OPEN ACCESS

e-ISSN 2827-8100
p-ISSN 2827-8496

The Journal of

Palembang Nursing Studies

Editor-in-Chief: Hidayat Arifin

Volume 1 Number 3: September 2022

P | M PUBLISHER

Published by
Palembang MediRose Publisher
Indonesia

e-ISSN 2827-8100
p-ISSN 2827-8496

The Journal of Palembang Nursing Studies

Volume 1 Number 3: September 2022

The Journal of Palembang Nursing Studies (JPNS) is a scholarly platform that has been designed to accommodate scientific works for researchers, lecturers, and nursing students. JPNS platform was started in January 2022. JPNS was designed using worldwide references that focus on the field of nursing with a particular emphasis on achievements in the Asian area. The focus of the JPNS includes nursing study with the scope of evidence-based practice in nursing, medical-surgical nursing, critical care, emergency, and disaster nursing, maternity and pediatric nursing, community and mental health nursing, management in nursing, fundamental nursing, nursing theory, and nursing policy.

JPNS is published by Palembang MediRose Publisher in Palembang, Indonesia. We collaborate with Indonesian National Nurses Association - Persatuan Perawat Nasional Indonesia (INNA-PPNI). JPNS is published three times a year (January, May, and September) with a double-blinded peer-review process.

Published by Palembang MediRose Publisher
Jl. Sanjaya VIII No. 96, Kota Palembang, Sumatera Selatan
Kode pos : 30151

e-ISSN 2827-8100
p-ISSN 2827-8496

EDITORIAL BOARDS

Volume 1 Number 3: September 2022

e-ISSN 2827-8100
p-ISSN 2827-8496

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https://doi.org/10.55048/jpns.v1i3

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The Journal of Palembang Nursing Studies
https://jpns-journal.com/index.php/jpns
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The relationship between stigma and anxiety among nurses during COVID-19 pandemic

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Volume 1(3), 69-73

http://dx.doi.org/10.55048/jpns.v1i3.12

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : January 25, 2022
Revised : March 29, 2022
Accepted : May 4, 2022
In Press : June 14, 2022
Published: September 11, 2022

ABSTRACT

Background: *Puskesmas* as public health facility encounter challenges in facing COVID-19, including nurses who provides care for patients who faces challenges in this emergency. The frequent interaction of nurses with patients put nurses in a high risk of being exposed to COVID-19. This situation triggers a negative stigma towards nurses in the community which impacted a lot of nurses.
Purpose: The purpose of this study is the relation between anxiety level and stigma on nurses during the COVID -19 pandemic.
Methods: The study used a descriptive analytic study with a cross-sectional study design with 96 respondents from *Puskesmas* Jambi City. Statistical test used in this research is Chi Square.
Results: Statistical test result shows that there is a significant relation between stigma and anxiety on nurses in *Puskesmas* Jambi city with p value=0.001.
Conclusions: Nurses are COVID-19 front liners, who are always exposed with patients, along with the stigma that comes from the community. The stigma could affect the nurses psychologically. Therefore, more attention is needed regarding this matter. Increasing public knowledge regarding infectious disease is one of the first steps in handling this issue as it could change the public perception regarding COVID-19 and its urgently needed to eliminate the negative stigma against nurses. for the next study, it can be a reference and research more about other factors that cause anxiety in nurses during the COVID-19 pandemic

Keywords: stigma; anxiety; COVID-19

INTRODUCTION

COVID-19 is an infectious disease which is caused by recently found corona virus which is medically known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Human case of COVID-19 is firstly identified in Wuhan, Chin in December 2019. Corona virus is a large family of viruses that is commonly found in animals and humans. The recently discovered coronavirus has caused the COVID-19 disease (Organization, I. L, 2020).

Yesni, M., & Rahmadhani, D. Y. (2022). The relationship between stigma and anxiety among nurses during COVID-19 pandemic. *The Journal of Palembang Nursing Studies*, *1*(3), 69-73. http://dx.doi.org/10.55048/jpns.v1i3.12

Nursing and Healthcare Practices

- *Nurses are facing stigma during the COVID-19 pandemic.*
- *The stigma experienced by nurses affects nurses anxiety during the COVID-19 pandemic.*
- *Psychological support is needed for nurses to reduce anxiety during covid 19. Thus, nurses can provide more optimal health services.*

There are a lot of medical staff in the hospital. However, medical staff who pose as the front liners are the nurses. Nurses have several roles. As a caregiver, nurses will be actively involved 24 hours in giving nursing care. As an educator, nurses provide education to patients, families, and communities (Kemenkes, 2020)

According to Organization, I. L, (2020), nurses are also involved in strengthen communities' understanding regarding COVID-19 which includes preventive actions and symptoms. This is done in order to increase the sense of crisis. Therefore, communities are more aware and implement preventive, healthy lifestyle, and is not panic. Beside those roles, nurses are also act as an advocate where nurses will help to reduce stigma on COVID-19 positive patients and their families. Generally, nurses have important role in promotive, preventive and nursing service during COVID-19 pandemic.

All of the nurses involved in the care of COVID-19 patients have sacrifices their personal and family matters. Nurses have sacrificed their safety with the threat of being infected by COVID-19 which could result in death. As a part of front liners who handle COVID-19 pandemic, there are a lot of nurses who experience burnout, physically and mentally. Their high workload in treating COVID-19 case along with limited personal protective equipment and nutritional needs that are not necessarily adequate resulted in the decrease of body immune and also higher risk in contracting the virus.

