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Analysis of the impacts of health service closure policy on Indonesian nursing during COVID-19 pandemic: A literature review

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ABSTRACT

Background: The COVID-19 pandemic has been over yet; one of the effects of this pandemic is plenty of hospitals in Indonesia have been applying for temporary health service closure.

Objective: This study aimed to analyse the effect of health service closure during the COVID-19 pandemic.

Design: Simple study literature is the method for this study.

Data Sources: This study used two different search processes. The first search process came from online news platforms (detik.com, kompas.com, and okezone.com), which used a combination of the words “COVID-19”, “emergency room”, “hospital”, and “closed” during November 2020. The second search was from the database (CINAHL, ProQuest, ScienceDirect, PubMed, SpringerLink, and Wiley Online).

Review Methods: The guidelines of the second search used Preferred Reporting Items for Systematic Review and Meta-Analysis. Both searching processes applied COVID-19 and hospital closed or emergency department closed as the keywords from November 2020-January 2021.

Results: The first finding showed more than 300 news about health service closure, and the second showed 13 selected articles. There were 42 health service unit closures from 16 provinces in Indonesia. These closures had disadvantages effect for patients, nursing care and nursing education side.

Conclusions: Total or partial health service closure could be happened due to increased patient capacity, delays in the treatment of the patient, many nurses getting infected by COVID-19, and nursing students cannot practice directly. Therefore, this issue needs innovative solutions to keep the nursing student placement going well by considering safety for the patient, nurses, nursing students, and trainer/ facilitator.

Keywords: closure; COVID-19; emergency health service

INTRODUCTION

Data on COVID-19 test numbers that have been done is still developing. The result of the Polymerase Chain Reaction (PCR) test in some countries increased the number of confirmed cases, hospitalised number, and mortality rate, which

Nursing and Healthcare Practices

- *The pandemic resulted in the partial or total closure of health services.*
- *The shortage of nurses is very drastic, while the number of patients is increasing.*
- *Nursing students are the choice to be involved in meeting the needs of health workers and consulting services can be optimized online*

also happened in Indonesia. These things are being concerned and pressured toward global health service, which is becoming worse these days (Dewart et al., 2020). Since 12 January 2021 Indonesian government, with COVID-19 Response Acceleration Task Force, has been reporting 836.718 cases of COVID-19 positive with a mortality rate of 2.9% (Satgas COVID-19, 2021).

The government has done many ways to decrease mortality and new cases, including applying social distancing (Pradana et al., 2020). Some Java and Bali Island provinces have been using Large-Scale Social Restrictions (*Pembatasan Sosial Berskala Besar/ PSBB*) stage two. However, many obstacles must be faced, especially the high rate of covid 19 new cases among health staff 8.692 new cases have been confirmed, and 34 provinces have been struggling with this increasing case. Five provinces with the highest number, such as the Provincial Government of Special Capital Territory of Jakarta (24.9%), West Java (11.8%), East Java (11.2%), Central Java (11.1%), dan South Sulawesi (4.4%) (Satgas COVID-19, 2021).

The increasing case impacted the health sector, one of them being health workers. Occupational Safety and Health Act (OSHA) classified health workers, including nurses, take high-risk jobs being infected by COVID-19 (U.S. Department of Labor, 2020). In Indonesia, since 1 October 2020, 92 nurses have died from COVID-19 (INNA, 2020). This issue could impact health services in Indonesia. A high number of confirmed COVID-19 cases and limited human resources in health service centres (hospitals, community health centres, and other health services) impacted the

closure of temporary health services (Nasution et al., 2021). So far, no data have shown the number of health service closures in Indonesia. However, this closure directly impacts health service, and nursing is the front line in the health service area. Therefore, this closure affects the nursing sector in providing care and education. This article analyses the effect of policy in health service closure, such as hospital and community health centres in Indonesia, on the nursing sector in nursing service to patients and nursing practice (clinical nurse and nursing education).

METHODS

Design

This article is based on a simple literature study method.

Search methods

Two search processes were applied. Firstly, searching about health service closure through some online news sources verified by the press council, such as detik.com, kompas.com, and okezone.com. The keyword those been used are a combination of some words, "COVID-19", "emergency room", "hospital", and "closed" during November 2020. The second step was a search process about the impact and policy related to Emergency Room (ER) and hospital closure during the COVID-19 pandemic. These articles were available from some databases such as Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, ScienceDirect, PubMed, SpringerLink, dan Wiley Online by using combination keywords "COVID-19", "emergency department closed", or "hospital closed" from November 2020-January 2021. The second data search used Preferred Reporting Items for Systematic Review and Meta-Analyses guidelines.

Inclusion and exclusion criteria

Inclusion criteria while searching online news in the first step used (a) Indonesian language news and (b) contains information about ER or hospital closure during the COVID-19 pandemic. And for the second step, articles searching that has been applied, such as (a) English language articles, (b) containing information about ER or hospital closure during the COVID-19 pandemic, (c) articles published in the last three years, (d) full text.

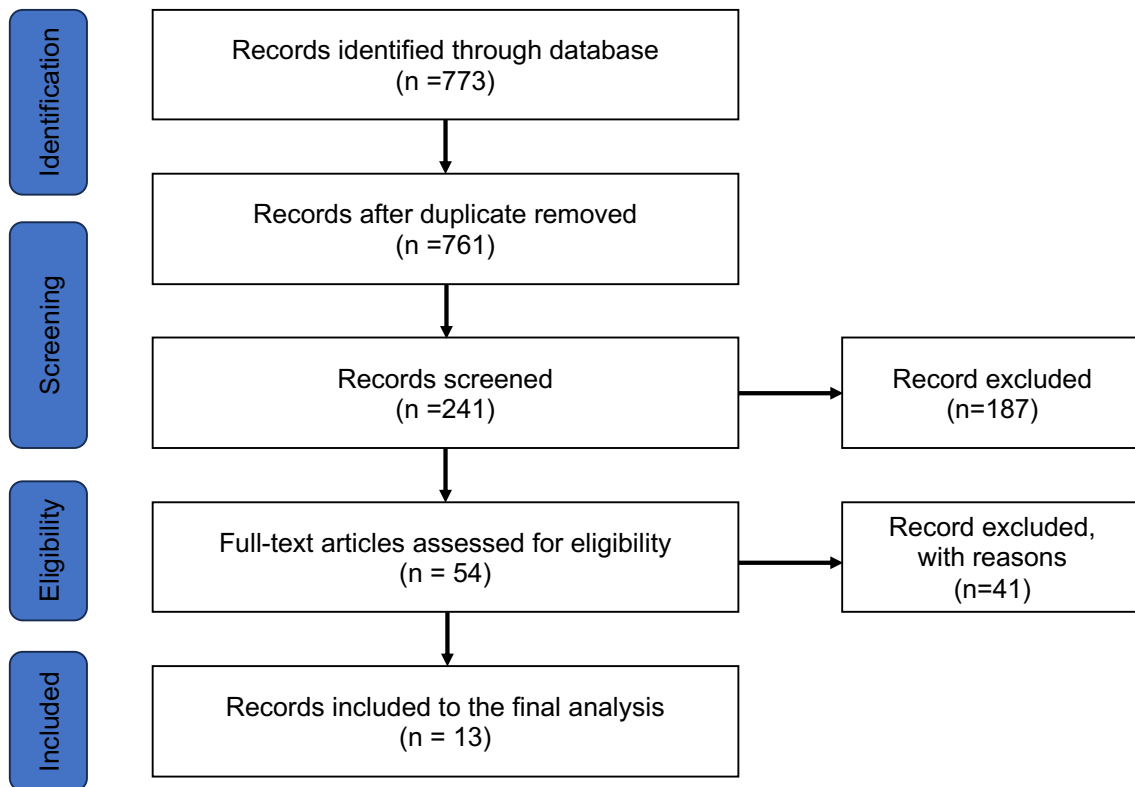


Figure 1. PRISMA flow chart

Data extraction

This article identifies the first step with the number of healthcare closures during COVID-19 by analysing the types of healthcare or emergency room closures in provinces of Indonesia. The news was excluded without mentioning the name of the health service (only the initial of the health service). At the same time, the second step of the selection process is based on identifying articles that meet the inclusion and exclusion criteria, with the final results being synthesised according to the theme of the impact of the closure of health services during the pandemic.

RESULTS

The first process generated more than 300 news that explained ER or hospital closure during the COVID-19 pandemic in Indonesia, 192 news from detik.com, 100 from kompas.com, and 74 from okezone.com (see table 1). Then, the second process generated 13 articles from 773 articles that explained about impact and policy of ER or hospital closure during the COVID-19 pandemic (Figure 1).

Number of Health Service Closures During Pandemic

Table 1 shows 42 health services closures in Indonesia until 10 November 2020. This closure was started in May and was created by five health service closures. The highest number of closures happened in August 2020. East Java province has become an area with the highest number of closures (12 health services from 9 cities). These closures vary started from 24 hours until 14 days. Many considerations were taken. Those were chosen to close for one to three days due to the need for more time for sterilisation and COVID-19 contact tracking—the others who decided to close for 14 days aimed to apply self-isolation, which got positive results.

DISCUSSION

Type of Health Service Closure

Based on 42 health service closures in Indonesia, there are two types of health service closures (Table 2). The first type is

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Table 1. Incidence of health service closure in Indonesia in 2020

Province	City	Hospital	Month on 2020							
			5	6	7	8	9	10	11	
Aceh	Karang Baru	Aceh Tamiang Regional Public Hospital			v					
	Bener Meriah	Muyang Kute Hospital			v					
Special Region of Yogyakarta	Yogyakarta	Pratama Yogya Hospital				v				
Banten	Cilegon	Cilegon Regional Public Hospital		v						
Central Java	Sragen	dr Soehadi Prijonegoro Regional Public Hospital								v
	Surakarta	Ngipang Regional Public Hospital								v
	Kudus	Kaliwungu Community Health Cente	v							
East Java	Madiun	Patihan Community Health Cente		v						
	Situbondo	Asembagus Community Health Cente		v						
	Probolinggo	Waluyo Jati Regional Public Hospital					v			
		Maron Community Health Cente					v			
		Pajarakan Community Health Cente						v		
	Tuban	Tuban Regional Public Hospital								v
	Pasuruan	Bangil Regional Public Hospital						v		
	Blitar	Ngudi Waluyo Regional Public Hospital					v			
		Wlingi Community Health Cente					v			
	Nganjuk	Nganjuk Regional Public Hospital			v					
Surabaya	Unair Hospital	v								
Ponorogo	Sawoo Community Health Cente				v					
West Java	Cimahi	Cibabat Regional Public Hospital					v			
	Tasikmalaya	Bunda Aisyah Mother and Children Hospital						v		

Table 1. Incidence of health service closure in Indonesia in 2020 (*continue...*)

	Cirebon	Gunung Jati Regional Public Hospital					v		
	Sukabumi	Pelabuhan Ratu Regional Public Hospital					v		
	Depok	Depok Regional Public Hospital	v						
East Kalimantan	Balikpapan	Kanjoso Djatiwibowo Regional Public Hospital					v		
	Samarinda	IA Moeis Regional Public Hospital				v			
	Samarinda	Samarinda Medika Citra Hospital					v		
South Kalimantan	Hamalau	Briggend Hasan Basry Regional Public Hospital			v				
Riau	Batam	Embung Fatimah Regional Public Hospital					v		
North Kalimantan	Nunukan	Nunukan Regional Public Hospital					v		
West Sumatera	Batusangkar	M. Ali Hanafiah Regional Public Hospital					v		
	Solok	Arosuka Regional Public Hospital	v						
	Padang Panjang	Padang Panjang Regional Public Hospital					v		
	Padang	Bhayangkara Hospital					v		
Jambi	Jambi	Raden Mattaher Regional Public Hospital					v		
South Sulawesi	Sidrap	Nene Mallommo Public Hospital					v		
	Makassar	Daya Regional Public Hospital	v						
	Takalar	H. Padjonga Dg Ngalle Regional Public Hospital				v			
West Nusa Tenggara	Lombok Tengah	Cahaya Medika Praya Hospital					v		
Maluku	Salahutu	dr Ishak Umarella Regional Public Hospital				v			
West Papua	Sorong	Sele Be Solu Public Hospital				v			
Total per month			5	8	8	12	4	3	2

total closure which has two subtypes. The first subtype is total closure for all the patients. So, the hospital did not accept any patients at all. The reason for these health providers' closures is dominated of COVID-19 cases in health staff that have been confirmed before. So this closure expects to end the spreading and decrease virus contamination risk. Health workers were confirmed COVID-19 positive during the closure, found in highest number at dr. Soehadi Prijonegoro Regional Public Hospital with a total of 77 cases among health staff. Then, our analysis related to other types of total closure showed that even though there was total closure for general health services, the hospital was still open for health staff and happened in Bhayangkara Hospital Padang. The second type is temporary closure. This type was applied due to overcapacity. So, they could not accept COVID-19 patients (happened in Airlangga Hospital Surabaya) or temporarily close certain wards in the hospital for the general patient because some health staff were confirmed as COVID-19 positive.

Impact and Solution Related to

Health Provider Closure

Researchers' analysis of literature findings showed that the number of nurse staff available and care load capacity for the patient had caused both total and temporary health closure during this pandemic in Indonesia. Indeed, this problem could cause changes and differences related to nursing care for nursing, patient, and nursing education.

Patient

The number of patients who came to ER has decreased since the beginning of the pandemic and then started to increase in line with the peak of cases during the pandemic. This number will stay high if the pandemic still happens for a longer time. This pandemic condition also has an increased risk of delaying case handling due to a bundle of protocols for

checking COVID-19 infection cases (Lo et al., 2020). Furthermore, the COVID-19 pandemic had an impact on the general condition of the available patient that was hospitalised. Patients had anxiety, fear, and panic about being transmitted with COVID-19 (Apisarnthanarak et al., 2020). On another side, fear and anxiety could be increased among both mothers and children, for example, due to health service closure and policy changes, which makes parents unable to accompany their children in receiving health services (Chanchlani et al., 2020). Then, the increasing COVID-19 confirmed cases became a risk for hospital closure due to overcapacity. The hospital has been trying to adapt the increasing capacity for balancing increased cases, called surge capacity, which is a solution that the hospital could do to prevent over-capacity. This solution comes along with adding more health staff. However, if the condition happened already, hospitals would have to take steps to fix the effect of COVID-19 highly increased case number. The hospital could reduce the number of elective surgeries scheduled to decrease inpatient numbers. Then, patient bed capacity could be available. Moreover, optimising information through online media needs to be done to reduce transmission risk.

Decreasing the number of scheduled elective surgeries could reduce eight inpatient number in acute service and one patient in critical service per day (O'Glasser et al., 2020). If bed capacity could be increased, then nurse staff that will work on it have to be prepared and set the patient criteria. Patients with mild symptoms who could be handled at home have to go through media online service. This service uses the telehealth concept (Flannery et al., 2020; Jones et al., 2020; Shenoj et al., 2020). Telehealth systems have become the correct solution for preventing COVID-19 transmission in hospitals. A systematic review explained telehealth is the correct system to minimise the risk of COVID-19 transmission. This solution potentially prevents any direct

Table 2. Health service closure type happened in Indonesia 2020

Closure Type	Explanation
Total closure	Health provider which have closure did not accept any patient at all, patients were referred to another health service nearby.
Temporary Closure	Health provider which had closure due to certain reason. Therefore only certain wards or division were closed. The rest of them still open for providing service.

physical contact, gives sustainable care to the patient, and, finally, decreases the morbidity and mortality rate of COVID-19 (Monaghesh & Hajizadeh, 2020). Then, telehealth could provide pre-hospital emergency service through an emergency medical system based on an internet application with mobile web service. This system effectively applies in cardiac arrest conditions and pre-hospital accidents (Fahmi & Nurachmah, 2020).

Telehealth also could be applied to pregnancy services during the pandemic, which has limited patient-giving services. This limitation makes pregnant women limited in receiving antenatal care. Patients with normal pregnancies could have online consultations through the website or phone provided by the hospital. However, the family cannot accompany pregnant women who want antenatal services. This new policy limits the number of visitors to prevent COVID-19 (Coxon et al., 2020). Then, for the hospital that still has not applied telehealth yet, related to internet coverage and mother understanding related to pregnancy check with telehealth, the hospital could use the recommendation from the Indonesian Society of Obstetricians and Gynaecologists (ISOG). That recommendation stated pregnant women with no COVID-19 symptoms could have antenatal care service four times. There will be one session in the first trimester at 10-12 weeks pregnant, one session in the second trimester at 20-22 weeks pregnant, and each session in the third trimester from 30 to 34 weeks pregnant. This session surely will provide by applying proper pregnancy history assessment for whom will get this antenatal care serv from a health provider (ISOG, 2020).

This change could be a concern for mothers who are delivering babies, but it does not make mothers right become less in getting pain management services in the parturition process and water birth. For a mother who will take delivery of a baby, just one family member will be allowed to become a companion. Companions must wear personal protective equipment and perform physical distancing from a patient during parturition sessions (Liao et al., 2020). This thing will impact the patient's confidence and convenience during parturition. Another limitation in postpartum this time is skin to skin in postpartum will be done following health protocols such as using a mask and washing hands before contact with the baby (Coxon et al., 2020). Besides maternity services, COVID-19 cases in children should

also be a particular concern. This condition makes children need to be accompanied still with parents during hospitalised. However, in reality, it will be different for every hospital. The hospital needs to have a standard policy in limiting visitors and companions for the patient, but children always need their families during hospitalisation. The presence of the closest person or family member could be facilitated by video calling.

Nurse

The increasing number of patients caused hospital closure, and many staffs were also confirmed positive for COVID-19. The hospital could make regulations for teams who confirmed favourable either with a symptom or not. If the patient show symptom, then they could be continued self-isolation according to COVID-19 management guideline released by The Indonesian Society of Respiriology, Indonesian Heart Association, Indonesian Society of Internal Medicine, Indonesian Society of Anaesthesiologists, and Indonesian Pediatric Society in 2020. Indeed this makes nurse and patient ratio would not be safe anymore. The ratio gap between nurse and patient could harm the patient's nursing care. This thing also puts patient safety at risk. So, ER closure and inpatient service for COVID and non-COVID will continue until the condition becomes stable.

In this condition, the first thing that the hospital should do is to give an announcement about the closure process to the service user or patient. Hospitals must be concerned about how they communicate information through service users. Communication must be carried out according to the Hospital National Standard of Accreditation 1.1 in Indonesia (Commission of Hospital Accreditation, 2019). Communication and Education Management Chapter, Standard 1 Assessment elements 1, 2, and 3 (effective communication regulation toward community, patient, family, professional who give care service, and proof of implementation), Communication and Education Management Chapter 1.1 Assessment element 3 (hospital provides information about service, time, access and process to get the service), and Communication and Education Management Chapter 2 assessment 1,2, and 3 (available information about care and service are provided by hospital through website or brochure, this information also explain access to service that provided by hospital and information

for alternative care service in another health provider if hospital could not provide care service that patient need). According to these standards, the hospital could announce both websites or the hospital.

Besides that, nursing service needs to be modified in the clinical area. No wonder the clinical area had changes and alterations in its implementation (Gralton et al., 2020). The first necessary thing is a modification in nursing care, which number of staff and competency in that ward should be set according to the patient's condition (Aznavorian, 2020). The nursing manager could count nursing staff by Douglas, Gillies, or the Indonesia Health Ministry method, which uses patient criteria/hour amount of patient service in counting nurse staff demand. This formula could also be used for the COVID ward because patient criteria that could be hospitalised range from mild to severe symptoms, according to prevention and control guidelines of Corona Virus Fifth-Revised (Ministry of Health of Republic Indonesia, 2020). Reminding about the possibility of complications of COVID-19 that quite heavy, so nursing managers need to be careful in deciding the level of dependence and amount of patient service hours. Patient service hours could be counted by the time motion study method (Hariyati, 2014). The COVID-19 team should be divided into four shifts, each shift will be 6 hours long (Carenzo et al., 2020). Reduced working hours can reduce exposure to the risk of transmission from patients to nurses or vice versa. In addition, nurses have more time to rest. This is particularly for decreasing exposure risk and keeping nurse immunity to not tired.

Maintaining service quality and habits and adhering to nurses-related personal protection equipment is also important. This rule becomes important because all areas need screening, tests, physical distancing, and compulsory wearing of personal protection equipment (Gralton et al., 2020). Particularly nurses must strict in general and medical waste disposal management. This management plays an important role in ER for decreasing exposure risk of COVID-19 (Yang et al., 2021). Personal protection equipment regulation in every hospital also concerns nursing staff. If the hospital applies personal protection equipment standards by using hazmat and N95 mask for looking after COVID-19 patients for any intervention, so three shifts policy could not be applied. However, if the hospital only applies a

gown for every intervention and an N95 mask for aerosol intervention, the shifting policy will be used as usual. Furthermore, it is important to ensure that nurses who are doing self-isolation were fulfilled their basic needs. The hospital must provide nursing supplies during self-isolation by establishing a special team to handle this issue.

Nursing Student

The COVID-19 crisis has a direct impact on nursing education, which is this education have a dilemma of continuing the study process and field practice to fulfilling competence target but coming along with health risk for student or withdrawing student from field practice (hospital or community health service) (Sheeren et al., 2020). However, if students do not do field practice, they will have a delay in completing their education. This could happen because of feeling worried the student will not be seen as competent if they complete education without completing the field practice (Dewart et al., 2020). A study in Korea showed before the COVID-19 pandemic, a student in South Korea decided to enrol in nursing school due to the high demand for nurse workers and high wages. However, during the pandemic, the student started to rethink that money they invest in education will not be worth it when they see the increased chance of COVID-19 exposure (Santos, 2020). Indonesia's nursing education system contains vocational, academic, and professional. For a professional degree, Ners (professional education) and Specialist nurse students are compulsory to do field practice for a year in health provider through 36 credits (Casman et al., 2020). Nursing students were worried after graduating. They are considered less competent. It makes them highly desirable to be involved in handling COVID-19, but the practice for nursing students should remain under supervision (Khumaidi et al., 2022). So, it becomes a severe concern for nursing education providers because closure in the health service provider becomes a practical placement for the student. This issue needs a proper solution.

