulthood end. Education subject on both group more from half is high school.

The results showed that the patients in both groups own trend different results (e.g. Table 2). There is a significant relationship between behavior stroke prevention (activity physical, behavior smoking, pattern eating, stress level, drinking medication, and control) with stroke incidence. Stroke patients and non-stroke patients who do not do activity for more than half. Statistical results show respondents who do not do activity physique chance experience the incidence of stroke by 37.9% compared to those who do activity physically. Stroke patients who do not smoke more than half, medium non-stroke patients almost all no smoking. Respondents who smoke have a 20.3% chance experience incidence of stroke compared with respondents who do not smoke. Diet Most stroke patients eat bad, while the non-stroke group mostly own patterns and eats well. Pattern respondents eat it bad chance experience the incidence of stroke by 32% compared to vice versa. Stroke patients with mild to moderate stress more than half, medium non-stroke patients with almost all mild to moderate stress. Respondents who rate the stress heavy have a 25.9% chance experience incidence of stroke compared with stressed respondents in light-medium. Drinking pattern drug Most stroke patients do not regularly drink medicine, while the non-stroke group almost entirely drink drugs regularly. Respondents who did not regularly drink drugs chance experience the incidence of stroke by 30.3% compared to vice versa. Control to Health services for stroke patients is mostly no regular control, while the non-stroke group mostly routine control. Respondents who did not regularly drink drugs chance experience the incidence of stroke by 33.2% compared to vice versa.

Table I. Demographic characteristics of the respondents (N=72).

Characteristics	Stroke Patient		Non-stroke patients	
	n	%	n	%
Type gender :				
Man	22	61.1	18	50.0
Woman	14	38.9	18	50.0
Age :				
25-35	1	2.8	5	13.9
36-45	3	8.3	6	16.7
46-60	32	88.9	25	69.4
Education:				
Primary school	1	2.8	1	2.8
Junior High School	3	8.3	3	8.3
Senior High School	27	75.0	26	72.2
Diploma	4	11.1	3	8.3
bachelor	1	2.8	3	8.3

Table 2. Relationship behavior prevention of stroke against the incidence of stroke during the COVID-19 pandemic (N= 72).

Indicator	Group				Total		OR 95% CI	Chi-Square (p)
	stroke		Non Stroke		n	%		
	n	%	n	%				
Activities Physical :								
No	24	66.7	13	36.1	37	51.4	3,538 (37.9%)	0.018
Yes	12	33.3	23	63.9	35	48.6		
Total	36	100	36	100	72	100		
Behavior Smoking :								
No	25	69.4	34	94.4	59	81.9	7,480 (20.3%)	0.014
Yes	11	30.6	2	5.6	13	18.1		
Total	36	100	36	100	72	100		
Diet:								
Bad	28	77.8	7	19.4	35	48.6	14,500 (32%)	0.000
Well	8	22.2	29	80.6	37	51.4		
Total	36	100	36	100	72	100		
Stress level:								
Heavy	17	47.2	3	8.3	20	27.8	9,842 (25.9%)	0.001
Moderate/ Mild	19	52.8	33	91.7	52	72.2		
Total	36	100	36	100	72	100		
Drink Drugs :								
No Regular	26	72.2	5	13.9	31	43.1	16,120 (30.3%)	0.000
Regular	10	27.8	31	86.1	41	56.9		
Total	36	100	36	100	72	100		

Control :

No Regular	26	72.2	7	19.4	33	45.8	10,771	0.000
Regular	10	27.8	29	80.6	39	54.2	(33.2%)	
Total	36	100	36	100	72	100		

DISCUSSION

Behavior patients in to do activity physique for stroke prevention has a significant relationship with stroke during the COVID-19 pandemic. Study this in line with a study previously that is existing connection Between activity physique with the incidence of stroke (Hartaty and Haris, 2020). Study others that strengthen statement the is activity physical/ sports regular 30 minutes every day During one week during the pandemic could help reduce risk the occurrence of stroke during the pandemic (Ekawati *et al.*, 2021). State the following theory where activity physique will influence body somebody for produce beta-endorphins. Beta endorphins will induce a sense of calm in the patient so which will influence the pressure of blood patient Becomes under control so which could lower stroke risk.

In line with the results of a study that shows that group stroke patients and groups patients, not a stroke, many don't do activity physique by routine. Activities physique respondents before happening pandemic often do activity physical outside House like regular exercise together 3x in a week for 30- 45 minutes. Respondents many don't regular in To do activity physical during a pandemic because of existing restrictions on activity outside the home. Activities physique respondents experience a drop in To do activity physique be 1- 2 in a week not enough than 30 minutes. Respondents who do not do activity physique increase during the pandemic than those who do activity physical is also found in research previously (Hartaty and Haris, 2020).

Research results next about the connection behavior smoke with stroke incidence. Analysis results show that respondents from the second group that doesn't smoke more many compared to respondents who smoke. The results of the study also show respondents who do not smoke in the group had more stroke patients many than group patients not strokes. Analytical results show there is a significant relationship Among behavior smoke with incident stroke during a pandemic.

Study this in line with a study that previously showed the existence connection Between behavior of smoke with the incidence of stroke (Hartaty and Haris, 2020). State it is also strengthened with found that before the pandemic respondents who have own habit smoke showed an existence increase compared to the pandemic. Respondents who smoke are men in general use up 1- 5 cigarettes a day During pandemics and have already become a habit for more than 10 years. Theory mentions that smoking though only around one stem per day could result in a risk of a stroke (Hackshaw *et al.*, 2018).

More results show that Habits eat respondents who have a pattern eat good more many compared with respondents who have a pattern eat badly. Habits pattern eat bad more in the stroke group than in the non-stroke group. Statistical results show that there is a significant relationship Between pattern eating during a pandemic with stroke incidence. This result is in line with the study the previous one showed patterns eat related to the incidence of stroke (Hartaty and Haris, 2020).

Someone who has a pattern eats bad and consumes food that contains excessive fat content, as a result, could clog arteries. Blockage in arteries bothers Genre blood to the heart (causes attack heart) and brain (causing stroke) (Wayunah and Saefulloh, 2017).

Habit eat respondent getting worse possible before the pandemic pattern eats respondent tend controlled however after the pandemic respondent tends no controlled much time free utilized for eat. In line with the study, the showing pandemic results in pattern eat what you don't control so that could Upgrade pattern poor eating in respondents (Hartaty and Haris, 2020).

Research results next show the existence significant relationship Between the level of stress during a pandemic with stroke incidence. Study this in line with a study previously that data obtained that there is a connection Between the level of stress with the incidence of stroke (Widyaswara Suwaryo, Widodo and Setianingsih, 2019). This thing is possible because the more heavy stress experienced the more big possibility of somebody having a stroke.

Stress experienced by respondents is possible because existence changes in life during the pandemic. Great change compared with before the pandemic was lost work, and restrictions on activity outside the House moment pandemic. Following the theory, where the risk of stroke/ Trans Ischemic Attack due to symptoms of depression, stress chronic, and excessive hostility (Malan *et al.*, 2021).

Regularity drink medicine and control of Health services are also an indicator of research. Regularly drinking drugs have a significant relationship with stroke during the COVID-19 pandemic. This result is in line with a study previous showing that there is a connection between regular drinking drugs and patient hypertension with the incidence of ischemic stroke (Rusminingsih and Mustika Dian, 2018). This thing shows that more regular patients drinking drugs so will reduce the risk of stroke incidence. Taking one pill per day in a week could lower stroke risk (Capriotti and Murphy, 2016).

Regularly drink drug responders during the pandemic no regular because neither respondent regular in control to House sick/ service health consequence afraid about COVID-19. This thing in line with a study previously where respondents who do not regularly drink drugs caused because respondent that also does not regular control House sick (Rusminingsih and Mustika Dian, 2018). Combination Among not order drink medicine and controlling Health services can result in stroke risk is very high. Analysis result research also shows a significant relationship Between regularity control with stroke incidence on the total page.

CONCLUSIONS

Behavior Prevention Stroke has a connection with Stroke Incidence during the COVID- 19 Pandemic in the Nursing Poly Medical Surgery. Behavior stroke prevention who have connection consists of activity physical, behavior smoking, pattern eating, rate stress, regularity drinking medicine, and regularity control to service health. Suggestions for the public are to inspect health by routine, do activity physique by regular 30-50 minutes for 3-5 times a week, set pattern to eat and drink drug routine. Study next need To do a study advanced to evaluate the prevention of stroke incidence with bio-molecular.

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CONFLICT OF INTEREST

The Author(s) declare(s) that there is no conflict of interest.

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Factors associated to dating violence behavior in adolescents

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ABSTRACT

Introduction: Dating violent behavior is something that often happens to teenagers who are dating. A high sense of ownership, accompanied by a lack of emotional control, often causes adolescents to express excessive affection leading to abusive actions towards their partners. This study aimed to explain the factors associated with dating violence behavior in adolescents.

Methods: This study used a correlational design. The population was late adolescents aged 18-21 years old currently dating in Surabaya. The total sample was 282 respondents using the convenience sampling technique. The independent variables in this study were age, gender, living with parents status, monthly expenses, violence experience, and dating experience, while the dependent variable was dating violence behavior. The Instrument used in this research was the modification of The Attitudes Towards Dating Violence Scales (ADV). The data was analyzed using the Spearman Rank Correlation test with a significant degree of $\alpha=0.05$.

Results: The results showed that there were significant correlations ($p \leq \alpha$) between age ($r = -0.301$), gender ($r= 0.283$), and dating experiences ($r = 0.135$) with dating violence behavior in adolescents. On the contrary, living with parents status, monthly expenses, and experiences of violence had no relation to it.

Conclusion: Adolescents at an older age have lower dating violence behavior. Girls are more accepting of dating violence behavior than boys. The more often teenagers date, the higher the dating violence behavior. Cross-sectoral cooperation is needed to reduce adolescents' acceptance of dating violence behavior, for they become more responsible adults and respectful to their partners.

Keywords: adolescent, dating violence, behavior, abusive partner

INTRODUCTION

Adolescents have friends to share stories and thoughts, as well as increased socialization during dating. However, bad relationship situations can also lead to dating violence. Kemen PPPA, Komnas Perempuan and FPL, (2021) stated that from January to June 2021, there were 1,489 victims of dating violence. Forms of dating violence can be physical, emotional, psychological, economic, and activity restrictions (Kemen PPA, 2018; Wahyuni *et al.*, 2020). Boys and girls can be both victims and perpetrators of dating violence. However, girls are more victims of violence than boys. (CDC, 2021; Cénat *et al.*, 2022). Physical dating violence causes bruises, cuts, abrasions, broken bones, and unwanted pregnancies. Emotional impacts include lack of confidence, anxiety, and depression (Ngo *et*

al., 2018; Dosil, Jaureguizar and Bernaras, 2021). Several studies mention characteristics related to violent behavior in dating, including gender, domestic violence, drug use, victims of peer violence, and antisocial traits. However, the results of these studies are still varied (Esparza-Martínez *et al.*, 2019; Lapierre *et al.*, 2019; Penado Abilleira *et al.*, 2019; Piolanti and Foran, 2022). This study aimed to explain the factors such as age, gender, living with parents' status, monthly expenses, violence experience, and dating experience associated with dating violence behavior in adolescents.

METHODS

Study Design

This study used a quantitative research design with a descriptive correlational approach.

Population, Samples and Sampling

The population in this study were late teens aged 18-21 years who are currently dating. The sampling technique was convenience sampling. There were 282 respondents in this study.

Instruments

The Instruments used in this research were the demographic questionnaire (age, gender, living with parents status, monthly expenses, violence experience, and dating experience) and a modification of The Attitudes Towards Dating Violence Scales (ADV). The questionnaire in this study has been tested for validity and reliability with a Cronbach alpha value of 0.74.

Procedure

This study was conducted in the Surabaya area, especially at three private universities. The three private universities were chosen because of the similarity in location characteristics and types of study programs. Researchers, previously obtained permission from the city service and the three universities mentioned. Dissemination of research information is carried out directly to students, either through the student body or the student affairs of the university. Prospective respondents then contacted the researcher to fill out the informed consent form and research questionnaire. The completed questionnaire was then recapitulated for tabulation and coding, before being analyzed.

Data Analysis

The data was analyzed using the Spearman Rank Correlation test with a significant degree of $\alpha=0.05$. SPSS statistical program was used for analysis.

Ethical Clearance

This research has received ethical approval from the KEPK of the Faculty of Nursing, Universitas Airlangga.

RESULTS

Table I provide data of the socio-demographic. The majority of respondents in this study were young women, 18 years old, in their fourth semester of college, and living with their parents. The marital status of parents is married and the number of siblings of two people. The father's work on private sector or self-employed, while the the mother is a housewife.

Table 1. Demographic characteristics of the respondents

Characteristics	n	(%)
Gender		
Laki-laki	96	34%
Perempuan	186	66%
Age		
18	105	37%
19	62	22%
20	93	33%
21	22	8%
Living with parent status		
Living by themselves	90	32%
Living with parents	192	68%
Parent's marital status		
Married	265	94%
Divorced	17	6%
Number of sibling		
1	50	18%
2	116	41%
3	71	25%
4	30	11%
5	12	4%
6	2	1%
8	1	0.4%
Fathers' occupation		
Unemployed	29	10%
Civil servant	39	14%
Private sector	108	38%
Self Employed	106	38%
Mother occupation		
Unemployed	23	8%
Civil servant	20	7%
Private sector	33	12%
Self Employed	51	18%
Housewife	155	55%
Monthly expenses		
< IDR 500.000	87	31%
> IDR 750.000	53	19%
IDR 1.000.000	42	15%
> IDR 1000.000	100	36%
Experience of domestic violence		
Yes	25	9%
No	257	91%
Dating experience		
First timer	40	14%
> 1 times	242	86%
Dating violence behavior		

Characteristics	n	(%)
Sedang	113	40.1
Tinggi	169	59.9

Table 2. Result correlation between independent variables and the dependent variable.

Correlations	p	r
Correlation of age with dating violence behavior	0,000	- 0,301
Correlation of gender with dating violence behavior	0.000	0.283
Correlation of living with parents status with dating violence behavior	0.615	-
Correlation of monthly expenses with dating violence behavior	0.932	-
Correlation of dating experiences with dating violence behavior	0.023	0.135
Correlation of domestic violence experiences with dating violence behavior	0.994	-

There was a significant correlation between the age and dating violence behavior in adolescents ($p = 0.000$) with a correlation coefficient of $- 0.301$ which means that the correlation between age and violent behavior in adolescents was moderately correlated and the direction was negative. There was a significant correlation between the gender and dating violence behavior in adolescents ($p = 0.000$) with a correlation coefficient of 0.283 which means that the correlation between gender and violent behavior in adolescents was moderately correlated and the direction was positive. There was a significant correlation between dating experiences and dating violence behavior in adolescents ($p=0.023$) with a correlation coefficient of 0.135 which means that the correlation between dating experiences and violent behavior in adolescents was weak and the direction was positive. Living with parents' status, monthly expenses, and experiences of violence had no relation to dating violence behavior.

DISCUSSION

The results of the correlation analysis for age and violent dating behavior in adolescents was in line with the previous research conducted by Martins *et al.*, (2014) which states that dating violence occurs at a younger age. This can result from a lack of knowledge about conflict resolution and increased relationships with other friends that may cause jealousy from their partners (Hokoda, Martin Del Campo and Ulloa, 2012). At the age of late adolescence, adolescents organically change their egocentric nature to a more altruistic nature (Sarwono, 2016). Adolescents who successfully pass through the adolescent process to adulthood and view themselves positively will usually be able to build meaningful social relationships with those around them and romantic relationships with their partners (Gómez-López, Viejo and Ortega-Ruiz, 2019).

There was a significant relationship between gender and dating violence behavior in adolescents. This confirmed most opinions about how violence is more common in women as victims, especially for sexual violence, or verbal violence that contains sexual content (Shorey *et al.*, 2019; Kemen PPPA, Komnas Perempuan and FPL, 2021). Female victims are usually very attached to perpetrators of violence because they are threatened or feel helpless, so they have no attempt to escape. Most sentences related to violence against women are also difficult to prove due to the lack

of evidence and witnesses because perpetrators of violence always try to cover up their actions (Penado Abilleira *et al.*, 2019; Dosil, Jaureguizar and Bernaras, 2021).

The dating experience in this study was related to the behavior of dating violence in adolescents. This research is in line with research conducted by (Martins *et al.*, 2014) which states that the experience of violence in previous relationships will cause a psychological well-being crisis, so that the victim will always be the target of manipulation from the perpetrator of violence. Experience with violence in previous relationships also causes victims to be more receptive to violent behavior, especially psychological violence because of the victim's poor mental health (Temple *et al.*, 2016; Kiekens *et al.*, 2021).

CONCLUSIONS

Adolescents over 18 years old have lower dating violence behavior than younger adolescents. Women have more accepting attitudes related to dating violence behavior. Adolescents who have been in a relationship several times have an attitude of acceptance of dating violence behavior compared to those who are dating for the first time. The acceptance of dating violence behavior is something that can negatively affected the psychological well-being of adolescents. Thus, cross-sectoral cooperation is needed to ensure that adolescents are spared from abusive relationships. The health services and schools should increase promotions related to the prevention of dating violence.

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NA

CONFLICT OF INTEREST

The Author(s) declare(s) that there is no conflict of interest'.

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Continuous Innovation for Sustainable Health and Climate Resilience

the effect of progressive muscle relaxation on blood pressure reduction in hypertension patients

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ABSTRACT

Abstract: Hypertension is a circulatory system disorder that causes an increase in blood pressure above normal, which is more than 140/90 mmHg. However, it often does not cause significant symptoms. But if there is an increase in blood pressure that continues in the long term, complications can arise. So that, more serious hypertension management should be conducted to reduce blood pressure by doing physical exercise, namely Progressive Muscle Relaxation Exercises. **Purpose:** The purpose of this study was to determine the effect of Progressive Muscle Relaxation on reducing blood pressure in hypertensive patients **Method:** For the database finding, researchers searched for several indexed electronic databases such as *Google Scholar, PubMed, Sage, Scince Direct, and Proquest* with the keywords: *Progressive Muscle Relaxation, Blood Pressure, Hypertension*. This article finding was suitable with criteria limits that were based on the last 10 years of studies published in 2012-2022 in English and Indonesian. This systematic review was compiled based on *Preferred Reporting Items for Systematic Reviews and Meta-Analies (PRISMA)*. **Results:** The research of 15 reviewed journals showed that physical exercise with Progressive Muscle Relaxation interventions were proven to have a positive effect in reducing blood pressure in hypertension patients. **Conclusion:** Based on the research that has been conducted, the researchers conclude that the results of the intervention of this innovation have the effect of Progressive Muscle Relaxation on reducing blood pressure in hypertensive patients.

Kata Kunci : *Progressive Muscle Relaxation, Blood pressure, Hypertension*

INTRODUCTION

Hypertension is a circulatory system disorder that causes an increase in blood pressure above normal, which is more than 140/90 mmHg. Hypertension is one of the deadliest diseases in the world but often does not cause significant symptoms. However, if there is an increase in blood pressure that continues in the long term, complications such as stroke, kidney failure, and coronary heart disease may occur. Blood pressure should be checked regularly to detect hypertension early, so that appropriate management can be given to minimize complications (Kemenkes RI, 2014).

According to the WHO (2015), the prevalence of hypertension in Indonesia is 24.4% and hypertension is the third leading cause of death. Based on the Basic Health Research (Riskesdas) data in 2018, the prevalence of hypertension based on measurement results in the population aged 18 years is 34.1%. Hypertension occurs in the age group of 31-44 years old (31.6%), 45-54 years (45.3%), and 55-64 years old (55.2%). Compared to Riskesdas 2013, the prevalence of hypertension in Indonesia obtained through measurements at the age of 18 years is 25.8%, so that within 5 years it has increased by 9.7%.

Hypertension is the main risk factor related to the main cause of death in the elderly. Many efforts have been made but they are still not optimal. This condition encourages the development of non-pharmacological therapies. One of the non-pharmacological treatments for reducing blood pressure is relaxation technique, especially Progressive Muscle Relaxation (PMR) techniques used to control and reduce blood pressure without side effects. One of the non-pharmacological treatments is relaxation exercises as Progressive Muscle. Progressive Muscle Relaxation itself is a form of relaxation therapy by tightening and relaxing the muscles in one part of the body at one time to gain control over anxiety that stimulates the mind and muscle tension (Keliat & Pasaribu, 2016). One study found that patients who discontinued antihypertensive therapy were five times more likely to have a stroke. On the other hand, drugs used to reduce blood pressure, if taken in the long term, can cause organ damage. Many non-drug therapies, such as diet, exercise, and relaxation therapy have been proven to be superior to drugs in cases of borderline to mild hypertension that can be used to control and reduce blood pressure without side effects. One of the non-pharmacological treatments is Progressive Muscle Relaxation (PMR) exercise. (Triyanto, 2014).

Progressive Relaxation Technique is a systematic technique to achieve a state of relaxation that is used to reduce blood pressure in people with hypertension. This relaxation technique can also inhibit the stress response of the sympathetic nerves, and the muscles of the arteries and veins along with other muscles in the body become relaxed. Relaxation of the muscles in the body affects the decrease in norepinephrine levels in the body (Shinde, et all, 2013).

Based on the data above, it shows that the number of the incidence of hypertension in Indonesia is still quite high. Various efforts have been made but they are still not optimal. It is hereby encouraging the development of non-pharmacological therapies to complement pharmacological therapies, such as progressive muscle relaxation, so from the article in this review it is necessary to do regular physical exercise for older adults with hypertension and as an effort to control blood pressure in people with hypertension. For this reason, this study conducted a systematic review of several articles or journals to determine the effect of progressive muscle relaxation on reducing blood pressure in patients with hypertension.

METHOD

For the database finding, researchers searched for several indexed electronic databases such as *Google Scholar, PubMed, Sage, Science Direct, and Proquest* with the keywords: *Progressive Muscle Relaxation, Blood Pressure, Hypertension*. This article finding was suitable with criteria limits that were based on the last 10 years of studies published in 2012-2022 in English and Indonesian. This systematic review was compiled based on *Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)*.

I. Strategy of Searching

The literature finding was carried out in February 2022. The strategy used to find articles was using the PICOS framework. Articles were identified with the keywords “Progressive Muscle Relaxation” and “Blood Pressure” and “Hypertension” and were restricted in 2012-2022 in English and full text articles, so as to obtain relevant articles.

2. Inclusion and Exclusion Criteria

The inclusion criteria of the article are the therapy intervention Progressive Muscle Relaxation which is carried out to reduce blood pressure in patients with hypertension. The articles taken are the last 10 years using the Randomized Control Trial, experimental, quasi-experimental and pre-experimental methods. The purpose of this study was to examine the effectiveness of Progressive Muscle Relaxation therapy on reducing blood pressure in hypertensive patients, so the article is without full text and does not explain the effect of therapy used to treat blood pressure reduction in hypertensive patients.

RESULTS AND ANALYSIS

Study Selection

The total articles identified were 1,890 articles. Then, the deletion of duplicates was conducted, and the remaining 570 articles were for feasibility review. Articles screened based on the title identification obtaining 60 articles. The feasibility test of full text article remaining 20 research articles for review. After being identified, all articles used *quasi-experimental*. The following is the table showing the finding results for each database, including *Google Scholar, PubMed, Sage, Science, Scopus, and Proquest*. Based on the table above, the finding results of each database including Scopus were 75 articles, web of science were 610 articles, PubMed were 81 articles, Proquest were 2 articles, and Sage were 1122 articles. The articles reviewed were 20 articles. The weakness in this finding results was that it only used 5 databases.

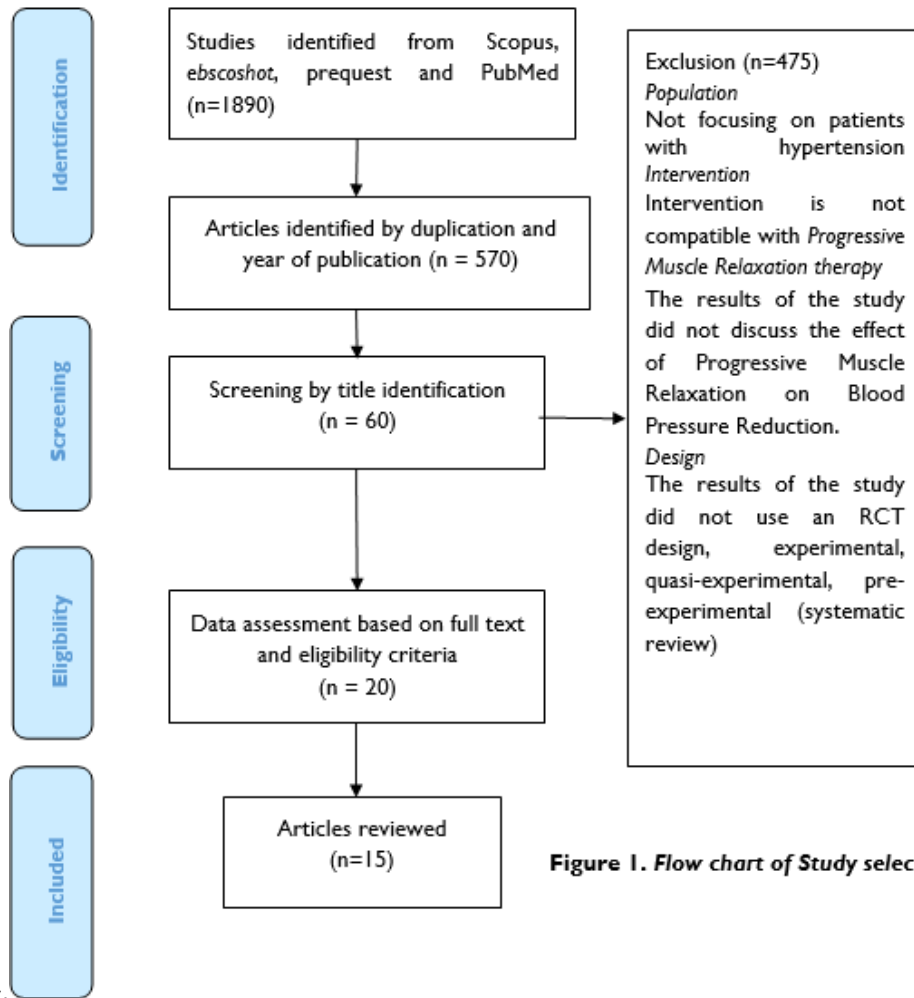


Figure 1. Flow chart of Study selection

Table 3.4 Study Characteristics

No.	Autor, Year	Design	Number of Respondents
1.	(Niken Fitri Astuti et all., 2019)	Quasi Experimental	100 Respondents
2.	(Yunping Li et all. , 2015)	Randomize Control Grup	130 Respondents
3.	(Mahboobeh Aalami et all. ,2016)	Clinical Trial	60 Respondents
4.	(Yenny Puspitasari et all. , 2022)	Quasi-Experimental	30 Respondents
5.	(Made Ermayani et all., 2020)	Quasi-Experimental	91 Respondents
6.	(Hossein Bagheri et all.,2021)	Randomized Controlled Trial	120 Respondents
7.	(Isnaini Herawati et all., 2016)	Quasi Experimental Study	15 Respondents
8.	(Dedy Arisjulyanto, 2018)	Quasi Experiment Design	27 Respondents
9.	(Gupta, Sapna S et all., 2014)	Experimental study	40 Respondents
10.	(Susanti Susanti, 2020)	Pre-Experimental	45 Respondents

11.	(Hurun Ain, 2018)	Quasy Experimental	50 Respondents
12.	(Ida Rosdiana & Cahyati, 2019)	Quasi-Experimental,	52 Respondents
13.	(Arlien Jeannete Manoppo et all., 2017)	Quasi-Experiment	45 Respondents
14.	(Jajuk Kusumawaty et all., 2021)	Pre-Experimental	24 Respondents
15.	(Kusnanto, et all. 2019)	Pre-post-test control group design experiment	105 Respondents

DISCUSSION

Progressive Relaxation Technique is a systematic technique to achieve a state of relaxation that is used to reduce blood pressure in people with hypertension. This relaxation technique can also inhibit the stress response of the sympathetic nerves, and the muscles of the arteries and veins along with other muscles in the body become relaxed. Relaxation of the muscles in the body affects the decrease in norepinephrine levels in the body (Shinde, et all, 2013).

The Progressive Relaxation Technique is an exercise to achieve sensation relaxation by tensing a group of muscles and stopping muscle tension. Progressive Muscle Relaxation Exercise has been shown to reduce blood pressure in patients with hypertension. Another study demonstrated a reduction in blood pressure in patients with essential hypertension who performed progressive muscle relaxation exercises. Meanwhile, progressive muscle relaxation can reduce stress and blood pressure in elderly with hypertension. Based on the results of a journal review, it was found that the results of research of Yunpi Li (2015) showing that the PMR intervention was effective in increasing anxiety, depression, and the mental health component of QOL in patients with PAH (pulmonary arterial hypertension). This was supported by the research of Niken Fitri Astuti (2017) whose research used a paired t-test showing a decrease in systolic blood pressure to 29.2 mmHg and a decrease in diastolic blood pressure to 16.2 mmHg. Progressive muscle relaxation and music therapy should be administered according to the implementation of protocol to obtain optimal therapeutic effects. The results of the study also showed a significant difference in both systolic and diastolic blood pressure blood pressure before and after the PMR therapy given with a difference in values for systolic and diastolic blood pressure. This is in accordance with the theory of Setyoadi and Kushariyadi (2011) which states that one of the goals of the PMR therapy is to reduce muscle tension, anxiety, neck and back pain, high blood pressure, heart rate, and metabolic rate.

The PMR therapy will produce relaxation in the body so that it can inhibit the increase in the sympathetic nervous system which is expected to reduce the amount of hormone that cause body dysregulation. The parasympathetic nervous system is a system that dominates in a calm and relaxed state having a work function that is opposite to the sympathetic nervous system which will slow down or weaken the work of the body's internal organs, so that there will be a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, and metabolic rate (Praptini, 2014). This was supported by the results of Made Ermayani's study (2020) that there is a significant difference between the intervention group and the control group in systolic blood pressure ($p = 0.001$) and diastolic blood pressure ($p = 0.000$), as well as anxiety ($p = 0.000$). The PMR intervention gave the strongest effect on systolic and diastolic blood pressure, and as well as anxiety ($p = 0.000$). This study also recommended the need for PMR exercises for 8 weeks to control blood pressure and anxiety in primary hypertensive patients. Made Ermayani's research (2020) shows that the PMR intervention has

the strongest influence on systolic and diastolic blood pressure, as well as anxiety. There was also a research conducted by Hossein Bagheri (2021) showing that the Progressive Muscle Relaxation, the MR and the BR therapy can be effective in improving overall sleep quality in patients following CABG. On the other hand, Susanti (2020) also found that the results of her tested research showing a p value = 0.000 ($\alpha = 0.05$) which included a difference in blood pressure before and after the intervention and the mean results showing an effect on blood pressure in patients with hypertension in Indonesia. This result showed that the progressive relaxation effectively reduces blood pressure in patients with hypertension. In connection with a recent study conducted by Yeni Puspitasari (2022) it was proven that progressive muscle relaxation therapy can reduce systolic pressure and proteinuria significantly after 3 and 7 days. All respondents showed a significant decrease in diastolic pressure after 7 days. The difference in systolic and diastolic pressure and proteinuria between the groups after 7 days was statistically significant ($P < 0.001$, $P = 0.008$, $P < 0.001$ respectively). With this, the intervention of the progressive muscle relaxation in 7 days and the combination of guided imagery can effectively reduce blood pressure and proteinuria during conservative treatment for preeclampsia.

NURSING IMPLICATIONS

The Progressive Relaxation Technique is a systematic technique to achieve a state of relaxation that is used to reduce blood pressure in people with hypertension. This relaxation technique can also inhibit the stress response of the sympathetic nerves, and the muscles of the arteries and veins along with other muscles in the body become relaxed. The relaxation of the muscles in the body affects the decrease in norepinephrine levels in the body (Shinde, et al, 2013).

The role of a nurse as the care giver is in providing nursing care with a problem-solving approach in accordance with the nursing method and process. Nurses play an important role in educating patients about planned interventions, so that patients understand the procedure of action that will be carried out and the side effects of the nursing actions given. The education provided is adjusted to the level of education of the patient and family and uses language that is easy to understand. Nurses make sure that patients get all the information needed, so that they get knowledge. Nurses ensure that the position is carried out correctly according to the procedure. Nurses need to study the development of science about Progressive Muscle Relaxation therapy and hope that this Progressive Muscle Relaxation technique can be used as an appropriate alternative therapy or complement treatment to control and help reduce blood pressure in patients with Hypertension.

CONCLUSION

Based on the research that has been done, the researcher concludes that there was a significant difference in the blood pressure of the respondents after being given the Progressive Muscle Relaxation (PMR) therapy, both systolic and diastolic blood pressure. And there were differences in hypertension rates between the intervention and control groups. The PMR therapy significantly reduced blood pressure in patients with hypertension. The Progressive Muscle Relaxation (PMR) therapy can be used as one of the competencies to reduce blood pressure in people with hypertension that must be carried out by nurses both in hospital and in the community.

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Various actions that contribute to reducing stunting : A literature review

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ABSTRACT

Introduction: Since 2017, there has been a surge in stunting case which motivated a number of researchers to conduct a study as to why this sudden phenomenon occurs in the first place. Four years have passed, the right actions to reduce stunting have been found. This study aim to discover the proper actions that could reduce the stunting cases.

Methods: This study was conducted using a systematic review method, which was searched from PubMed, Science Direct, and Sagepub web-sources for cross-sectional, case-control and cohort studies, published between 2017 and 2022, using subject titles as keywords: Stunting, reduce stunting, stunting reduction. The stages of the literature study were guided by The Prisma checklist and JBI (Joanna Brings Institute) which were used as instruments to evaluate the quality of the journal, and analyzed by Thematic Analysis.

Results : The results of the screening showed a total of 174 studies, and 20 articles that met the criteria. There are stunting reduction measures with nutritional supplements and additional food (1 article discusses supplements for teenage girls, 4 articles for mothers before conception, and 2 articles for mothers during pregnancy and lactation, and 8 articles for children), 4 articles on educational mechanisms with various platforms and assistance and 1 article on the administration of growth hormone.

Conclusion: that the most decisive action in reducing the incidence of stunting is by fulfilling nutritional needs from an early age, namely from adolescence, before the period of conception, as well as direct nutrition improvement in infant/child nutrition.

Keyword: Stunting reduction; actions ; nutrition; growth hormone; educational mechanisms

I. Background

Stunting, during the Covid-19 pandemic, is increasingly becoming a big problem faced by the world, especially in poor and developing countries. Stunting will have short-term and long-term impacts. The short-term impact is the presence of disturbances in brain development, intelligence, physical growth disorders and disorders of the body's metabolism. While the long-term impact is a decrease in cognitive function and learning achievement, decreased immunity, a high risk of disease,

and the quality of work is not optimal so that it can result in low economic productivity of individuals and the state. Chronic malnutrition during the first 1000 days of a child's life, will also result in irreversible child development and the child will never learn or get as much as he can.(Ministry of Health RI, 2016).

The prevalence of stunting in the world in 2017 reached 22.2%, half of the number of children with stunting were in Asia (55%) and a third were in Africa (39%). Currently, more than 140 million children suffer from stunting and malnutrition. The COVID-19 pandemic has had a significant impact on meeting nutritional needs, so it is estimated that more than 13.6 million children will suffer from wasting.(UNICEF, 2018).

In 2017 the number of stunting toddlers in Indonesia was ranked the 4th largest in the world after Nigeria, Pakistan and India. Prior to 2015, there had been a decline in the stunting rate, namely; 2007 (36%); 2010 (35%); 2013 (37.2%); 2015 (29%)(Ministry of Health RI, 2016), but the decline is still above the target to be achieved by the national which is 28%(Riskesdas National Report, 2018).According to research from the Ministry of Health in 2017 stunting in East Java showed a prevalence of 26.7%. Batu City is an area that shows the second highest incidence of stunting (35.1%) after Bondowoso (38.3%), while the city of Malang has a prevalence that is not so high compared to the two areas, with 27.4% prevalence in Malang city area(Riskesdas East Java, 2018).

The Indonesian government is focusing on addressing three priority health issues, where one of them is the handling of stunting.Indonesia targets a reduction in the prevalence of stunting to 28% in 2015-2019, but in 2018 the prevalence of stunting has increased again, namely 30.8%, while the standard set by WHO is 20%.(Ministry of Health RI, 2018).Observational studies show that stunting is associated with poor nutrition, especially a plant-based diet, inflammation, caused by infection, environmental enteric dysfunction, which may be widespread without clean water, adequate sanitation and hygiene (WASH), and endogenous inflammation associated with excess adiposity, thus explaining why nutrition interventions are often unsuccessful(Millward, 2017).The results of the multilevel analysis showed that previous birth spacing, low birth weight, duration of breastfeeding, maternal age at delivery, maternal education, and occupation were risk factors associated with stunting. Among them, low birth weight (OR 2.22, 95% CI: 1.44-3.41) and bid's mother's occupation (OR 1.92, 95% CI: 1.18-3.12) were the most important factors. affect the occurrence of stunting(Rayhan, Banerjee and Rana, 2021).

The government has prepared a National Strategy for the Acceleration of Handling Stunting for the period 2018-2024. The government is targeting to reduce the stunting rate from 27.67 percent in 2019 to 14 percent in 2024. In supporting this target, the government has intervened to reduce stunting to the target party, which is divided into two categories. The first category is specific nutrition interventions, namely monitoring children under five at the posyandu, giving immunizations, giving vitamin A, giving Supplementary Foods (PMT) and others. The second category is sensitive nutrition interventions, namely the provision of drinking water and proper sanitation, postnatal family planning (KB) services, providing information related to stunting, food social assistance, conditional cash assistance, and others.(KEMEN-PMK, 2018).

In an effort to reduce the incidence of stunting, the Indonesian government also allocates separate funds to overcome this problem. The allocation of funds by the government is used to improve factors that can affect the occurrence of stunting. Such as providing complete nutrition

package interventions for pregnant women and children, utilizing existing health services, childcare training, providing additional food for pregnant women with Chronic Energy Deficiency (KEK) and undernourished toddlers, fostering good sanitation and providing clean water, so that It is hoped that the incidence of stunting will decrease(Ministry of Finance, 2018)

Based on the above phenomenon, it shows that efforts to reduce stunting have been ongoing since 2015-2019, and have been increased with follow-up programs in 2018-2024. To support government programs, information is needed on effective measures to reduce stunting. This study aims to determine the various actions that aim to reduce the incidence of stunting through a systematic review. This research is expected to be useful as a basis for considering interventions for stunting reduction efforts, as an evaluation of several effective and ineffective actions, and can be a new idea in developing interventions for stunting reduction.