Education providers have to make changes in learning methods. So nursing competence could be fulfilled with online methods during this pandemic. Learning media should be a concern during online sessions, so it will not be relied on video only (Konrad et al., 2021; Savitsky et al., 2020). Some methods could be applied to gaining online active learning,

such as expert opinion, case discussion, group work, role play, question and answer facilitated by a trainer and self-reflection (Konrad et al., 2021; Morin, 2020). Online learning should be interactive, with some strategies explained down below:

1. Case study: Case study implementation by student come with making a nursing care plan every week. Then facilitator could have a virtual discussion by using a question about Socratic dan Tanner's Clinical Judgment Model. These questions could be "What do you think about?"; "What do you observe from?"; "How do you interpret that data?"; "How do you make a priority?"; "How do you respond if ?" (Konrad et al., 2021; Morin, 2020).
2. Communication Practice: Communication skills that students should have through online learning have to be trained. So the student can communicate with nurses and other caregivers. One structured communication method is ISBAR (introduction, situation, background, assessment, recommendation). Online activities that could be provided are communication observation (for example, for right and wrong), practice among students with planned scenarios then evaluation by peers and facilitators/trainers (Konrad et al., 2021; Morin, 2020).
3. Video stimulation and scheduled laboratory practice minimising contact between students and facilitator. The Nursing Education Association in Indonesia needs to develop a nursing education curriculum based on the pandemic. This model showed nursing learning practice during the pandemic not only restrictions on the learning unit but also expects behaviour change for trainers and students in the study process that they usually do. This model will develop more innovative ways, like making the video for the practice module aimed at students' critical thinking skills and developing discussion and interaction for every learning unit through distance learning (Bezerra, 2020).

CONCLUSION

The COVID-19 pandemic has made 42 health service closures in many provinces in Indonesia. All health service closures could have happened temporarily or totally. This condition has a bad effect on Indonesian nursing. For the patient, it impacts delay in providing service for the non-COVID patient. For the nurse, an increasing number of nurse staff confirmed COVID-19 positive. So, the gap ratio between nurse and patient became higher. Moreover, in nursing education, a nursing student going to do an internship will have trouble due to their closed practice area. Many efforts could be made to overcome this situation, such as decreasing the number of elective surgery schedule in hospitals, increasing bed capacity for COVID patients, recruiting contract nurses as a volunteer, optimising health services through telehealth concepts, and making innovation in online learning for nursing student

Declaration of Interest

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Fire management: A virtual treatment towards psychological preparedness among health college volunteers in Indonesia

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ABSTRACT

Background: Fire disasters in educational facilities often occur and lead to a lack of psychological readiness of volunteers in health colleges and in general.

Objective: The study aimed to analyze the effects of fire management: A virtual short film on the psychological preparedness of university volunteers in Indonesia.

Methods: This study uses quasi-experimental. The sampling technique used purposive sampling with a sample of 87 respondents who were divided into treatment and control groups. Health college volunteers were recruited from Java, Bali, and Sumatera islands. The psychological Preparedness for Disaster Threat Scale (PPDTS) questionnaire was used. The statistical test used is the paired t-test and the Independent Sample T-test.

Results: We found a difference in volunteers' psychological preparedness pre-treatment and post-treatment in the treatment group ($p < 0.001$) and control group ($p = 0.800$). Differences in both groups were significant ($p < 0.001$).

Conclusions: Treatments using technology media, namely short films, can virtually influence increasing psychological preparedness for volunteers. In addition, this intervention can be used as media for health promotion that is easily accessible to everyone in the face of disasters.

Keywords: fire; preparedness; psychological; volunteer

INTRODUCTION

Fire is a disaster event that can occur in any building designation, from housing, settlements, or urban areas to public facilities such as educational facilities (Valentine & Bolaji, 2021). In Indonesia, there are several colleges or campuses (academic) with high-rise and spacious building facilities. In the last ten years, fires have often occurred in Indonesia, especially in the areas of universities. In the past ten years, fires have often occurred in Indonesia, especially in Jakarta and Malang. For example, from 2014 to 2016, at universities in Jakarta and Malang, there was a fire disaster (Pertwi et al., 2021).

Fires that occur in educational facilities do not only occur in Indonesia. Fire disasters have also occurred from 2000 to 2015

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- *Fire management is essential knowledge to be known.*
- *Psychological preparedness is important during emergency and disaster conditions.*
- *Fire management intervention through virtual short film can be an alternative to improve the psychological preparedness.*

in the United States. The incidence increases every year to an average of 7 fires per year. The impact of the fire on campus is the loss of life. Nearly 50% of the fires that hit students came from dormitory facilities, student extracurricular activities, and public facilities on campus. In addition, almost 85% of fire incidents on campus are not equipped with fire sprinkler equipment (Rafelitoo & Triyatno, 2019).

The causes of fires on campus are not only caused by inadequate facilities, but several factors, especially disaster risk management on campus, are very important (Sholanke et al., 2020). Integrated efforts in preventing fire risk on campus must be supported by clear planning, implementation, monitoring, and a follow-up system (Waheed, 2014). In addition, human resources are also needed on campus. Through voluntary organization programs such as the Indonesian Red Cross Volunteer Corps (KSR PMI) or disaster care-based student activity units, they are able to become volunteer resources in the field of students in disaster preparedness and response on campus (Lestari & Nurman, 2019).

The results of a survey of 100 students related to earthquake and tsunami disaster preparedness at Padang city universities showed that students' knowledge related to preparedness, while the level of disaster preparedness related to the disaster early warning system, and the level of disaster preparedness related to earthquake and tsunami emergency response was in the high category (Rafelitoo & Triyatno, 2019). In addition, the results of a survey at Binawa University on 207 students, almost 65% have less knowledge of disaster preparedness. In addition, a study of 49 nursing students at one

of the universities in Makassar showed that 43% of nursing students were classified as not being ready for knowledge physically and 35% as not being prepared psychologically (Pertiwi et al., 2021).

In addition, the results of the analysis of 4 health colleges in Indonesia, namely health universities on the islands of Java, Bali, and Sumatera, have the same characteristics as adequate campus volunteer resources; there are campus volunteers, is a health college that has a multi-story building, the location of the campus is in the middle of the city centre. However, another problem faced by the campus volunteers was that they never received training related to disaster management, especially fires. In addition, facilities for fire prevention on each campus are also lacking.

Efforts that can be made to prevent building fires on campus can use a health education approach (Seyedin et al., 2020). These efforts can be through human resource training, such as the presence of campus volunteers (KSR PMI) or disaster response volunteers (Manurung & Siahaan, 2017). In addition, the training can be carried out to prepare human resources on campus for psychological preparation in dealing with fire disasters on campus (Nipa et al., 2020). A suitable form of health education is currently used to reach all circles with a virtual approach. In addition, the health education model of showing a film to the target is more effective and acceptable today (Sowa et al., 2018).

Respondents can improve preparedness and reduce psychological problems during fire disasters through this health education model. Therefore, virtual health education by showing short films on fire disaster management can improve the psychological preparedness of volunteers at health campuses in Indonesia. Therefore, this study aimed to analyze the effects of fire management: a virtual short film on the psychological preparedness of university volunteers in Indonesia.

METHODS

Design

This study uses a quantitative approach with a quasi-experimental research design.

Sample and Setting

The total population in this study was all student volunteer members at four health

Table 1. Frequency distribution of respondents (n=87)

Characteristics	Category	n	%
Gender	Male	11	12.6
	Female	67	87.4
Age	18-23	67	77
	24-28	20	23
Education	Diploma	38	43.7
	Bachelor	49	56.3
Volunteer Membership on Campus	PMI volunteer corps	54	62.1
	Disaster Response Nurse	33	37.9
Ready to be a volunteer	Ready	61	70.1
	Possible	24	27.6
	Doubtful	2	2.3
College Origin	Java	39	44.8
	Bali	14	16.1
	Sumatera	34	39.1
Volunteer experience	Ever	12	13.8
	Never	75	86.2

Table 2. An overview of the average psychological preparedness of health college volunteers before and after being given the short film "Fire Management"

Sub-Indicator	Treatment Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
Indicator 1 (knowledge and management of extraneous environmental situations)	38.5	46.0	37.9	36.5
Indicator 2 (emotional management and psychological response)	16.8	21.2	19.3	19.9
Indicator 3 (social environment management)	6.0	7.9	5.7	5.9
Indicator 4 (anticipatory coping with emotional response)	5.23	8.09	6.7	6.5
Total Average	66.6	83.2	69.5	68.8
Difference	16.6		0.7	

Universities in East Java, Bali, and Sumatera were 93 volunteers. The sampling technique used in this study was purposive sampling, with a sample of 87 respondents divided into two groups, namely the treatment group, with as many as 44 respondents. The control group had as many as 43 respondents, with inclusion criteria being volunteer members (Volunteer Corps Indonesian Red Cross Society, disaster response volunteers, etc.); Volunteer a health student from universities in Java, Bali, and Sumatera, the respondent had previously attended volunteer education. In addition, the respondent had or never been a volunteer

in a disaster. While the exclusion criteria are respondents are not able to follow the activity from beginning to end. The place of this research was carried out in health universities in Java, Bali, and Sumatera. The research was conducted in April-Mei 2022.

Variable

This variable consists of the independent variable, namely fire management: a virtual short film. In contrast, the dependent variable is psychological preparedness.

Table 3. The homogeneity test of psychological preparedness scores for health college volunteers before and after being given the short film "Fire Management".

Score	p
The results of the psychological preparedness post-test scores (in the Treatment group and the control group)	0.625

Table 4. Normality test of psychological preparedness data for health college volunteers before and after being given the short film "Fire Management"

Score	Group	Statistic	df	p
Pre-result Treatment Control	Treatment	0.186	43	0.216
	Control	0.079	44	0.200
Post-treatment-control results	Treatment	0.120	43	0.127
	Control	0.140	44	0.149

Table 5. The short film "Fire Management" affects the psychological preparedness of health college volunteers in Indonesia in the treatment and control groups.

Group	Category	n	Mean	SD	p
Treatment	Pre	43	66.60	10.97	< 0.001
	Post	43	83.16	8.49	
Control	Pre	44	69.48	11.05	0.800
	Post	44	68.77	16.80	

Table 6. The average difference test of the short film "Fire Management" on the psychological preparedness of health college volunteers in Indonesia in the treatment and control groups.

Independent sample test	Mean	SD	p
Treatment post-test	83.16	8.49	< 0.001
Control post-test	68.77	16.80	

Instruments

The measuring instrument in this study is the Psychological Preparedness for Disaster Threat Scale (PPDTS) with indicators that have been translated into Indonesian, namely awareness, anticipation, and readiness (sub four indicators, namely knowledge, and management of external environmental situations, emotional management and psychological response, management of social environment and anticipatory coping with emotional responses). The questionnaire items met the validity of 26 items. The reliability value of this questionnaire is 0.750 (Anggraeni et al., 2021). The questionnaire uses a Likert scale with a range of 1 to 4. Therefore, a score of 4 is very appropriate, up to a value of 1 for strongly disagree. The score result is a maximum value of 104 and a minimum of 26 (Zulch, 2019).

Intervention.

The Treatment in this study used the short film

"Fire Management" with a film duration of 10.21 minutes. This film was produced by a nursing student of Kerta Cendikia health polytechnic and the copyright holder of the film, as well as a student and lecturer of Kerta Cendikia Health Polytechnic. The short film tells about fire risk assessment in colleges, triage of fire victims, techniques to get together, first aid for trauma, burns, and cardiac arrest, and how to stop a simple fire with a fire extinguisher, wet burlap, and sand. The Treatment was carried out virtually with a duration of explanation and watching a short film four times 30 minutes accompanied by an explanation by the facilitator. Meanwhile, the control group was only explained using a virtual poster explanation about fire management. At the end of the research, all respondents can watch the short film. In addition, questionnaires are distributed via Google Forms sent before and after treatment via the Zoom application.

Data Collection

Measurements of this study were carried out before and after the treatment of the short film “Fire Management” was given to the treatment group. Meanwhile, the control group was assigned a virtual poster explanation about fire management—data retrieval before and after using the google form application in which there is also informed consent.

Data Analysis

The statistical test used in this research is the paired-sample t-test and the independent sample t-test using the IBM SPSS Statistic 25 tool and $p < 0.05$.

Ethical Consideration,

This study received ethical approval from ITKS Bali with No. 04.0469/KEPITEKES-BALI/IV/2022. First, we provide information to the chairman of each of these health institutions. Then detail the study and ask for approval by asking permission to explain the research objectives and ethical issues through a consent form, anonymity, confidentiality, privacy, and fair dealing.

RESULTS

The distribution of the frequency of respondents who take part in educational activities through the film “Fire Management” states that the majority of respondents are female at 87.4%, respondents are dominated by ages between 18-23 at 77%, respondents with the most education are undergraduates at 56.3%, respondents with the most membership on campus participated in the Voluntary Corps (PMI), as many as 63.1%, the largest volunteer readiness respondents were ready, namely 70.1%, respondents from universities from Java were 44.8%, and respondents experience volunteering is never as much as 86.2% (Table 1).

Based on the total average value of the sub-indicator that the average value of the psychological preparedness of volunteers in health colleges on indicator one treatment group (short film) and control group (Virtual Poster), there is a difference before and after, namely the treatment group 16.6 and the control group 0.7 (Table 2).

The results of the homogeneity test in table 3 show that the significance value of the psychological preparedness post-test in the

treatment and control groups is 0.625; this indicates that the data is homogeneous.

The results of the psychological preparedness test of health college volunteers using the Kolmogorov-Smirnov normality test showed that the results of the Treatment and control pre-test were 0.186 and 0.079, while the post-test results of Treatment and control were 0.120 and 0.140. So, the conclusion from the normality test of the data is that the distribution is not normal ($p > 0.05$) so the significance value is normally distributed (Table 4).

Based on table 5 shows that in the Treatment group, namely the provision of a short film “Fire Management”. There is an influence on the psychological preparedness of health college volunteers in Indonesia; the significance value is < 0.001 . Meanwhile, the control group was given health education in the form of a virtual “fire management” poster with a significance value of 0.800, showing no effect. The table 6 shows the difference between the Treatment group and the control group, namely the significance value is < 0.001 , which means that there is a difference between the two.

DISCUSSION

Research related to the short film “Fire Management” shows a change in the increase in psychological preparedness in the Treatment group. Meanwhile, in the control group, there was a decrease in psychological preparedness. Disaster preparedness education is very important, especially in the Indonesian state, where disasters often occur (Johnson et al., 2014). One of the risks of disaster in urban areas is fire. Public facilities such as educational facilities also often fire (Desriani, 2018). Therefore, the effort that can be done is prevention in the pre-disaster phase. In this pre-disaster phase, a person must be able to prepare for disasters in this phase (Panes et al., 2020). Several studies related to the lack of knowledge about fire disaster preparedness make problems in handling fire problems. This lack of disaster preparedness knowledge is limited to contacting the fire department; when panicking, it only shouts and asks for help until it only extinguishes the fire with water (Setyawan et al., 2021).

This form of preparedness impacts a person’s psychology when facing a fire disaster. Some of the impacts that arise are anxiety, panic feeling afraid of the surrounding environment (Chowdhury &

Chakraborty, 2017). The effect of psychological preparedness on disasters is also influenced by several factors, such as one's knowledge in dealing with disasters, emotional management and psychological responses, management of the social environment and anticipatory coping through emotional responses (Sheek-Hussein et al., 2021). In addition, technical factors can increase a person's preparedness for disasters. Technology and information advances can prevent and control fires, especially in densely populated locations (Rathore, 2016).

One can improve one's psychological preparedness through preparedness education, health education models and modality therapy (Noviekayati et al., 2021). The current form of health education is easy to do concerning current technology (Nastiti et al., 2021). One of the appropriate technologies to improve psychological preparedness is screening a short film on fire management (Mukhopadhyay, 2015). There is research on the health education model using short films to reduce the risk of sexual behavior among adolescents. In addition, this educational model is straightforward to understand by everyone because the focus on health education model focuses on audio and visual (Susanto et al., 2020).

Audio and visuals seen by someone are more likely to be easily remembered by someone. Because the film media will show a story like the actual condition. Many films become a conversation after being watched by someone. This becomes the attraction of a person to behave (Botchway & Simpson, 2017). The research results also explain that films shown in theatres or social media platforms are easier to remember to retell to others (Stellefson et al., 2020). This short film tells about fire management focusing on managing and responding to a fire disaster. This film also explains the steps in disaster management, especially fires.

A person can change through educational media in the form of films, especially in his psychological problems. By watching a short film about fire management, it is hoped that someone who sees it will be able to dissolve and follow the film and put it into practice in everyday life. This requires a change in one's behaviour in changing for the better. Behaviour change is influenced by a person's knowledge, attitudes and actions. Therefore, preparedness education is very important for a person or community at risk (Rahman et al., 2020).

In addition, volunteers become people ready to prevent or help victims during disasters. Volunteers need to be continuously trained in dealing with disasters. Many volunteer organizations currently carry out standardized education and training, with the aim that when helping disaster victims have good knowledge and ability to help (Whittaker et al., 2015). These efforts can be carried out at the level of education, such as universities. Many volunteers at universities are still unable to implement human values during a disaster. This is not done because many volunteers and students are not ready when they come to help in a disaster.

The results of government policies and the current minister of education are promoting an independent campus. One of these indicators is a humanitarian project. In humanitarian projects, students are expected to participate in disaster activities and humanitarian organizations such as volunteers (Sulistiyan et al., 2021). The government program is expected to be able to increase the capacity of students to prevent a disaster from occurring, with this program also being able to increase campus preparedness in preventing disasters from occurring.

The obstacle in this treatment is the network constrained some respondents during the treatment. So that some respondents could not become inclusion criteria because they did not follow the Treatment until the end. And the efforts that have been made by re-recording the film and the recorded explanations were also sent to all respondents.

Conclusions

Health college volunteers on Java, Bali, and Sumatra increased their psychological preparedness during a fire disaster after watching the short film "fire management". While volunteers who have explained fire management through virtual posters also had a decreased change in psychological preparedness during a fire disaster. However, the two groups have different psychological preparedness in a fire disaster. The implications of this Treatment as a technology-based health promotion innovation media that all people can access in preventing psychological problems and preparedness in disaster risk areas.

Declaration of Interest

None

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Booster dose of COVID-19 vaccination: Perception among elderly

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ABSTRACT

Background: COVID-19 is still a health problem that needs to be addressed. COVID-19 vaccination had been promoted but its coverage was still low, including coverage for the elderly.

Objective: This study aimed to investigate the elderly's perception of participation in COVID-19 vaccination of booster dose.

Methods: This research was a qualitative descriptive study. Collected informants using purposive sampling method. Semi-structured in-depth interviews with nine informants who were domiciled in Kendari, Indonesia. Data analysis using thematic analysis approach.

Results: There were three things related to the perception of the elderly in participating in booster dose COVID-19 vaccinations that have been identified. These three things were the elderly's perception of the COVID-19 vaccination, doubts about the COVID-19 vaccine, and family support.

Conclusions: The elderly's perception of COVID-19 vaccination can help determine the next intervention that can help increase vaccination coverage among elderly. The need to increase understanding of COVID-19 vaccination to the elderly through clear, comprehensive, easy-to-understand, and easily accessible information.

Keywords: vaccination; COVID-19; elderly's perception; Pender theory

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INTRODUCTION

COVID-19 is still one of the health problems that needs the attention of the whole community. The emergence of various types of COVID-19 variants (delta variant, omicron variant) had triggered the government and all relevant departments to promote the importance of carrying out various prevention and intervention measures to suppress the transmission of COVID-19. One of the steps taken was the provision of a COVID-19 vaccine. Vaccination is the most effective COVID-19 preventive measure available today, but its success depends on global accessibility to the vaccine and the willingness of people to be vaccinated (Subedi et al., 2021). Concerns about vaccine safety, vaccine efficacy, and lack of confidence were

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- *The COVID-19 vaccination program is a challenge for the elderly.*
- *It is necessary to provide proper understanding and knowledge about COVID-19.*
- *The right approach to understanding the characteristics of the elderly can be considered.*

possible underlying causes of vaccine doubt (Vellappally et al., 2022). Vaccine hesitancy became one of the top ten global health threats in 2019, referring to people's reluctance or refusal to be vaccinated, especially among the elderly population (Qin et al., 2022). With the availability of vaccines with proven safety and efficacy, vaccination and non-pharmacological measures had become important resources for managing pandemics and controlling the spread of the virus (Vellappally et al., 2022).

The elderly were individuals who receive priority to receive the COVID-19 vaccine. It was because the elderly experience a decrease in the immune system associated with the aging process. This decline in the immune system makes the elderly vulnerable to infections including severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus infection (Cao, 2020). COVID-19 vaccination was considered a public health intervention that could control the infectious disease (SARS-CoV-2) and reduced the mortality rate (Cao, 2020; Vellappally et al., 2022). Data from the United States, Germany, and South Korea show that COVID-19 vaccination could save most lives and remaining life expectancy (Qin et al., 2022; Vellappally et al., 2022).

Until now, governments around the world, including in Indonesia, have launched a 4-dose COVID-19 vaccination program, but the coverage had not been maximized. Based on data, the percentage of vaccination coverage in each stage had decreased. World data shows that up to June 20, 2022, 26.4% of the world's population had received booster doses of vaccine and 35.2% of the elderly in China had not received booster doses of vaccine (Qin et al., 2022). Likewise, data from the Ministry

of Health of the Republic of Indonesia as of October 30, 2022 stated that the first dose of vaccination was 87.42%, the second dose was 73.24%, the third dose was 27.70%, and the fourth dose was 0.28%. The decrease in coverage was also seen in the percentage of elderly vaccination coverage for the first dose of 85.56%, the second dose of 69.28%, and the third dose of 31.80%.

Low vaccination coverage could be attributed to perception. Perceptions or beliefs determine individuals in deciding to take certain preventive actions (Qin et al., 2022). Perception determines a person's behavior. The success of vaccination in achieving immunity through mass vaccination, was highly dependent on the attitudes and perceptions of the community towards the available vaccines (Subedi et al., 2021; Yesni & Rahmadhani, 2022). Promotion of global coverage of early vaccination and booster doses of COVID-19 vaccine had become an urgent issue worldwide, which was closely related to the establishment of herd immunity. The high level of reluctance to be vaccinated when a vaccine is available can be associated with negative attitudes and low perceptions of the COVID-19 vaccine (Adane et al., 2022). Negative attitudes and distrust towards the COVID-19 vaccine were a major obstacle to increase vaccine coverage worldwide (Adane et al., 2022).

As digitization advances – the expansion of social media and internet use – information can spread faster but it can also amplify dangerous messages. An infodemic is too much information, including false or misleading information, both digital and physical during a disease outbreak (Diseases, 2020). This can lead to distrust of health authorities and disrupt the public health response. The COVID-19 'infodemic' and the spread of misinformation through various media had increased negative perceptions about the COVID-19 vaccine and increased the risk of vaccine doubt (Subedi et al., 2021). A review of 35 studies revealed that vaccination doubt rates vary from 4.3% to 72% worldwide (Adane et al., 2022). Based on the results of the COVID-19 symptom survey in Indonesia, it was stated that public doubts about the COVID-19 vaccine decreased from 28.6% to 19.2% during the period January – March 2021 (Djanas et al., 2021; Olivia et al., 2020).

Therefore, it was important to understand people's perception of vaccines and willingness to accept them in order to formulate appropriate

promotional strategies towards successful vaccination. One of the strategies used refers to the Pender theory (Health Promotion Model). The Pender Health Promotion Model was one of the most widely used models to identify, change unhealthy behaviors, and improve health (Chen & Hsieh, 2021; Nurhayati & Dewi Setyawati, 2022; Pouresmali et al., 2022). However, until now there had been no research that examines the perception of the elderly about COVID-19 vaccination based on the Pender theory. For this reason, this study used the Pender theory as a frame of reference for investigating the perception of the elderly on the COVID-19 vaccination so that it could determine the right steps for the future in an effort to increase the coverage of the booster dose of COVID-19 vaccination. The purpose of this study was to investigate the elderly's perception of participation in COVID-19 vaccination of booster dose.

METHODS

Design

This research was a descriptive qualitative study. This study was done by collecting qualitative information data through interviews. Information collected on elderly perceptions of COVID-19 vaccination.

Participants and Setting

This research was conducted in Kendari City. Nine informants were recruited using purposive sampling. The informants were elderly aged 60 – 69 years, did not experience cognitive impairment, have had no history of being diagnosed with COVID-19, and domiciled in Kendari City, Southeast Sulawesi, Indonesia.

Ethical Consideration

This research has been approved by the ethical committee of the Faculty of Health Sciences Universitas Mandala Waluya Kendari, with certificate number No. 1568/UMW/VII/2021.

Data Collection

The semi-structured in-depth interview guide was developed based on the theory of the Health Promotion Model. The focus of the interview was on perceived benefits, perceived barriers, interpersonal influences, and situational influences (Alligood, 2014). The researcher explained the research objectives to all informants. The informed consent form was

given to the informant to be signed as proof of consent to become an informant. Informants were willing to share their perceptions and were willing to participate at any time. All informants were given the freedom to express their views and comments. The informant's identity is only known by the researcher by giving a code to each informant's identity. During data collection the researcher was assisted by a research assistant. Interviews were conducted for 45-60 minutes and were repeated up to 3 times. This is done to clarify the statements submitted by informants. The interview process is stopped when all question items have been answered in accordance with the research objectives that have been set and no new data is found. This is related to data saturation. Saturation was reached at the ninth interview. The interview process was carried out at the informant's house. All interviews were recorded using audio-recorded. Observational data during the interview process was recorded by the research assistant in the field notes. Data collection was carried out during the research period (January – March 2022).

Data Analysis

All data was transcribed into narrative form (verbatim), then read repeatedly and matched with the recording. Researchers coded the data and performed thematic analysis. Thematic analysis is used to conclude the meaning behind the words conveyed by the informants (Maguire & Delahunt, 2017). This is achieved using six steps: 1) become familiar with the data; 2) generate initial code; 3) search for themes; 4) review the theme; 5) determine the theme; 6) write/make a report. Becoming familiar with the data is accomplished by reading and rereading the transcript. Then code, in this phase the researcher organizes the data found by coding the data into small, meaningful pieces. Line-by-line coding of each relevant data with pen and highlighter. The next step was the search for themes by collecting some of the same code to be combined to form a theme. Review of the theme is done by collecting all available and relevant data for each theme. Define a theme, is done by defining and naming each theme found. The last step was reporting a thematic analysis.

Trustworthiness

In this study, trustworthiness was achieved using four approaches, namely credibility, transferability, dependability, and confirmability

(Polit & Beck, 2008; Polit & Beck, 2012; Polit & Beck, 2013; Stahl & King, 2020). The credibility of the qualitative data could be ensured through various perspectives during data collection to ensure the data was appropriate. It could be done by asking informants to reread the transcripts that the researcher had compiled. If the transcript was in accordance with what had been conveyed by the informant, the researcher asked the informant to sign the transcript sheet. Transferability of qualitative data ensures that research findings could be applied to similar settings or individuals. Data transferability in this study had been carried out by applying the methodology and purposive sampling. Dependability refers to the stability of the data. Dependability in this study was achieved by involving the review of data and documents by experts through a consultation process, including expert consultation in helping to review the themes found. Confirmability refers to the accuracy, relevance, or meaning of data. Researchers confirmed the findings of this study to the scientific community, including expert researchers.

RESULTS

The majority of informants were male (56%), most recently graduated from high school (67%), marital status was more married (78%), the others were widows and widowers. More informants have not received the second dose of the COVID-19 vaccine. The employment status was mostly retired civil servants (67%), the rest were housewives and entrepreneurs (Table 1). There were three themes identified in this study, namely perceptions about vaccines, doubts about vaccines, and family support. The distribution of themes can be seen in table 2.

Theme 1: Perceptions about The COVID-19 Vaccine

This theme was formed from three sub-themes: protected from COVID-19, prevented the spread of the virus, and followed government programs.

Subtheme 1.1. Protected from COVID-19

Several informants said that the COVID-19 vaccination was needed especially by the elderly, because the elderly was more susceptible to infectious diseases and vaccines could protect from COVID-19. The following

was the informant's statement:

"I thought this vaccine could protect our body from COVID-19. This disease is really scary, even though we are old but we want to stay healthy and live a long life." (11)

"The COVID-19 vaccination could protect us from the COVID-19 disease. Our body were already weak because we were getting older, we were more susceptible to disease, especially COVID-19, we wanted to be healthy and live long, so I just took this vaccine, but only the first dose." (13, 16)

"We have seen a lot of news on television, this vaccine could protect our bodies so that we could avoid this COVID-19 disease, God willing" (14, 19)

Subtheme 1.2 Prevented the spread of the virus

"I thought that people who received the vaccine would not be susceptible to the COVID-19 virus so that it could prevent the spread of the virus." (15)

"This vaccine was able to prevent the spread of the COVID-19 virus. I heard this news from the news on television, was it true or not... only Allah knows. We just hope so." (11, 18)

"Hopefully this vaccine could really prevent the spread of the COVID-19 virus. We were also afraid with this disease, especially since we were old and easily get sick." (13)

Subtheme 1.3 Followed government programs.

However, there were also informants who said that the lack of information about COVID-19 vaccination, informants did not know the benefits of booster doses of COVID-19 vaccines. Informants assume that the booster dose was only for participating in government programs without knowing the benefits. Informants did not get valid information about vaccination. Some informants only obtained information through television and other mass media (newspapers). Several informants also said that the COVID-19 vaccination was carried out only for administrative purposes such as the requirement to use air and sea transportation. The following was the informant's statement:

"I did the COVID-19 vaccine because

Table 1. Participants Characteristics

Code	Age (year)	Education	Job	Gender	Marital status	Vaccine COVID-19
11	65	Senior High school	Housewife	Female	Married	The first vaccine
12	63	Senior High school	Retired	Male	Married	Not yet vaccinated
13	60	Diploma	Retired	Male	Married	Not yet vaccinated
14	68	Senior High school	Retired	Male	Married	Not yet vaccinated
15	60	Senior High school	Housewife	Female	Widow	Not yet vaccinated
16	61	Bachelor	Housewife	Female	Widow	the first vaccine
17	64	Senior High school	Entrepreneur	Male	Married	Not yet vaccinated
18	67	Diploma	Retired	Male	Married	the first vaccine
19	65	Senior high school	Retired	Female	Married	Not yet vaccinated

I: participants

I wanted to get on a plane, I wanted to visit my child out of town, I couldn't go on a plane if I wasn't vaccinated, so I just followed these rules." (15)

"I thought this vaccine was just part of a government program, because almost all government administration requires us to be vaccinated, so whether we wanted to or not, we just gone with it." (17, 18)

"I wanted to go on a ship, I wanted to do gardening in the village, so I get vaccinated so I could get on a ship." (13, 19)

Theme 2: Doubts about Vaccines

This theme consists of three subthemes, namely fear of the COVID-19 vaccine reaction, possible risks/effects of the vaccine, and still being infected.

Subtheme 2.1 Fear of the COVID-19

vaccine reaction

Almost all of the informants had doubts about the effectiveness of the COVID-19 vaccine in overcoming the spread of COVID-19 infection. The following was the informant's statement:

"I was still afraid of being vaccinated, I was afraid... there was a reaction after being vaccinated, so I was still hesitant to get vaccinated again, I was just getting my first dose." (16)

"I didn't want to be vaccinated yet. I was afraid... because I was old... I was afraid after being vaccinated my body would be sick." (12)

"I was afraid that my body would become

weaker after being vaccinated, making it easy for me to catch COVID, I was not ready to be vaccinated at this time." (17, 14)

Subtheme 2.2 Possible risks/effects of the vaccine

Several informants said many people who had been vaccinated experienced fever, bone and joint pain. The following was the informant's statement:

"I was old, my physical condition had decreased, so if I get vaccinated again, I might get sick, because after the vaccination, someone had fever, bone and joint pain, so I didn't want to be vaccinated yet." (15)

"I heard the news that after being vaccinated, the body could get sick and even fever, it hurts the joints, when we get vaccinated then we get sick." (13, 19)

"I just doubted that if I get vaccinated, maybe my body would get sick, even though I was old, I wanted to be healthy, not sick." (14)

Subtheme 2.3 still being infected

"I saw the news on television that it said we could still be infected with COVID-19 even though we were vaccinated, so I was hesitant to get vaccinated." (11, 14, 17)

"I heard that someone could still get COVID even though she/he have been vaccinated, so I was a bit doubtful to, the vaccine doesn't guarantee that we were

Table 2. Themes Distribution

Themes	Subtheme	Category
Perceptions about vaccines	Protected from COVID-19	<ul style="list-style-type: none"> Vaccines could protect against COVID-19 Vaccines could avoid COVID-19 Vaccines could protect family and others
	Prevented the spread of the virus	<ul style="list-style-type: none"> Vaccines could prevent the spread of the virus Vaccines could prevent transmission of COVID-19 infection
	Followed government programs	<ul style="list-style-type: none"> COVID-19 vaccine to meet long-distance travel requirements Join government programs
Doubts about vaccines	Fear of the COVID-19 vaccine reaction	<ul style="list-style-type: none"> Fear of a reaction after being vaccinated Fear of getting sick after getting vaccinated Fear of being easily infected after being vaccinated
	Possible risks/effects of the vaccine	<ul style="list-style-type: none"> Possibility of getting sick after being vaccinated Experiencing bone pain Joint pain Fever
	Still being infected	<ul style="list-style-type: none"> Could still be infected with COVID-19 after being vaccinated Could still get sick after getting vaccinated
Family support	Required information support from the family	<ul style="list-style-type: none"> Required information from the family about the timing of the vaccine Need information from family about the benefits of vaccines
	Required instrumental support from the family	<ul style="list-style-type: none"> Required family support to deliver to the vaccine site Need transportation assistance from family

protected from COVID.” (12, 15)

Theme 3: Family Support

This theme was formed from two subthemes, namely required information support from the family and required instrumental support from the family.

Subtheme 3.1 Required information support from the family

Several informants said that because of their age and physical limitations, they needed to be accompanied by their families when vaccinating. Informants also needed support in the form of information from family members. But on the other hand, there were busy family members so that family members were limited in providing support to carry out COVID-19 vaccinations. The following is the informant's

statement:

“I didn't know the vaccination schedule, so I needed information from my family because they were close to me”. (13)

“Sometimes I was ready to be vaccinated, but I forgot the time, if my child didn't remind me, so I kept forgetting, so I needed information from my child.” (19)

“I was getting senile, so I needed help with information about vaccines from my child, but my children were busy at work so sometimes they forgot too.” (16)

Subtheme 3.2 Required instrumental support from the family

“I was usually accompanied by my child, I couldn't go to the vaccination center alone, so I needed my child's help.” (11)

“I was weak, I didn't dare to walk alone, so my child always accompanied me everywhere, it was just that the children

were also busy, so I haven't been vaccinated." (I2, I3)

DISCUSSION

Perceptions about Vaccines

Perceptions or beliefs about outbreaks are important in deciding to take certain precautions (Qin et al., 2022). Overall, the perception of informants could understand the importance of COVID-19 vaccination. However, there were some informants who still did not understand that. Inadequate knowledge of informants could be associated with insufficient information received. In Pender's theory was stated that in the process of changing behavior a person must know the benefits of the action to be achieved (Alligood, 2017).

The benefits and barriers to action affect a person's perception of health behavior, the barriers they face when trying to change their health behavior, and their awareness of how doing health behavior will have a positive impact or consequence. A person who is committed to taking an action will predict the benefits of the action according to his personal value (Rezaeemanesh et al., 2020). Perceived barriers can prevent commitment to take certain actions (Rezaeemanesh et al., 2020).

It was related to one's knowledge. Inadequate knowledge about vaccines could be caused by low educational background, poor socioeconomic status, or getting knowledge from fellow laymen (Mohamed et al., 2021). The results of this study indicated that most of the informants had an educational background of high school graduates. Higher levels of education, higher income, and living with high-risk individuals were significantly associated with higher knowledge (Mohamed et al., 2021). Other studies suggest that perceptions of vaccine safety decrease with age, but increase with increasing education (Syan et al., 2021).

Doubts about Vaccines

The success of a vaccination program to achieve herd immunity depends on the acceptance of the vaccine and the uptake rate (Mohamed et al., 2021). Achieved adequate vaccine coverage also depends on addressing vaccine doubts and addressing vaccination barriers (Bolotin et al., 2021). The results of this study also showed that there was a perception of doubt in the elderly in carrying out COVID-19 vaccinations, most of the elderly did not want to

be vaccinated because they get bad information about the COVID-19 vaccine. Vaccine hesitancy was the reluctance of people to receive vaccines that are proven to be safe, effective, and available to them for protection against infectious diseases (Danabal et al., 2021). Vaccine doubt in the elderly was influenced by inappropriate vaccine information, vaccine benefits, and vaccine side effects (Rantingsih & Sutantri, 2022). The elderly expressed fear of the side effects of vaccines that cause fever, headache or pain at the injection site, doubting the benefits of vaccines that could protect them from the COVID-19 virus (Rantingsih & Sutantri, 2022).

Individuals who were unwilling to receive vaccinations indicated that concerns about the short- and long-term side effects of vaccines and a lack of confidence in the vaccines themselves were the main reasons they did not want to receive vaccinations (Syan et al., 2021). COVID-19 vaccine hesitancy in the United Kingdom was reported to be around 35% (Danabal et al., 2021).

This hesitation was driven by people's attitudes towards the health system and vaccines, including social factors, health systems and accessibility also play a role in vaccine doubt (Danabal et al., 2021). Another study also found that for older adults, the higher the knowledge score about COVID-19 and COVID-19 vaccines, the lower the vaccination hesitation against booster shots. A survey conducted in southern Italy showed that what people over 65 years of age know about COVID-19 can change their behavior during this pandemic (Qin et al., 2022).

Family support

In Pender's theory stated that health behavior was also influenced by interpersonal sources such as family, health workers, and peers. Pleasant environmental support will affect personal perception and cognition to facilitate or hinder further behavior. A situational influence that makes a person more able to be influenced to perform certain behaviors was a pleasant environment that can have a positive impact on efforts to change behavior (Alligood, 2017). In this study, it was found that the elderly need support from both their families and health workers to carry out the vaccine. This support can be in the form of information support on the importance of COVID-19 vaccination or support in the form of time from the family to take the elderly to health facilities that provide

vaccinations.

Family and peer support seems to be very helpful for patients to cope with their condition. Social support could serve as a protective buffer against one's perceptions and was an important factor in overcoming health-related problems (Helitty et al., 2021). The involvement of patients, family members, and peers was one approach that could be taken to improve the patient's health status (Helitty, 2022). In addition to information, informants also needed instrumental assistance from their families. Instrumental assistance in the form of transportation support to the vaccination site and assistance during the vaccination process. This is due to the physical weakness experienced by the elderly so that they need instrument assistance from the family.

This research had limitations but also had strengths. The limitation of this study was the results of this study cannot be generalized nationally because the sample was taken from one location. Although this research has applied the rules that have been set in qualitative research, but the results cannot be generalized. The strength of this study was that the results of this study can be used as a basis for determining further interventions so that a method can be developed that can increase the knowledge and behavior of the community, especially the elderly, about the booster dose of COVID-19 vaccination, thereby can be increasing vaccination coverage.

CONCLUSIONS

The elderly's perception of COVID-19 vaccination can help determine the next intervention that can help increase vaccination coverage. The provision of health information related to vaccination can be further improved by providing comprehensive, accessible, easy-to-understand information so as to prevent or reduce doubts about COVID-19 vaccination. The ease of the elderly in accessing appropriate and adequate information can reflect the elderly's desire to know more about vaccination. The involvement of the support system, including the family, in helping to increase the elderly's understanding of COVID-19 vaccination and the elderly's desire to be vaccinated needs to be done. Families can support the elderly through providing appropriate information and support the elderly by providing time, facilities, and infrastructure so that the elderly can receive doses of the COVID-19 vaccine. Perception

can help the elderly in determining the action to be achieved. This study is used as input in determining the appropriate intervention in an effort to increase the coverage of booster dose COVID-19 vaccination. Recommendation for further research is the need to take research samples from various regions with different ethnicities and customs, because a person's perception is also influenced by the norms he adheres to. The results of this study can also be continued into quantitative research methods by examining the relationship or influence of the themes found in this study on the booster dose COVID-19 vaccination coverage.

Declaration of Interest

None

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Knowledge and attitude on tuberculosis among college students in Cambodia

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ABSTRACT

Background: Tuberculosis (TB) is one of the most common infectious diseases in the world, and it remains a significant public health concern. Cambodia is one of the 30 countries with the highest tuberculosis burden.

Objective: to explore the knowledge and attitudes about TB and obtain sources of TB information among college students in Cambodia.

Methods: The study design was descriptive and cross-sectional. The participants were 240 students from the Royal University of Phnom Penh who were chosen at random. The questionnaire was self-administered. The information was gathered in May 2019 and analyzed using descriptive and t-test statistics and the Chi-square test. To determine statistical significance, a p-value of 0.05 was used.

Results: This study revealed that students moderately understood tuberculosis (M = 27.76, range = 21 - 35). Male students had higher levels of TB knowledge than female students (X² = 5.909, p = 0.052). Many students lacked knowledge regarding tuberculosis transmission and had a negative attitude toward tuberculosis, particularly "if they found out that they had TB" and "if they thought they had symptoms of TB." TB data was gathered from various sources. TB knowledge was significantly related to TB information obtained by health workers (r = 0.234, p = 0.01).

Conclusions: The findings emphasize increasing knowledge about tuberculosis prevention and treatment. They will be able to practice appropriate health behavior through health education effectively, and education will lead to the formation of proper attitudes about tuberculosis.

Keywords: tuberculosis; knowledge; attitudes; college students

INTRODUCTION

Tuberculosis (TB) is one of the most common infectious diseases in the world, and it remains a major health issue in low and middle-income countries (Meghji et al., 2021). The bacteria primarily affect the lungs but can harm other organs (Ou et al., 2018). TB is spread through airborne contamination, such as coughing, sneezing, and spitting, and affects millions of people

Nursing and Healthcare Practices

- *Knowledge about TB in student groups is needed.*
- *Our research shows that good knowledge among student can participate in prevention and seek for treatment.*
- *Community nurses and health workers can involve youth groups especially student in TB prevention.*

each year, ranking as the second leading cause of death among transmission diseases. Any healthy person can become infected by breathing in airborne bacteria and develop tuberculosis (Hayward et al., 2020). This can happen within a year or years of being infected. When an infected person's immune system is compromised due to malnutrition, other diseases such as human immunodeficiency virus (HIV) infection, diabetes, ageing, and the TB risk are increased (Organization, 2013).

According to Global Tuberculosis Report, TB is one of the world's top ten causes of death and the leading cause of a single infection agent, ranking above HIV/AIDS (Clarke et al., 2019). In 2017, there were an estimated 10 million incident cases worldwide, of which 5.8 million were among men, 3.2 million were women, and 1.0 million were children. There were 1.6 million TB death and an additional 0.3 million death resulting from TB disease among HIV positive. Moreover, there were 558 000 new cases with drug resistance TB (Houben & Dodd, 2016). The Global Burden of latent tuberculosis also estimated that approximately 1.7 billion individuals were latently infected with M. TB globally in 2014, just under a quarter of the global population (Bello, 2010). The global targets for TB control have been developed to halt and reverse TB incidence by 2015 and to eliminate TB as a public health problem with one case per one million population by the year 2050 (Organization, 2015).

In South-East Asia, TB continues to remain one of the major health and developmental problems. With 26% of the world's population, this region carries over 41% of the global TB burden. An estimated 4 million new TB cases and 460 000 TB deaths occurred in 2014, and

about 5.4 million people suffered from active TB (Chhim, 2021).

In 2015, WHO estimated there were approximately 36,000 cases out of the population of 16 million, which was more than 2 cases for every 1000 people. Between 2000 and 2015, the estimated incidence of all forms of TB fell from 575 to 380 per 100 000 population (34% reduction) (Hossain et al., 2017). However, it revealed that many people lacked knowledge and attitude related to tuberculosis infection. Moreover, beyond the health care provider and educators, college students are a potential influence on the family and their contribution to the future society in Cambodia. Thus, special attention and education should be paid to university students (Organization, 2013). Therefore, it is worthy to assess the level of knowledge and attitudes about TB, as well as to examine the socio-demographic factors associated with knowledge and attitudes toward TB among college students in Cambodia.

METHODS

Design

A quantitative, descriptive, and cross-sectional study was used to assess TB knowledge and attitudes among Cambodian college students.

Sample and Setting

To avoid bias, a random sampling method ensures that all students are given the same chance. A multistage sampling method was employed. First, choose two faculties randomly: Science and Social Science and Humanity (out of six). Second, six programs from & Social Science and Humanity (out of 16 undergraduate programs) were randomly chosen. Third, choose second and third-year students from six programs: Khmer, Psychology, Philosophy, Tourism, International Technology, and Physics. The sample size was 240 students. The study was conducted at the Royal University of Phnom Penh (RUPP), Cambodia's most prominent university. It offers degrees in sciences, social sciences and humanities, and engineering. Vocational courses in information technology, electronics, psychology, and tourism also provide Cambodia's foremost degree-level language programs through the Institute of Foreign Languages. RUPP has full membership in the ASEAN University Network. The inclusion criteria in this study consist of 1)

Table 1. Respondents Characteristics

Variable	Category	n	%
Sex	Male	150	62.5
	Female	90	37.5
Ethnicity	Khmer	233	97.1
	Khmer Loue	6	2.5
	Vietnamese	1	0.4
Religion	Christianity	4	1.7
	Buddhism	232	96.7
	Islam	4	1.7
Hometown	Urban	70	29.2
	Rural	170	70.8
Academic year	Second year	120	50
	Third year	120	50
Age (year)		Mean \pm SD	Range
		20.43 \pm 1.35	17 - 25

the respondents who present at school during the data collection; 2) the participants who are willing to participate; and 3) the participants who are studying in departments and universities as the above. In addition, respondents who were absent during data collection and not studying in the department and university above were excluded.