2. Method

Childhood stunting is one of the most significant barriers to human development. There are around 162 million children under the age of 5 who suffer from stunting in the world. In stunting reduction efforts WHO targets a reduction of up to 40% so that at least 100 million are left by 2025. The WHO recommendation in reducing stunting is to promote Health with a holistic perspective on malnutrition through understanding that stunting, wasting, and micronutrient deficiencies can occur in children, families and communities alike, and ensuring services for malnutrition are delivered in a more cohesive manner(World Health Organization, 2014)

2.1 Search Strategy

This research was conducted using a systematic review method, where original articles were searched from 4 online databases (PubMed, Science Direct, Scopus with intermediaries). **Scopus via publish or perish 8** and journal.Sagepub for cross-sectional, case-control and cohort studies, using the following keywords and Booleans: "Reduction stunting OR Reducing Stunting AND Nutrient" and Reduction stunting OR Reducing Stunting AND Breast feeding". We limited our search to materials published between 2017 and 2022, to ascertain their relevance to current socio-economic conditions. We obtained 433 and 77 articles from PubMed, 61 and 61 articles from Science direct, and 175 and 39 from journal.sagepub and 7 and 1 articles from **Scopus via publish or perish 8** and selected 25 articles after applying the inclusion/exclusion criteria.

2.2 Study selection and eligibility criteria

Articles were screened and evaluated for eligibility. Any study in the English language (case study, cohort study, Randomized Control Trial (RCT)) that addressed reducing stunting or reduction stunting with nutrient or breast feeding was included in the study. Articles containing efforts to reduce stunting, wasting/thin, and associated risk factors along with age range, total study population, and study area were included for this systematic review and meta-analysis. All articles included in this meta-analysis were written in English and published between 2017 and 2022.

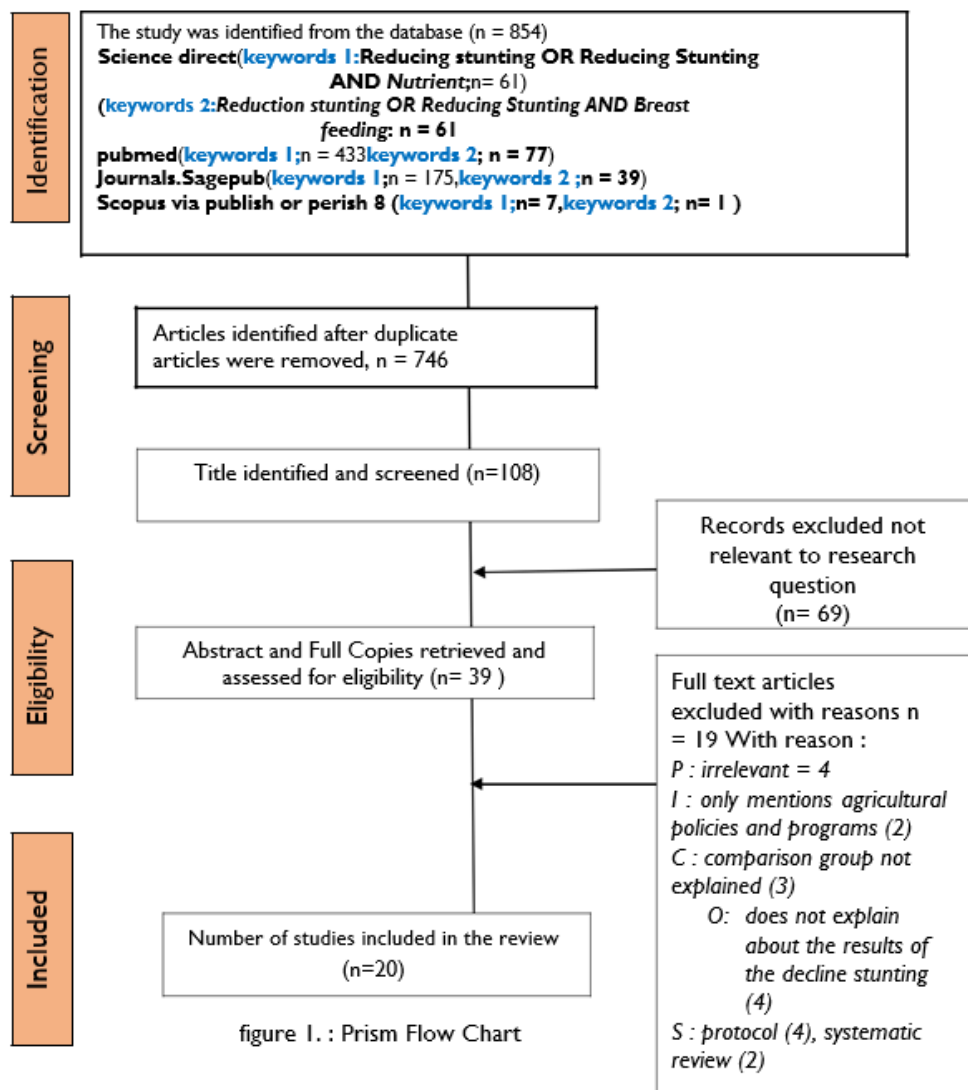
2.3 Methods of Data Extraction

Original articles were extracted from online databases using a data extraction protocol developed by the author. The data extraction protocol consists of sample size, method of

participant selection, age-group, study design, study regions, year of publication, articles on interventions to reduce stunting and wasting/thinness.

2.4 Quality Assessment and Publication Bias

Quality assessment of the article using the Joanna Briggs Institute (JBI) instrument. The JBI instrument was chosen because it can assess the quality of the journal with randomized controlled trial (RCT) and quasi-experimental study design. JBI's Randomized Controlled Trial (RCT) checklist consists of 13 items and JBI's Experimental Study checklist consists of 9 items. Several research stages were done so the literature study — results credibility is legit and credible. The steps applied are shown in figure 1.



3. Results

The results of this systematic literature review will be presented in the form of a data extraction table as follows;

No	Title of scientific work & Author	Method	Results
1	<p>An empirical study of factors associated with height-for-age z-scores of children aged 6-23 months in northwest Rwanda: The role of care practices related to child feeding and health,</p> <p>(Dusingizimana, Theogene Weber, Janet L. Ramilan, Thiagarajah Iversen, Per Ole Brough, Louise)</p>	<p>D : Observation</p> <p>S:379</p> <p>V : factors that affect height - age Z score (HAZ)</p> <p>I : structured questionnaire</p> <p>A : linear regression analysis</p>	<p>Overall, mothers of children who were not stunted demonstrated better feeding and health practices than mothers of children who were stunted. ICFI is positively related to children's HAZ. There was an adjusted mean HAZ difference of 0.14 between children whose mothers were in the high tertile of ICFI compared with those in the low tertile. Neither HPI nor its components were significantly associated with a child's HAZ.</p> <p>Other factors that are positively relatedwith child HAZ were the baby's birth weight ($P < 0.001$) and the mother's height ($P < 0.001$). Children's age, sex (male) ($P < 0.05$) and height ($P < 0.05$) were negatively associated with children's HAZ. Diarrhea ($P < 0.05$) and respiratory tract infections ($P < 0.05$) were negatively associated with HAZ in younger children 6-11 months of age.</p>
2	<p>Attending informal preschools and daycare centers is a risk factor for underweight, stunting and wasting in children under the age of five years in underprivileged communities in south Africa</p> <p>(Madiba, Sphiwe Chelule, Paul Kiprono Mokgatle, Mathildah Mpata)</p>	<p>D : observational – cross sectional</p> <p>S : 1,256 mothers and their children</p> <p>V : nutritional status, attendance at preschool and daycare</p> <p>I : questionnaire and anthropometric measurements</p> <p>A : Bivariate and Multivariate</p>	<p>The results showed that factors related to children, namely birth weight, age, gender, and attending preschool increased the risk of malnutrition. Children over the age of 24 months tend to be stunted and underweight. Maternal education reduces the likelihood of being underweight. Children who stay at home have reduced chances of underweight and stunting. High birth weight reduces the likelihood of being thin and underweight. The risk of malnutrition varies, but children who attend preschool have an increased risk of malnutrition. The risk of malnutrition increases with age and coincides with</p>

No	Title of scientific work & Author	Method	Results
	The aims of the study were to determine the nutritional status of children between the ages of 12-60 months and to establish the relationship between attending preschool and the prevalence of malnutrition.		the timing of cessation of breastfeeding and attendance at daycare or preschool.
3	Dietary consumption and its effect on nutrition outcome among under-five children in rural Malawi Machira, Kennedy Chirwa, Tobias	D : demographic survey S : 4,150 children V: food consumption and nutritional status I : questionnaire A : multilevel logistic regression	Results Based on the results of the study, exclusive breastfeeding for children under five, after controlling for parents' socioeconomic factors, was found to reduce wasting levels (ODDS RATIO [OR] = 0.763; $p < 0.05$), underweight (OR = 0.548; $p < 0.001$) and stunting (OR = 0.709; $p < 0.005$). Furthermore, it was found that even though women felt they had sufficient access to fruits and vegetables, carbohydrates and micronutrient supplements, their children under five years of age, still experienced public health challenges and suffered from underweight, underweight and stunting.
4	Effect of lipid-based nutrient supplement-medium quantity on reduction of stunting in children 6-23 months of age in Sindh, Pakistan: A cluster randomized controlled trial Khan, Gul Nawaz Kureishy, et al.	D : Case control S : 870 children aged 6 – 18 months, from 13 clusters. (419 intervention groups, 451 controls) V : wamamun (nutritional supplement) and the incidence of stunting	Results: Children who received Wawamun were found to have a significant reduced risk of stunting (RR = 0.91, 95% CI: 0.88-0.94, $p < 0.001$) and wasting (RR = 0.78, 95% CI ; 0.67–0.92, $p = 0.004$) compared with children receiving government health care standards. There was no evidence of a reduced risk of underweight (RR = 0.94, 95% CI; 0.85-1.04, $p = 0.235$) in the intervention group compared with the

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No	Title of scientific work & Author	Method	Results
		I: measurement of height and weight A : independent T test	control group. A statistically significant reduction in anemia in the intervention group was also found compared to the control group (RR = 0.97, 95% CI; 0.94-0.99, p = 0.042). Subgroup analysis by age, showed a significant intervention effect in reducing the risk of stunting in young children aged 6-12 months (RR = 0.83, 95% CI; 0.81-0.86, p = <0.001) and their peers 13 years old. -18 months- (RR = 0.90, 95% CI; 0.83-0.97, p = 0.008). Wawamum's average adherence was 60% among children.
5	Effectiveness of integrated nutrition interventions on childhood stunting: a quasi-experimental evaluation design Elisaria, Esther Mrema, Jackline Bogale, Tariki Segafredo, Giulia Festo, Charles	D : Quasi experiment pre post test design S : 896 and 1736 households in each round, mothers who gave birth in the last 24 months before the survey and all children under 5 years old living in eligible households. V : Health Education and the incidence of stunting measurement I : t of height and weight, lab results, nutrition care practices, breastfeeding. A : DID predicts stunting incidence	Difference in difference (DID) analysis was used to estimate the effect of the intervention. All ethical clearances were obtained from the relevant authorities prior to data collection. Results: A total of 3467 and 4145 children under 5 years were recruited at baseline and end, respectively. The proportion of stunted children decreased from 35.9 to 34.2% in the intervention and from 29.3 to 26.8% at the control location. Overall, no statistically significant reduction in stunting was observed between the intervention and control sites. However, a significant effect was observed in the intermediate outcomes; Folic acid iron uptake (DID: 5.2%, (95% CI: 1.7-8.7), p = 0.003), delivery at a health facility (DID: 6.5%, (95% CI: 1.8-11.2), p = 0.006), pre-lacteal feeding (DID: 5.9%, (95%CI: 9.2, 2.5), p = 0.001),

No	Title of scientific work & Author	Method	Results
			breastfeeding within 1 hour after birth (DID: 7.8%, (95%CI: 2.
6	Household, dietary and healthcare factors predicting childhood stunting in Ethiopia Ayelign, Abebe Zerfu, Taddese	D : demographic survey S : 11,023 data on children aged 0-59 months. V : Education, economy, gender, having a refrigerator, TV, type of cooking fuel, house flooring materials, etc I : questionnaire A : Bivariate and multivariate logistic regression	The results showed that, household and demographic factors such as mother's education (AOR: 0.67, 95% CI: 0.51, 0.89), wealth index (AOR: 0.65 (0.54, 0.78), sex of children (AOR: 0.78 (0.72, 0.85)), ownership of refrigerator (AOR: 0.57 (0.36, 0.89), ownership of television and others such as multiple births, main floor material of the house, type of cooking fuel were significantly related to stunting. Among the factors of food, initiation early breastfeeding; feeding powder or fresh milk (AOR: 0.63 (0.52, 0.76); formula feeding (AOR: 0.41 (0.21, 0.81)); consumption of organ meats (AOR: 0.52 (0.32, 0.85) and beta-carotene-rich fruits and vegetables were significantly associated with lower odds of stunting, follow-up antenatal care (ANC), deworming during pregnancy (AOR: 0.11 (0.02, 0.74), institutional delivery (AOR: 0.64 (0.58, 0.71) and birth size (AOR: 5.1 (1.64, 15.88) is one of the health care factors associated with stunting in children under five.
7	Individual and community level factors with a significant role in determining child height-for-age Z score in East Gojjam Zone, Amhara Regional State, Ethiopia: A multilevel analysis	D : observational; cross sectional S : 3108 children aged 6-59 months. V : individual level factors (childhood age in months, child gender, number of children	Results: In the intercept only model and the full model, 3.8% ($p < 0.001$) and 1.4% ($p < 0.001$) the variability was due to cluster-level variability. From individual level factors, child's age in months, child's gender, number of children under five, immunization status, breastfeeding initiation time, mother's nutritional status, diarrhea

No	Title of scientific work & Author	Method	Results
	Alemu, Zewdie Aderaw Ahmed, Ahmed Ali Yalew, Alemayehu Worku Birhanu, Belay Simanie Zaitchik, Benjamin F.	under five, immunization status, breastfeeding initiation time, maternal nutritional status, diarrheal morbidity, household level water treatment and household dietary diversity) and community level determinants, types of agroecosystems, wastewater disposal practices and use of latrines I : questionnaire A : STATA 13. Preceded by the basic assumption test of linear regression.	morbidity, household level water treatment and household dietary diversity are significant determinants of children's height by age. Z scores. Also, community-level determinants, agroecosystem type, wastewater disposal practices and latrine use were significantly associated with high-for-age Z-scores of children.
8	Nutrient supplementation during the first 1000 days and growth of infants born to pregnant adolescents Dewey, Kathryn G. Matias, Susana L. Mridha, Malay K. Arnold, Charles D. the effect of the Rang Din Nutrition Study (RDNS) intervention on children born to mothers aged <20 years	D : experiment S : 4011 women with gestational age <20 weeks; 1552 is a teenager. V : lipid-based nutritional supplements (LNS-LNS), iron and folic acid (IFA), LNS (IFA-LNS), IFA and children receiving micronutrient powder (MNP) (IFA-MNP), IFA and children did not receive the supplement (IFA-Control).	The RDNS is a four-arm cluster randomized effectiveness trial: (1) women and children alike received small amounts of lipid-based nutritional supplements (LNS-LNS), (2) women receive iron and folic acid (IFA) and children receive LNS (IFA-LNS), (3) women received IFA and children received micronutrient powder (MNP) (IFA-MNP), and (4) women received IFA and children did not receive supplements (IFA-Control). Results: Among adolescents, prenatal LNS reduced newborn stunting by 25% and small head size by 28% and had a slightly significant effect on newborn wasting, compared with IFA. Low birth weight

No	Title of scientific work & Author	Method	Results
		I : questionnaire A : Independent T test	and premature birth were reduced only among adolescents with lower food security. Effects on subsequent growth status were observed only among girls in the LNS-LNS group: less stunting at 18 months (versus IFA-MNP) and a lower prevalence of small and thin head circumference at 24 months (compared to IFA-Controls).
9	Rice bran supplementation modulates growth, microbiota and metabolome in weaning infants: a clinical trial in Nicaragua and Mali Zambrana, Luis E. McKeen, et al	D : Experiment S : babies weaned from 6 to 12 months (...) V: rice bran supplement I : spectrometry A : independent T test	Daily consumption of rice bran was safe and feasible to support changes in LAZ from 6-8 and 8-12 months of age in Nicaraguan and Malian infants when compared with controls. WAZ increased significantly only for Mali infants at 8 and 12 months. Mali and Nicaraguan infants exhibited large differences in overall gut microbiota and metabolic composition and structure at baseline, and thus each country group exhibited different microbial and metabolite profile responses to rice bran supplementation when compared to controls.
10	Short-term nutrition and growth indicators in 6-month- to 6-year-old children are improved following implementation of a multidisciplinary community-based program in a chronic conflict setting Simonyan, Hambarzum	D : secondary data survey S : Children aged 6 months to 6 years, 348 children V : community-based multidisciplinary intervention and level of anemia and level of dietary indicators. I : secondary data	Results: The analysis includes data for 2013 consisting of 382 children, and data for 2016 consisting of 348 children living in the communities where the program was implemented, and 635 children from communities that were not exposed. The prevalence of anemia in the exposed community was significantly lower in 2016 v. 2013 (10.9 v. 19.1%, $P < 0.01$). Minimum dietary diversity (79.0 v. 68.1%, $P < 0.001$) and duration of breastfeeding (13.0 v. 11.5 months, P

No	Title of scientific work & Author	Method	Results
	Sargsyan, Aelita Balalian, Arin A. Davtyan, Carpet Gupte, Himanshu A.	A : logistic regression analysis	< 0.002) were significantly increased in the exposed community. The prevalence of stunting (11.5 v. 10.2 %, P = 0.57) and wasting (4.8 v. 2.0 %, P = 0.07) were not significantly different. The odds of anemia were significantly lower (OR = 0.24, 95% CI 0.16, 0.36) in the intervention community.
11	Associations of Knowledge, Attitude, and Practices toward Anemia with Anemia Prevalence and Height-for-Age Z-Score among Indonesian Adolescent Girls Agustina, Rina Wirawan, Fadila Sadariskar, Arini A. Setianingsing, Ainanur A. Nadiya, Khairun Prafiantini, Erfi Asri, Eriana K. Purwanti, Tutut S. Kusyuniati, Sri Karyadi, Elvina Raut, Manoj K.	D : observational, cross sectional S : 335 young women V : nutrition, food diversity, and health environment related to anemia and stunting, consisting of 9 knowledge components, 3 attitudes, and 6 practice components I : Questionnaire adapted from KAP guidelines related to nutrition for anemia. Dietary practices were evaluated from 2-day 24-hour recall and semi-quantitative food frequency questionnaire A : multivariate logistic regression and linear regression models,	Results: The average hemoglobin (Hb) level was 119.7 g/L, with 44% of adolescent girls experiencing anemia (Hb < 120 g/L) and an average height of 151.0 cm with 25% stunting (HAZ < 2 standard deviations). [SD]). The median KAP score was 7 and ranged from 3 to 10. A low to moderate KAP score was not significantly associated with anemia (adjusted odds ratio [AOR] = 1.26; P = 0.43), but an increase in KAP score of 1 point was associated with an increase in HAZ of 0.037 SD (P = 0.012).
12	Maternal Dietary Diversity and Growth of Children Under 24 Months of Age in Rural Dodoma, Tanzania	D : S:361 mothers with children under 24 months in 5 villages	Results: Around 40% of mothers did not consume a variety of foods (MDD-W < 5), and 35% of children were stunted. Household production of a greater number of crops was