Instruments

Data was gathered using a self-administered questionnaire. The survey was divided into four sections. Section 1 included items to assess TB knowledge. Section 2 had questions about TB attitudes. Section 3 included items relating to TB information sources. Finally, Section 4 included questions about the respondents' socio-demographic characteristics. Aung developed an instrument in 2013 to assess TB knowledge (39 items). Attitudes toward tuberculosis (5 items) and information about tuberculosis (2 items) were measured using WHO tools developed in 2018 (Organization, 2018). The TB knowledge instrument is made up of the following components: the cause of TB, transmission, signs and symptoms, prevention, diagnosis, treatments, misconceptions, sources, and contents of TB information (39 items). The answers are classified as 'true,' 'false,' or 'don't know.' Participants who said they didn't know the answer were thought to have answered the question incorrectly. A correct answer receives a score of '1', while false or unknown answers receive a score of

'0'. The score ranged from 0 to 39, with answers added together for a total score. The total score in this study was divided into three levels: low (0 – 23 scores), moderate (24-31 scores), and high (32-39 scores). Multiple-choice questions were used to assess participants' attitudes toward tuberculosis (5 items). To assess the TB information (2 items), the participant was asked to indicate whether they had received TB information ('yes' or 'no'). The survey questionnaire was translated into Khmer by the research team.

Data Collection

The data collectors on the research team first explained the purpose of the study and how to fill out the questionnaires to participants. Students were informed that their participation was entirely voluntary and that they could withdraw at any time. Participants had the option of refusing to answer any questions that made them uncomfortable. Answering the questions took about 15 to 20 minutes. Data was collected between the 5th and 25th of May 2019.

Data Analysis

Data in each question was coded by number and analyzed with the Statistical Package for the Social Sciences® (SPSS), version 25.0. (SPSS Inc., Illinois, USA). Participants' characteristics were examined using descriptive statistics, frequency counts, and percentages. Variables are summarized using the mean and standard

Table 2. Descriptive of The Students' TB Knowledge

Items	Male		Female		Total	
	n	%	n	%	n	%
Basic knowledge						
TB is a communicable disease	143	95.3	85	94	228	95
TB caused by germs produced from a person with active lungs TB	93	62	53	58.9	146	60.8
Transmission of TB						
Through handshakes*	133	88.7	91	90	214	89.2
Through the air when a person with TB coughs or sneezes	138	92	85	94.5	223	92.9
Through sharing dishes*	65	43.3	42	46.7	107	44.6
Through eating from the same plate*	48	32	34	37.8	82	34.2
Through touching items in public place*	133	88.7	76	84.4	209	87.1
Through mosquito bite*	142	94.7	85	94.5	227	94.6
Through blood transfusion*	93	62	57	63.3	150	62.5
Signs and symptoms of TB						
Cough for more than 2-3 weeks	130	86.7	80	88.9	210	87.5
Coughing up blood	72	48	46	51.1	118	49.2
Evening rise in low grade fever	24	16	7	7.8	31	12.9
Sweating at night time	27	18	5	5.6	32	13.3
Gain weights*	145	96.7	87	96.7	232	96.7
Gain appetite*	139	92.7	86	95.6	225	93.8
Prevention of TB						
Avoiding handshakes*	134	89.3	80	88.9	214	89.2
Covering when cough or sneeze	140	93.3	85	94.4	225	93.8
Avoiding the sharing of dishes*	51	34	33	36.7	84	35
Washing hands after touch public items	90	60	51	56.7	141	58.8
Closing windows at home*	141	94	82	91.1	223	92.9
Having nutritious foods	86	57.3	47	52.2	133	54.5
Taking antibiotics*	105	70	71	78.9	176	73.3
Praying*	145	96.7	85	94.4	230	95.8
BCG vaccination children < one year old	129	86	72	80	201	83.8
TB can be diagnosed by sputum test	121	80.7	63	70	184	76.7
TB can be cured	123	82	71	78.9	194	80.8

*Negative

deviation (SD). Differences in male and female TB knowledge scores were assessed using Chi-square tests for categorical variables and t-tests for continuous measures. Correlation tests were performed to determine which obtained information is related to tuberculosis knowledge. All tests were two-tailed, with a p 0.05 threshold considered significant. Positive items were coded as 'yes' (correct answer)

was 1 and negative items were coded as 'no' (incorrect answer) was 0. Negative items were re-recorded in reverse order, with 'yes' (incorrect answer) equal 0 and 'no' (correct answer) equal 1.

Ethical Consideration

Before beginning data collection, the University of Health Sciences ethic committee issued the

Table 2. Descriptive of The Students' TB Knowledge *Continue ...*

Items	Male		Female		Total	
	n	%	n	%	n	%
How can be TB cured						
Taking medicines from drug store*	52	34.7	27	30	79	32.9
Rest in home without taking medicine*	147	98	89	98.9	236	98.3
Self-treatment*	146	97.3	88	95.6	234	96.7
Praying*	149	99.3	87	96.7	236	98.3
Taking treatment with traditional healer*	138	92	87	96.7	225	93.8
Taking anti-TB drugs by health care providers	143	95.3	88	97.8	231	96.3
Skipping the anti-TB drugs*	138	93	87	96.7	225	93.8
Who can be infected with TB?						
Poor people	75	50	29	32.2	104	43.3
Well-nourished people*	135	90	84	93.3	219	91.3
Old people	79	62.5	42	46.7	121	50.4
People living with crowed places	55	36.7	28	31.1	83	34.6
People living close to the TB patients	136	90.7	75	83.3	211	87.9
People living in good ventilated places	16	10.7	6	6.7	22	9.2

*Negative

letter of approval number 0995-UHS. This was sent to the Royal University of Phnom Penh, who granted permission for data collection. The study's purpose was explained to the students. Anonymous questionnaires maintain confidentiality, and all students have the right to decline participation without penalty. If they agree to participate in the study, a consent form is obtained and the questionnaires are completed. All study participants are permitted to read and sign the consent form.

RESULTS

Table 1 describes the characteristics of the participant. The average age of the participants was 20.43 years (SD = 1.35) with a range of 17 to 25 years. Fifty percent were second-year students, and fifty percent were third-year students; 62.5% were male, and 37.5% were female. Participants were mostly Khmer (97.1%), Khmer Loue (2.5%), and Vietnamese (0.4%). The majority of students (70.8%) were from rural areas, while 29.2% were from urban areas.

Table 2 describes the students' TB knowledge. The majority of them (95.0%) were aware that tuberculosis is a communicable disease and that TB caused by germs produced by a person with active lungs TB (60.8%). The majority of students correctly answered

the question about TB transmission. When a person with tuberculosis coughs or sneezes (92.9%), handshakes (89.2%), touching items in public (87.1%), and mosquito bites, TB can be transmitted through the air (94.6%). Students, on the other hand, revealed a lack of understanding that TB can be transmitted through blood transfusion (62.5%), sharing dishes (44.6%), and eating from the same plate (34.9%). The students were aware that 'coughing for more than 2-3 weeks' (87.5%) and 'coughing up blood' (49.2%) were signs and symptoms of tuberculosis. Almost all students (96.7%) correctly answered that weight gain and appetite gain were not signs and symptoms of tuberculosis. The students demonstrated a lack of understanding that 'evening rise in low grade fever' (12.9%) and 'sweating at night time' (11.8%) were signs and symptoms of tuberculosis. TB can be prevented, according to the students, by covering one's cough or sneeze (93.8%), washing one's hands after touching public items (58.8%), and receiving BCG vaccination (83.8%). The majority of students were aware that TB cannot be prevented by avoiding handshakes (89.2%), closing windows at home (92.9%), taking antibiotics (74.3%), or praying (95.8 percent). However, 35% of them believed that TB could be avoided by not sharing dishes. 76.7% of students knew that TB can be

Table 3. TB Knowledge between Male and Female

Level		Male		Female		Total		X ²	p
		n	%	n	%	n	%		
High	32-39	14	5.8	8	3.3	22	9.2	5.909	0.052
Moderate	24-31	132	55.0	73	30.4	205	85.4		
Low	0-23	4	1.7	9	3.8	13	5.4		
Total		150	62.5	90	37.5	240	100		

Table 4. Total Mean Score of TB Knowledge in Male and Female

Variable	n	%	M±SD	t	p
Male	150	62.5	21.99 ± 2.52	1.72	0.087
Female	90	37.5	27.37 ± 2.93		

diagnosed by examining sputum, and 80.8% believed that TB could be cured. Almost all students responded that TB can be cured by taking anti-TB drugs prescribed by health care providers (96.3%). Almost all students were aware that TB cannot be cured with rest at home without taking medicine (98.3%), self-treatment (96.7%), praying (98.3%), traditional healer treatment (93.8%), and skipping anti-TB drugs (93.8%). In contrast, 32.9% of students believed that taking drugs from a drug store could cure tuberculosis. Surprisingly, students demonstrated a lack of knowledge about tuberculosis infection, including the fact that poor people (43.3%), elderly people (50.4%), people living in crowded places (34.6%), and people living in well-ventilated places (9.2%) can be infected. Furthermore, most students (91.3%) understood that well-nourished people cannot be infected with TB and that people living near TB patients can be infected with TB (87.9%).

Table 3 revealed about Level of TB Knowledge between Male and Female. The Chi-square test was used to compare TB knowledge levels between male and female students. In this sample, 85.4% (55% male, 30.4% female) had moderate TB knowledge, 9.2% had high TB knowledge (5.8% male, 3.3% female), and 5.4% had low TB knowledge (1.7% male, 3.8% female). Male students had higher knowledge levels than female students, but the difference was insignificant ($X^2 = 5.909$, $p = 0.052$). Furthermore, the students' total mean TB knowledge score was 27.76 (SD = 2.69, Range = 21-35).

Table 4 was the result to compare the total mean score of TB knowledge between male and female students, an independent t-test was used. Although female students scored

higher than male students ($M = 27.37$, $SD = 2.93$), the difference was insignificant ($t(238) = 1.72$, $p = 0.087$).

Table 5 summarizes the findings of the TB attitude survey. More than half of students said they would be scared if they were diagnosed with tuberculosis (52.9%). Female students (64.4%) were more fearful than male students (46%). 38.3% of students would be surprised if they had tuberculosis, and 27.5% would be sad or hopeless. Only 9.6% of respondents reported feelings of shame, while 6.3% reported feelings of embarrassment. If they have TB, almost all of them want to speak with a doctor or another medical professional (96.3%). If they had TB, 42.5% of them want to talk to their parents, 19.2% want to talk to other family members, and 17.9% want to talk to close friends. If they have TB symptoms, 95.8% of students go to a health facility, and 26.3% go to a pharmacy. They refused to go to the hospital for the following reasons: Cost (42.5%), not knowing where to go (35.45%), transportation or distance to clinic (29.9%), not wanting to find out that something is seriously wrong (20.4%), and distrust of medical workers (15.8%). Students were asked how much they thought TB diagnosis and treatment cost. According to the findings, it is reasonably priced (32.9%), somewhat or moderately expensive (30.8%), and free of charge (26.3%).

Described the Sources of TB Information among participants. More than half of the students (69.2%) had received tuberculosis information (68.0% male and 71.1% female). When asked where they learned about tuberculosis, the top five ranked resources were as follows: TV (54.6%), family, friends, neighbors, colleagues (40.8%), health worker (36.30%), teacher (35.8%), radio (28.7%)

Table 5. Attitude on TB in Male and Female Students

Items	Male		Female		Total	
	n	%	n	%	n	%
What would be your reaction if you were found out that you have TB?						
Fear	69	46	58	64.4	127	52.9
Surprise	62	41.3	30	33.3	92	38.3
Shame	16	10.7	7	7.8	23	9.6
Embarrassment	8	5.3	7	7.8	15	6.3
Sadness or hopelessness	43	28.7	23	25.6	66	27.5
Other	28	18.7	12	13.3	40	16.7
Who would you talk to about your illness if you had TB?						
Doctor or other medical worker	146	97.3	85	94.4	231	96.3
Spouse	35	23.3	11	12.2	46	19.2
Parent	61	40.7	41	45.6	102	42.5
Child(ren)	17	11.3	3	3.3	20	8.3
Other family member	31	20.1	15	16.7	46	19.2
Close friend	27	18	16	17.8	43	17.9
No one	2	1.3	1	1.1	3	1.3
Other	3	2	2	2.2	5	2.1
What would you do if you thought you had symptoms of TB?						
Go to health facility	143	95.3	87	96.7	230	95.8
Go to pharmacy	35	23.3	28	31.1	63	26.3
Go to traditional healer	3	2	2	2.2	5	2.1
Pursue other self-treatment options (herbs, etc.)	0	0	1	1.1	1	0.4
Other	8	5.3	4	4.4	12	5
If you would not go to the health facility, what is the reason?						
Not sure where to go	53	35.3	32	35.6	85	35.45
Cost	64	42.7	38	42.2	102	42.5
Difficulties with transportation/distance to clinic	37	24.7	18	20	55	29.9
Do not trust medical workers	21	14	17	18.9	38	15.8
Do not like attitude of medical workers	19	12.7	6	6.7	25	10.4
Cannot leave work or school (overlapping work hours with medical facility working hours)	20	13.3	9	10	29	12.1
Do not want to find out that something is really wrong	29	19.3	20	22.2	49	20.4
Other (please explain)	14	9.3	3	3.3	17	7.1
How expensive do you think TB diagnosis and treatment is in your country?						
It is free of charge	34	22.7	29	32.2	63	26.3
It is reasonably priced	50	33.3	29	32.2	79	32.9
It is somewhat / moderately expensive	49	32.7	25	27.8	74	30.8
It is very expensive	17	11.3	7	7.8	24	10

*Attitude questions were multiple answer format except question 5. Respondents selected more than one answer that apply to them.

(Table 6).

Table 7 displays the results of Spearman correlation statistics. Students who received TB information through a health worker ($r = 0.243$, $p 0.01$) and radio ($r = 0.127$, $p 0.05$) were significantly related to their TB knowledge score.

DISCUSSION

The goal of this study was to look at college students' knowledge, attitudes, and sources of information about tuberculosis. The current study's findings revealed that participants had limited knowledge and misconceptions about tuberculosis. In the TB knowledge levels, which were classified as high, moderate, and low, most of student demonstrated moderate knowledge. When compared to the Thailand study results, the total mean score of knowledge in this study was higher. On the other hand, a study in Thailand were immigrants from Myanmar with a low level of education (Hibstu & Bago, 2016).

Knowledge on TB

Almost of students were aware that tuberculosis is a communicable disease. This finding was higher than the study's finding among Nepalese at higher secondary school (high school) students in 2016 (Hibstu & Bago, 2016). The students were well-versed in the transmission of tuberculosis. Higher percentages of the participants were correctly identified that TB can be transmitted through the air when a person with TB coughs or sneezes and less than half of students revealed that they were lacked knowledge about TB transmitted through 'sharing dishes and eating from the same plate. According to the North Carolina Tuberculosis Control Program, people who are infected with TB have usually had close contact with someone who is sick with TB diseases. Someone with TB disease is more likely to infect family members, roommates, friends, or close co-workers. However, TB cannot be transmitted through shaking hands, kissing, sex, sharing glasses, plates, utensils, clothing, sheets, or furniture, or through the air outside (Organization, 2018).

Students had a general understanding of the signs and symptoms of tuberculosis, but some statements were misunderstood. Coughing up blood was regarded as a sign and symptom of tuberculosis by less than half of the students. Only a small percentage of students knew that 'night-time sweating and

evening rise in low graded fever were signs and symptoms of tuberculosis. Consistent findings from a Belgrade study of college students revealed that night-time sweating and evening rise in low graded fever were signs and symptoms of tuberculosis (Vanaja et al., 2016). The students were well-versed in tuberculosis prevention. Concerning TB prevention, most of participants were aware that TB can be prevented by covering mouth and nose when a person with TB coughs or sneezes' and 'by BCG vaccination. However, the discovery that less than half of students believe that TB can be prevented by avoiding sharing of dishes. It revealed that students had insufficient knowledge. Tuberculosis could have been eradicated with proper treatment, vaccination, and prevention measures.

The majority of students were knowledgeable about tuberculosis diagnosis and treatment. Almost of students were aware that tuberculosis can be cured by taking anti-TB drug, this result was higher than the Thailand study. In contrast, a small percentage of students believed that taking medicine from a drug store could cure tuberculosis, it was consistent with a previous study at Thailand in 2014. In addition, more than one quarter of them would visit a pharmacy if they had TB symptoms. These findings suggested that there is a possibility of developing multidrug-resistant tuberculosis (MDR-TB). MDR-TB is a dangerous form of tuberculosis that does not respond to isoniazid or revamping, the two most powerful anti-TB drugs used to treat pulmonary tuberculosis. Because anti-TB drugs do not kill Mycobacterium tuberculosis, MDR-TB is much more difficult to treat. MDR-TB was diagnosed in an estimated 490,000 people worldwide in 2016. The causes of multidrug resistance are incorrect or inappropriate treatment due to the use of incorrect medications, the use of only one medication (standard treatment includes at least two drugs), and the failure to take medication consistently or for the entire treatment period (treatment is required at least 6 months). Drug-resistant tuberculosis treatment is much more expensive and can take up to two years, putting a strain on both patients and the health-care system (Chandra Gurung et al., 2019).

MDR-TB and the Use of Non-Prescription Antibiotics in Cambodia

Antibiotics without a prescription are widely used in the Cambodian community. MDR-TB accounted for more than ten percentage of all

Table 6. The Source of TB Information among Male and Female

Items	Male		Female		Total	
	n	%	n	%	n	%
Have you ever received information about TB?						
Yes	102	68	64	71.1	166	69.20
No	48	32	26	28.9	74	30.80
*Where do you first heard about TB? (Check all that apply)						
Newspapers and magazine	28	18.7	14	15.6	42	17.15
Radio	44	29.3	25	27.8	69	28.70
TV	90	60.0	41	45.6	131	54.60
Billboard	41	27.3	17	18.9	58	24.20
Brochures, posters and other printed materials	31	20.7	12	13.3	43	17.90
Health worker	53	35.3	34	37.8	87	36.30
Family, friends, neighbors and colleagues	54	36.0	44	48.9	98	40.80
Religious leader	11	7.3	4	4.4	15	6.30
Teacher	59	39.3	27	30	86	35.80
Other	10	6.7	5	5.6	15	6.30

*Respondents selected more than one answer.

Table 7. Relationship between Sources of TB Information and TB Knowledge Score

Variables	Radio	Health worker	TB knowledge
Radio	1		
Health worker	0.191**	1	
TB knowledge	0.127*	0.243**	1

** $p < 0.01$ (2-tailed); * $p < 0.05$ (2-tailed)

TB cases in Cambodia in 2011, up from a small percentage in 2001. In 2014, Cambodia was one of the first countries in the region to develop an antimicrobial resistance policy. The WHO-guided policy was comprehensive and included a three-year implementation plan. However, this has yet to be translated into action. A key policy was a 2016 directive that prohibited pharmacists from dispensing antibiotics without a doctor's prescription. On the other hand, A Health Ministry had no idea whether any pharmacy had ever been disciplined for doing so. Pharmacists were completely ignoring the ministry's ban because no one was monitoring their antibiotic dispensing (Faiz & Basher, 2011; Khan et al., 2022).

Almost of students were aware that well-nourished people are less likely to become infected with tuberculosis. In contrast, a surprising number of students lacked knowledge about TB infection. There were minimal percentage of students correctly stated that people living in well-ventilated areas

can be infected with tuberculosis. In addition, the current study found that male students had better knowledge than female students, though the difference was insignificant. The findings revealed that the student knowledge of tuberculosis was insufficient. Health education will improve people's understanding of tuberculosis. The Center for Disease Control and Prevention in the United States has identified colleges and universities as important settings for providing students with health education and services (Control & Prevention, 1997). These findings imply the importance of health education on the causes, transmission, signs and symptoms, prevention, and importance of treatment for tuberculosis. This type of education allows college students to obtain accurate information, improve their knowledge of tuberculosis, and guide positive attitudes. They will be able to effectively practice appropriate TB health behaviors after receiving health care education. An intervention study conducted among students in India to

determine whether educational intervention would affect the level of TB knowledge and awareness discovered that knowledge score improved significantly after education session (Vanaja et al., 2016).

Attitude on Tuberculosis

More than half of participants said they would be scared with TB and minority of participants were surprised and sad or hopeless if they found out they had tuberculosis. There was small percentage of them felt shame or embarrassment. Participants in the Saudi Arabia study (aged 20-60 years old) expressed more fear with a higher percentage and more than one quarter sadness or hopelessness after learning they had tuberculosis (Aung & Panza, 2014). In the current study, the majority of participants would consult a doctor or medical worker if they had TB, and they would visit a health facility if they had TB symptoms. In contrast, an Ethiopian study (aged over 18 years old) found that bigger than half of participants would consult a doctor or medical worker if they had TB and would visit a health facility if they had TB symptoms (Tolossa et al., 2014). The findings revealed that students had a negative or incorrect attitude toward tuberculosis, as well as poor knowledge and attitude toward TB diagnosis and treatment. Less than one-third of students believed that tuberculosis diagnosis and treatment were free of charge. The National Tuberculosis Program in Cambodia provides free TB diagnosis and treatment (Lorent et al., 2015; Yi et al., 2021). International donors and partners include the World Health Organization, Japan International Cooperation Agency, the World Bank, the United Nations World Food Program, the United States Agency for International Development, the Centre for Disease Control and Prevention, and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Brown et al., 2006; Ruger, 2005).

Tuberculosis Information

In this study, majority of students had heard of tuberculosis. In Bangladesh, most of university students were informed about tuberculosis (Rana et al., 2015). The majority of students in this study learned about tuberculosis from a variety of sources, including television, family, friends, neighbors, and colleagues, a health worker, a teacher, and the radio. As a result, because TV has been identified as the primary source of TB-related information, it will be an

effective way to advertise TB information. Malaysian and Ethiopian studies found similar results (Chinyama, 2021). In this study, one-third of students learned about tuberculosis from a health professional. According to a study conducted in Serbia, the majority of students regard doctors as a source of health-related information (Vanaja et al., 2016). This study found that there were positive relationships existed between TB knowledge and the source of TB information. The source of TB information by health workers and radio were both significantly related to TB knowledge. According to the findings, health workers, particularly community health workers, can play an important role in disseminating TB information. To improve TB knowledge and attitudes, health care workers must educate students and the general public.