No	Title of scientific work & Author	Method	Results
	<p>Huang, Megan Sudfeld, Christopher Ismail, Abbas</p> <p>Vuai, Said Ntwenya, Julius Mwanyika-Sando, Mary Fawzi, Wafaie</p>	<p>V : predictors of maternal dietary diversity in rural areas and child growth outcomes</p> <p>I : food frequency questionnaire, and food diversity was categorized using the Minimum Dietary Diversity for Women (MDD-W) guidelines.</p> <p>Anthropometric measurements</p> <p>A : Linear and logistic regression were used to examine the relationship between maternal dietary diversity and child growth outcomes.</p>	<p>associated with a higher MDD-W score ($P < .01$). Greater maternal dietary diversity was associated with significantly greater WHZ of children (mean difference = 0.44; 95% confidence interval [CI]: 0.10-0.78; $P = .01$), WAZ (difference mean = 0.37; 95% CI: 0.08-0.65; $P = .01$), and reduced risk of wastage (odds ratio = 0.22; 95% CI: 0.07-0.66; $P = .01$).</p> <p>Conclusion: Greater maternal dietary diversity was associated with improved child WHZ and WAZ outcomes. Ongoing interventions to increase maternal dietary diversity could increase WHZ and WAZ in young children in similar settings.</p>
13	<p>Evaluation of pro-inflammatory cytokines in nutritionally stunted Egyptian children</p> <p>Abd El-Maksoud, Awatif M. Khairy, Sahar A. Sharada, Hayat M. Abdalla, Mohga S. Ahmed, Nehal F.</p>	<p>D :</p> <p>S : 88 registered children; 60 stunted and 28 non-stunted children of the same age and gender</p> <p>V: pro-inflammatory cytokines and micronutrients</p> <p>I : measurement of serum levels of calcium, magnesium, and zinc were measured. Plasma levels of interleukin-6 (IL-6), tumor necrosis factor alpha (TNFa) and</p>	<p>Abstract Objective: Stunting affects 32% of children living in developing countries and has a major impact on children's health and development.</p> <p>Results: Stunting children showed significant weight loss and weight-for-age Z scores (WAZ) compared to healthy ones. Significant reductions in serum levels of Ca, Mg, and Zn were detected in stunted children compared with healthy control subjects. In addition, the mean serum levels of IL-6 (pg/ml) (1.5 Vs 1.6), TNFa (pg/ml) (1.7 Vs 1.8) and CRP (mg/l) (0.7 Vs 1) was significantly higher among stunted children.</p> <p>Conclusion: Children with nutritional stunting experienced a decrease in serum Zn levels. Ca, and Mg, in</p>

No	Title of scientific work & Author	Method	Results
		C-reactive protein (CRP) A : descriptive	addition to increased serum levels of proinflammatory cytokines (Il-6, TNFa, and CRP).
14	Predictors of stunting with particular focus on complementary feeding practices: A cross-sectional study in the northern province of Rwanda Uwiringiyimana, Vestine Ocké, Marga C. Amer, Sheriff Veldkamp, Antonie	D : cross sectional S : 138 children aged 5 to 30 months V : factors related to stunting I : a structured questionnaire for anthropometric measurements, food intake, and overall complementary feeding practices. sociodemography of each mother and child as well as the practice of breastfeeding and complementary feeding. A : linear and logistic regression	Results: The prevalence of stunting was 42%. The prevalence of continued breastfeeding and exclusive breastfeeding were 92% and 50%, respectively. Most of the children (62%) were included in the low food diversity score group. Nutrient intake from complementary feeding is below the recommendation. The odds of stunting were higher in children >12 months of age (odds ratio [OR], 1.18; 95% confidence interval [CI], 1.08-1.29). Exclusive breastfeeding (OR, 0.22; 95% CI, 0.10-0.48) and use of deworming tablets in the previous 6 months (OR, 0.25; 95% CI, 0.07-0.80) significantly reduce the likelihood of stunting in children. Also, administrator body mass index ($= 0.08 \text{ kg/m}^2$; 95% CI, 0.00-0.17) and zinc intake ($\beta = 1.89 \text{ mg/day}$; 95% CI, 0.29-3.49) was positively associated with a high-for-age z score. Conclusion:
15	Independent and combined effects of improved water, sanitation, and hygiene, and improved complementary feeding, on child stunting and anemia in rural Zimbabwe: a cluster-randomised trial	D : Experiment S : 5280 pregnant women were enrolled from 211 clusters. 3686 children born to HIV-negative mothers were assessed at 18 months of age (884 in the standard care group out of 52 groups, 893 in the PMBA group out of 53	In the PMBA intervention group, the mean length-for-age Z score was 0.16 (95% CI 0.08-0.23) higher and the mean hemoglobin concentration was 2.03 g/L (1.28 -2.79) higher than the non-IPM intervention group. The PMBA intervention reduced the number of stunted children from 620 (35%) in 1792 to 514 (27%) in 1879, and the number of children with anemia from 245 (13.9%) in 1759 to

No	Title of scientific work & Author	Method	Results
	Humphrey, Jean H. Mbuya, Mduduzi NN etc all.	<p>groups, 918 in the WASH group out of 53 groups, and 991 in the IYCF plus WASH group out of 51 clusters).).</p> <p>V : infant length-for-age and hemoglobin concentration at 18 months of age among children born to HIV-negative mothers during pregnancy.</p> <p>I : Height-age and Hb . measurements</p> <p>A : Independent T test</p>	193 (10.5%)) 1845. The WASH intervention had no effect on the two main outcomes. No intervention reduced the prevalence of diarrhea at 12 or 18 months.
16	<p>Correlation Between Protein, Calcium and Zinc Intake with Stunting in Children Age 3-5 Years Old in Gubeng, Mojo, Surabaya</p> <p>Ayuning Tetirah Ramadhani1 (CA), Widati Fatmaningrum2, Roedi Irawan3</p>	<p>D : analytical observation with case control</p> <p>S :</p> <p>V :risk factors (intake of calcium, protein and zinc and disease and stunting</p> <p>I : lab test</p> <p>A : Fisher exact test</p>	<p>Results: the relationship between reduced calcium intake and the incidence of stunting</p> <p>incidence using Fisher's Exact test with a p value of 0.001 and an odds ratio of 0.056. Significant correlation of</p> <p>Insufficient calcium intake was found with the incidence of stunting, but there was no relationship between</p> <p>Inadequate protein and zinc intake with stunting.</p>
17	<p>PROCOMIDA, a food-assisted maternal and child health and nutrition program, reduces child stunting in Guatemala: A cluster-randomized</p>	<p>D : Randomized controlled trial</p> <p>S : mother (pregnant up to 6 months postpartum) and children (age 6-24 months). 1) FFR + CSB (n = 576); 2) RFR +</p>	<p>Results: PROCOMIDA significantly reduced stunting at 1 month of age in the FFR + CSB, RFR + CSB, and FFR + MNP groups compared to controls [5.05, 4.06, and 3.82 percentage points (pp), respectively.]. The impact of stunting increased at 24 months of age on FFR +</p>

No	Title of scientific work & Author	Method	Results
	controlled intervention trial Olney D; Leroy J; Bliznashka L; Ruel M	CSB (n = 575); 3) NFR + CSB (n = 542); 4) FFR + LNS (n = 550); 5) FFR + MNP (n = 587); 6) control (n = 574). V : PFA-MCHN program, PROCOMIDA, on linear growth (shorting [length-for-age z score (LAZ) <-2] and length-for-age difference [LAD]) among children aged 1 -24 mth. I: measurement of height / body length A : linear regression test	CSB and FFR + MNP relative to controls (impact = 11.1 and 6.5 pp at 24 months). For CSB recipients, FFR compared to RFR or NFR significantly reduced stunting (6.47-9.68 pp). CSB reduced stunting significantly more than LNS at 24 months (8.12 pp). Conclusion: The FA-MCHN program can reduce stunting during the first 1000 days, even in populations that are relatively energy/food safe. Large family rations with individual CSB or MNP rations are most effective.
18	Complementary feeding with cowpea reduces growth faltering in rural Malawian infants: a blind, randomized controlled clinical trial Kevin B Stephenson ¹ , Sophia E Agapova ¹ , Osca Divala ¹ , Yankho Kaimila ¹ , Kenneth M Maleta ¹ , Chrissie Thawalakwa ² , M Isabel Ordiz ¹ , Indi Trehan ^{1,3} , Mark J Manary ^{4,25}	Q : I : C : O : S :	Background: Growth retardation is common in rural African children and is associated with inadequate food intake and environmental enteric dysfunction (EED). Objectives: We tested the hypothesis that complementary feeding with cowpea or plain peanut flour would reduce impaired growth and EED in 6-month old rural Malawi compared with a control group receiving a corn-soy mixture. Design: A prospective, double-blind, clinical trial. A randomized controlled trial was conducted in which children received daily meals for 6 months (200 kcal/day at 6-9 months). old age and 300 kcal/day at the age of 10-12 months).

No	Title of scientific work & Author	Method	Results
			<p>The primary outcome was a change in the length-for-age (LAZ) z score and an increase in EED, as measured by the percentage of lactulose excretion (% L). %L < 0.2% is considered normal. Anthropometric measurements and urinary %L were compared between each legume group and the control group by Student's t test.</p> <p>Results: Of the 355 infants enrolled, 291 completed the trial, and 288 were breastfed during the study. Cowpeas and peas add 4.6-5.2 g protein/day and 4-5 g indigestible carbohydrates/day to the diet. LAZ and weight-for-height z scores were reduced in all 3 groups from 6 to 12 months of age. Changes in LAZ [mean (95% CI)] for cowpea, chickpeas, and control groups from 6 to 9 months were -0.14 (-0.24, -0.04), -0.27 (-0.38, -0.16), and -0.27 (-0.35, -0.19), respectively. LAZ was reduced less in infants receiving cowpea than in those receiving control foods from 6 to 9 months (P = 0.048). The absolute value of %L did not differ between food groups at 9 months of age (mean ± SD: 0.30 ± 0.43, 0.23 ± 0.21, and 0.26 ± 0.31 for cowpeas, kidney <u>beans</u>, and control), also did not change in %L from 6 to 9 months.</p> <p>Conclusion: The addition of cowpea to complementary feeding in Malawian infants resulted in fewer linear growth disorders. This trial is</p>

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No	Title of scientific work & Author	Method	Results
			registered on clinicaltrials.gov as NCT02472262.
19	<p>Two-year impact of community-based health screening and parenting groups on child development in Zambia: Follow-up to a cluster-randomized controlled trial</p> <p>Peter C Rockers¹, Arianna Zanolini¹, Bowen Banda², Mwaba Moono Chipili⁴, Robert C Hughes⁵, Davidson H Hamer^{1,3,6}, Gunther Fink^{7,8}</p>		<p>Background: Early childhood intervention has the potential to offset the negative impact of early adversity. We evaluated the impact of a community-based parenting group intervention on child development in Zambia.</p> <p>Methods and findings: We conducted an unmasked cluster randomized controlled trial in the Southern Province of Zambia. Thirty village groups were matched on the basis of population density and distance from the nearest health center, and randomly assigned to the intervention (15 groups, 268 caregiver-child pairs) or controls (15 groups, 258 caregiver-child pairs). Caregivers are eligible if they have children aged 6 to 12 months at baseline. In the intervention group, caregivers were visited twice per month during the first year of study by a child development agency (CDA) and invited to attend parent group meetings every two weeks. Childcare groups select “head mothers” from their community who are trained by the CDA to facilitate meetings and deliver diverse parenting curricula. The parental group intervention, originally</p>

	Title of scientific work & Author	Method	Results
			<p>designed to run for 1 year, was extended, and households were visited for follow-up assessment at the end of year 2. The control group did not receive any intervention. An intention-to-treat analysis was performed for the main outcomes measured at year 2 of follow-up: stunting and 5 domains of neurocognitive development as measured using the Bayley Scales of Infant and Toddler Development-Third Edition (BSID-III). To demonstrate Cohen's d estimation, the BSID-III composite score was converted to a z-score by standardizing within the study population. Overall, 195/268 children (73%) in the intervention group and 182/258 children (71%) in the control group were assessed at the end of 2 years. The intervention significantly reduced stunting (56/195 versus 72/182; adjusted odds ratio 0.45, 95% CI 0.22 to 0.92; $p = 0.028$) and had a significant positive impact on language (β 0.14, 95% CI 0.01 to 0.27; $p = 0.039$). The intervention had no significant impact on cognition (β 0.11, 95% CI -0.06 to 0.29; $p = 0.196$), motor skills (β -0.01, 95% CI -0.25 to 0.24; $p = 0.964$), adaptive behavior (β 0.21, 95% CI -0.03 to 0.44; $p = 0.088$), or socio-emotional development (β 0.20, 95% CI -0.04 to 0.44; $p = 0.098$). The observed impact may be partly due to home visits by the CDA during the first year</p>

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No	Title of scientific work & Author	Method	Results
			<p>of intervention. motor skills (β -0.01, 95% CI -0.25 to 0.24; $p = 0.964$), adaptive behavior (β 0.21, 95% CI -0.03 to 0.44; $p = 0.088$), or socio-emotional development (β 0.20, 95% CI 0.04 to 0.44; $p = 0.098$). The observed impact may be partly due to home visits by the CDA during the first year of intervention. motor skills (β -0.01, 95% CI -0.25 to 0.24; $p = 0.964$), adaptive behavior (β 0.21, 95% CI -0.03 to 0.44; $p = 0.088$), or socio-emotional development (β 0.20, 95% CI 0.04 to 0.44; $p = 0.098$). The observed impact may be partly due to home visits by the CDA during the first year of intervention.</p> <p>Conclusion: The results of this trial show that parenting groups hold promise for enhancing child development, particularly physical growth, in low-resource settings such as Zambia.</p>
	<p>Home- and community-based growth monitoring to reduce early life growth faltering: an open-label, cluster-randomized controlled trial</p> <p>Gunther Fink ¹, Rachel Levenson ³, Sarah</p>		<p>Background: Despite the high prevalence of growth disorders, monitoring of height is still limited in many low- and middle-income countries. Objective: The purpose of this study was to test whether providing parents with height information could increase the height and development of children. Results.</p> <p>Design: Villages in Chipata District, Zambia ($n = 127$), were randomized with equal probability to 1 of 3</p>

No	Title of scientific work & Author	Method	Results
			<p>interventions increased parental reporting of the child's protein intake.</p> <p>Conclusions: Results from this trial suggest that growth monitoring has a limited effect on child height and development, despite improvements in self-reported feeding practices. HBGM has a modest positive effect in children with stunted growth. Given its relatively low cost, this intervention can be a cost-effective tool to enhance parental efforts to reduce a child's physical growth deficit. This trial is registered on clinicaltrials.gov as NCT02242539.</p> <p>Keywords: growth faltering; growth monitoring; tall; malnutrition; stunting; weight.</p>
	<p>Effect of complementary feeding behavior change communication delivered through community-level actors on infant growth and morbidity in rural communities of West Gojjam Zone, Northwest Ethiopia: A cluster-randomized controlled trial</p>		<p>Achieving the recommended adequacy level of the infant diet remains a serious challenge in developing countries. On the other hand, the incidence of failure to thrive and morbidity increased significantly at 6 months of age when complementary foods were introduced. This trial aims to evaluate the effect of communication on behavioral changes in complementary feeding delivered through community-level actors on infant growth and morbidity. We conducted a randomized cluster-controlled trial in a rural Ethiopian community. The</p>

No	Title of scientific work & Author	Method	Results
	<p>Tembo⁴, Peter C</p> <p>Rockers⁵</p> <p>providing height information to parents can increase the height and development of children</p>		<p>groups: home-based growth monitoring (HBGM), community-based growth monitoring including nutritional supplementation for children with stunted growth (CBGM+NS), and control. The primary study outcome was an individual high-for-age z score (HAZ) and overall child development assessed with the International Fetal and Newborn Growth Consortium for the 21st Century Neurodevelopmental Assessment tool. Secondary outcomes were weight-for-age (WAZ) z scores, protein consumption, breastfeeding, and general dietary diversity.</p> <p>Results: We enrolled a total of 547 children with a median age of 13 months at baseline. The estimated mean difference (β) in HAZ was 0.127 (95% CI: -0.107, 0.361) for HBGM and -0.152 (95% CI: -0.341, 0.036) for CBGM+NS. HBGM had no impact on child development [β: -0.017 (95% CI: -0.133, 0.098)]; CBGM+NS reduced a child's overall developmental score by -0.118 SD (95% CI: -0.230, -0.006 SD).</p> <p>Both interventions had a greater positive effect among children with growth retardation at baseline, with an estimated interaction effect of 0.503 (95% CI: 0.160, 0.846) and 0.582 (95% CI: 0.134, 1.030) for CBGM+NS and HBGM. , each.</p>

No	Title of scientific work & Author	Method	Results
			<p>HBGM increased mean WAZ [$\beta = 0.183$ (95% CI: 0.037, 0.328)]. Both interventions increased parental reporting of the child's protein intake.</p> <p>Conclusions: Results from this trial suggest that growth monitoring has a limited effect on child height and development, despite improvements in self-reported feeding practices. HBGM has a modest positive effect in children with stunted growth. Given its relatively low cost, this intervention can be a cost-effective tool to enhance parental efforts to reduce a child's physical growth deficit. This trial is registered on clinicaltrials.gov as NCT02242539.</p> <p>Keywords: growth faltering; growth monitoring; tall; malnutrition; stunting; weight.</p>
	<p>Home- and community-based growth monitoring to reduce early life growth faltering: an open-label, cluster-randomized controlled trial</p> <p>Gunther Fink^{1,2}, Rachel Levenson³, Sarah Peter Tembo⁴, C Rockers⁵</p>		<p>Background: Despite the high prevalence of growth disorders, monitoring of height is still limited in many low- and middle-income countries. Objective: The purpose of this study was to test whether providing parents with height information could increase the height and development of children. Results.</p> <p>Design: Villages in Chipata District, Zambia (n = 127), were randomized with equal probability to 1 of 3 groups: home-based growth monitoring (HBGM), community-</p>

No	Title of scientific work & Author	Method	Results
	<p>providing height information to parents can increase the height and development of children</p>		<p>based growth monitoring including nutritional supplementation for children with stunted growth (CBGM+NS), and control. The primary study outcome was an individual high-for-age z score (HAZ) and overall child development assessed with the International Fetal and Newborn Growth Consortium for the 21st Century Neurodevelopmental Assessment tool. Secondary outcomes were weight-for-age (WAZ) z scores, protein consumption, breastfeeding, and general dietary diversity.</p> <p>Results: We enrolled a total of 547 children with a median age of 13 months at baseline. The estimated mean difference (β) in HAZ was 0.127 (95% CI: -0.107, 0.361) for HBGM and -0.152 (95% CI: -0.341, 0.036) for CBGM+NS. HBGM had no impact on child development [β: -0.017 (95% CI: -0.133, 0.098)]; CBGM+NS reduced a child's overall developmental score by -0.118 SD (95% CI: -0.230, -0.006 SD).</p> <p>Both interventions had a greater positive effect among children with growth retardation at baseline, with an estimated interaction effect of 0.503 (95% CI: 0.160, 0.846) and 0.582 (95% CI: 0.134, 1.030) for CBGM+NS and HBGM. , each. HBGM increased mean WAZ [β = 0.183 (95% CI: 0.037, 0.328)]. Both</p>