CONCLUSION

Tuberculosis is one of the most lethal contagious diseases and a leading cause of death worldwide. This study sought to identify TB knowledge and attitudes, as well as sources of TB information, among Cambodian college students. The findings revealed that students lacked adequate knowledge of tuberculosis. Even though the majority of students were aware that tuberculosis is a curable disease, there are still misconceptions and limited knowledge about tuberculosis, particularly regarding TB treatment. Less than half of participants would go to pharmacy during they had any symptoms and many respondents believed that TB could be cured by taking medication from the drug store. In addition, less than one-third of students were aware that TB-control programs in Cambodia provide free TB medicine. These findings emphasized the importance of increasing knowledge about tuberculosis prevention and treatment. Education will lead to the formation of proper attitudes toward tuberculosis because people's attitudes toward a given disease usually reflect their level of understanding of the disease. Furthermore, the findings suggested that there is a need for the development of relevant information, education, and communication materials to increase knowledge about tuberculosis and its implications for teaching students in schools. On the other hand, the finding suggested that there is a need for the development of relevant information about tuberculosis such as sign, symptom, TB transmission and

how to prevent this disease that it should be encouraged by nursing and other health care providers due to they are an important role in disseminating TB information. Education and communication materials also as the essential parts to increase knowledge about tuberculosis and its implications for teaching students in schools. Proper tuberculosis knowledge aids in tuberculosis prevention and treatment. TB burden can be reduced in any community by providing education and dispelling misconceptions.

Declaration of Interest

None

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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The relationship between family support with self-concept in patients with post mastectomy

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ABSTRACT

Background: Uncontrolled cancer conditions will cause several impacts, both physiological impacts, as well as psychological impacts such as maladaptive self-concepts.

Objective: To determine the relationship between family support and self-concept in post-mastectomy patients.

Methods: The variables measured in this study were family support and self-concept. The sample was taken using a purposive sampling technique, namely selecting existing respondents with inclusion and exclusion criteria. In this study, the researcher used an observational analytic research design with a cross sectional approach with a sample of 30 respondents. The measuring instrument used was a questionnaire that was measured using a questionnaire that had been compiled and validated by Nurwulan for family support, while the self-concept questionnaire was adapted from Hartoyo's theory. Test data analysis using Spearman Rho with $\alpha=0.05$.

Results: The results showed that most of the patients received high family support as many as 17 people (56.7%). On family support, most of the respondents have a high self-concept as many as 21 people (70%). The results also show that there is a relationship between family support and the patient's self-concept. with a p -value=0.001 ($p<0.05$) and $r=0.57$.

Conclusions: Based on the results of this study, it is recommended from nurses in the treatment room, to improve the quality of service and provide support to patients.

Keywords: family support; mastectomy; self-concept

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INTRODUCTION

Breast cancer is a disease that occurs due to excessive growth or uncontrolled development of cells or breast tissue (Nayyar et al., 2018). Based on estimates from the International Agency for Research on Cancer, in 2020 there will be 1.15 million new cases of breast cancer with 411,000 deaths. As many as 70% of new cases and 55% of deaths are predicted to occur in developing countries (Chavez-MacGregor et al., 2017). Uncontrolled cancer conditions will cause several impacts, both physiological impacts such as pain to death, as well as psychological impacts, which are not only felt by patients,

Nursing and Healthcare Practices

- *Family support has a positive impact on increasing the patient's self-concept with post mastectomy.*
- *Family empowerment in providing support to patients can be initiated by nurses.*

but can also have an impact on their families (Sastra, 2017).

The World Health Organization (WHO) states that in Indonesia itself, the most common type of cancer is breast cancer, which is around 58,356 cases, or 16.7% of the total 348,809 cancer cases that occur (Bray et al., 2018). The Ministry of Health of the Republic of Indonesia (Kemenkes RI) in Infodatin 2018 also stated that breast cancer is the most common type of cancer in Indonesia (Kemenkes, 2016). The highest incidence rate for women is breast cancer, which is 42.1 per 100,000 population with an average death rate of 17 per 100,000 population, followed by cervical cancer at 23.4 per 100,000 population with an average death rate of 13.9 per 100,000 population.

Breast cancer treatment that can be done is by surgical methods, and non-surgical methods (chemotherapy, and radiotherapy), or it can be both. The most common surgical procedure is a mastectomy. Mastectomy is a breast removal surgery with or without breast reconstruction and rescue surgery in combination with radiation therapy (Wang et al., 2020).

Mastectomy performed can cause physical changes in the patient so that it has an impact on one's self-acceptance. A person who experiences changes in his appearance and body function, will mostly experience negative self-acceptance. The results of a previous study on 112 post-op mastectomy breast cancer patients in Turkey showed that 33% of women after treatment felt they were different from others, 12% of women believed that other people realized they were on treatment and worried 25% of them (Afriyanti, 2018). Likewise, research conducted by Sriwahyuningsih & Askar, (2017) found that most of the respondents experienced negative self-acceptance.

Self-concept is a perspective and attitude, as well as one's acceptance of oneself (Berman et al., 2014). Self-concept is the core of one's personality and plays a very important role in determining and directing the development of one's personality and behavior in the environment. Conditions of self-concept that tend to be negative will cause prolonged psychological effects such as depression. Pitman et al., (2018) stated that currently 20% of cancer patients experience depression, and 30% experience anxiety. Lack of attention to this depressive condition will lead to a decrease in the quality of life and survival rates of cancer patients.

Support from the closest people who are easy to find is support from family. The role of the family in supporting someone who is in the treatment of a chronic disease will be of great benefit. Wati & Yanti (2018) states that by increasing family support in a positive direction, it can cause a positive response in changing the self-concept of patients who are undergoing treatment for chronic diseases. Line family support is important in determining the healing process in patients which can help sufferers deal with their problems by increasing individual coping (Cumayunaro, 2018). Ineffective coping accompanied by a lack of family support can trigger feelings of depression (mild, moderate, severe) that can develop into a disorder of self-concept.

The phenomenon of poor family support and negative self-concept makes this condition important to identify. A negative self-concept will lead to unexpected treatment outcomes. Based on the above phenomenon, researchers are interested to determine relationship between family support and self-concept in post-mastectomy patients.

METHODS

Design

The research design used was an observational analytic design with a cross sectional approach.

Sample and Setting

In this study, population used were all post-mastectomy patients in Kerinci Room, dr. Saiful Anwar Malang Hospital during December 2021. The sampling technique used in this study is non-probability sampling by purposive sampling. The sample size involved in the study was 30 patients. It considered by the number

of post-mastectomy surgery patients who were treated in Kerinci Room within one month was 30 patients and none of respondents dropped out.

Instruments

The independent variable in this study is the patient's family support. The dependent variable in this study is self-concept. The family support variable was measured using developed (Nurwulan, 2017) questionnaire with validity test r table = 0.514. (r count > r table) and reliability 0.757. This family support questionnaire is structured in the form of a closed statement with a choice of answers already provided, so that the respondent does not need to provide another answer. The statements in this questionnaire consist of 16 question items with an answer score. Family support is classified into score < 56% (Less); Score 56-75% (Moderate/enough); Score 76-100% (Good). Self-concept questionnaire adopted by (Mujito, 2018) was adapted from Hartoyo's theory with validity test r table = 0.674. (r count > r table) and reliability 0.887. Self-concept with several indicators, including: Self-identity, self-ideal, body image, self-esteem, and roles. Questionnaire consists of 40 questions using the Likert scale model and all statements are in the form of favorable and unfavorable. Self-concept scale questionnaire has three answer choices with a score between 40-120 with a score interval of 40-66: Low self-concept; 67 – 93: Moderate self-concept; 94 – 120: High self-concept.

Data Collection

Researchers selected respondents who met the inclusion and exclusion criteria of the study for fully one month in December 2021. Inclusion criteria (1) The first post-mastectomy patient (2) Stable condition and vital signs (3) Having a family living with the patient (4) Willing to be a research respondent. Exclusion criteria (1) Post-mastectomy patients with critical conditions or not possible to be involved as respondents in the study (2) Post-mastectomy patients who could not read and write (3) Post-mastectomy patients who were not willing to be respondents. During the data collection process, the researcher did not involve enumerators.

Data Analysis

The statistical test used in this study is the

Spearman Rho correlation test with a 95% (CI) or $p=0.05$ by SPSS 23.0 for Windows. In addition to the level of significance, it is also seen the level of closeness of the relationship by looking at the r value of the results of the research statistics. Spearman Rho correlation test was chosen by research design. It is a correlation study that connects two variables. In addition, data scale used is ordinal.

Ethical Consideration

This research has gone through an ethical test at dr. Saiful Anwar Hospital, Malang. Information that passes the ethical review will get an ethical approval letter number : 400/230/k.3/302/2021 on November 23, 2021.

RESULTS

The results of descriptive statistics on the demographic characteristics of the respondents based on table 1, it is known that most of the respondents aged 41-50 years as many as 20 people (66.7%), almost half of them have junior high school education as many as 13 people (43.3). Most of them have been diagnosed with breast cancer at 1-5 years as many as 18 people (60%), and almost all of the patients had a married status of 28 people (93.3%). It is known that most of the patients received high family support as many as 17 people (56.7%) and as many as 13 people (43.3%) received moderate family support. Most of the respondents have a high self-concept as many as 21 people (70%) and as many as 9 people (30%) have a moderate self-concept.

Based on tables 2 and 3, it is known that the results of the analysis of the relationship between family support and self-concept in post-mastectomy patients using a spearman rho obtained p value of 0.001 (<0.05), it can be concluded that there is a relationship between family support and self-concept patient. The strength of the relationship is worth $r = 0.568$. The relationship is sufficient with positive criteria, which means that the higher the family support for eating, the higher the self-concept of post-mastectomy patients.

DISCUSSION

The results of the research show that most of the respondents have high family support, as many as 17 people (56.7%), and as many as 13 people have moderate family support as many as 13 people (43.3%). The high family support in this study is a good sign, because

Table 1. Respondents Characteristics, Family Support, and Self-Concept Level

Variable	n	%
Age		
20 – 40 year	9	30
41 – 50 year	20	66.7
>60 year	1	3.3
Education		
Elementary School	6	20
Junior High School	13	43.3
Senior High School	10	33.3
College	1	3.3
Long Diagnosed with Cancer		
6 month – 1 year	11	6.7
1 – 5 year	18	60
>5 year	1	3.3
Marrital Status		
Married	28	3.3
Divorced	2	6.7
Family support		
Moderate	13	43.3
High	17	56.7
Self-concept		
Moderate	9	30
High	21	70

Table 2. Cross Table of The Relationship Between Family Support and The Self-Concept of Post-Mastectomy Patients

Family Support	Self-Concept			Total
	Support	Moderate	High	
Moderate	0 (0%)	0 (0%)	13 (43.3%)	13 (43.3%)
High	0 (0%)	9 (30%)	8 (26.7%)	17 (56.7%)

Table 3. Spearman Rho's Analysis of Family Support with Self-Concept

N	p	α	r
30	0.001	0.05	0.57

with good family support, it will reduce the risk of psychological disorders in patients. The role and function of the family can be associated with social welfare functions. Where these functions are to reduce or eliminate pressure caused by irregularities or problems that occur in the family. These functions include prevention functions, healing functions, development functions and support functions (Yusuf et.al, 2015).

Support is an important psychological factor in healing post-mastectomy patients. Support from the closest people who are easy to find is support from family. The role of the family in supporting someone who is in the treatment of a chronic disease will be of great benefit. Wati

& Yanti, (2018) states that by increasing family support in a positive direction, it can cause a positive response in changing the self-concept of patients who are undergoing treatment for chronic diseases. Line family support is important in determining the healing process in patients which can help sufferers deal with their problems by increasing individual coping (Cumayunaro, 2018).

The occurrence of high family support can occur due to several factors, one of which is the level of knowledge. The results of the study stated that almost half of the respondents had an education level of graduating from junior high school which in previous years was the level of education that must be carried out

by Indonesian citizens (Syani et al., 2018). Yudiningsih, (2015) states that knowledge is very influential in the level of family support. Families who have low knowledge tend not to be able to provide maximum support to sick families. For example, if a family member receives therapy, but it has an effect that the patient does not like, the family tends to follow the patient's wishes without any effort to seek other information.

Researchers argue that family support can also change over time a person is exposed to stressors. The results showed that most of the patients had been diagnosed with cancer ranging from 1 to 5 years. This is also one of the factors in the formation of good family support. Like the loss theory mentioned by Kulber Ross in (Yusuf, et.al, (2015), the sequential loss stages start from rejection, anger, bargaining, depression, and acceptance. The researcher argues that the family has gone through all the stages and entered the acceptance stage, where at this stage the family's coping, decision-making, and support abilities can be implemented properly. The acceptance process carried out by the family can also be called resilience, where resilience is the capacity to maintain the ability to function competently in the face of various stressors and the process of forming resilience depends on time (Hendriani, 2022).

Table 1 shows the results of the self-concept level of post-mastectomy patients which states that most of the respondents have a high self-concept, as many as 21 people (70%). While 9 other people (30%) have moderate self-concept. Self-concept is the core of one's personality and plays a very important role in determining and directing the development of one's personality and behavior in the environment. The condition of a positive self-concept will cause a person's acceptance of oneself, the environment and effective coping to increase.

There are several factors that can influence self-concept, including age, and marital relationship (Obineli, 2017). In this study obtained. Most of the respondents as many as 20 people (66.7%) aged between 41-50 years. Salmiah & Mustafa, (2016) states that adults who have entered that age enter the peak of development where they already have balanced and controlled emotional stability, and have realistic thinking abilities. Development is a series of progressive changes that occur as a result of the process of maturity and

experience, development is not just a change of a few centimeters in a person's height or an increase in a person's abilities but is a process of integration and many complex structures and functions. Development is a series of physical and spiritual changes in humans towards a more advanced and perfect direction. Due to this, adult respondents have the ability to see the good in themselves, life opportunities are more important than outward appearances, and this can lead to increased self-concept.

Self-concept is also closely influenced by external factors such as a life partner. Hilda, (2018) states that the concept of a woman who has divorced has a negative self-concept. Some assumptions always arise, some of the conditions found in women who have divorced are sadness, shame, depression, fear, hopelessness, worry. These psychological conditions have an impact on social interaction with the community, they withdraw from the environment and spend more time at home. In addition, the negative thoughts that arise cause them to close themselves off from men and are reluctant to remarry. This happens because of their bad past experiences and their new status which causes their mindset to become negative. At the time of data collection, respondents stated that the closest family member to share grief was the husband, and the husband's acceptance of the patient's condition was the most important thing to determine the adaptation of the patient's self-concept.

Researchers believe that respondents who have a positive self-concept will have an impact on their physical condition after mastectomy. As stated by Hattie, (2014) a positive self-concept also means that a person has high self-esteem, and this causes the individual's ability to understand and accept a number of very diverse facts about himself, both positive and negative information. quickly. This attitude is different from arrogance or selfishness, a positive self-concept is more directed to self-acceptance as it is, not rejecting the condition of his body, and developing realistic expectations according to his abilities. Based on these reviews, it can be concluded that someone who has a positive self-concept is a person who is able to enjoy what is in him, both shortcomings and advantages, able to accept suggestions and criticism from others, satisfied with his situation.

The results showed that there was a relationship between family support and self-

concept in post-mastectomy patients with a closeness value of 0.5 or moderate with a positive relationship direction. The results of this study are in line with research conducted by Sastra, (2017) which states that there is a positive relationship between family support and the self-concept of post-mastectomy patients. The positive direction can also be interpreted that the higher the family support, the higher the self-concept of post-mastectomy patients.

Good family support will lead to a good self-concept. Self-concept is also closely influenced by external factors such as a life partner. Hilda, (2018) states that the concept of a woman who has divorced has a negative self-concept. Iminayah, (2016) states that the earliest self-concept is generally influenced by family and other close people around us (significant others). In this environment, the individual begins to be introduced to life and begins to have views about himself that are obtained from the assessment of his family or those closest to him. Positive or not the individual's view of himself is also influenced by the family. Individuals are raised in various situations created by parents who then after marriage, the source of psychological needs is centered on the partner.

The occurrence of high family support can occur due to several factors, one of which is the level of knowledge. The results of the study stated that almost half of the respondents had an education level of graduating from junior high school which in previous years was the level of education that must be carried out by Indonesian citizens (Syani et al., 2018). There are other things that are also one of the factors in the formation of good family support. Like the loss theory mentioned by Kulber Ross in Yusuf (2015) the sequential loss stages start from rejection, anger, bargaining, depression, and acceptance. The researcher argues that the family has gone through all the stages and entered the acceptance stage, where at this stage the family's coping, decision-making, and support abilities can be implemented properly. The acceptance process carried out by the family can also be called resilience, where resilience is the capacity to maintain the ability to function competently in the face of various stressors and the process of forming resilience depends on time (Hendriani, 2022).

According to Friedman et al., (2010) family health tasks include recognizing health problems, decision-making abilities, the ability

to provide care for sick families, maintaining the state of the family environment, and the ability to use health services. In this case, if one of the family health tasks does not function, there will be problems with the results to be achieved. There will be various problems ranging from physical problems, such as worsening conditions, as well as psychological problems, ranging from feelings of shame, fear to the desire to commit suicide. With the inclusion of family nursing, in the process, of course, the family will be able to adapt to new stressors or diseases, so that it is hoped that it can prevent and resolve health-related problems.

The researcher argues, in this study there was no low level of family support, which also led to the absence of low self-concept. When viewed from the characteristics of the respondents, most of them have been diagnosed with cancer for 1-5 years. This does not include a short time for someone to accept the conditions and circumstances that exist in him. The rejection period has passed so it has reached the acceptance phase. Likewise with the family, the family is used to providing assistance to respondents voluntarily in the hope that the patient's condition is always in a stable status, there is no decline.

Limitation of This Study

This study has limitations in the relatively small number of respondents. This is related to the research period which was affected by physical distancing during the Covid-19 pandemic. Researchers have attempted to optimize the number of possible samples according to the minimum number according to the literature.

CONCLUSION

The conclusion of this study is that there is a relationship between family support and self-concept in post-mastectomy patients. Based on the results of the study, it can be suggested for the families of patients with post-mastectomy in order to increase family support, and maintain good family support. Post-mastectomy patients are expected to always be active in treatment and pay attention to psychological conditions, because this can be a way of developing psychosocial problems. Furthermore, the results of the study also showed that there were some post-mastectomy patients who still had moderate self-concept, this needs attention from the nursing room nurses, to improve service quality and provide support to patients,

because this is also included in external factors that influence the level of care. self concept.

Declaration of Interest

None

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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The effect of pregnancy yoga exercise on reducing anxiety of pregnant woman third trimester

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ABSTRACT

Background: Physiological changes and fear of facing labor in the third trimester of pregnancy can trigger increased anxiety in pregnant women. One of the interventions to reduce anxiety in third trimester pregnant women is yoga exercise.

Objective: The purpose of this study was to determine the effect of pregnant yoga exercise on reducing anxiety pregnant women in the third trimester.

Methods: This quantitative research uses a pure experimental research design with pre and post-test control group techniques. The number of respondents was 30 and divided into the intervention group and the control group. Data collection using The Pranaya Pregnancy Yoga Exercise Protocol and PASS questionnaire. The pregnancy yoga exercise protocol was used after passing the feasibility test using The Dolphin Yoga Assessment Tool and PASS questionnaire used after passing the validity and reliability test. Bivariate data analysis was performed using the Man-Whitney non-parametric test. The test was carried out after the data passed the normality test using the Shapiro-Wilks test.

Results: This study showed that yoga interventions during pregnancy had a significant effect on reducing anxiety in third trimester pregnant women with a $p < 0.001$.

Conclusions: Health workers need to make innovative interventions that can improve the mental health of pregnant women, for example through the activation of the pregnant women class program.

Keywords: yoga pregnancy exercise; anxiety; pregnancy; third trimester

INTRODUCTION

Pregnancy is a valuable experience for a woman. Pregnancy causes physiological and psychological changes in pregnant women (Bjelica et al., 2018). Pregnant women must be able to adapt to pregnancy. Anxiety is one of the factors that can cause the ability to adapt in pregnancy is not achieved optimally (Glover, 2011). Changes in body physiology in the third trimester of pregnancy and fear of facing labor often exacerbate anxiety in pregnant women. Anxiety in third trimester pregnant women

Nursing and Healthcare Practices

- Pregnant women experienced anxiety in the last stage of pregnancy
- Yoga exercise can be a solution to decrease the anxiety among pregnant women
- This intervention can be implemented and recommended for maternity nurses

requires immediate nursing intervention. Prenatal depression, maternal stress, and maternal anxiety can impact not only the course of a woman's pregnancy, labor, and childbirth experiences, but also the actual physiology and birth outcomes of the developing fetus (Linda Chapman & Roberta Durham, 2013).

Non-pharmacological intervention to reduce the anxiety of pregnant women is yoga pregnancy exercise (Corrigan et al., 2022). Yoga pregnancy exercise is an activity that involves physical movement and breathing regulation. Yoga pregnancy exercise will physically train pregnant women to become stronger and have better breathing control (Yekefallah et al., 2021). Bringing yoga practice into a woman's pregnancy will promote peace and harmony in her life (More, 2017). A small number of women reported taking benzodiazepines or atypical antipsychotic medicines during pregnancy to treat anxiety (Centers for Disease Control and Prevention, 2022). That third trimester pregnant women and mothers who have just given birth can experience mental disorders, trauma, and depression (Chandra & Paul, 2015). 12.1% of women >15 years in Indonesia experienced mental emotional disorders including anxiety (Kementrian Kesehatan Republik Indonesia, 2019). Anxiety is a response to stress that can stimulate the body to be difficult to relax, because the muscles become tense and the heart beats faster.

Bandung City is ranked ninth with the highest number of pregnant women in West Java (2.587 people) (Dinas Kesehatan Kota Bandung, 2021). Pregnant women with comorbid anxiety, depression and obesity are at risk of experiencing gestational hypertension and this can be prevented through dietary patterns and physical activity interventions (Winkel et al., 2015). One of the physical

activity interventions for pregnant women is yoga exercise during pregnancy (Jiang et al., 2015).

Third trimester of pregnancy causes physiological changes in the body of pregnant women. More (2017) explained that in the third trimester a woman might feel extreme fatigue possibly due to the baby going through growth spurts and sleep disruption, able to eat less at one time due to stomach compression, Braxton hicks contraction, increase frequency of urination, as a baby shifts bladder is compressed, less room lungs to expand therefore causing shortness of breath, feet, hands, ankles and wrists might begin to swell, referred to as edema. Physiological changes in the body in the third trimester can increase anxiety (Shahhosseini et al., 2015). Pregnant yoga exercise has the effect of reducing the anxiety level of third trimester pregnant women (Corrigan et al., 2022).

The results of the literature review study revealed that there were 862 appropriate citations and 31 studies that met the inclusion criteria. 29 studies with 2217 pregnant women in 12 or more yoga sessions of long duration (> 60 minutes) had a statistically significant impact on stress perception (Maryati et al., 2021). The benefits of yoga pregnancy exercise are increase relaxation, yoga pregnancy exercise releases endorphins (More, 2017). Women who do yoga pregnancy exercise tend to have better stamina. Yoga can increase lung capacity, focus and connection with the breath allows a woman to take advantage of the rhythm of their body and achieve relaxation (Zope & Zope, 2013). This study aims to determine the effect of yoga pregnancy exercise on anxiety in third trimester pregnant women. The hypothesis in this study is that yoga during pregnancy influences reducing anxiety in third trimester pregnant women.