No	Title of scientific work & Author	Method	Results
			<p>interventions increased parental reporting of the child's protein intake.</p> <p>Conclusions: Results from this trial suggest that growth monitoring has a limited effect on child height and development, despite improvements in self-reported feeding practices. HBGM has a modest positive effect in children with stunted growth. Given its relatively low cost, this intervention can be a cost-effective tool to enhance parental efforts to reduce a child's physical growth deficit. This trial is registered on clinicaltrials.gov as NCT02242539.</p> <p>Keywords: growth faltering; growth monitoring; tall; malnutrition; stunting; weight.</p>
	<p>Effect of complementary feeding behavior change communication delivered through community-level actors on infant growth and morbidity in rural communities of West Gojjam Zone, Northwest Ethiopia: A cluster-randomized controlled trial</p>		<p>Achieving the recommended adequacy level of the infant diet remains a serious challenge in developing countries. On the other hand, the incidence of failure to thrive and morbidity increased significantly at 6 months of age when complementary foods were introduced. This trial aims to evaluate the effect of communication on behavioral changes in complementary feeding delivered through community-level actors on infant growth and morbidity. We conducted a randomized cluster-controlled trial in a rural Ethiopian community. The</p>

No	Title of scientific work & Author	Method	Results
	<p>Chalachew Abiyu Ayalew J. Tefera Belachew I</p> <p>communication of behavioral changes in breastfeeding complementary feeding delivered through community-level actors</p>		<p>trial participants in the intervention cluster (eight clusters) received communication on changes in complementary feeding behavior for 9 months, while those in the control cluster (eight clusters) received only the usual care. A pre-tested structured interviewer administered questionnaire was used for data collection. Regression analysis of generalized estimation equations adjusted for baseline and clustering covariates was used to examine the effect of the intervention on infant growth and morbidity. Infants in the intervention group had significantly higher weight gain (MD: 0.46 kg; 95% CI: 0.36-0.56) and length gain (MD: 0.96 cm; 95% CI: 0. 56-1.36) compared with infants in the control group. The intervention also significantly reduced infant stunting rates by 7.5 percentage points (26.5% vs. 34%, RR = 0.68; 95% CI: 0.47-0.98) and underweight by 8.2 points. percentage (17% vs. 25.2%; RR = 0.55; 95% CI: 0.35-0.87).</p> <p>Trial registration: ClinicalTrials.gov NCT03488680.</p> <p>Keywords: behavior change communication; complementary foods; baby growth; morbidity.</p>

No	Title of scientific work & Author	Method	Results
	<p>Eggs in Early Complementary Feeding and Child Growth: A Randomized Controlled Trial</p> <p>Lora L Iannotti¹, Chessa K Lutter¹, Christine P Stewart², Carlos Andres Gallegos Riofrio⁴, Carla Malo¹, Gregory Reinhart³, Ana Palacios⁵, Celia Karp⁴, Melissa Chapnick¹, Katherine Cox⁶, William F Waters⁴</p> <p>1 egg per day for 6 months</p>		<p>Background: Eggs are a good source of nutrition for growth and development. We hypothesized that introducing eggs earlier during complementary feeding would improve child nutrition.</p> <p>Methods: A randomized controlled trial was conducted in Cotopaxi Province, Ecuador, from March to December 2015. Children 6 to 9 months of age were randomly assigned to treatment (1 egg per day for 6 months [n = 83]) and controls. (no intervention [n = 80]) group. Both arms receive social marketing messages to encourage participation in the Lulun Project (lulun means "eggs" in Kichwa). All households were visited once a week to monitor symptoms of morbidity, distribute eggs, and monitor egg intake (for the egg group only). Initial outcome measures and endpoints included anthropometry, frequency of food intake, and symptomatic morbidity.</p> <p>Results: Mothers or other caregivers reported no allergic reactions to eggs. Generalized linear regression modeling showed the egg intervention increased the length-for-age z-score by 0.63 (95% confidence interval [CI], 0.38-0.88) and the weight-for-age z-score by 0.61 (95 %CI, 0.45-</p>

No	Title of scientific work & Author	Method	Results
			<p>0.77). . The log-binomial model with a strong Poisson showed a 47% reduction in stunting prevalence (prevalence ratio [PR], 0.53; 95% CI, 0.37-0.77) and underweight by 74% (PR, 0.7). 26; 95% CI, 0.10-0.70). Children in the treatment group had a higher egg intake (PR, 1.57; 95% CI, 1.28–1.92) and a reduced intake of sugary foods (PR, 0.71; 95% CI, 0.51 -0.97) compared to control.</p> <p>Conclusions: These findings support our hypothesis that early introduction of eggs significantly enhances growth in young children. Generally accessible to vulnerable groups, eggs have the potential to contribute to global targets for reducing stunting.</p>
	<p>Nutrient supplementation during the first 1000 days and growth of infants born to pregnant adolescents</p> <p>Kathryn G Dewey¹, Susana L Matias¹, Malay K Charles Mridha^{1,2}, D Arnold¹</p>		<p>Several studies have evaluated the impact of nutritional supplementation among pregnant adolescents. We investigated the effect of the Rang Din Nutrition Study (RDNS) intervention on children born to mothers <20 years of age. The RDNS was a four-arm cluster randomized effectiveness trial: (1) women and children received small amounts of a lipid-based nutritional supplement (LNS-LNS), (2) women received iron and folic acid (IFA) and children received LNS (IFA-LNS), (3) women received IFA and children received micronutrient powder (MNP) (IFA-MNP), and (4) women received IFA</p>

No	Title of scientific work & Author	Method	Results
	nutritional supplementation among pregnant adolescents		<p>and children did not receive supplements (IFA-MNP). Control). We enrolled 4011 women with gestational age <20 weeks; 1552 is a teenager. Among teenagers, Prenatal LNS reduced newborn stunting by 25% and small head size by 28% and had a slightly significant effect on newborn wasting, compared with IFA. Low birth weight and premature birth were reduced only among adolescents with lower food security. Effects on subsequent growth status were observed only among girls in the LNS-LNS group: less stunting at 18 months (versus IFA-MNP) and a lower prevalence of small and thin head circumference at 24 months (compared to IFA-Controls). Initiatives targeting pregnant adolescents in similar settings should consider the inclusion of small numbers of LNS, particularly for adolescents living in food insecure households. Low birth weight and premature birth were reduced only among adolescents with lower food security. Effects on subsequent growth status were observed only among girls in the LNS-LNS group: less stunting at 18 months (versus IFA-MNP) and a lower prevalence of small and thin head circumference at 24 months (compared to IFA-Controls). Initiatives targeting pregnant adolescents in similar settings should consider inclusion of small numbers of LNS, particularly</p>

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No	Title of scientific work & Author	Method	Results
			<p>for adolescents living in food insecure households. Low birth weight and premature birth were reduced only among adolescents with lower food security. Effects on subsequent growth status were observed only among girls in the LNS-LNS group: less stunting at 18 months (versus IFA-MNP) and a lower prevalence of small and thin head circumference at 24 months (compared to IFA-Controls). Initiatives targeting pregnant adolescents in similar settings should consider the inclusion of small numbers of LNS, particularly for adolescents living in food insecure households. less stunting at 18 months (versus IFA-MNP) and a lower prevalence of small and thin head circumference at 24 months (versus IFA-Control). Initiatives targeting pregnant adolescents in similar settings should consider the inclusion of small numbers of LNS, particularly for adolescents living in food insecure households. less stunting at 18 months (versus IFA-MNP) and a lower prevalence of small and thin head circumference at 24 months (versus IFA-Control). Initiatives targeting pregnant adolescents in similar settings should consider inclusion of small numbers of LNS, particularly for adolescents living in food insecure households.</p>

No	Title of scientific work & Author	Method	Results
			<p>Keywords: child growth and development; lipid-based nutritional supplements; low birth weight; nutrition before childbirth; stunting.</p>
	<p>Effect of lipid-based nutrient supplement-Medium quantity on reduction of stunting in children 6-23 months of age in Sindh, Pakistan: A cluster randomized controlled trial</p> <p>Gul Nawaz Khan¹, Sumra Kureishy², Shabina Ariff¹, Arjumand Rizvi¹, Muhammad Sajid¹, Cecilia Garzon², Ali Ahmad Khan², Saskia de Pee^{3,4}, Sajid Bashir Soofi⁴, Zulfiqar A Bhutta^{1,6}</p>		<p>Background: Chronic childhood malnutrition, or stunting, remains a persistent barrier to achieving optimal cognitive development, growth and children's ability to reach their full potential. Nearly half of children under five are stunted in Sindh province, Pakistan.</p> <p>Objective: The main objective of this study was to test the hypothesis that administration of a lipid-based LNS-MQ (LNS-MQ) known as Wawamum would result in a 10% reduction in stunting risk at 24 months of age in the intervention group compared to the control group.</p> <p>Design: A cluster randomized controlled trial was conducted in Thatta and Sujawal districts of Sindh province, Pakistan. A total of 870 (419 in the intervention; 451 in the control) children aged between 6-18 months were enrolled in the study. The unit of randomization was the union board and was considered a cluster. A total of 12 clusters, 6 in each study group were randomly assigned to the intervention and control groups. All children received government standard health services,</p>

No	Title of scientific work & Author	Method	Results
			<p>while children in the intervention group also received an Wawamum of 50 grams/day.</p> <p>Results: Children who received Wawamum were found to have a significant reduced risk of stunting (RR = 0.91, 95% CI; 0.88-0.94, $p < 0.001$) and wasting (RR = 0.78, 95% CI ; 0.67–0.92, $p = 0.004$) compared with children receiving government health care standards. There was no evidence of a reduced risk of underweight (RR = 0.94, 95% CI; 0.85-1.04, $p = 0.235$) in the intervention group compared with the control group. A statistically significant reduction in anemia in the intervention group was also found compared to the control group (RR = 0.97, 95% CI; 0.94-0.99, $p = 0.042$). Subgroup analysis by age, showed a significant intervention effect in reducing the risk of stunting in children aged 6-12 months (RR = 0.83, 95% CI; 0.81-0.86, $p = <0.001$) and their older peers. 13 years old. -18 months- (RR = 0.90, 95% CI; 0.83-0.97, $p = 0.008$). Wawamum's average adherence was 60% among children.</p> <p>Conclusion: The results of the study confirmed that giving wawamum to children aged 6-23 months was</p>

No	Title of scientific work & Author	Method	Results
			<p>effective in reducing the risk of stunting, wasting and anemia. This approach should be scaled up among the most food insecure regions/households with a high prevalence of stunting to achieve positive outcomes for nutrition and health. The study is registered at clinicaltrials.gov as</p>
	<p>Effect of maternal nutritional education and counseling on children's stunting prevalence in urban informal settlements in Nairobi, Kenya</p> <p>CK Nyamasege ^{1,2}, EW Kimani-Murage ^{3,4}, M Wanjohi ¹, Dwm Kaindi ⁵, Y Wagatsuma ¹</p> <p>receive monthly nutrition education and counseling (NEC) during pregnancy and infancy.</p>		<p>Objectives: To find out whether the prevalence of stunting was different between the intervention group and the control group and to identify the factors associated with the linear growth of children.</p> <p>Design: This is a follow-up study of a mother-daughter pair participating in the 2012-2015 cluster randomized controlled trial. The linear mixed effects model was carried out to model the linear growth of children and identify the determinants of children's linear growth.</p> <p>Location: The study was conducted in two slum areas in Nairobi. The intervention group received monthly nutrition education and counseling (NEC) during pregnancy and infancy.</p> <p>Participants: A birth cohort of 1004 was followed up every 3 months after</p>

No	Title of scientific work & Author	Method	Results
			<p>delivery until the 13th month. However, as a result of dropping out, a total of 438 mother-daughter pairs participated during 55 months of follow-up. The loss to follow-up to baseline characteristics did not differ from those included for analysis.</p> <p>Results: The length-for-age z-score decreased from birth to 13 months, a mean of -1.42 (sd 2.04), with the control group (33.5%) reporting a significantly higher prevalence of stunting than group intervention (28.6%). In contrast, scores increased at 55 months, a mean of -0.89 (to 1.04), with significantly more males (16.5%) stunting in the control group than in the intervention group (8.3%). In the control group, boys, frequent vomiting, maternal height <154 cm and early weaning were negatively related to linear growth of children.</p> <p>Conclusion: NEC of home-based mothers reduces stunting in children under five; however, the long-term benefits of these interventions on child health need to be clarified.</p> <p>Keywords: Public health workers; Kenya; Maternal nutrition education</p>

No	Title of scientific work & Author	Method	Results
			and counseling; Stunting; urban slum areas.
	<p>Reduced Effectiveness and Comparable Safety in Biweekly vs. Weekly PEGylated Recombinant Human Growth Hormone for Children With Growth Hormone Deficiency: A Phase IV Non-Inferiority Threshold Targeted Trial</p> <p>Chengjun Sun ¹, Biao Lu ², Yu Liu ³, Yaqin Zhang ⁴, Haiyan Wei ⁵, Xu Hu ⁶, Pei Hu ⁷, Qian Zhao ⁸, Yanling Liu ⁸, Kan Ye ⁹, Kan Wang ¹⁰, Zaiyan Gu ¹¹, Zheng Liu ¹², Jin Ye ¹³, Hongxiao Zhang ¹⁴, Hong Zhu ¹⁵, Zhihong Jiang ¹⁶, Yanjie Liu ¹⁷, Naijun Wan ¹⁸, Chengming Yan ¹⁹, Jianying Yin ²⁰, Lirong Ying ²¹, Feng Huang ²², Qingjin Yin ²³, Li Xi ¹, Feihong Luo ¹, Ruoqian Cheng ¹</p>		<p>Context: Long-acting recombinant human growth hormone (rhGH) has transformed the treatment of growth hormone deficiency (GHD). However, the possibilities and rationale for flexible time regimens await.</p> <p>Aim: We studied the efficacy of biweekly versus weekly PEGylated rhGH (PEG-rhGH) therapy in GHD children.</p> <p>Design and patient settings: This multicenter phase IV trial with a non-inferiority threshold of 20% enrolled 585 Tanner stage I GHD children.</p> <p>Intervention: Subjects were randomized to receive 0.20 mg/kg once weekly or biweekly PEG-rhGH, or 0.25 mg/kg.w rhGH once daily for 26 weeks.</p> <p>Main outcome measures: The primary outcome was the SD height for chronological age (HtSDSCA) score at week 26 and safety measures</p>

No	Title of scientific work & Author	Method	Results
	<p>Long-acting recombinant human growth hormone (rhGH) has transformed the treatment of growth hormone deficiency (GHD).</p>		<p>including adverse events (AE), changes in IGF-2, and IGFBP-2.</p> <p>Results: At week 26, the median HtSDSCA changed from -2.75, -2.82, and -2.78 to -2.31, -2.43, and -2.28 with weekly and biweekly PEG-rhGH, and daily rhGH. The difference in HtSDSCA was 0.17 ± 0.28 between weekly and biweekly PEG-rhGH, and 0.17 ± 0.27 between daily rhGH and biweekly PEG-rhGH, failing at the non-inferiority threshold. However, the high rates of children receiving biweekly PEG-rhGH reached 76.42%-90.34% and 76.08%-90.60%, respectively, of children receiving weekly PEG-rhGH and daily rhGH. AE rates were comparable between groups. No statistical differences were observed in IGF-2 and IGFBP-2 levels between the groups. IGFBP-2 levels decreased over time in all groups, with no significant differences in IGF-2 and IGFBP-2 changes between the three treatment groups.</p> <p>Conclusions: Despite a particularly high-speed boost, biweekly PEG-rhGH failed within the threshold of non-inferiority compared to weekly PEG-rhGH or daily rhGH. Compared with short-acting rhGH, long-acting PEG-rhGH did not significantly</p>

No	Title of scientific work & Author	Method	Results
			<p>increase tumor-associated IGF-2 and IGFBP-2 expression.</p> <p>Clinical trial registration: clinicaltrials.gov, identifier NCT02976675.</p>
	<p>Role of maternal preconception nutrition on offspring growth and risk of stunting across the first 1000 days in Vietnam: A prospective cohort study</p> <p>Melissa F Young ¹, Phuong Hong Nguyen ^{2,3}, Ines Gonzalez Casanova ¹, O Yaw Addo ¹, Lan Mai Tran ¹, Son Nguyen ¹, Reynaldo Martorell ¹, Usha Ramakrishnan ¹</p> <p>nutritional status of preconception mothers (PMNS)</p>		<p>Growing evidence supports the role of preconception maternal nutritional status (PMNS) on birth outcomes; however, evidence for an association with child growth is limited. We examined the association between PMNS (height, weight and body mass index-BMI) and offspring growth during the first 1000 days. We used prospective cohort data from a randomized controlled trial of preconception micronutrient supplementation in Vietnam, PRECONCEPT (n = 1409). Poisson regression model was used to examine the relationship between PMNS and the risk of stunting (<-2 HAZ) at 2 years. We used a pathway analytic model to examine the association with PMNS on fetal growth (ultrasound measurements) and HAZ progeny at birth and 2 years. All models were adjusted for the child's age, gender, gestational weight, education, socioeconomic status and treatment group. One third of women had a preconceptional height < 150 cm or a weight < 43 kg. Women with preconception height < 150 cm or weight < 43 kg had an increased risk</p>

No	Title of scientific work & Author	Method	Results
			<p>of having a stunted child at 2 years (risk ratio IRR: 1.85, 95% CI 1.51-2.28; IRR 1.35, 95% CI 1.10-1.65, respectively). While the traditional low BMI limit (<18.5 kg/m²) was not significant, the low BMI threshold (<17.5 kg/m² or <18.0 kg/m²) was significantly associated with a 1.3-fold increased risk of stunting. 28; IRR 1.35, 95% CI 1.10-1.65, respectively). While the traditional low BMI limit (<18.5 kg/m²) was not significant, the low BMI threshold (<17.5 kg/m² or <18.0 kg/m²) was significantly associated with a 1.3-fold increased risk of stunting. 28; IRR 1.35, 95% CI 1.10-1.65, respectively). While the traditional low BMI limit (<18.5 kg/m²) was not significant, the low BMI threshold (<17.5 kg/m² or <18.0 kg/m²) was significantly associated with a 1.3-fold increased risk of stunting. In the pathway model, PMNS was positively associated with fetal growth (ultrasound measurement) and offspring HAZ at birth and 2 years. For every 1 standard deviation (SD) increase in maternal height and weight, the offspring's HAZ at 2 years increased by 0.30 SD and 0.23 SD, respectively. In conclusion, PMNS affects the linear growth of offspring and the risk of stunting in the first 1000 days. This finding underscores the importance of broadening the scope of current policies and</p>

No	Title of scientific work & Author	Method	Results
			strategies to include the preconception period to reduce child stunting.
	<p>A Cluster-Randomized Trial to Test Sharing Histories as a Training Method for Community Health Workers in Peru Laura C Altobelli ^{1,2,3}, José Cabrejos-Pita ^{2,4}, Mary Penny ⁵, Stan Becker ⁶</p> <p>CHW training, Sharing Histories (SH), where CHW</p> <p>CHWs as agents of change among literate mothers to reduce child stunting</p>		<p>Background: Public health workers (CHWs) are increasingly being deployed to support maternal adoption of healthy home practices in low- and middle-income countries. However, little is known about how best to train them for the skills and cultural competencies needed to support maternal health behavior change. We tested CHW's training method, Sharing Histories (SH), in which CHWs recounted their own birthing and parenting experiences to build new learning.</p> <p>Methods: We conducted a randomized embedded cluster trial in rural Peru in 18 matched clusters. Each cluster is a primary health facility catchment area. Government health staff trained female health workers using SH (experimental group) or standard training methods (control group). All other training and systems strengthening interventions were the same between the study groups. All CHWs made home visits with expectant mothers and children aged 0-23 months to teach, monitor health practices and danger signs, and refer. The primary outcome was height for age (HAZ) <-2 Z-score (stunting) in children aged 0-23 months. A household survey was</p>

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No	Title of scientific work & Author	Method	Results
			<p>conducted at baseline (606 cases) and a 4-year follow-up (606 cases).</p> <p>Results: Maternal and child characteristics were similar in both study groups at baseline and follow-up. Difference-within-difference analysis showed that the mean change in HAZ was not significantly different in the experimental versus control groups from baseline to end (P=0.469). However, in the subgroup of literate mothers, the mean HAZ increased by 1.03 on the Z-score scale in the experimental group compared to the control group from baseline to end (P=0.059). Using the general estimate equation, we showed that the stunting in children of literate mothers was significantly reduced (Beta=0.77; 95% confidence interval=0.23, 1.31; P<.01), adjusted for covariates.</p> <p>Conclusions: Compared with standard training methods, SH may have increased the effectiveness of CHWs as change agents among literate mothers to reduce child stunting. Stunting experienced by children of illiterate mothers may involve unaddressed determinants of stunting.</p>

No	Title of scientific work & Author	Method	Results
	<p>Using a Community-Based Early Childhood Development Center as a Platform to Promote Production and Consumption Diversity Increases Children's Dietary Intake and Reduces Stunting in Malawi: A Cluster-Randomized Trial</p> <p>Aulo Gelli¹, Amy Margolies¹, Marco Santacroce², Natalie Roschnik³, Aisha Twalibu³, Mangani Katundu⁴, Helen Moestue⁵, Harold Alderman¹, Marie Ruel¹</p> <p>agriculture and nutrition-based interventions</p>		<p>Background: Children in Malawi face nutritional risks associated with a poor quality diet and chronic malnutrition.</p> <p>Objectives: This study evaluates the impact of a 1-year early childhood development center-based agricultural and nutrition intervention aimed at increasing household production diversity, mothers' knowledge of nutrition and child feeding practices, and children's diets and anthropometric measures.</p> <p>Methods: A longitudinal cluster randomized controlled trial was conducted in 60 community-based childcare centers (CBCC), which included 1248 preschool children (aged 36-72 months) and 304 younger siblings (aged 6-24 months). The CBCCs were randomly assigned to 1) a control group that provided the Save the Children's ECD program or 2) a treatment group that provided a standard ECD program with additional activities to increase production of nutritious foods and communication of behavior change to improve eating patterns and care practices for young children. The primary outcomes were household production and production diversity, enrollment and attendance of preschool children, and food intake as measured by quantitative 24-hour recall and minimum dietary diversity</p>

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No	Title of scientific work & Author	Method	Results
			<p>for younger siblings. Secondary outcomes included anthropometric measures for preschoolers and younger siblings, child development scores for preschoolers, and women's asset ownership and time use (the latter 2 are not discussed in this article). We used the estimated difference-in-difference (DID) to assess impact.</p> <p>Results: Compared with the control group, preschool children in the intervention group experienced increased nutritional intake and greater dietary diversity. No impact on anthropometric measures was seen in preschool children. Siblings in the intervention group had a greater increase in height-for-age z-scores than children in the control group (DID: 0.44; P<0.05) and a greater decrease in stunting prevalence (DID: -17 percentage points; P < 0.05). The plausible impact on younger sibling growth is supported by effects along the program impact pathway, including nutritious food production, caregiver knowledge, and dietary diversity.</p> <p>Conclusion: Implementing integrated agriculture and nutrition interventions through the ECD platform benefits children's diets and reduces stunting among younger siblings of targeted preschoolers. This trial is registered in</p>

No	Title of scientific work & Author	Method	Results
			the ISRCTN registry as ISRCTN96497560.
	<p>Preconception nutrition intervention improved birth length and reduced stunting and wasting in newborns in South Asia: The Women First Randomized Controlled Trial</p> <p>Sangappa M Dhaded ^{1,K}, Michael Hambidge ^{1,Sumerian}, Aziz Ali ^{3,Manjunath}, Somannavar ^{1,Sarah}, Saleem ^{3,Omrana}, Pasha ^{3,Umber}, Khan ^{3,Veena}, Herekar ^{1,Sunil}, Vernekar ^{1,Yogesh}, Kumar S ^{1,Jamie E}, Westcott ^{2,Vanessa R}, Thorstein ^{4,Amaanti}, Sridhar ^{4,Abhik}, Das ^{4,Elizabeth}, McClure ^{4,Richard J}, Derma ^{3,Robert L}, Goldenberg ^{6,Marion}, Koso-Thomas ^{7,Shivaprasad S}, Goudar ^{1,Nancy F}, Krebs ²</p>		<p>South Asia has >50% of the global burden of low birth weight (LBW). The aim was to determine the extent to which maternal nutritional intervention initiated before conception or in the first trimester enhances fetal growth in this region. This is a secondary analysis of combined newborn anthropometric data for South Asian locations (India and Pakistan) in the First Women's Preconception Maternal Nutrition Trial. Participants were 972 newborns to poor, rural mothers who were not selected based on nutritional status, and were randomized to receive daily lipid-based micronutrient supplements starting 3 months before conception (Arm 1), in the 1st trimester (Arm 2), or not at all (Arm 3). Additional protein energy supplements are given if BMI <20 kg/m² or pregnancy weight gain is less than guidelines. Gestational age was determined in the 1st trimester and anthropometry of the newborn was obtained <48 hours postpartum. Mean difference at birth between Arm 1 vs. 3 is +5.3mm in length and +89g in weight. Effect size (ES) and relative risk (RR) with 95% CI for Arm 1 vs. 3 are: length-for-age</p>

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			Z score (LAZ) +0.29 (0.11-0.46, p = 0.0011); weight Z score for age (WAZ) +0.22 (0.07-0.37, p = 0.0043); weight-length-ratio-to-age Z-score
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No	Title of scientific work & Author	Method	Results
	<p>where maternal nutrition intervention begins before conception or in the first trimester</p>		<p>(WLRAZ) +0.27 (0.06-0.48, p = 0.0133); LAZ<-2, 0.56 (0.38-0.82, p = 0.0032); WAZ < -2, 0.68 (0.53-0.88, p = 0.0028); WLRAZ < -2, 0.76 (0.64-0.89, p = 0.0011); small for gestational age (SGA), 0.74 (0.66-0.83, p<0.0001); low birth weight 0.81 (0.66-1.00, p = 0.0461). For Arm 2 vs. 3, LAZ, 0.21 (0.04-0.38); WAZ < -2, 0.70 (0.53-0.92); and SGA, 0.88 (0.79-0, 97) only slightly different. ES or RR did not differ for preterm delivery for either Arm 1 vs. 3 or 2 vs. 3. In conclusion, point estimates for continuous and binary anthropometric outcomes are consistently more favorable when maternal nutritional supplementation initiated 3 months before conception demonstrates a benefit for fetal growth improving nutrition for women in this population.</p>
	<p>Evaluation of mobile phone-based Positive Deviance/Hearth child undernutrition program in Cambodia Melissa F Young ¹,Good Diane ²,Kathryn Reinsma ²,Lucas Gosdin ¹,Hannah Paige Rogers ³,Sreymom Oy ³,Wuddhika Invong ³,Heang Hen ⁴,Sopheap</p>		<p>Child malnutrition in Cambodia is a public health problem that constantly requires low-cost and scalable solutions. The increasing use of cell phones in low-resource settings represents an opportunity to replace in-person counseling visits with telephone calls; However, the question remains on its relative effectiveness. Our aim was to evaluate the impact of two options for delivering World Vision's infant and child feeding counseling (PMT) program: (1) the traditional Positive/Hearth Post (PDH) program with in-person visits or (2) PDH with</p>

No	Title of scientific work & Author	Method	Results
	<p>Ouk¹, Chhea², Chhorvann³</p> <p>to evaluate the impact of two options for delivering World Vision's infant and child feeding counseling (PMT) program: (1) the traditional Positive/Hearth Post (PDH) program with in-person visits or (2) PDH with Interactive Voice Calls (PDH-IVC) which</p>		<p>Interactive Voice Calls (PDH). -IVC) which integrates telephone calls replaced 62.5% of face-to-face interactions between caregivers and volunteers, compared with standard of care (SOC). We conducted a longitudinal cluster randomized controlled trial in 361 children aged 6–23 months. We used an adjusted difference-in-difference approach using baseline, midline (3 months) and endline (12 months) surveys to evaluate the impact on child growth among the three groups. At baseline, nearly a third of children were underweight, and more than half were food insecure. At the midline the PDH group and the PDH-IVC group had increased body weight z-scores for age (0.13 DID, $p = 0.011$; 0.13 DID, $p = 0.02$, respectively) and body weight z-scores. for height (0.16 DID, $p = 0.038$; 0.24 DID, $p = 0.002$), relative to SOC. There was no difference in the children's height-for-age z scores. At the end, impact was maintained only in the PDH-IVC group for weight z score for age (0.14 DID, $p = 0.049$), and the prevalence of underweight decreased by 12.8 percentage points ($p = 0.036$), relative to SOC. The integration of telephone-based PMBA counseling is a potentially promising solution to reduce the burden of in-person visits; however, modest improvements indicate the need to combine it with</p>

No	Title of scientific work & Author	Method	Results
			<p>other strategies to improve child nutrition.</p> <p>Keywords: Cambodia; Positive Foreign Exchange/Hearth Program; children; underweight.</p>
	<p>Behavior Change Interventions Delivered through Interpersonal Communication, Agricultural Activities, Community Mobilization, and Mass Media Increase Complementary Feeding Practices and Reduce Child Stunting in Ethiopia</p> <p>Sunny S Kim¹, Phuong Hong Nguyen¹, Yisehac Yohannes¹, Yewelsew Abebe², Manisha Tharaney³, Elizabeth Drummond⁴, Edward A Frongillo⁵, Marie T Ruel¹, Purnima Menon⁶</p> <p>intensive behavior change intervention through 4 platforms: interpersonal communication (IPC), nutrition sensitive agricultural activities (AG), community</p>		<p>Background: Appropriate infant and child feeding practices are essential for optimal child growth and development, but in Ethiopia, complementary feeding practices are very poor. Alive & Thrive (A&T) provides intensive behavior change interventions through 4 platforms: interpersonal communication (IPC), nutrition sensitive agricultural activities (AG), community mobilization (CM), and mass media (MM).</p> <p>Objectives: The aim of this study was to evaluate the impact of intensive A&T versus non-intensive interventions (standard nutrition counseling and agricultural extension services and less intensive CM and MM) on CF practice and knowledge and child anthropometric outcomes.</p> <p>Methods: We used a randomized cluster-evaluation design with a cross-sectional survey among households with children aged 6–23.9 months [n = 2646 at baseline (2015) and n = 2720 at the end (2017)]. We obtained a difference-in-difference impact</p>

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No	Title of scientific work & Author	Method	Results
	mobilization (CM), and mass media (MM).		<p>estimate (DDE) and performed a dose-response and pathway analysis to document the likely impact.</p> <p>Results: At the endline, IPC exposure was 17.8-32.3%, AG exposure was 22.7-36.0%, CM exposure was 18.6-54.3%, and MM exposure was 35.4% at intensive group. Minimum dietary diversity and minimum acceptable diet increased significantly in the intensive group but remained low at the end (24.9% and 18.2%, respectively). A significant decrease in the prevalence of stunting was observed (DDE: -5.6 percentage points; $P < 0.05$) in children aged 6-23.9 months, decreasing from 36.3% to 22.8% in the intensive group. The dose-response analysis showed a higher likelihood of minimum dietary diversity (OR: 3.3; 95% CI: 2.2, 4.8) and minimum meal frequency (OR: 1.9; 95% CI: 1.4, 2.6) and a higher z-score for the same age. was higher (HAZ) (β: 0.24; 95% CI: 0.04, 0.4) among women exposed to 3 or 4 platforms.</p> <p>Conclusion: Delivery of social and behavioral change interventions using multiple platforms was feasible and effective, resulting in improvements in CF practices and child stunting over a 2 year period. There is a need for continued efforts, however, to broaden the scope of interventions and to improve CF practices in</p>

No	Title of scientific work & Author	Method	Results
			<p>Ethiopia. This trial is registered on clinicaltrials.gov as NCT02775552.</p> <p>Keywords: Ethiopia; child malnutrition; complementary foods; effectiveness evaluation; baby feeding; child feeding.</p>
	<p>Child stunting concurrent with wasting or being overweight: A 6-y follow up of a randomized maternal education trial in Uganda</p> <p>Per O Iversen¹, Moses Ngari², Ane C Westerberg³, Grace Muhoozi⁴, Prudence Atukunda⁵</p> <p>Affiliates expand</p> <p>Sagepub.com</p>		<p>Objective: There is a paucity of longitudinal data on combined anthropometric deficiencies in children. Here, we present data on child stunting along with underweight or overweight among children in a 6-year follow-up study of a maternal education trial in rural Uganda.</p> <p>Methods: We previously conducted a randomized controlled trial in which half of 511 mothers of 6 to 8 months of age children were provided with 6 months of education on child nutrition, hygiene and stimulation. Anthropometry and prevalence of stunting with underweight or overweight were determined. We applied a stratified mixed effects logistic regression model and 2 statistics to assess the intervention effect and prevalence trends over time.</p> <p>Results: Complete data sets were obtained from 307 of 511 children (60%). The prevalence of stunting and wasting or being overweight was both <7%, and did not change significantly over time. Notably, the prevalence of concurrent stunting and overweight</p>

No	Title of scientific work & Author	Method	Results
			<p>was significantly reduced in the intervention group compared with controls among children aged 36 months and 60 to 72 months, with a corresponding odds ratio at 0.24 (95% confidence interval, 0.06). -0.90) and 0.10 (95% confidence interval, 0.01-0.82), respectively.</p> <p>Conclusion: The prevalence of stunting along with being underweight or overweight remained low throughout the observation period. Interventions may have reduced concurrent stunting and overweight over time</p> <p>Keywords: Anthropometry; Children; Mother's education; Obesity; Randomized trial; Stunting; Ugandan; Wasting.</p>

DISCUSSION

The results of the screening showed a total of 174 studies, and 20 articles that met the criteria. There are stunting reduction measures with nutritional supplements and additional food (1 article discusses supplements for teenage girls, 4 articles for mothers before conception, and 2 articles for mothers during pregnancy and lactation, and 8 articles for children), 4 articles on educational mechanisms with various platforms and assistance and 1 article on the administration of growth hormone. Based on the results above, it can be answered why nutrition plays an important and dominant role in stunting improvement. Short toddlers describe the existence of chronic nutritional problems, influenced by the condition of the mother/prospective mother, fetal period, and infancy/toddler, including diseases suffered during infancy. Like other nutritional problems, it is not only related to health problems, but is also influenced by various other conditions that indirectly affect ushealthtoddlers, therefore improvement efforts. Specific nutrition interventions are generally carried out in the health sector, but only contribute 30%, while 70% are the contribution of sensitive nutrition interventions involving various sectors such as food security, availability of clean water and sanitation, poverty alleviation, education, social, and so on. Specific nutrition interventions are generally carried out in the health sector, but only contribute 30%, while 70% are contribution to sensitive nutrition interventions involving various sectors such as food security, availability of clean water and sanitation, poverty alleviation, education, social, and so on.(Ministry of Health RI, 2016).In infants, breast milk

plays a very important role in fulfilling their nutrition. Consumption of breast milk also increases the baby's immune system, thereby reducing the risk of infectious diseases. Until the age of 6 months, it is recommended that babies only consume exclusive breastfeeding. Based on Government Regulation Number 33 of 2012, exclusive breastfeeding is breast milk that is given to babies from birth for six months, without adding and/or replacing with other foods or drinks (except drugs, vitamins and minerals). After the age of 6 months, in addition to breast milk, additional food is given (Ministry of Health RI, 2016).

CONCLUSION

The conclusion of this study is that The results of the screening showed a total of 174 studies, and 20 articles that met the criteria. There are stunting reduction measures with nutritional supplements and additional food (1 article discusses supplements for teenage girls, 4 articles for mothers before conception, and 2 articles for mothers during pregnancy and lactation, and 8 articles for children), 4 articles on educational mechanisms with various platforms and assistance and 1 article on the administration of growth hormone. That the most decisive action in reducing the incidence of stunting is by fulfilling nutritional needs from an early age, namely from adolescence, before the period of conception, as well as direct nutrition improvement in infant/child nutrition

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CONFLICT OF INTEREST

'The author declares that there is no conflict of interest'.

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Knowledge of stunting nutrition in children under five years: A systematic review

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ABSTRACT

The impact caused by stunting can cause children to experience cognitive disorders, experience motor disorders, body growth, increase morbidity and mortality. Lack of mother's knowledge is one of the factors for stunting in toddlers. Mother's level of knowledge is closely related to the level of awareness of the health of her child.

Introduction: The purpose of this paper is to review selected studies regarding nutritional intervention knowledge in stunted children under five years of age.

Methods: Selected studies from the Scopus database, web of science, science direct, pubmed, and springer link. The keywords used to search for research and articles from the selected database were: stunting, intervention, knowledge, nutrition, toddlers, cross sectional, open access, and research articles. Articles published from 10 years ago 2010-2022 reporting nutrition affects growth in children under five years were included in this review. 13 articles that met the study inclusion criteria. The findings of this review highlight that stunting is influenced by several factors. **Results:** Children whose mothers did not receive postnatal vitamin A supplementation had a greater chance of experiencing severe stunting than their peers. Exclusive breastfeeding, and use of tablet drugs deworming in the last 6 months is a predictor of stunting in children aged >12 months, exposing them to stunting; while exclusive breastfeeding and the use of deworming tablets are protective

Conclusions: The magnitude of stunting is a critical public health problem. Therefore, emphasis should be placed on increasing supplementation coverage and building knowledge about appropriate child feeding practices.

Keywords: stunting, intervention, knowledge, nutrition, a cross sectional

Introduction

Stunting in toddlers needs special attention because it has an impact on the inhibition of physical growth, mental development, and the overall health status of children (Masrul ES. 2018). Stunting is caused by two group factors, specifically direct and indirect factors. The direct cause of stunting is nutritional intake that is not in accordance with the needs of children (Loya RR, Nuryanto N, 2017). The indirect cause of stunting is parenting (Yudianti Y, 2016). Parenting practices include child health care, dietary diversity, stimulation, symptoms of depression, mother's knowledge of child development, and sociodemographic and family indicators (Indonesian Pediatrician Association; 2015). Stunting in children will have an impact on their productivity in adulthood. Stunting children also have difficulty learning to read,

Method

This study, using a systematic review methodology identifies relevant studies. Search data and information by using an electronic site as a source of data taken. Search articles using PRISMA (Preferred Reporting Items For Systematic Reviews & Meta-Analyses) with instruments using Flowcharts based on the 2009 PRISMA checklist, removing articles that do not meet the identified criteria, screening and eligibility and finally downloading the appropriate or relevant articles. The first step is to open the Scopus database, Web Of Science, Science direct, pubmed and springer link.

Materials and methods

We carried out a systematic review after reporting items selected for systematic review and Meta Analysis (PRISMA Guidelines) (Mother et al, 2009).

Document Selection

We identified search terms to describe Stunting. We selected using the keywords Stunting AND Intervention AND Knowledge AND Nutrition AND "Cross Sectional" in journals in Scopus, Web Of Science, Science direct, Pubmed and Springer links. Found 1,731 articles based on searches across multiple databases. Then we selected full-text articles with access to vulnerable articles in 2012-2022, open access and research articles we found 217, then re-selected according to the title of inclusion and exclusion criteria as a whole we got 10 articles for further analysis.