METHODS

Design

This research is quantitative research with a true experiment research design with pre-test and post-test control group design techniques.

Sample and Setting

The study was conducted in a class of pregnant women at community health center that location is in one of the districts in West Java. The research sample was taken using

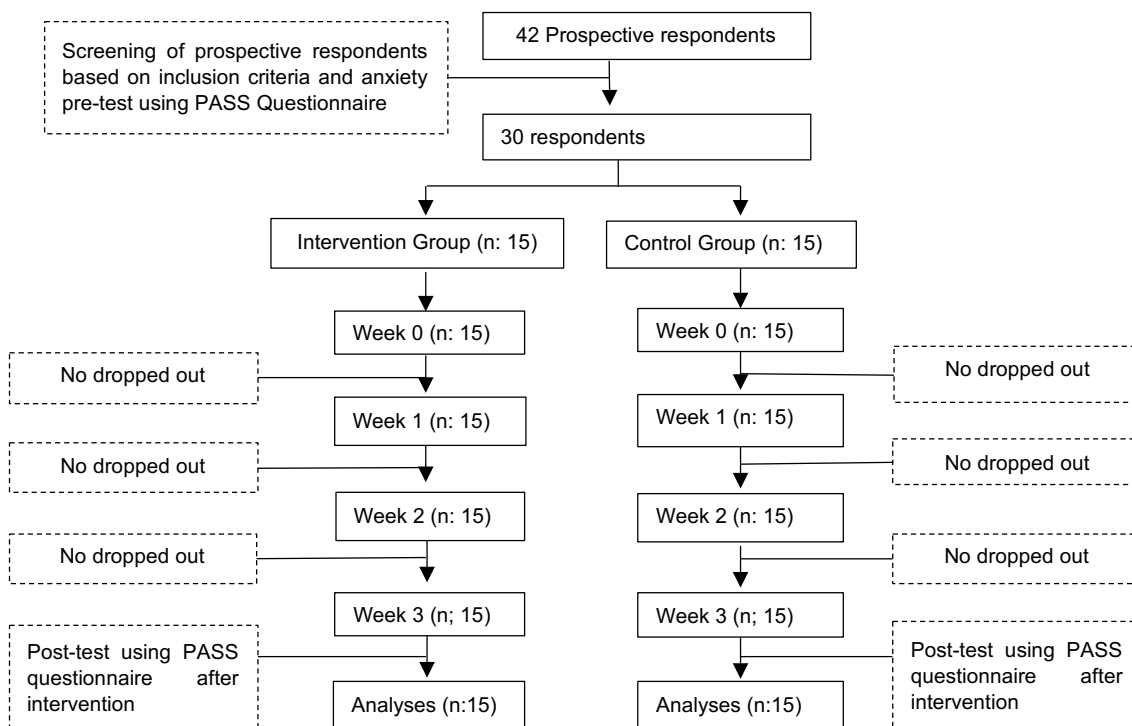


Figure 1. Data collection flow diagram

the consecutive sampling method. In this method, a specified number of samples is selected, the sample is given the opportunity to fill out the PASS questionnaire and only third semester pregnant women with severe and moderate anxiety scores are included as research samples. The number of samples was determined using the sample size formula to test the paired group hypothesis. The sample size in this experiment was 28 respondents. The researcher added the number of respondents by 5% (2 respondents) to anticipate the drop out event and the number of respondents was 30. Respondents were divided into two groups. 15 respondents in the control group and 15 respondents in the intervention group. To avoid bias, the selection of the research sample was carried out based on the inclusion criteria set by the researcher. The inclusion criteria for this study were determined as follows: the respondent was not a high-risk pregnancy, the respondent's gestational age was in the third trimester, the respondent was physically healthy, the respondent did not have a congenital disease and the respondent experienced moderate anxiety or severe anxiety.

The body of pregnant women undergoes tremendous changes during pregnancy and as a result there are several health conditions

that are contraindications to the intervention of pregnancy yoga exercises. Before carrying out the activity, each prospective respondent was given information about the health requirements to be able to take part in the yoga pregnancy exercise as follows: not having heart disease, not having frequent headaches, not having heartburn, not having blurred vision, not having pre-eclampsia, never having had sharp pain in the stomach, abdomen or chest, no intermittent Braxton-Hicks contractions, no changes in body temperature, no signs of edema in the lower extremities, no gestational diabetes, no leg cramps, no carpal tunnel and no varicose veins. This research was conducted by applying four principles of research ethics. Anonymity (maintaining the confidentiality of the respondent's identity), confidentiality (maintaining confidentiality information about respondents), justice (applying the conduct of research fairly all respondents), beneficence (carrying out research that has a great value of benefit to efforts to improve the health status of respondents and minimize or eliminate the effects of research actions on respondents).

Intervention

This study used a pre-test and post-test control group experimental design. The sampling method is done by consecutive sampling.



Figure 2. The pranaya yoga pregnancy exercise

Data on prospective respondents came from the community health center. Prospective respondents were met at the community health center when they were carrying out routine pregnancy examination. At the first meeting with prospective respondents, the researcher shows identity card, conveys the research objectives, research benefits, research procedures and informed consent.

If the prospective respondent agrees to be a research respondent, the researcher gives a PASS anxiety screening questionnaire. The completed PASS questionnaire was collected by the researcher then at that time the questionnaire score was calculated to determine the anxiety experienced by the respondent. Only prospective respondents who experience moderate and severe anxiety can become

respondents. 30 prospective respondents who met the inclusion criteria were given informed consent to find out about their willingness to become respondents in the intervention group or control group. prospective respondents who were willing to join the intervention group were given follow-up questions about the schedule for participating in yoga exercises that they could follow. Prospective respondents who were willing to join the control group were asked follow-up questions about their willingness to take the post-test on the schedule made by the researcher together with the intervention group. The post test will be carried out after the intervention group has participated in pregnancy yoga exercises for three weeks, and this coincided with the 4th pregnancy check-up schedule for the intervention group and the control group. To prevent contamination between the intervention group and the control group, the researcher explained to the respondents that the two groups would receive different treatment from each other. The intervention group will participate in yoga exercises twice a week for three consecutive weeks. While the control group would not receive any yoga intervention at all. the number of respondents divided into 2 groups. 15 respondents were the intervention group, and 15 respondents were the control group.

Pregnancy exercise interventions are given to pregnant women using The Pranaya Yoga Pregnancy Exercise Protocol and the implementation of yoga pregnancy exercises led by experienced yoga instructors. The yoga exercise protocol is designed to have light movement techniques and not pose a risk of physical injury to pregnant women and their fetuses. Injuries that can occur in this activity are leg cramps and uterine contractions due to imperfect stretching. An experienced instructor will be able to handle this incident. Interventions are carried out according to the schedule. The schedule was made according to the agreement between health workers, respondents and researchers. The intervention was carried out in the intervention group three times a week for 3 weeks. The duration of each intervention was 30 minutes. The intervention was carried out in the local sub-district hall. The control group is the group that does not receive the intervention. At the end of the session the researcher conducted a post test on both groups using the PASS questionnaire. Data collection techniques are explained in the form of diagrams in [figure 1](#) and yoga techniques

are explained in [figure 2](#).

Instruments

Instrument 1 is The Pranaya Prenatal Yoga Protocol which consists of 5 main movements named: seated hand on heart movement, cat/cow movement, child's pose movement, downward facing dog movement and cat twist movement. every movement has benefits for the health of the pregnancy and the well-being of the fetus. The movement patterns are described in [figure 2](#). This protocol reference is obtained from a book written by [More \(2017\)](#) entitled Prenatal Vinyasa Yoga: Teacher Training Manual. Before use, each movement is tested for feasibility by using Assessment Yoga Dolphin Tool. Assessment Yoga Dolphin Tool consists of 6 appropriate test questions. The questions in this assessment tool consist of "Does the pose create space?", "Where?", "What is the effect of the pose on the abdominal muscles?," "What kind of stress or load does the pose put on the joints?", "Does this pose cause compression in the belly?", "How stable is the pelvis", "specifically the sacrum & pubic symphysis?", "Could the woman do the pose pre-pregnancy?", "Does it feel good?"

Instrument 2 in this study was the PASS standardized questionnaire which consisted of 31 question items which were proven to be valid and reliable for screening anxiety problems in antenatal mothers. This instrument was designed by King Edward Memorial Hospital of Western Australia through research entitled The Parinatal Anxiety Screening Scale: Development and Preliminary Validation. PASS differentiates between high and low risk anxiety by measuring four domains that address specific anxiety symptoms as they occur in perinatal women. These domains form a subscale which includes 1) Excessive Worry and Specific Fears, 2) Perfectionism, Control and Trauma, 3) Social Anxiety, and 4) Acute Anxiety and Adjustment. The items are on a scale ranging from 0: "not at all" to 3: "almost always". The score of the test results is obtained by adding up all the items marked with a checklist by the respondent. To determine the respondent's level of anxiety, the following severity ranges were used: no symptoms (0-20), mild-moderate signs (21-41), and severe symptoms (42-93). This questionnaire has passed the content validity index and content validity ratio test in the latest research in Persia with values of 0.80 and 0.87 ([Jradi et al., 2020](#)). Even though its validity has been tested, in this

Table 1. Frequency distribution of respondent characteristics: age, education, occupation, gestational age, parity (n=30)

Characteristics	n	%
Age		
<20 years old	2	6.7
20-35 years old	23	76.7
>35 years old	5	16.6
Education		
High Education	28	93.3
Low Education	2	6.7
Occupation		
Laborer	6	20
Employee	8	26.7
Housewife	16	53.3
Gestational Age		
28-31 week	12	40
32-35 week	8	26.7
36-40 week	10	33.3
Parity		
Primipara	18	60
Multipara	12	40

Table 2. Frequency distribution of pregnancy yoga exercises (n=30)

Frequency of Yoga Exercises	Follow Regularly	Do not Follow	n (%)
Intervention Group	15	0	15 (50%)
Control Group	0	15	15 (50%)
Total	15	15	30 (100%)

study the same test was still carried out due to the process of transferring the language into Indonesian. PASS validity test in this study was conducted on 15 respondents using the r table value of 0.497 at a significance level of 5%. the results of the validity test show that the value of $r > r$ table is 0.760 (> 0.497), after passing the validity and reliability tests, PASS was used in this study.

Data Analysis

Controlling for confounding factors is done by randomization and restriction of research samples. Randomization was carried out by selecting samples using the consecutive sampling method in an affordable population at a time according to the research schedule. Restrictions are carried out by strictly applying inclusion criteria when selecting and determining respondents. The next analysis is

the identification of the normality of the data using the Shapiro Wilks test. if the data is normally distributed with a significance value of $p > 0.05$ then the next test is the bivariate hypothesis test using the Man Whitney non-parametric test.

Ethical Considerations

This research has obtained a certificate of ethical conduct from the health research ethics committee of Institute of Health Science of Dharma Husada College of Health with No. 124/KEPK/SDHB/B/VII/2022.

RESULTS

The respondents in this study were 76.7% aged 20-35 years old, on the last education characteristics 93.3% had a high school education, on the occupation characteristics 53.3% were housewives, on the gestational

Table 3. The effect of pregnancy yoga exercises on reducing respondents' anxiety (n=30)

Category	Anxiety				Man Whitney	p		
	Moderate		Severe				Saphiro-Wilk statistic	Sig
	n	%	n	%				
Intervention Group	Pre-test before intervention	0	0	15	100	0.697	<0.001	
	Post-test after intervention	12	80	3	20	0.840	<0.001	
Control Group	Pre-test without intervention	1	7	14	93	0.801	<0.001	
	Post-test without intervention	0	0	15	100	0.984	<0.001	

age characteristic 40% have a gestational age of 28-31 weeks and on the parity characteristics 60% of respondents are primipara (Table 1).

The frequency distribution of yoga pregnancy exercise, 100% of the intervention group respondents participated in yoga activities according to schedule and none dropped out and 100% of the control group respondents did not participate in yoga activities and no one dropped out (Table 2).

In the table 3, it is known that in the intervention group, the results of the pre-test before being given the intervention showed 100% of respondents experienced severe anxiety, and the results of the post-test after being given the intervention showed 80% of respondents experienced moderate anxiety. In the control group, the results of the pre-test without intervention 93% of respondents experienced severe anxiety, and in the results of the post-test without intervention 100% of respondents experienced severe anxiety. This shows that most of the intervention group experienced a change in anxiety levels from severe to moderate anxiety after receiving the yoga exercise intervention and in the control group it is known that without the intervention of yoga exercises, all respondents experience severe anxiety at the end of the third trimester. The results of the normality test in the intervention group and the control group using the Shapiro-Wilk show a $p < 0.001$ this means that the data is normally distributed and proceed to hypothesis testing. That the results of testing the hypothesis using the non-parametric Mann-Whitney formula in the intervention group and the control group showed a $p < 0.001$, this means that yoga pregnancy exercise has a significant effect on reducing the anxiety of pregnant women third trimester.

DISCUSSION

Frequency Distribution of Yoga Exercises

Physical exercise and staying active while pregnant is one way to maintain health, maintain physical fitness and prepare for childbirth which is often difficult and challenging. Yoga is a physical activity that is recommended for pregnant women to do regularly. Yoga exercise for pregnant women consists of five training sessions that are carried out simultaneously (Curtis et al., 2012). The five training sessions are yoga physical exercises, breathing

exercises (pranayama), positions (mudras), meditation and deep relaxation. All sessions in yoga exercise aim to improve blood circulation, support the head presentation position and can be delivered spontaneously vaginally and increase relaxation (More, 2017). Yoga practice for pregnant women is known to be beneficial for the health of pregnant women and their fetuses. Yoga exercise experiment carried out for two weeks with a frequency of 2-3 times a week, can improve the quality of sleep of pregnant women (Indrayani & Muhayah, 2020).

Pregnancy yoga that is done regularly will give a better effect than pregnancy yoga that is done irregularly (Deshpande et al., 2013). Information about the benefits of yoga that is done regularly needs to be conveyed to pregnant women. Health information support from health workers for pregnant women can support good health behavior (Dorst et al., 2019). Good health behavior during pregnancy will improve the welfare of pregnant women and their fetuses

The Effect of Pregnancy

Yoga Exercises on Reducing

Respondents' Anxiety

Depression and anxiety during pregnancy need to be treated urgently (Ningrum et al., 2019). This is to prevent labor pain, premature birth, long labor, caesarean delivery, low birth weight babies (LBW), and postpartum depression which can cause developmental delays in children. This situation can occur and accompany life situations and various health problems. The level of anxiety is divided into mild anxiety, moderate anxiety and severe anxiety (Maryati et al., 2021). In this study, it is known that yoga exercise that is done regularly in the intervention group affects the anxiety level of pregnant women in the third trimester. Yoga exercises reduce the anxiety level of pregnant women from severe anxiety to moderate anxiety.

One of the non-pharmacological techniques to reduce anxiety in third trimester pregnant women that is easy, inexpensive and can be done independently by pregnant women is yoga exercise (Davis et al., 2015). Yoga is effective to reduce anxiety in pregnant woman. The results of this study found that pregnant women who received yoga exercise treatment experienced severe anxiety during the pre-test and moderate anxiety during the post-test

(Ningrum et al., 2019). Meanwhile, pregnant women who did not receive treatment were known to experience moderate anxiety at the pre-test and severe anxiety at the post-test. The results in this study indicate that yoga exercise can reduce anxiety in third trimester pregnant women.

Implication and limitations

The pregnancy yoga exercise can be a non-pharmacological intervention to reduce anxiety levels in third trimester pregnant women. The practice of yoga pregnancy exercise that is carried out regularly and with the correct procedures can increase relaxation, reduce anxiety, and encourage adaptation to pregnancy in the third trimester optimally. Pregnancy yoga exercises can be done by pregnant women easily, inexpensive and does not cause pharmacological effects because there are no substances that are inserted into the body. The limitation in applying yoga exercises to pregnant women is the limited number of health workers who have yoga certificates for pregnant women. Yoga exercises for pregnant women need to be done properly assisted by trained instructors. This is done to prevent injury from improper training. the researcher suggests that further research be carried out on a larger sample size so that the research results are more representative of the wider population.

CONCLUSION

Factors that contribute to anxiety in the third trimester of pregnancy are age, education level, occupation, gestational age, and parity. Factors that influence reducing anxiety in the third trimester of pregnancy are yoga pregnancy exercises. Efforts to reduce anxiety in third trimester pregnant women through pregnant women class programs are already available in primary care networks in Indonesia. However, the program is not optimal due to several obstacles, including limited yoga instructors for pregnant women and a lack of awareness for pregnant women to take part in the routine class program for pregnant women. Training for yoga instructors needs to be held to increase the number of instructors and socialization of pregnancy yoga classes needs to be increased so that pregnant women are interested in taking part in pregnancy yoga regularly and have a healthy pregnancy

Declaration of Interest

We certify that there is no actual or potential conflict of interest in relation to this article.

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Relationship of work motivation with nurse performance in Installation Room of Islamic Hospital

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ABSTRACT

Background: Work motivation is often the cause of the reduced performance of nurses, it is related to the lack of internal and external motivation in the work.

Objective: This study aimed to analyze the relationship between work motivation to nurse performance in the installation room of an Islamic hospital.

Methods: The design of this study uses cross-sectional methods. The sampling method used is purposive sampling. Samples taken by 35 respondents are nurses who work in the Inpatient Room of Sakinah Islamic Hospital, Mojokerto, East Java. Research data was taken using motivation sources inventory and a nurse's work functioning questionnaire that was validated with an r count of 0.786-0.912 and reliable (Cronbach alfa = 0.876). After the tabulated data were analyzed using the Spearman Rho test with a significance level of 0.05.

Results: The results showed the motivation of nurses working in the high category (65.7%) and nursing performance showed in the excellent category (57.1%). While the results obtained from the statistical tests showed a correlation between nursing motivation and the performance of nurses with a correlation value of 0.728 with $p < 0.001$.

Conclusions: Seeing these results it is necessary to coach the head office and nurses by providing training to improve motivation and performance so nurses can lead to good service and a good image for the hospital in the community.

Keywords: work motivation; performance of nurses; nursing; hospital

INTRODUCTION

Nursing staf development management is based on human behavior (Raza et al., 2018). The quality of hospital services is largely determined by nursing services or nursing care (Beccaria et al., 2018). So the success of nursing services is largely determined by the performance of the nurses. Nurses are the largest group in the hospital organization who work 24 hours/day which makes them more highlighted than other health teams (Kaya et al., 2022). Coaching and development of nurses are the activities that must be carried out by the leadership/head of the ward to support the performance of nurses. Many

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Nursing and Healthcare Practices

- *Motivation has relationship with nurse's work performance*
- *Understanding nurse's condition and motivation can should be initiated by leader.*
- *Providing training to improve motivation and performance can be considered.*

complaints were expressed by patients against the performance of nurses who were not good, such as the lack of nurse response and unfriendly attitudes toward service (Nursalam et al., 2020). Poor performance was also expressed by the room leader that the lack of work discipline on average late attendance, a low sense of work responsibility, and the absence of a desire to advance in work by nurses became one of the factors for problems in the quality of work (Asadi et al., 2019).

Based on data from the Indonesian National Nurses Association, about 50.9 percent of nurses working in four provinces in Indonesia experience work stress, often feel dizzy, and tired, cannot rest because the workload is too high and time-consuming, and the salary is low without adequate incentives (Demirhan et al., 2020). Nurses with low motivation with moderate performance 43 (72.9%), and with good performance 16 (27.1%), while respondents were highly motivated with moderate performance 41 (55.4%) and good performance 33 respondents (44.6 %). Based on the results of a preliminary study at the hospital, it was obtained from 10 nurses 60% of nurses with less attention to the quality and quantity of work and lack of incentives provided, 40% of them paid attention to quality and quantity, while the results from 12 patients of whom 50% of patients said they were not satisfied, 30% sufficient and 20% satisfied with the performance of nurses.

In carrying out the duties and responsibilities of nurses at work, nurses need psychological support from the leadership/head of the ward where they work (Mamay et al., 2021). This support greatly affects the level of performance, one of which is motivation. One of the most common causes of decreased performance is the lack of motivation from internal and

external at work (Nursalam et al., 2020). Three factors can affect performance, among others, individual worker factors, organizational factors, and psychological factors. Low motivation will have an impact on decreasing the performance of nurses which will greatly affect the service image of a hospital in the community, poor nursing services can lead to a lack of trust and public dissatisfaction with hospitals (Fauziah et al., 2020).

One of the efforts to increase the work motivation of nurses is to do job redesign and job enrichment, while efforts to improve nurse performance are to provide achievements, recognition, challenges, interests, responsibilities, promotions, salaries, and benefits (Agustin et al., 2019). With the increase in high work motivation and good performance, it can reduce absenteeism, and turnover, and have a positive impact on the organization and a positive image in society. Based on the description above, researchers are interested in examining the relationship between work motivation and nurse performance. The purpose of this study was to analyze the relationship between work motivation and the performance of nurses in inpatient installations.

METHODS

Design

This type of research is using analytical methods with a cross-sectional approach where research aims to find out whether there is a relationship between two variables. Study search the correlation between work motivation to nurse performance in installation rooms of Islamic hospitals. This study was conducted in March–May 2021.

Sample and Setting

The population in the study of work motivation with nurse performance is all nurses who work in the Inpatient Installation Room (the operating room is 11 nurses, the classroom is 15 nurses, and the internal room is 12 nurses) at Sakinah Mojokerto Hospital with a total of 38 respondents. The criteria of respondents were nursing with minimum vocational in nursing, experience for one year, literate, and understanding of the Indonesian Language. The research sample was 35 respondents who were recruited using purposive sampling.

Table 1. Characteristics of research respondents

Characteristics	n	%
Age		
21-30 years	25	71.4
31-40 years	10	28.6
Educational background		
Diploma	26	74.3
Bachelor	9	25.7
Length of working		
< 1 year	5	14.3
1-5 years	24	68.6
6-10 years	5	14.3
>10 years	1	2.9

Table 2. Motivation and work performance

Variable	n	%
Work Motivation		
Low	4	11.4
Moderate	8	22.9
High	23	65.7
Performance		
Very low	4	11.4
Low	2	5.7
Moderate	5	14.3
Good	4	11.4
Very Good	20	57.1

Variable

The independent variable in this study is the work motivation of nurses and the dependent variable is the performance of nurses.

Instrument

Research on work motivation uses a motivation sources inventory questionnaire with a Likert scale in a statement totalling 11 items, while the performance of nurses uses a nurse's work functioning questionnaire with a Hundred T score in a statement totalling 14 items. A questionnaire that validated with r count 0.786-0.912 and reliable (Cronbach alfa = 0.876).

Data Analysis

Data were tabulated and grouped according to the variables studied to analyze the relationship between work motivation and nurse performance in the inpatient installation room

of RSI Sakinah Mojokerto by using a significant test with the selection of the Spearman Rho correlation test. All data processing is processed by a computerized system with the help of SPSS software. Spearman rank correlation test is used with $\alpha = 0.05$ and 95% confidence level.