Inclusion and Exclusion Criteria

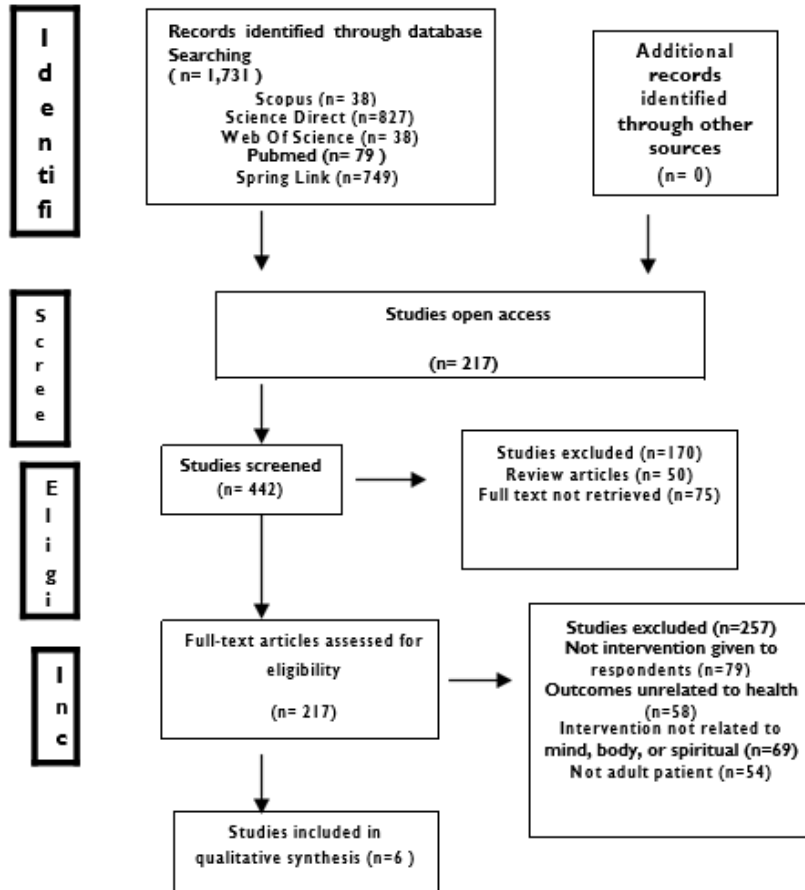
The inclusion criteria in this article that are considered suitable for systematic review are the journals of the research, reported in English with vulnerability 2012-2022, researchers used a systematic review of all types of study designs. Studies with knowledge of stunting in children under 5 years old using a cross sectional study.

Study Selection

In the PRISMA guidelines, the articles found are then selected starting from the title and the suitability of the abstract. And the same article will be deleted. The text obtained in the selected articles that meet the inclusion criteria will be taken to meet all the inclusion criteria and reviewed.

Data Extraction

The data obtained in the search were assessed by including author, quality, year, country, design, age and sample size, intervention, results and conclusions in an article evaluating several factors and the benefits of the intervention findings carried out.



The Experience Of Covid-19 Vaccine Program In The Banyuwangi Regency Community: An Exploration Study

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ABSTRACT

Introduction: The Covid-19 vaccine program is one of the Indonesian government's efforts in dealing with the Covid-19 problem. The government's plan to implement a Covid-19 vaccine program in Indonesia has received various responses from the public. The difference in knowledge gained will affect the vaccination experience for each individual. The purpose of this study is to discuss the experience of the Covid-19 vaccine program in the people of Banyuwangi Regency.

Methods: Qualitative research using phenomenological research design with Colaizzi data analysis method. The sampling technique used purposive sampling and obtained 11 participants. The approach used in this research is to use observation techniques and in-depth interviews. Data validity uses credibility, dependability, confirmability, and transferability. The inclusion criteria in this study were that the age of the participants was more than 18 years with a minimum of having received the first dose of the Covid-19 vaccine.

Results: In this study, 4 themes and 14 sub-themes were realized. The 4 themes are understanding about vaccine, support systems, self motivation, and survive for side effect.

Conclusions: The experience of the Covid-19 vaccine program in Banyuwangi Regency depends on the understanding obtained, an adequate support system, strong self-motivation, and resistance to the effects caused after vaccination so that increased education is needed to achieve maximum understanding.

Keywords: Covid-19 vaccine; experience; exploration study

INTRODUCTION

Prevention of Covid-19 has also entered a new stage with the availability of a Covid-19 vaccine that has gone through several phases of clinical trials and can be mass-produced. Good immunity helps reduce the risk of spreading Covid-19. Ways to increase immunity are taking vitamins, utilizing solar energy, light activities, and vaccinating. This vaccine has several benefits, namely protecting from exposure to the virus and can reduce the spread of the virus (Abna *et al.*, 2021). Another important

benefit of vaccination is that it can break the chain of virus transmission with human immunity, which is called "herd immunity" or "community protection" (Pang *et al.*, 2020). The government's plan for a Covid-19 vaccine for the entire population of Indonesia has generated various responses in the community. The number of notifications that come from many sources can affect the public's perception of vaccines. The negative perception of vaccines experienced by the community can trigger anxiety. People who are willing to be vaccinated say that they believe vaccination can protect themselves, their families and others. Meanwhile, people who refuse vaccines have doubts about vaccines. Doubts that occur can be caused by the accuracy of the source of the information received (Putri, 2020; Arumsari, Desty and Kusumo, 2021).

The Indonesian Ministry of Health survey with the United Nations Children's Fund (UNICEF) and WHO in 34 provinces in Indonesia in September 2020 showed that around 64.8% of respondents agreed to undergo the Covid-19 vaccination, 27.6% were hesitant, even 7.6% rejected. This is due to many factors, including misinformation about Covid -19 which has spread throughout the media (Martini, Kusumawaty and Yunike, 2021). This vaccine has several benefits, namely protecting from exposure to the virus and can reduce the spread of the virus (Abna *et al.*, 2021; Hannan, 2021). Another important benefit of vaccination is that it can break the chain of virus transmission with human immunity, which is called "herd immunity" or "community protection" (Pang *et al.*, 2020; Reiter, Pennell and Katz, 2020; El-Elimat *et al.*, 2021; Elharake *et al.*, 2021).

Vaccine education is critical to stressing the seriousness of Covid -19, in particular the potential long-term negative health consequences, addressing common vaccine side effects by dispelling myths, and focusing on the most vulnerable. These efforts can increase the perception of vulnerability and severity, which can encourage people to carry out protective behavior, including vaccination (Kostoff *et al.*, 2020; Qiao, Tam and Li, 2022). The Banyuwangi Government held a mass immunization at the Tawangalun Sports Center in Banyuwangi on Saturday, June 26th, 2021. Many of the vaccination participants had burst out of the Tawangalun Sport Center, according to detik News journalist Ardian Fanani. The individuals did this because they needed a vaccination card to get into work. Supriyono, a resident of Kebalenan Banyuwangi, claimed to have received word that his direct financial support (BLT) would be canceled if he did not vaccinate against Covid-19. The government has a number of options for speeding up the vaccine campaign in Indonesia, including going door to door. This research uses an exploration study to find out in depth about the explore the experience of Covid-19 vaccine program in Banyuwangi Regency.

METHODS

Study Design

A qualitative research with a phenomenological approach that aims to explore the experience of Covid-19 vaccine program. This research uses a descriptive research design, which is a research design delivered with how to describe and explain research problems.

Population, Participants, and Research Setting

The populations of this research is in the Banyuwangi Regency population census data, it was found that the population reached 1,708,114 inhabitants. The number of samples in this study was 11 participants with different sub-districts. The inclusion criteria of this research are: Banyuwangi Regency community, over 18 years old, and have received the Covid-19 vaccine at least the first dose, with

exclusion criteria are: unable to provide information/become participant and health workers. Sampling technique using purposive sampling where the researcher selects participants according to the research objectives based on predetermined criteria. The approach used in this research is to use observation and in-depth interview.

Instruments

The instrument in this study is a human instrument that functions to determine the focus of research, select informants as data sources, collect data, assess data quality, analyze data, interpret data, and draw conclusions based on findings. In addition to using human instruments, they also used interview guidelines and interview transcripts. The questions in this study include how knowledge about vaccination is known, what is the perception of vaccination, what are the preparations before vaccination, what is the situation and circumstances during vaccination, and what are the effects after vaccination. The tools used were a notebook to record the results of observations, a mobile phone recorder to record interviews which were then used as interview transcripts, and a cellphone camera to capture videos and pictures of research activities as supporting data in this research.

Data Analysis

Data analysis in this research using measures from Colaizzi (1978) (Polit, 2018). The steps of data analysis according to Colaizzi (1978) that will be carried out by researchers are: (1) read all protocols to acquire a feeling for them, (2) review each protocol and extract significant statements, (3) spell out the meaning of each significant statement, (4) organize the formulated meanings into clusters of themes, (5) integrate results into an exhaustive description of the phenomenon under study, (6) formulate an exhaustive description of the phenomenon under study in as unequivocal a statement of identification as possible, (7) ask participants about the findings thus far as a final validating step.

Ethical Clearance

The ethical license was approved by the Health Research Ethics Committee Institute Of Health Science Banyuwangi No. 021/01/KEPK-STIKESBWII/2022. Respondents were informed and agreed that this research was voluntary. The researchers guaranteed the confidentiality and anonymity of respondents' data.

Table 1. Participants’s characteristics

Age/ Gender	Marital Status	Last Education Level	Occupation	Ethnicity	Sub-district	Vaccine Status	Vaccine Type	Vaccine Site	Adverse Events After Immunization
P1 (21y/o) /Female	Single	SHS	Student	Jawa	Cluring	Second dose	Astra Zeneca	Hospital	Yes
P2 (18y/o) /Female	Single	SHS	Student	Osing	Rogojampi	Second dose	Astra Zeneca	Public health center	No
P3 (19y/o) /Female	Single	SHS	Student	Jawa	Srono	Second dose	Astra Zeneca	Village office	Yes
P4 (53y/o) /Female	Married	Bachelor	Teacher	Jawa	Blimbingsari	Second dose	Sinovac	School	Yes

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P5 (53y/o) /Male	Married	SHS	Entrepreneur	Jawa	Genteng	Second dose	Sinovac	Public health center	No
P6 (51y/o) /Female	Married	Elementary School	Housewife	Madura	Songgon	Second dose	Sinovac	Public health center	Yes
P7 (23y/o) /Male	Single	Bachelor	Entrepreneur	Jawa	Tegaldlimo	Second dose	Astra Zeneca	Hospital	Yes
P8 (21y/o) /Female	Single	SHS	Student	Jawa	Purwoharjo	Second dose	Astra Zeneca	Village office	Yes
P9 (21y/o) /Male	Single	SHS	Student	Jawa	Muncar	Second dose	Astra Zeneca	Village officer's house	Yes
P10 (26y/o) /Male	Single	Graduate	Lecturer	Jawa	Wongsorejo	Second dose	Astra Zeneca	Hospital	Yes
P11 (22y/o) /Male	Single	SHS	Student	Osing	Singojuruh	Second dose	Sinovac	District office	No

RESULTS

Table 1 shows the profiles of 11 participants who were involved in this study. Based on the table above, the majority of participants were female as many as 6 participants (54.5%). The majority of the age of participants were in the late teens category according to the Ministry of Health of the Republic of Indonesia 2009 (17-25 years) as many as 7 participants (63.6%). The level of education is the majority of senior high school as many as 7 participants (63.6%). The majority of students are 6 participants (54.5%). The ethnicity of the majority of the Javanese as many as 8 participants (72.7%). In this research, the participating sub-districts varied, among others; Cluring, Rogojampi, Srono, Blimbingsari, Genteng, Songgon, Tegaldlimo, Purwoharjo, Muncar, Wongsorejo, and Singojuruh. All participants had received the second dose of vaccine (100%) with the majority of Astra Zeneca as many as 6 participants (54.5%). The majority of vaccine sites are Hospital and Public Health Centers with as many as 3 participants (27.2%). The majority of participants experienced adverse events after immunization as many as 8 participants (72.7%). In this study, 4 themes and 14 sub-themes were realized. There are four main themes, namely 1) understanding about vaccine, 2) support systems, 3) self motivation, and 4) survive for side effect. This study reveals that the experience of the Covid-19 vaccine program varies greatly and differs depending on the background of the participants.

Table 2. Theme Distribution

Themes	Sub-themes and Categories
Understanding about vaccine	1. Knowledge
	1) Lack of knowledge
	2) Good knowledge
	3) Misinformation
	4) Lack of awareness
	2. Perception
	1) Psychological response

	<ul style="list-style-type: none"> 2) Behavior 3) Vaccine effectiveness 3. Resources <ul style="list-style-type: none"> 1) Mass media 2) Social media 3) Community
Support system	<ul style="list-style-type: none"> 1. Instrumental support <ul style="list-style-type: none"> 1) Government 2) Family 3) School 2. Infrastructure <ul style="list-style-type: none"> 1) Service provider 2) Vaccine site 3. Vaccine situation <ul style="list-style-type: none"> 1) Conducive 2) Not conducive
Self motivation	<ul style="list-style-type: none"> 1. Hoping for government help <ul style="list-style-type: none"> 1) Social assistance 2. Administrative requirements <ul style="list-style-type: none"> 1) Take public transportation 2) Enter a public place 3) Profession 4) Driving requirement 3. Health fields <ul style="list-style-type: none"> 1) Prevention of being infected with a virus 2) Keep health 4. Obligation <ul style="list-style-type: none"> 1) Education 2) Obey the rules 5. Self strength <ul style="list-style-type: none"> 1) Surrender 2) Find the truth of the information
Survive for side effect	<ul style="list-style-type: none"> 1. Activities after vaccine <ul style="list-style-type: none"> 1) Maintain food and drink intake 2) Physical activity 3) Rest 4) Take medicine 2. Condition after vaccine <ul style="list-style-type: none"> 1) Biological effect 2) Psychological effect 3) Health protocol behavior 3. Suggestion for government regulation <ul style="list-style-type: none"> 1) Increase public knowledge 2) About vaccine program

Theme I: Understanding about vaccine

The understanding theme explains the level of participants' knowledge of the Covid-19 vaccine program. This theme is identified through sub-themes 1) knowledge; 2) perception; and 3) resources.

Knowledge

The 13th International Nursing Conference

Knowledge here is about how well participants understand the Covid-19 vaccine program. Based on the results of the in-depth interview, participants stated that there were several categories of knowledge.

“E, yes, if it's like a vaccine, it's like giving medicine, sis, it's like a regular injection, then at most the injection is done, that's all, that's all. So maybe this is less or lack of education” (P1)

“As far as the vaccine's effect is concerned, it's a reaction to what it's called, an attenuated virus, so it's the same for me that the vaccine puts the virus into our bodies” (P7)

Perception

The perceptions conveyed by the participants also affect the action to do Covid-19 vaccine program.

“Wow, panic. Especially in my family who just got vaccinated it's me” (P1)

” That's where I was excited if I wanted to take part in the vaccine when it was ready in Indonesia” (P10)

Resources

Information about the Covid-19 vaccine program is obtained from many sources.

“Yes from TV yeah” (P5)

“There is Instagram, the first is WhatsApp” (P2)

“From neighbors” (P6)

Theme 2: Support system

The support system theme explains that support for carrying out the Covid-19 vaccine program is supported by several aspects. This theme is identified through sub-themes 1) instrumental support; 2) infrastructure; and 3) vaccine situation.

Instrumental support

Providing financial assistance, goods, or services as well as this form of support uses materials to provide real (physical) and direct assistance to those in need. Instrumental support is important in providing support to people who will undergo the Covid-19 vaccine program.

“We prioritize this one, that's how we follow it because of the appeal from the health office and vaccine officers” (P4)

“If one's own family supports it, some supports vaccines, and even suggests vaccines” (P7)

Infrastructure

Infrastructure is an important part of providing support for the Covid-19 vaccine program.

“Yes, from the campus program, sist” (P1)

“Here at the village hall here” (P3)

Vaccine situation

The definition of a situation is the interpretation of a social situation carried out by members of the community in a social environment. The situation that occurred during the Covid-19 vaccine program also affected the community support system that would implement the vaccine.

“Just because it's crowded so it's jostle so you don't comply with health protocols, many don't wear masks at that time” (P8)

“For me, it's fast, because I'm next to it, my neighbor has a sub-district employee so I don't have to queue” (P11)

Theme 3: Self motivation

Self-motivation is the ability to push oneself to do something in order to achieve goals and complete tasks. Good or bad self-motivation from the community will affect their actions in carrying out the Covid-19 vaccine program. This theme is identified through sub-themes 1) hoping for government help; 2) administrative requirements; 3) health fields; 4) Obligation; and 5) self strength.

Hoping for government help

Hoping for government help becomes a stepping stone for the community's motivation to carry out the Covid-19 vaccine program.

“If you're in the village, first of all, the notification from the head of the neighborhood unit is that you get vaccinated or if you don't vaccinate, you won't get help. So, so many people flocked to get social assistance” (P7)

“If it's e here, it's because here in the village, you get rice, yes, if it's vaccinated. So if the people who have been vaccinated will get a share of rice” (P10)

Administrative requirements

Self-motivation in carrying out the Covid-19 vaccine program is also influenced by all administrative requirements, one of which is the requirement to have a vaccine certificate.

“Keep on long trips we take public transportation such as trains that also need vaccines like that” (P2)

“Oh, when you go to Roxy, if you go to tours, you usually have to get vaccinated” (P8)

Health fields

A good reason when implementing the Covid-19 vaccine program is for health reasons.

“Surely that's already this, yes, this prevents what is called the corona virus” (P1)

“Being vaccinated, there will be herd immunity, that's what I know” (P7)

“If I'm actually more for health reasons” (P10)

Obligation

In some cases, vaccination is mandatory.

“Yesterday, I joined this program from campus because I am currently studying at a health college and at that time it was one of the requirements to practice” (P1)

“Yes, whether we want it or not, let's follow the government's rules” (P5)

Self strength

Motivation to implement the Covid-19 vaccine program also requires self-strength to do it.

“Let's just give it up to Allah” (P8)

“Because I'm what it's called, it's like seeing what it's called clear information, so look for references related to the truth of the vaccine and how effective it is. So that's what I'm really looking for” (P10)

“Yes, just surrender to Allah” (P11)

Theme 4: Survive for side effect

Every time do something there must be an effect as well as vaccines. The government's program regarding the Covid-19 vaccine program will have an effect on the human body. This theme is identified through sub-themes 1) activities after vaccine; 2) condition after vaccine; and 3) suggestion for government regulation.

Activities after vaccine

After implementing the Covid-19 vaccine program, a person's body will experience both normal and serious reactions. this will result in differences in activity after the vaccine.

“So, if father do exercise after the vaccine, you'll sweat” (P3)

“Taking the medicine, the one given by the integrated service center was given 3, paracetamol” (P6)

“While after the vaccine, I just eat fruit, eat good food, continue to drink lots of water, water” (P7)

Condition after vaccine

After vaccination will have an impact on society.

“The effect is that you have a fever for 2 days, then you feel dizzy and weak and you drink water more often, feel dry in throat” (P3)

“Pain, the first is rheumatic pain, but only for a while at the place after the injection, only 3 days” (P6)

Suggestion for government regulation

After vaccination, people will think about whether they are satisfied with government regulations regarding the Covid-19 vaccine program.