Ethical Consideration

This research used humans as the respondents, the author already get ethical consideration from the Ethical Health Commission Faculty of Nursing, Universitas Airlangga with the number of certificate 125/KEP/2021.

RESULTS

The results showed that most of the respondents were 21 to 30 years of age with a percentage (of 71.4%), with a D3 Nursing education as many as 26 respondents with a percentage (of 74.3%) and the majority of

Table 3. The relationship between work motivation and the performance of nurses in inpatient installations

Work Motivation	Nursing Performance				
	Very Low	Low	Moderate	Good	Very Good
	n (%)	n (%)	n (%)	n (%)	n (%)
Low	3 (8.6)	1 (2.9)	0 (0.0)	0 (0.0)	0 (0.0)
Moderate	1 (2.9)	1 (2.9)	3 (8.6)	1 (2.9)	2 (5.7)
High	0 (0.0)	0 (0.0)	2 (5.7)	3 (8.6)	18 (57.1)

p < 0.001

respondents working duration of 1 to 5 years was 24 (68.6%) (Table 1).

Most of the nurses showed high motivation as many as 23 (65.7%) and a small proportion of respondents with low motivation as many as 4 (11.4%). While the performance of nurses in the very good category was 20 (57.1%) and a small proportion of respondents with poor performance were 2 (5.7%) (Table 2).

Table 3 shows that as many as 18 (51.4%) respondents have high motivation with excellent performance, and it is found that a small portion of 2 (5.7%) respondents, including 1 (2.9%) respondent has low motivation with poor performance and 1 (2.9%) respondent has moderate motivation with poor performance. Spearman Rank test results obtained value $p < 0.001$ then H_0 is rejected and H_1 is accepted, which means there is a relationship between work motivation and nurse performance in the inpatient installation room.

DISCUSSION

Among several factors that also influence this research is the age factor of the respondents, from the research results, most of the high motivation is shown in adult respondents. Age is closely related to the level of maturity or maturity of a person. Workers aged 20-30 years have relatively lower work motivation than older workers because young workers are more likely to experience disappointment at work. Based on previous studies, it was shown that nurses in the early years of work tended to explore a job more. It is proven by the high turnover intention of junior nurses in the hospital (Labrague et al., 2020). In this study, it is different from the theory, that most of the respondents aged 21-30 years have high motivation, and that age is classified as an adult age (Kovach, 2018). The adult respondents already have a level of technical and psychological maturity in carrying out tasks that will show their mental maturity

which affects the work motivation of nurses in the inpatient installation room (Agustin et al., 2019). The work motivation of nurses is related to the age of the nurse working. Nurses of mature age are more likely to be loyal to the hospital than new nurses because they are more likely to find jobs that make them comfortable and pay appropriate salaries.

A person's education will affect the ability to meet their needs according to the level of fulfillment of different needs which in turn affects work motivation (Mansaray, 2019). The results of this study are not following the theory above where respondents with a D3 Nursing education are more than respondents with a Nursing S1 education. The level of nurse education can be a higher work motivation if education must always be honed with skills and knowledge according to expertise (van der Kolk et al., 2019). The respondent's length of work will become an experience and can continue to be developed in increasing work motivation, but motivation does not mean it is obtained from someone who has a lot of experience, but a sense of recognition and attention from friends and superiors towards one's work will be able to increase one's work motivation (Jabagi et al., 2019; Ozkeser, 2019). Based on the results of research and previous studies, shows that the motivation of nurses in improving their performance is related to the latest level of education and experience during work. Nurses will show better performance if their level of education is higher as well as more experience.

One of the factors that can improve the performance of nurses is formal education of nurses. Education provides direct knowledge, not only directing the implementation of tasks but also the basis for self-development and the ability to utilize all existing facilities around for the smooth running of tasks (van Roy & Zaman, 2018). With this education is closely

related to one's performance, the higher one's level of education, the higher the level of effective performance (Trogakos et al., 2020). The more knowledge and skills obtained by nurses will make nurses have higher their work motivation.

Work motivation is one of the factors that determine a person's performance. The size of the influence of a person's work motivation depends on how much intensity of motivation is given. In the study of the internal motivation component, it was found that some respondents had high motivation because most of the nurses were responsible for the assigned tasks (Davis, 1991; Mor et al., 2004). Motivation in nurses needs to be directed, raised and stimulated such as being given a reward to further increase work motivation so that the nurse's motivation to work is getting better, if the nurse's internal motivation is not considered it will cause work to be not optimal and the quality of work to be poor (Raza et al., 2018). It was also found that some nurses had low motivation, one of which was the D3 Nursing education factor that could affect respondents' work motivation, even 6-10 years of work was not a guarantee in increasing work motivation. Nurses at work also need to be considered in external motivation, it is even found from the external motivation component that nurses will be motivated to work well if nurses at work get attention from friends and superiors. In this case, motivation is an input that must be considered both internal motivation and external motivation, so that the behavior of nurses will be formed at work (Gilbert et al., 2017).

These two factors influence each other, including the process of motivation, generating, directing, and continuing. It was found that most of the nurses had a very good performance as seen from the cooperation component, that nurses working on solving patient problems always cooperated with a team of nurses (Asadi et al., 2019). In establishing cooperation between teams, it is necessary to maintain so that every problem can be solved through evaluation, and discussion, even if the length of work is intertwined with cooperation, it will be a good work experience. It was also found that some nurses had a less visible performance from the obedience component, so nurses at work would be better if nurses took action according to SOP provisions and arrived on time according to working hours (Demirhan et al., 2020; Mamay et al., 2021).

The results obtained from the existing

theory that there is a relationship between work motivation and the performance of nurses in the Islamic hospital inpatient installation room. Because when both internal and external work motivation are considered by nurses and leaders and if low motivation can be immediately increased, the level of performance of nurses will certainly be better at work. This can be interpreted that the work motivation of nurses will determine their level of performance of nurses. So it can be said that the higher the motivation of nurses at work, the better the level of nurse performance will be, and vice versa if the lower the work motivation of nurses, the less the level of nurse performance will be.

This study shows that the limitation is that the researcher did not evaluate the difference in the workload of nurses with both low and high workloads. Nurses cannot measure the level of work motivation of nurses from the workload they feel while providing services at the hospital.

CONCLUSION

Most of the nurses working motivation in the inpatient installation room have high work motivation and also the performance of nurses mostly had a very good performance. So it was found that there was a relationship between work motivation and the performance of nurses in the inpatient installation room. This study is expected to improve the performance of nurses by improving their motivation of nurses, so hospital managers need to pay attention to the work motivation of nurses.

Declaration of Interest

The author declares that this manuscript does not have a conflict of interest with the other study or author.

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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The effect of ice pack gel on pain reduction of sheath removal in post-cardiac catheterization patients

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ABSTRACT

Background: Cardiac catheterization is a minimally invasive intervention that can cause complications of vascular access after compression of the femoral artery or sheath removal. Cold pack gel is a non-pharmacological therapy given after sheath removal to reduce pain.

Objective: This study aimed to measure the effect of ice pack gel on pain reduction in arterial sheath removal post-cardiac catheterization patients.

Methods: This interventional clinical study with control and group treatment was conducted in the cardiology room of Saiful Anwar Hospital Malang, Indonesia. The respondents (n=32) were divided into two groups in pre and post-test control group design. Group A receives pressure bandages as a standard protocol (control groups) while group B, ice-packed gel. Pain scale measured by Visual Analog Scale (VAS) by 1-10.

Results: The Mann-Whitney test in two groups shows that there are differences in scores of pain reduction. The pain reduction difference in the treatment group (ice pack gel) was higher than the control ones ($p < 0.001$). The cold temperature of the cold-packed gel decreased the peripheral free nerve ending conductivity, furthermore, it made sensitivity stimulus or pain impulses slowed down then reduced the perception of pain.

Conclusions: The intervention of ice-packed gel is more effective than the standard protocols to reduce the pain in the removal sheath post cardiac catheterization.

Keywords: ice-packed gel; sheath removal; pain; cardiac catheterization

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INTRODUCTION

Cardiac catheterization and percutaneous interventions are minimal invasive causes of vascular access complications or vascular injury. The compression or pressure manually done above the femoral arteries caused pain. This intervention provides to achieve homeostasis condition by spending 10-20 minutes in time after removing the catheter sheath immediately called removal sheath (Lombardo & van den Berg, 2010). The homeostasis protocol is divided into the removal of the sheath of venous and arterial femoral; the venous sheath removal (VSR) and arterial sheath removal (ASR). It causes major

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- *Non pharmacological intervention such as ice-packed gel can be an alternative to reduce pain*
- *Nurse can use this intervention to reduce patient pain during PCI*

and minor complications (Bhatty et al., 2011) starting from bleeding, death risk, AV fistula, and pseudoaneurysm (Bhatty et al., 2011) while the major complication after removal of sheath intervention could be higher at 64% (Lombardo & van den Berg, 2010).

According to the World Health Organization, vascular and cardiac diseases result in 17 million people dying. In Indonesia, in 2020 reported 11.592.990 people suffered from cardiac disease. Furthermore, it gives financial burdens to the country up to 8.3 trillion rupiahs in 2020 (Beyer et al., 2006). Preliminary research was conducted in the cardiac catheterization laboratory room of Saiful Anwar Hospital of Indonesia, at least 782 cardiac catheterizations were done during 2020-2021. That numbers consist of 45,5% coronary intervention; 9% electrophysiology; 1.7% peripheral vascular; 6,33% congenital intervention and 1.75% others. The observation and interview data held on February 2021 in 15 cardiac catheterization inpatients after the ASR intervention showed that they feel a painful sensation and were uncomfortable with the puncture marks of catheter sheath injection which is a rating from 4 of non-complication to 8 on a scale which complicated such as multiple puncture hematoma. Regularly, the hospital solved this problem by giving bandage intervention standards in surface areas.

Cardiac catheterization is done by entering the small hose catheter into the arterial or venous and then reaching the coronary blood vessels or another system organ helped by an X-ray. The procedures were done to know the potential of coronary arterial, either cardiac structure or therapeutic intervention needed by patients such as diagnostic coronary angiography (DCA), percutaneous transluminal coronary angioplasty (PTCA), percutaneous coronary intervention (PCI) (Association, 2018).

Cardiac catheterization and percutaneous intervention could cause complications in vascular access. This condition more often happens in the femoral than radial access. The vascular wound in the femoral arterial provided pain mediators i.e leukotrienes, prostaglandin E₂, and histamines then stimulated nociceptors. Similarly, bradykinin and serotonin are activated by wounds and cause pain sensations (Bahrudin, 2018).

Management of pain reduction and hematoma in the cardiac catheterization room at RSUD Dr. Saiful Anwar was performed with elastic bandage pressure on the area where the catheter was removed. This bandage pressure has become the standard operating procedure for pain management for both VSR and ASR at RSUD Dr. Saiful Anwar. The use of bandage pressure is based on the patient's strong pain experience, so the use of alternative pain management needs to be pursued. Despite Based on this, researchers want to innovate non-pharmacological pain management that can be done to reduce pain in aff sheath patients by cold pack compresses.

During the last decades, pain management was treated by pharmacology or a non-pharmacology approach. One non-pharmacological approach for ASR management is by cold pack (Kristiyan et al., 2019). In early research by Bayindir in 2017, cold packs for 20 minutes were effective in reducing pain post-PCI (Bayindir et al., 2017). This research uses cold pack gel as a piece of compressed equipment. Besides the flexibility, it also has bandage management on arterial access after the ASR intervention. Generally, this instrument has a stable temperature of -90 to -130 Celcius and the endurance to absorb or save cold temperature from the freezer or cold storage. Gel usage at cold temperatures has the benefit to minimize tissue destruction after cardiac catheterization and affected the body surfaces in pain reduction, muscle relaxation, blood vessels change, and connective tissue effect. The temperature causes arterial and venous vasoconstriction to stimulate the smooth muscle in blood vessel layers. Furthermore, vasoconstriction prevents bleeding and tissue hematoma (Wicaksono et al., 2020). Ice pack gel was chosen for this research because of its simplicity, inexpensiveness, comfort, and non-invasive nursing management. This study aimed to measure the effect of ice pack gel on pain reduction in arterial sheath removal post-cardiac catheterization patients.

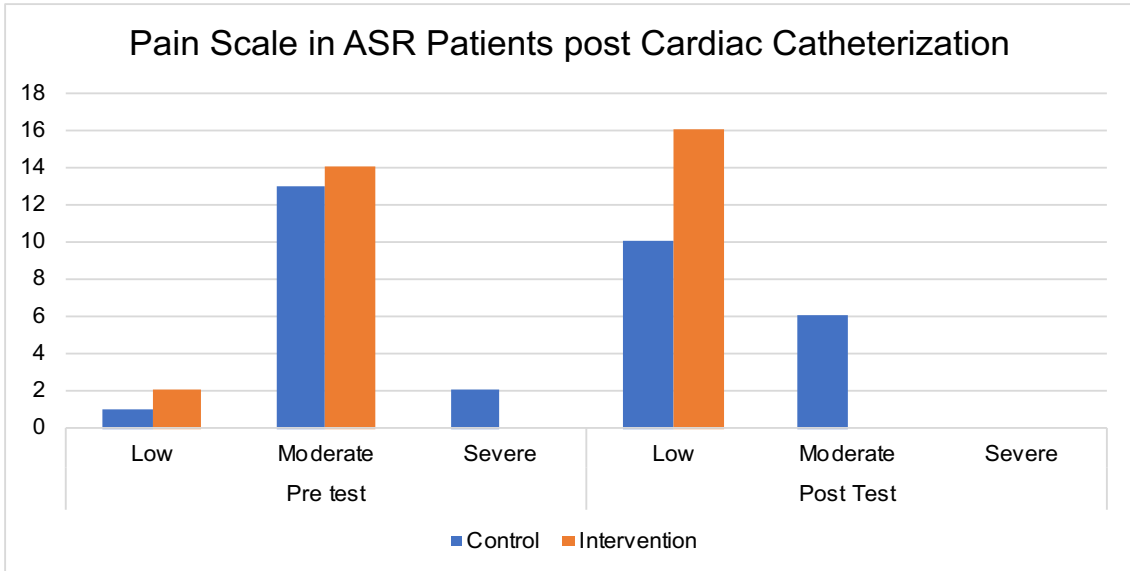


Figure 1. Pain scale in ASR post cardiac catheterization

METHODS

Design

A quasi-experimental study design was used in this study.

Sample and Setting

This interventional clinical study was conducted in the Cardiac Catheterization Room, Cardiology Department of Saiful Anwar Hospital, Malang, Indonesia. The time setting was from November—December 2021. As many as 32 respondents were selected by purposive sampling technique. Respondents have been divided into two groups. The group was divided randomly after the patient underwent catheterization. The treatment group is intervened with ice pack gel (n=16) and the control group (n=16) by standardized treatment in the hospital with bandage pressure. Inclusion criteria : (1) Cardiac catheterization with access via the femoral artery (2) Experience pain after aff sheath procedure by Numeric Rate Scale (3) Age 21 – 60 years (4) Cardiac catheterization without general anesthesia or sedation (5) During catheter sheath removal not receiving pharmacological analgesia. Exclusion Criteria : (1) Post-cardiac catheterization patients with major complications of pseudoaneurysm, arteriovenous (AV) fistula, hematoma requiring transfusion, and retroperitoneal bleeding and experiencing cardiac arrhythmia disorders (2) Patients with IABP (Intra Aortic Ballon Pump) procedures who require post-cardiac

catheterization observation.

Study Procedure

A first group is a control group that uses the standard protocol in the hospital by using the bandage pressure intervention in ASR post-cardiac catheterization. It applied immediately after the ASR protocol and was observed for 4 hours. The second group is the treatment group, given ice-packed gel immediately after the ASR protocol and observed for 20 minutes. Pain scale scores were measured twice. The first is a pre-test directly when ASR intervention is done before ice pack gel and bandage application; the second is a post-test 20 minutes after the treatment of ice pack gel and 4 hours after standardized ones.

Statistical Analysis

Pain reduction was analyzed by the Wilcoxon and Mann-Whitney tests ($p < 0.05$ and 95% confidence interval) using SPSS 16 for windows.

Ethical Approval

This study was approved by the health research ethics committee of Saiful Anwar Hospital, Number: 400/204/K.3/302/2021.

RESULTS

All 32 patients following the study. The respondent characteristic of this research shows in table 1. It is divided into three groups: age, work, and education. The first aspect in

Table 1. Characteristics of respondents (n=32)

Characteristics	Intervention	Control	n (32)	(%)
Age (Year)				
20-30	2	1	3	9.4
31-40	4	2	6	18.5
41-50	3	2	5	15.5
>50	7	11	18	56.0
Work				
Farmers	1	0	1	3.1
Private Sector	11	11	22	68.8
Housewife	1	1	2	6.2
Students	2	1	3	9.4
Public Sector	1	1	2	6.2
Education				
Secondary School	0	2	2	6.2
High School	9	11	20	62.5
Graduate	7	3	10	31.3

Table 2. Statistical result

Wilcoxon Test		
Group	Mean±SD	P Value
Control		
Pre	4.75 ± 0.77	< 0.001
Post	2.31 ± 0.60	
Treatment		
Pre	4.63 ± 1.02	< 0.001
Post	1.63 ± 0.81	
Mann-Whitney Test		
Δ Mean pre-post control vs treatment group		< 0.001

the age group, >50 years is the highest number (56%) and the opposite age group at 20-30 years is the lowest. Most of them work in the private sector (68.8%) while only 3,1% are farmers. The educational grade, the highest is graduate from high school (62.5%), graduate (31.3%), and the last followed by secondary school (6.2%) (Table 1).

Information in the bar chart (Figure 1) shows pain scale measurement in ASR intervention patients after cardiac catheterization. The use of diagrams makes it easy to observe direct comparisons between the control group and the treatment group before and after an intervention. In general, there are few differences in the scale of pain in pre and post-test. In the pre-test, both in the control and

intervention groups the pain scale varies in low, moderate, and severe. While the post-test shows the two areas of pain scale into low and moderate, no one is severe.

In the pre-test, the pain scale of the patient who used the standard protocols by pressure bandage was spread in three areas of low, moderate, and severe level pain. The pain dominated on the moderate scale as the highest (13/81,25%) underneath followed by severe (2/12,5%) then low scale (1/6,25%). At the same time in the intervention group with ice-packed gel patients experienced a moderate scale of pain, with the highest number (14/87,5%) and a small number low (2/12,5%). Furthermore, during the post-test as represented in figure 2, the spreading areas

of a pain level of bandage treatment were more varied than in the treatment group. The standardized treatment was divided into two pain levels; low and moderate, but in an ice pack gel group all of the pain levels become low overall.

Table 2 shows the differences in scores of pain levels in both groups before and after treatment. The average ice-pack gel differences score is higher than the control group. The mean score in ASR patients post cardiac catheterization in the control groups pre-test is 4.75 ± 0.77 then in the post after 4 hours of treatment decreased to 2.31 ± 0.60 . Whereas in ice pack gel groups, pain levels in the pre-test are 4.63 ± 1.02 and decrease rapidly to 1.63 ± 0.81 in the post-test. The Wilcoxon test of both groups is $p < 0.001$. It is concluded that there is a difference in pain levels in ASR patients before and after the treatment in the control and intervention groups.

Furthermore, to make sure which group is more significant in the two groups, a difference score test was conducted between the control and ice pack gel groups using the Mann-Whitney test. Table 4 indicates that the declining average of the intervention group is higher than the control ones. It means the ice pack gel is adequate to reduce pain faster than the standard protocol. To summarize, there were differences between ice pack gel and standard protocol in reducing pain in ASR patients post cardiac catheterization ($p < 0.001$).

DISCUSSION

Cardiac catheterization is a non-invasive procedure in which asymptomatic cardiac disease patients need hospital treatment in diagnostic and percutaneous intervention. However, when the procedure was held it can be a major cause of stress, anxiety, and uncomfortable for the patients. Uncertainty feelings will develop pain sensations due to intervention and the ASR after cardiac catheterization (Bashore et al., 2012).

This research is in line with the other, that the manual compression by a sand pillow on the femoral artery after the ASR procedure can reduce the vascular complication after cardiac catheterization (Manik, 2015). The disruption or vascular injury on the femoral artery release histamine, serotonin, bradykinin, and prostaglandin called pain mediators. This will stimulate pain receptors located in the peripheral free nerve ending, blood vessels

membrane, and other tissues then appear as pain. The release of pain mediators also stimulated the sympathetic nerves and vasoconstriction happened. Furthermore, the muscle density would increase and cause muscle spasms, decrease blood flow, and increases the muscle metabolic rate thus developing impulse transfer and causing pain perception (Mutlu & Yilmaz, 2020).

The decrease of pain in the controls group during the pre and post-test was caused by the prolonged time of pressure by the elastic bandage on the femoral artery. According to the standard protocol of cardiac room inpatients, the bandage pressure must do at least 4 hours after taking the ASR protocols. This procedure aims to stop the bleeding in the femoral artery, develop blood clots, and maintain the homeostasis of blood vessels. Bandage and pressure are a way to stimulate hematoma, another condition that causes pain sensation or vascular damage which is uncomfortable for patients, whereas immobilization will prevent the bleeding.

In another research; firstly, sand pillow intervention or manual pressure after the ASR procedure is effective in reducing vascular complications (Manik, 2015). Secondly, the comparison between sand pillow compression and cold-pack ice to prevent hematoma after cardiac catheterization shows that there is a significant difference in blood vessel vasoconstriction incidents. The cold-packed ice is more effective than a sand pillow to decrease the hematoma complication (Syahri & Andriani, 2021)

In the intervention groups, the levels of pain majority are mild and the view patients is low during the pre-test, whereas in the post-test all respondents changed to a low level. There is a difference in pain level reduction in post-ASR cardiac catheterization procedures by cold-packed ice.

Ice gel is effective to reduce pain after the PCI procedure (Wicaksono et al., 2020). In a few years, research has developed to expand cold pack gel as a replacement for dry ice or ice. Cold pack gel has many transcendences compared to regular ice. This material is reusable and becomes an alternative option besides ice or dry ice. People also can freeze it in the freezer. It is beneficial as long as the package didn't break. The endurance of ice-packed gel achieves 12 hours maximum depending on the material as a substitution compound to the container.

The low-temperature method will inhibit the acceleration of the nerve's signal related to pain to the brain access. According to the gate theories, ice has a role as a nociceptor related to hurt feelings. It collected both perceptions of mechanical and chemical impulses, including wounds or hurt by closing the 'gates' sensation to the central nervous system. This study proved that cold compressing the ice-packed gel is possibly done as a non-invasive and non-pharmacologic intervention in nursing, especially in pain management of removal sheath in post-cardiac catheterization. The other research which is supported this finding is that ice compression gives a positive impact on the physiologic aspect in increasing vasoconstriction, and decreasing capillary permeability. The other way is by influencing the metabolic mechanism, muscle relaxation, inhibiting the bacterial growth, non-inflammatory agents, relieving pain by shaking the pain sensory or developing the numb tissue, slowing down pain impulse, increasing pain threshold, and giving temporary local anesthesia (Bayındır et al., 2017).