“And for the government yesterday I saw the news on TV, I don't know if it's true or not, it's just that it says it's on his population registration number, he hasn't been vaccinated, but when he put his Population Registration Number into the village service, it says that he's been vaccinated, so maybe it's more about accuracy in data collection. if it's for the government” (P3)

“And this socialization was delivered about this vaccination later on, because people who didn't know before know what vaccination is” (P4)

DISCUSSION

Understanding of vaccination includes knowledge about vaccines and then affects the perception of participants. This study also explains the sources of information that participants get, namely from mass media, social media, even relatives and friends of participants. Information that cannot be responsible for vaccines Covid-19 causes anxiety, fears and doubts about vaccination. This can affect perceptions regarding vaccine effectiveness and attitudes willingness to vaccination program (Dyer, 2021). In Widayanti and Kusumawati (2021) stated that 77.7% of the people agreed to vaccination and the rest refused. This is also supported by 87.2% people having a good perception about vaccination and 12.8% having a bad perception about the Covid-19 vaccine. Hoaxes regarding the Covid-19 vaccine continue to increase both on Facebook and on other social media such as Twitter and Instagram, even though Facebook is still the most dominant media for spreading hoaxes (Tustin *et al.*, 2018; Priastuty, Pawito and Rahmanto, 2020). In the study of (Lee, Kang and You, 2021) which states that knowledge can directly relate to a person's attitude and behavior to prevent disease, but one's belief about the efficacy of a prevention method is the most influential factor when compared to the knowledge factor (Lee, Kang and You, 2021). Vaccine doubts can be caused by lack of knowledge, wrong religious beliefs, or anti-vaccine misinformation (Ullah *et al.*, 2021). Understanding of vaccines is still said to be lacking. This is because most people in the village or community in Banyuwangi Regency are less literate. The confusion of information obtained by word of mouth worsens public perception. We can see this with news circulating through television, social media such as WhatsApp, Instagram, Youtube and others. Sorting news is indeed very important at this time to avoid hoax news that is widely circulated.

Support system is generated from the instrumental support provided by the government, families, and schools. The elderly experience limited mobility to come to the vaccination site, long queues at the vaccination site and anxiety related to their current physical condition, so this elderly vaccination is carried out door to door (Retnaningrum, Rahmawati and Patemah, 2021). Family support is an effort given to family members both morally and materially in the form of real motivation, advice, information and assistance. Family support can be obtained from family members (husband, wife, children, and relatives), close friends or relations (Karunia, 2015). In Hutomo, Marayate and Rahman (2021), it was stated that there was a relationship between family support and participation in the second dose of Covid-19 vaccination. Support from health workers is also very much needed. this is done in the vaccination program implemented by the government in 4 stages carried out by the community health center as an extension of the local health office. The community health center is the spearhead of the implementation of the vaccination program to the community (Ritunga *et al.*, 2021). In implementing the Covid-19 vaccine program, a strong support system is needed. This can be obtained from the government or schools. The role of the family is also very large in this regard. Having family support will make other family members calm in carrying out vaccinations.

Based on the Presidential Regulation of the Republic of Indonesia number 14 of 2021, it is stated that if there are people who are required to vaccinate but do not get the vaccine, they will receive sanctions in the form of delaying or terminating the provision of social security or social assistance and delaying or terminating government administration services. Vaccination was originally everyone's right, it turned into an obligation due to the emergency situation in Indonesia that someone who was not vaccinated had a greater potential for transmitting the Covid-19 virus to other people (Ritunga *et al.*, 2021). In the study of, (Krause *et al.*, 2021) stated that the Covid-19 vaccine continues to be effective against severe diseases, including those caused by delta variants (Krause *et al.*, 2021). Self motivation can be obtained easily and also difficult. This depends on each individual when

addressing a problem. The reasons for carrying out the Covid-19 vaccine program also varied and were conveyed by participants during interviews. The decision to carry out vaccination was also due to the requirement that a vaccination certificate be required.

According to the Ministry of Health (2021), the way to deal with post-immunization follow-up is to apply cold compresses to the injection area if you feel pain or swelling or redness. Due to the vaccine, urgent understanding is needed to investigate the acceptance of Covid-19 vaccines in order to prepare effective promotion strategies (Lin *et al.*, 2020). Post-vaccination symptoms (both systemic and local) often last for 1-2 days after injection (Menni *et al.*, 2021; Yisak *et al.*, 2021). So to ensure the success of vaccination, the approach can be taken by involving various parties, especially community leaders such as traditional leaders, youth leaders and religious leaders as health agents, as well as the involvement of educational institutions such as universities, so that education is given to the community regarding effectiveness vaccines and the dangers of Covid-19 are able to increase public awareness and change people's habits to care more about health (Fauzia and Hamdani, 2021). The implementation of vaccination will have an effect on the community's body due to the response given by the body. This will affect community activities. Activities needed after vaccination include consuming adequate intake, resting and taking medication if the effects after vaccination are getting worse. The effects after the vaccine will make the body uncomfortable. The government's Covid-19 vaccine program has also received a lot of criticism and suggestions. People still think that the government does not provide education about this vaccination, causing a lot of negative stigma. In addition to this, the role of vaccination organizers must also enforce health protocols conveyed by several participants that after vaccination, the number of Covid-19 increases due to crowding during vaccination.

CONCLUSIONS

Public understanding of the Covid-19 vaccine program is influenced by many things, namely knowledge, perceptions, and sources of information obtained. Perception about the Covid-19 vaccine program includes bad perception regarding rejection, doubt perception, and good perception, namely acceptance of vaccination. Before carrying out the Covid-19 vaccine program includes preparations and actions taken before vaccinating. When carrying out the Covid-19 vaccine program, it includes the place of implementation and the conditions during which the vaccination program takes place. After carrying out about the Covid-19 vaccine program, including the effects after vaccination as well as criticism of suggestions for government regulations regarding the vaccination program.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

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Analysis factors related to the compliance of self care needs for elderly at UPTD griya wreda and Panti Surya elderly house

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ABSTRACT

The related factors of self care needs compliance of elderly consist of biology, psychology, social and culture factors. Those factors can be determinant will be given impact for elderly self care needs compliance and health problem. Research aim to analyze the factors related to the compliance of self care need for elderly. Research used study descriptive analytic with cross sectional approach. Sample were 41 respondent. Data Sample collected used sample random sampling technique. Research study uses two variable were independent and dependent. Independent variable is factors related to the compliance of self care and dependent variable is self care needs compliance. There are four categories respondent ; less, enough, good and very good for both variable. Data analyzed used the Spearman Rank Correlation. The result study reached that majority of elderly can fulfilled self care theyself good. Biology, psychology, social and culture factors have positive correlation with self care needs compliance of elderly. Next nurses should to be advanced perform with nursing approach well in order to elderly can be complienced self care needs from good to very good.

Keyword : Related factors, self care compliance, elderly

Introduction

According to World Health Organization standart that elderly is aged individual 65 tahun years old. There are impact of elderly process consist of deterioration of health and any health problem that need immediate treatment. These changes will lead to reduced independence for elderly. Orem's theory there are several component, including maintenance of air, water/fluids, fulfilment of food, normal elimination processes, balance between activity and rest, social interaction, danger prevention for life, function and wellbeing, as well as improving individual function and development according to potential, limitations and individual desires. According to Henderson theory, there are 14 component of basic human need, including : breathing normally, eating and drinking, normal elimination, moving and maintaining position, resting and sleeping, choosing clothes, removing and changing clothes (decoration), maintaining body temperature, taking care of the body to stay clean and tidy, avoid danger from the environment, communicate with others, worship according to beliefs, work, play, participate in an activity, learn, explore or satisfy curiosity that refers to development and health. Self-care is related to several factors, including: biological (health, muscle strength and ability), psychological

(developmental status, motivation, and memory), social (life experiences, socio-cultural orientation, available resources, and cultural values). According to the United States Population Service (1999), the elderly population aged 60 years old or over is estimated at 600 million people (Maryam 2008). According to data held by the Surabaya City Government and Civil Registry that the population in Surabaya men were 1,473,640 elderly people, women were 1,469,888 elderly people, so the total population of Surabaya was 2,943,888 people. According to data collected from direct interviews the number of elderly people in UPTD Griya Werdha was 107 elderly people, while the number of elderly people in the Panti Surya Elderly House has 78 people.

Methods

This study uses a measuring instrument in the form of a questionnaire. This study aims to determine the relationship between biological, psychological, social, and cultural factors with the fulfillment of self-care in the elderly. The design in this research is descriptive analytic with a cross sectional approach. In this study using probability sampling technique by simple random sampling. This study uses the elderly aged 60-75 years who are at the UPTD Griya Werdha, and the Panti Surya Elderly House. The sample in this study was 41 people. Data analysis in this study used the Sperman rho <0.05 correlation test. The independent variable in this study is a factor related to the fulfillment of self-care. The dependent variable in this study is self-care. This study have Ethical Approval with Number 494-KEPK. This letter was issued by Committee of Ethical Approval of Faculty Nursing Universitas Airlangga.

Result

Demographic characteristic of elderly at UPTD Griya Werdha elderly house

Respondent characteristic	Frequency	Percentage
Age		
60-65 years old	5	16,1 %
66-70 years old	7	22,6%
70-75 years old	19	61,3%
Total	31	100%
Weight		
Obesity	0	0%
Fat	4	12%
Normal	24	77%
Thin	3	9%
Total	31	100%
Education		
No School	3	9,7%
Primary school	17	54,8%
Junior high school	0	0%
Senior high school	6	19,4%
Academi /College	5	16,1%
Total	31	100%
Marriage status		
No marriage	7	27,6%
Marriage	0	0%
Widow/widower	24	77,4%
Total	31	100%

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Jenis		
Male	11	35,5%
Female	20	64,5
Total	31	100%

The demographic characteristics of respondents in UPTD Griya Werdha are known that the age distribution of most of the elderly is 70-75 years old (61.3%) or 19 elderly, most of the respondents who live in UPTD Griya Werdha have normal weight as much as (77.4%) or 24 elderly, most of the last education of the elderly was elementary school (54.8%) or 17 elderly. Most of the elderly have widowed/widower status (77.4%) or 24 elderly, most of the respondents who meet the criteria are women (64.35%) or 20 elderly, while men are (35.5%) or 11 Elderly.

Demographic characteristic of elderly at Panti Surya elderly house

Respondent characteristic	Frequency	Percentage
Age		
60-65 years old	0	0 %
66-70 years old	0	0%
70-75 years old	10	100%
Total	10	100%
Weight		
Obesity	0	0%
Fat	0	0%
Normal	9	90%
Thin	1	10%
Total	10	100%
Education		
No School	1	10%
Primary school	2	20%
Junior high school	1	10%
Senior high school	4	40%
Academi /College	2	20%
Total	10	100%
Marriage status		
No marriage	0	0%
Marriage	0	0%
Widow/widower	10	100%
Total	10	100%
Sex		
Male	2	20%
Female	8	80%
Total	10	100%

The demographic characteristics of respondents at Panti Surya Surabaya are known that the distribution of the age of the elderly is 70-75 years (100%) or 10 elderly. Most of the respondents who live in Panti Surya have normal weight (90%) or 9 elderly people. The last education of the elderly is mostly high school (40%) or 4 elderly. Most of the elderly have widow/widower status (100%) or 10 elderly. Most of the respondents who met the criteria were women (80%) or 8 elderly people, while men (20%) or 2 elderly people.

Measured Variable

Frequency distribution of factors related to self care need compliance of elderly at UPTD Griya Werdha elderly house

Measured Variable	Category	Total	Percentage
Biology	Less	0	0 %
	Enough	1	3,2%
	Good	11	35,5%
	Very good	19	61,3%
Total		31	100%
Psychology	Less	0	0 %
	Enough	2	6,5%
	Good	7	22,6%
	Very good	22	71%
Total		31	100%
Social	Less	0	0 %
	Enough	2	6,5 %
	Good	14	45,2%
	Very good	15	48,8%
Total		10	100%
Culture	Less	0	0 %
	Enough	1	3,2%
	Good	7	22,6%
	Very good	23	74,2%
Total		31	100%

In the biological aspects of the elderly who have very good categories (61.3%) or 19 elderly, psychological aspects of the elderly who have very good categories (71%) or 22 elderly, social aspects of the elderly who have very good categories (48.8 %) or 15 elderly, while the cultural factors of the elderly who have a very good category are (74.2%) or 23 elderly

Frequency distribution of self care need compliance of elderly at UPTD Griya Werdha elderly house

Measured Variable	Category	Total	Percentage
Self care compliance	Less	0	0 %
	Enough	0	0%
	Good	9	29%
	Very good	22	71%
Total		31	100%

In the table above, it is known that in the aspect of fulfilling self care for the elderly at UPTD Griya Werdha, most of the respondents were in the very good category (71%) or 22 elderly, while a small proportion of respondents were in the good category (29%) or 9 elderly.

Frequency distribution of factors related to self care need compliance of elderly at Panti Surya elderly house

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Measured Variable	Categori	Total	Percentage
Biology	Less	0	0 %
	Enough	0	0%
	Good	1	10%
	Very good	9	90%
Total		10	100%
Psychology	Less	0	0 %
	Enough	1	10%
	Good	1	10
	Very good	8	80%
Total		10	100%
Social	Less	0	0 %
	Enough	0	0 %
	Good	2	20%
	Very good	8	80%
Total		10	100%
Culture	Less	0	0 %
	Enough	0	0%
	Good	1	10%
	Very good	9	90%
Total		10	100%

In the biological aspects of the elderly who have very good categories (90%) or 9 elderly, psychological aspects of the elderly who have very good categories (80%) or 8 elderly, social aspects of the elderly who have very good categories (80%) or 8 elderly, while the cultural factors of the elderly who have a very good category are (90%) or 9 elderly.

Frequency distribution of self care need compliance of elderly at Panti Surya elderly house

Measured Variable	Category	Total	Percentage
Self care compliance	Less	0	0 %
	Enough	0	0%
	Good	1	10%
	Very good	9	90%
Total		10	100%

In the table, it can be seen that in the aspect of fulfilling self-care for the elderly at the Rumah Sainswan Panti Surya Surabaya, most of the respondents are in the very good category (90%) or 9 elderly, while a small proportion of respondents are in the good category (10%) or 1 elderly.

Discussion

Analysis of factors related to the fulfillment of self-care for the elderly at UPTD Griya Werdha. The results of statistical tests, it can be seen that most of the respondents can fulfill self-care very well. However, there were some respondents who did well. Based on the results of calculations using Spearman Rank Correlation, in all aspects the value of 0.05. All aspects of the research at UPTD Griya Werdha relate to the fulfillment of self-care. In this research at UPTD Griya Werdha, the factors that are closely related to the fulfillment of self-care are psychological and cultural factors. Based on research obtained from Hannan (2013) the habit of maintaining health with good personal hygiene will

have a good impact on health and will not suffer from skin diseases. Respondents have good habits including eating, eliminating, bathing, and making up. In this study, the majority of respondents had a very good category in fulfilling self-care, but there was also a small percentage of respondents who were still in the good category. Based on the theory of Orem says that all biological factors including muscle strength and ability, and health will be related to the fulfillment of self-care. The functional ability of the elderly is the ability of the elderly to carry out mobility and self-care. Muscle strength is very supportive of the movements performed in daily activities. This is in line with the results of the study that these factors are related to the fulfillment of good self-care. If the elderly have good muscle strength and ability, the elderly can fulfill self-care. Healthy elderly can fulfill self-care in an independent and good way. Based on Orem's theory, motivational factors will be related to the fulfillment of self-care, this is in line with research at UPTD Griya Werdha. Elderly who have good motivation can fulfill self-care well. Great motivation in fulfilling self-care, will have a very good impact on fulfilling self-care for the elderly. Based on Orem's theory, the availability of available resources will be related to the fulfillment of self-care. If the resources/facilities are available very well, the elderly can fulfill their self-care well. Based on this research at UPTD Griya Werdha, respondents said that there was a lack of available resources/facilities to fulfill self-care. Based on research by Akmal, Semiarty, and Gayatri 2013 said that personal hygiene or the habit of maintaining good personal hygiene will prevent the occurrence of scabies. This is in line with this study, that the habit factor in maintaining personal hygiene as part of self-care will have a good impact on health. Analysis of factors related to the fulfillment of self-care of the elderly at the Panti Surya elderly House. In this research at the Panti Surya, the factors that are closely related to the fulfillment of self-care are biological and cultural factors. According to Orem's theory, there are several factors related to the ability to fulfill self-care including biological: age, health, strength and physical ability. While the psychological factors include: developmental status, motivation and memory. In this study, these two factors were closely related to the fulfillment of self-care. Factors of muscle strength and muscle endurance of the lower limbs will be associated with decreased ability to move, decreased balance, and there will be a risk of falling (Ferruri 1997 in utomo 2010). The functional ability of the elderly is the ability of the elderly to carry out mobility and self-care. Muscle strength is very supportive of the movements performed in daily activities. Based on research (Frontera 2000 in Utomo 2010) that there is a relationship between age and changes in muscle morphology. This is also in line with research from (Narici 2003 in Utomo 2010) that there are morphological differences in the elderly which include muscle mass, muscle fibers, and fascia. Herman (2005) reported that there is a relationship between muscle strength and endurance in the upper and lower limbs with physical mobility barriers. In a study conducted by Van Swearinge (2002) that there will be a relationship between the physical abilities of the elderly on daily activities. This is in line with research at Panti Surya, that the biological aspect is very influential on the fulfillment of self-care. Based on Orem's theory states that psychological factors which include motivation, growth and development, and memory will be related to the fulfillment of self-care. If the elderly have a high motivation to fulfill good self-care, it will have a good impact on the fulfillment of self-care. Elderly people who have a good memory will have a very good impact on fulfilling their self-care, because if the elderly experience decreased memory, it will have an impact on the fulfillment of self-care. self care. This is in line with this research, that the psychological aspect is related to the fulfillment of self-care. Based on Orem's theory states that socio-cultural factors are related to the fulfillment of self-care. If the elderly who are in the solar home have a good / good social relationship, both the relationship between the elderly and the elderly and officers, then the elderly can fulfill good self-care. Based on research obtained from Hannan (2013) the habit of maintaining health with good

personal hygiene will have a good impact on health and will not suffer from skin diseases. Respondents have good habits including eating, eliminating, bathing, and making up. In this study, the majority of respondents had a very good category in fulfilling self-care, but there was also a small percentage of respondents who were still in the good category. Based on research by Akmal, Semiarty, and Gayatri 2013 said that personal hygiene or the habit of maintaining good personal hygiene will prevent the occurrence of scabies. This is in line with this study, that the habit factor in maintaining personal hygiene as part of self-care will have a good impact on health.

Conclusion and suggestion

Based on the discussion in the previous chapter, it can be concluded that research on the relationship biological, psychological, social and cultural factors and the fulfillment of self-care needs for the elderly.

1. Biological factors have a relationship with the fulfillment of self-care in UPTD Griya Werdha and Panti Surya Surabaya. This is indicated by the presence of very good biologics which will have a very good impact on the fulfillment of self-care.
2. Psychological factors have a relationship with the fulfillment of self-care in UPTD Griya Werdha and Panti Surya Surabaya. This is indicated by a very good psychological will have a very good impact on the fulfillment of self-care.
3. Social factors have a relationship with the fulfillment of self-care in UPTD Griya Werdha and Panti Surya Surabaya. This is indicated by a very good social will have a very good impact on the fulfillment of self-care.
4. Cultural factors have a relationship with the fulfillment of self-care in UPTD Griya Werdha and Panti Surya Surabaya. This is indicated by a very good culture that will have a very good impact on the fulfillment of self-care.

Suggestion

The results of the research obtained regarding the analysis of factors related to the fulfillment of self-care for the elderly at UPTD Griya Werdha and Panti Surya Surabaya.

1. For UPTD Griya Werdha and Panti Surya Surabaya UPTD This research is expected to UPTD Griya Werdha and Panti Surya Surabaya more attention to the elderly so that the factors for fulfilling elderly self-care can be fulfilled very well. So that the fulfillment of self-care for the elderly, is expected to improve the health status of the elderly.
2. For Further Researchers Future researchers can conduct ongoing research on self-care in nursing homes so that they can develop effective interventions for the elderly.

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