In our opinion, the decrease of pain in the intervention groups between pre and post-test is influenced by cold-pack gel. The 20 minutes give a positive effect on the patients, but if the intervention is prolonged, it would give many symptoms such as paresthesia, redness, itchy sensation, soreness and even changing the skin color. The cold-packed gel also prevents the hematoma process. This result is in line with other research that an ice-cold pack is effective to avoid the hematoma complication in post-cardiac catheterization (Syahri & Andriani, 2021). The cold temperature in cold-packed gel prevented the blood flow and capillary permeability by increasing the arteriole vasoconstriction and then lessening the bleeding, inflammation, and pain.

There is a difference in the deviation score of the pain scale in ASR patients post cardiac catheterization in control and intervention groups. The decrease in score differences of pain in ASR post cardiac catheterization in the intervention group is higher than in the control groups. It means the ice-packed gel can reduce the pain faster than the pressure bandage as the standard protocol. It is in line with previous research, that cold-packed is effective to reduce pain in the removal of the femoral sheath in percutaneous coronary intervention (PCI) (Wicaksono et al., 2020).

In addition to pharmacologically pain

management, currently also being developed non-pharmacological treatment. Examples are distractions, relaxation hypnosis, or Transcutaneous Electrical Nerve Stimulation (TENS) technique. This method is used to organize various conditions of pain. It has specific characteristics; non-invasive, non-systemic side effects, simple, safe, cost-effective, and available for self-monitoring (Rizqi, 2018).

Many references state that ice is effective to reduce pain. The effectiveness of cold compress with various methods has been studied and applied in medical sciences or other fields. The application of cold compress and manual bandage on the femoral artery gave a good effect in decreasing vascular complicated symptoms such as hematoma, and ecchymosis and releasing pain reduction in patients with coronary percutaneous intervention (Shofyan Baidhowy et al., 2021). Cold application is effective to reduce pain in subcutaneous heparin injection (Inangil & Şendir, 2020). Cold compress decreases pain sensation because it inhibits the nerve's response transfer to the central nervous system (Bahrudin, 2018). The pain in the patient's post-PCI procedure causes vasovagal incidents or other complications, furthermore, this should be handled. Uncontrolled vasovagal reactions cause irreversible shock and even death. The anxiety and prolonged treatment times caused by pain and unexpected hospital costs occurred (Bayındır et al., 2017).

According to the gate control theory, cold acts as nociceptors that are collected mechanical and chemical stimulation perceptions including pain by closing the gate system of sensation to the central nervous system (Ropero Peláez & Taniguchi, 2016). In line with this, the ice-packed gel compress in pain stimulation decreases the hurt feeling. Other research mentions that pain works in the peripheral nervous system by protecting the nerve transmission acceleration. Furthermore, it would increase pain threshold and pain tolerance along the same nerve. Another one said that cold application and pharmacological intervention decrease the side effect, improve the outcome, and reduce the hospital time treatment (Mutlu & Yılmaz, 2020). Furthermore, ice application together with a pharmacological agent can effectively be used in reducing pain.

In this research, the decrease in pain scores in the intervention groups gives a huge number and is faster than in the control

groups in terms of time. The comparison of pain inhibition mechanisms in the control and intervention groups shows that the ice-packed gel intervention in 20 minutes has less time compared to the bandage pressure (4 hours). It happened because the acceleration of the nerve conjunction of the gate control mechanism in the ice-packed gel groups was faster and shorter than in another group. The regular bandage needs more time to reduce the pain. Besides that, the ice-packed gel can reduce pain and prevent the vasovagal reflex.

The catheter size which is used may contribute to complications of vascular injury. The higher the number of the sheath, the more visible it contributes to an incident of bleeding or hematoma during the deliverance of the ASR. Pain as a symptom of hematoma was present and cold application using ice-packed gel is appropriate during this time.

Age may contribute to pain perception in this study. The observational data in this research represent that the perception of pain in older age is getting more biased. This condition is probably affected by the aging factor. Many elderly people generally have pathological symptoms following the pain sensation in the past. Then it would describe that pain sensation in old people is lower than in younger ones.

Pain causes anxiety problems. It would affect the time of treatment in the hospital, burden condition to the health care provider, and increases the cost of therapy. To sum up it is important to consider the use of ice-packed gel to reduce pain as a non-pharmacological approach.

CONCLUSION

The result suggested that the application of ice-packed gel as pain management in the removal of sheath post cardiac catheterization has a potential role in reducing pain. However, future research with larger sample sizes and observing the complications of the ice-packed gel application is recommended in post-cardiac catheterization patients.

Declaration of Interest

The authors have no conflict of interest to declare.

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Relationship between cholesterol levels and anxiety levels among hypertension patient in the community setting

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ABSTRACT

Background: Cholesterol is needed by humans for glucose metabolism and it also plays an important role in human energy metabolism. However, having too much cholesterol can also harm the individual himself, which can lead to the accumulation of fat in the blood.

Objective: The purpose of this study was to determine the relationship between cholesterol levels and anxiety levels on hypertension in the working area of Klatak Health Center.

Methods: The research design used a Correlation Study with a cross-Sectional research design. The study population was 70 respondents with hypertension and as many as 60 respondents were selected by using a purposive sampling technique. The research instrument used a cholesterol meter and an Anxiety Questionnaire Hamilton Rating Scale for Anxiety (HRS-A). Data analysis in this study used the Spearman Rank.

Results: The result of cholesterol levels with anxiety levels in patients with hypertension ($p = 0.003$; $r = 0.380$) which mean that there was a relationship between cholesterol levels and anxiety levels in the working area of Klatak Health Center.

Conclusions: The conclusion is that with better cholesterol levels in patients with hypertension then the level of anxiety in diseases will be reduced.

Keywords: anxiety; cholesterol levels; hypertension

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INTRODUCTION

The National Institute of Heart, Lung, and Blood in Indonesia estimates that some people who suffer from hypertension will not be aware of their condition. Lack of physical activity can increase cholesterol levels in the body which is a risk factor for heart and blood vessel disease (Maryati, 2017). In a preliminary study in the Klatak Health Center Work Area, problems that occur in the field are lifestyles with the habit of eating fast food rich in fat, laziness to exercise in addition to increasing blood pressure, which will also increase cholesterol levels. High cholesterol levels or hypercholesterolemia can lead to fat storage in the blood (Ujjani, 2015). The buildup of fat in the blood is called cholesterol plaque. Cholesterol plaques can make blood vessels narrow so that blood flow becomes less

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- *An evidence that cholesterol has a relationship with anxiety level in patient with hypertension*
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smooth. Lifestyle is also very influential on the form of behavior or habits of a person that has a positive or negative influence on health. Anxiety is a psychological factor that affects hypertension. This is supported by the opinion of (Handayani, 2022) in many people that anxiety or psychosocial stress can increase blood pressure.

The global prevalence of hypercholesterolemia in adults is 37% for men and 40% for women. Patients with total cholesterol in Indonesia according to RISKESDAS (Basic Health Research) data in 2018, there are 34,820 people consisting of several characteristics, this is also supported by data from PTM (Non-Communicable Diseases) in 2016, showing that the prevalence of high cholesterol is 52,3%. East Java Province occupies the 23rd position out of 34 total provinces in Indonesia, the prevalence is as high as 2,967 people who have high cholesterol detected from a total of 8,225 people who do the examination. The incidence of hypercholesterolemia shows a prevalence of 1,233 people, while the Klatak Health Center occupies the 3rd position in Banyuwangi Regency, which is 115 people (Banyuwangi Health Office, 2020). High cholesterol levels or hypercholesterolemia in the blood is also a trigger for hypertension. This is because high cholesterol is the cause of blockage in peripheral blood vessels which reduces blood supply to the heart (Soleha, 2012). Cholesterol is a modifiable risk factor for hypertension, so the higher the total cholesterol level, the higher the likelihood of developing hypertension (Sulastris et al., 2020). Hypertension has a relationship with total cholesterol lipid abnormalities, where the presence of dyslipidemia increases the risk of developing hypertension so the risk of cardiovascular morbidity and mortality increases (Firman, et al., 2020).

Increased coronary heart disease (CHD) and hypertension occur epidemiologically in total serum cholesterol that exceeds 193.2 mg/dl. Cholesterol is a neutral fat that is used for the synthesis of hormones and folic acid in the liver. Cholesterol is located in tissues and plasma in the form of stored or free cholesterol. Lipoproteins transport both forms into the plasma. The four main lipoprotein groups are chylomicrons, very low-density lipoprotein (VLDL), low-density lipoprotein (LDL), and high-density lipoprotein (HDL). The function of each lipoprotein is different and is broken down and excreted differently.

Anxiety is closely related to an increase in blood cholesterol (Fauziah, at al., 2018). Hyperactivity of the nonandrogenic system can cause an increase in cholesterol levels in individuals with higher anxiety compared to individuals with lower anxiety levels (Lestari et al., 2015). Anxiety is confusion and worry about something that will happen with unclear causes and is associated with feelings of uncertainty and helplessness (Pramana et al., 2016). Anxiety can be expressed through physiological responses, where the body responds by activating the autonomic nervous system (sympathetic and parasympathetic). The sympathetic nervous system will activate the body's response, while the parasympathetic nervous system will minimize the body's response (Pratama, et al., 2020; Puspita, et al., 2020). The body's reaction to anxiety is "fight or flight" (the body's physical reaction to external threats), when the brain cortex receives a stimulus it will be sent through the sympathetic nerves to the adrenal glands which will release the hormone epinephrine (adrenaline) which stimulates the heart and blood vessels so that the effect is breath becomes deeper, pulse increases, and blood pressure increases or hypertension (Pramana et al., 2016).

To avoid high cholesterol levels, namely by not eating fatty foods, a healthy lifestyle, adequate rest, and can control anxiety. To reduce the level of anxiety, efforts can be made by doing relaxation techniques. The more often relaxation techniques are used, the more effective it is to reduce tension and anxiety. Progressive relaxation therapy is effective in reducing anxiety and stress. Based on the background of the problem above, the researcher is interested in conducting research on the relationship between cholesterol levels and anxiety levels in hypertension patients in the work area of the Klatak Health Center.

METHODS

Design

The research design in this study used a cross-sectional research design, which is a type of research where the measurement or observation time is only once at a time on the data of the independent variable and the dependent variable (Nursalam, 2016).

Sample and Setting

The sample is part of the affordable population that can be the subject of research through sampling (Nursalam, 2016). The sample used was 60 people with hypertension in the working area of the Klatak Public Health. The sample in this study must meet the inclusion criteria. Inclusion criteria are general characteristics of research subjects from a target population that is affordable and will be studied (Nursalam, 2016). Inclusion criteria in this study were patients with hypertension who were recorded in the work area of the Klatak Health Center and patients with hypertension who were willing to become respondents. Exclusion criteria are eliminating or removing subjects who do not meet the inclusion criteria from the study for various reasons (Nursalam, 2016). Exclusion criteria in this study were hypertensive patients with mental disorders and hypertensive patients who were not present at the examination.

Variable

The independent variable is the variable that causes the dependent variable to arise (Nursalam, 2016). The independent variable in this study is cholesterol levels. The dependent variable is a variable that is influenced or positioned as a result of the emergence of an independent variable and is a factor that can be observed and measured by seeing whether there is a correlation or influence of the independent variable (Nursalam, 2016). The dependent variable in this study is the level of anxiety.

Instruments

Cholesterol levels can be done by using a cholesterol measuring device (cholesterol meter). When using a cholesterol meter, the results are classified as to whether cholesterol levels are in the good range, the upper threshold, or high. Anxiety level questionnaire using Hamilton Rating Scale For Anxiety (HRS-A). According to (Nursalam, 2013). The

HRS-A questionnaire is an instrument used to measure anxiety levels such as mood, tension, physical symptoms, and worries. The HRS-A questionnaire consists of 14 groups of anxiety symptoms that are described more specifically. This questionnaire uses a score with a Likert scale range of 0-4, which consists of 0: no symptoms (no symptoms at all); 1: Mild symptoms (one symptom from the available options); 2: Moderate symptoms (half of the symptoms present); 3: Severe symptoms (more than present); 4: Severe symptoms (all symptoms present). With the measurement results, a score <14 indicates no symptoms of anxiety, a score of 14-20 indicates mild anxiety, a score of 21-27 indicates medium anxiety, a score of 28-41 indicates heavy anxiety, a score of 42-56 indicates very heavy anxiety. The researcher chose the HRS-A questionnaire as the research instrument because the HRS-A instrument has been proven to be a tool for measuring anxiety levels. The components contained in the HRS-A questionnaire are fewer than other instruments so that it can maintain the concentration of respondents to fill out the questionnaire carefully.

Ethical Consideration

The study received ethical approval from the Klatak Banyuwangi Public Health Center (No: 049/01/KEPK-STIKESBWI/II/2022).

RESULT

Based on the research in table 1, that cholesterol levels in the working area of the Klatak Health Center in patients with hypertension, mostly in the upper threshold category as many as 39 respondents (65%). This study is in line with research (Maryati, 2017) who obtained the results of cholesterol levels with the upper threshold category (more than 200-239 mg/dl). A factor that can affect cholesterol levels is age. According to (Maryati, 2017) age factor is very important in increasing cholesterol levels in the blood. Based on the results in table 3, 39 (65%) respondents had cholesterol levels in the upper threshold category and almost half of them were 26 respondents (43.3%) aged 46-55 years. Gender factors are also at risk for increased cholesterol levels. Based on the results in table 4, it was found that 21 (35%) of the respondents had cholesterol levels in the high category and most of the 36 respondents (60%) were women. The most of the anxiety levels in the heavy category were 35 respondents (58.3%),

Table 1. Characteristics of respondents (n=60)

Characteristics	n	%
Cholesterol Levels		
Threshold	39	65
High	21	35
Age		
46-55 years old	26	43.3
56-65 years old	23	38.3
>65 years old	11	18.3
Gender		
Male	24	40
Female	36	60
Anxiety Levels		
No symptoms	2	3.3
Mild	6	10
Medium	7	11.7
Heavy	35	58.3
Very Heavy	10	16.7

Table 2. Relation between cholesterol levels and anxiety levels of hypertension

Cholesterol	Anxiety					Total	p	r
	No	Mild	Medium	Heavy	Very heavy			
	n (%)	n (%)	n (%)	n (%)	n (%)			
Threshold	2 (3.3%)	6 (10%)	5 (8.3%)	23 (38.3%)	3 (5%)	39 (65%)	0.003	0.380
High	0 (0%)	0 (0%)	2 (3.3%)	12 (20%)	7 (11.7%)	21 (35%)		
Total	2 (3.3%)	6 (10%)	7 (11.7%)	35 (58.3%)	10 (16.7%)	60 (100%)		

a small portion in the very heavy category were 10 respondents (16.7%), a small part in the medium category as many as 7 respondents (11.7%), a small part in the mild category as many as 6 respondents (10%), and also a small part that has no symptoms of anxiety as many as 2 respondents (3.3%).

Based on the results of the Spearman rank test, with a significance level of 0.05 (5%), obtained $p = 0.003$ then the alternative hypothesis is accepted and H_0 is rejected, meaning that there is a relationship between cholesterol levels and anxiety levels in sufferers. Hypertension in the working area of the Klatak Public Health Center. With a close correlation of 0.380, it shows a correlation with low strength (Table 2).

DISCUSSION

The results showed that cholesterol levels in the working area of the Klatak Health Center in patients with hypertension, mostly in the upper threshold category as many as 39 respondents (65%). This study is in line with research (Maryati, 2017) who obtained the results of cholesterol levels in the upper threshold category (more than 200-239 mg/dl). High cholesterol in the blood is associated with blood pressure (hypertension), and narrowing and stiff blood vessel walls due to cholesterol in blood vessels can cause blood pressure. Several factors cause hypercholesterolemia. According to (Ujiani, 2015), the factors that can affect cholesterol levels are age and gender factors.

This is in line with research (Rachmawati et al., 2021), 40 years of age increases the occurrence of hypertension due to natural changes in the body that affect the elasticity of blood vessels decreases and body resistance decreases, increasing age due to the aging process which makes people susceptible to disease. This is following the theory that states that cholesterol in the blood is getting thicker over time. With age, the thickening that occurs will increase and physical activity tends to decrease, and the metabolic rate will run slower due to the weakening of the body's organs. There is a relationship between cholesterol levels in patients with hypertension with the age of the respondent. This is due to changes in the structure of large blood vessels, so that blood vessels become narrowed and blood vessel walls become stiff and cholesterol increases.

Women have more free time than men. This is because after the age of 45, the number of women who suffer from hypertension which also triggers an increase in cholesterol will be higher than men because women are protected by female hormones during their productivity period (Dwipayanti, 2019). Mild anxiety levels are associated with tension in daily life which causes a person to be more alert and increases his perceptual space. Obtained from the results of the study, respondents experienced mild anxiety as many as 6 (10%) respondents. Signs that often appear in mild anxiety of respondents with hypertension with hypercholesterolemia from the results of the questionnaire include physiological responses, namely muscle stiffness, and frequent urination.

Medium anxiety levels make a person focus on things that are felt to be important to the exclusion of other aspects. Obtained from the results of the study, respondents experienced medium anxiety as many as 7 (11.7%) respondents. The signs that often appear in medium anxiety are respondents with hypertension with hypercholesterolemia from the questionnaire results, including physiological responses, namely difficulty sleeping, loss of interest, and changes in behavior when communicating. Heavy levels of anxiety can cause a person to tend to focus on something more detailed, specific, and unable to think about other things, and will require a lot of direction to focus on another object. From the results of the study, the respondents experienced heavy anxiety as many as 35 (58.3%) respondents. It was found

that most of the respondents experienced heavy anxiety. Signs that often appear in heavy anxiety of respondents with hypertension with hypercholesterolemia from the questionnaire results include physiological responses, namely tension, difficulty sleeping, difficulty concentrating, decreased memory, muscle pain, muscle stiffness, frequent urination, and changes in urine output on behavior when communicating (Firman, et al., 2020).

Very heavy levels of anxiety (panic) related to the fear and terror of experiencing a loss of control. People who are panicking are unable to do anything even with direction (Elviani, et al., 2021). Signs that often appear in very heavy anxiety respondents with hypertension with hypercholesterolemia from the results of the questionnaire include physiological responses, namely anxiety, tension, difficulty sleeping, difficulty concentrating, decreased memory, muscle pain and stiffness, weakness, heart palpitations, frequent urination, headaches, and changes in behavior when communicating (Endriyani, et al., 2021).

Cholesterol is a modifiable risk factor for hypertension, so the higher the total cholesterol level, the higher the likelihood of developing hypertension (Sulastrri et al., 2020). Lack of physical activity can increase cholesterol levels in the body which is a risk factor for heart and blood vessel disease (Maryati, 2017).

Anxiety can affect thinking skills, both thought processes and thought content, including not being able to pay attention, decreased concentration, easy to forget, decreased field of perception, and confusion (Pramana et al., 2016). Mild anxiety levels are associated with tension in daily life which causes a person to be more alert and increases his perceptual space. Medium anxiety levels make a person focus on things that are felt to be important to the exclusion of other aspects. Heavy levels of anxiety can cause a person to tend to focus on something more detailed, specific, and unable to think about other things, and will require a lot of direction to focus on another object. Panic anxiety levels are related to the fear and terror of experiencing a loss of control. People who are panicking are unable to do anything even with direction (Hidayat, et al., 2021).

There were 2 (3.3%) respondents in the category of upper threshold cholesterol with no symptoms of anxiety level. This is due to muscle stiffness and difficulty sleeping. In the category of upper threshold cholesterol with mild anxiety, 6 (10%) respondents were found.

This is because respondents with hypertension with hypercholesterolemia upper threshold signs that often appear from the results of the questionnaire include physiological responses, namely muscle stiffness and frequent urination (Mahardika, 2017). In the category of upper threshold cholesterol with medium levels of anxiety, there were 5 (8.3%) respondents. This is because respondents with hypertension with hypercholesterolemia upper threshold signs that often appear from the results of the questionnaire include physiological responses, namely difficulty sleeping, loss of interest, and changes in behavior when communicating (Kartika, et al., 2021; Kati, et al., 2018). In the upper threshold cholesterol category with heavy anxiety, 23 (38.3%) respondents were found. This is because respondents with hypertension with hypercholesterolemia upper threshold signs that often appear from the questionnaire results include physiological responses, namely tension, difficulty sleeping, difficulty concentrating, decreased memory, muscle aches, muscle stiffness, and frequent urination (Lestari, 2015). As well as changes in behavior when communicating. In the category of upper threshold cholesterol with a very heavy level of anxiety, 3 (5%) respondents were found. This is because respondents with hypertension with hypercholesterolemia upper threshold signs that often appear from the questionnaire results include physiological responses, namely anxiety, tension, fear of being left alone, difficulty sleeping, loss of interest, muscle pain and stiffness, weakness, heart palpitations, no appetite, frequent urination, headache, restlessness, and restlessness when communicating (Handayani, at al., 2019).

In the category of high cholesterol with medium levels of anxiety, 2 (3.3%) respondents were found. This is because respondents with hypertension with high hypercholesterolemia often have signs that often appear from the questionnaire results, including physiological responses, namely anxiety, tension, fear of the dark, difficulty sleeping, not sleeping well, waking up at night, loss of interest, muscle stiffness, weakness, decreased appetite, frequent urination, headache, restlessness, and restlessness (Melfa, et al., 2008; Mutawalli, et al., 2020; Wahyuni & Wahyuningsih, 1967). In the category of high cholesterol with heavy anxiety levels, 12 (20%) respondents were found. This is because respondents with hypertension with high hypercholesterolemia often have signs that often appear from

the results of the questionnaire, including physiological responses, namely difficulty sleeping, not sleeping well, difficulty concentrating, nightmares, decreased memory, loss of interest, sadness, and fluctuating feelings. every day, decreased appetite, frequent urination, easy sweating, headache, restlessness, and restlessness. In the category of high cholesterol with very heavy anxiety levels, 7 (11.7%) respondents were found. This is because respondents with hypertension with high hypercholesterolemia often show signs of physiological responses, namely anxiety, tension, difficulty sleeping, difficulty concentrating, decreased memory, muscle pain, and stiffness, weakness, heart palpitations, frequent urination, headaches, changes in behavior when communicating.

CONCLUSION

The cholesterol levels in patients with hypertension in the working area of the Klatak Health Center were mostly in the upper threshold category and the level of anxiety in a severe category. From the statistical analysis, there was a relationship between cholesterol levels and anxiety levels in hypertension patient. This study can be a reference and basic information for nurses in the community settings.

Declaration of Interest

No conflict of interest.

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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