Hospital as a health public facility encounters challenges in facing COVID-19 pandemic, especially nurses who provides nursing for patients. A research study done to 994 medical staff and nurses in Wuhan found that 34.4% of them are experiencing light symptom of mental health issue, 22.4% mild symptom, and 6.3% of them with severe symptom. Mental health issues were assessed from anxiety, stress, depression, and insomnia level experienced by nurses. The main factors that trigger the psychological distress are exposure to patients infected with COVID-19 and psychological support (Kang et al., 2020). In reality, nurses works in vulnerable situation to contract COVID-19, isolated from social environment, and is in contact with asymptomatic patients which affected nurses' psychological response. Another study about nurses' stress in facing infectious disease emergency situation done by (Oh N et al., 2020) in South Korean nurses during MERS pandemic shows that the average stress level of nurses is round 32.91 (SD: 7.30). Insufficient basic knowledge about MERS becomes the factor that related with stress that is experienced by nurses. A study about nurses' anxiety during COVID-19 pandemic currently is still very limited. This research is important to be carried out as a consideration in policy making as an effort to break the chain of COVID-19 transmission.

METHODS

Design

This study is a quantitative study using cross-sectional design (Arikunto, 2010).

Sample and Setting

Populations used in this research are all nurses in *Puskesmas* Jambi City. The sample used are executive nurses who worked in *Puskesmas* Jambi City. Sampling technique being used is consecutive sampling. The data is gathered for 2 days with respondent of 96 nurses.

Instruments

The variable in this study is stigma as the independent variable and anxiety as dependent variable. Research instrument used to assess anxiety is DASS questionnaire (Depression Anxiety and Stress Scale) (Henry & Crawford, 2005) and stigma questionnaire, using the Infection Stigma Scale (CSS) which has been modified, consisting of 14 statements and has been tested for validity and reliability with a value of Cronbach alpha 0.81.

Table 1. Distribution of stigma (n = 96)

Negative Stigma	n	%
None	52	54.1
Present	44	45.9
Total	96	100

Table 2. Distribution of anxiety level (n = 96)

Anxiety	n	%
Normal	35	36.5
Light	15	15.6
Mild	46	47.9
Total	96	100

Data Analysis

Data analysis used in this study is univariate and bivariate data analysis where Chi Square is used to do bivariate analysis.

Ethical Consideration

Research ethic in this study involved nurses as the research subject. Therefore, the process must meet the standard of research ethic. In this study, researchers ask the respondents' consent to participate as a respondent after the explanation regarding the research process is explained. Respondent signed the informed consent while researchers guarantee the data confidentiality.

RESULTS

The univariate analysis result in this research is that amongst 96 nurses, 54.1% nurses doesn't get the negative stigma, meanwhile 45.9% experienced the negative stigma. The illustration regarding the stigma frequency distribution is explained on the table 1.

Univariate analysis in done for anxiety variable shows that amongst 96 nurses, 47.9% experienced mild anxiety, 15.6% with light anxiety, and 36.5% did not experienced anxiety during COVID-19 pandemic. Further explanation illustrated on the table 2.

Analysis on the relation between stigma with the anxiety level of nurses in *Puskesmas* Jambi city during COVID-19 pandemic resulted in the p-value of 0.01 ($p \leq 0.05$), there is a significant relation between negative stigma and anxiety in nurses. Further explanation illustrated on the table 3.

DISCUSSION

Result from this research shows that from 96 nurses, 54.1% doesn't experience negative stigma, meanwhile 45.9% experienced negative stigma. 47.9% of nurses experienced mid-level of anxiety, 15.6% experienced low level of anxiety, and 36.5% doesn't experienced any anxiety. It is shown that there is a significant relation between negative stigma and anxiety in nurses.

Menon et all., (2020) stated that the health workers who are at the forefront of handling COVID-19 patients are faced with quite heavy pressure after the pandemic occurred, one of which must be faced is the stigma associated with COVID-19. The emergence of this stigma is due to the large amount of false information/ hoax spreading in the community regarding COVID-19 and the fear that these health workers might carry the virus after treating COVID-19 patients in their workplaces. Everyone who works at health care facilities and treat patients with COVID-19 cases as well not escape the stigmatization of society. This is because the officers who have been in contact with a COVID-19 patient has a high probability of spread the disease to the community (Klankhajhon & Sthien, 2022). They are considered untouchable or being approached and even experienced discrimination and social isolation by the community (Singh & Subedi, 2020).

Throughout negative stigma, an individual connects their mental struggle with internal cause (Seligman et al., 2005). When an individual stigmatized themselves, it causes their pride to decrease, loss of confident, loss of self-control, and high level of desperation addition, individuals who experiencing devaluation and discrimination may divert themselves with engage in risky behavior, such as substance abuse, with negative health (Clair et al., 2017).

Stigma is a negative view in regards of certain condition. Social stigma and social discrimination could be linked to COVID-19, for example to people who have been infected, families and medical staff specifically nurses who act as the front liners in handling COVID-19 patients with high risk of being infected.

Medical staff are at high risk of experiencing psychological issue in forms of mild to severe anxiety and stress due to the various pressure that increased, and they must face (Lai et al., 2020). Fear, specifically in the increased risk

Table 3. Relation between stigma and nurses' anxiety

Stigma	Anxiety Level			Total n (%)	*p*
	Normal n (%)	Light n (%)	Mild n (%)		
None	22 (42.3)	12 (23.1)	18 (24.9)	52 (100)	0.01
Present	13 (16)	3 (6.9)	28 (21.1)	44 (100)	
Total	35 (36.5)	15 (15.6)	48 (47.9)	96 (100)	

of being infected and the probability of infected the one they love is also another burden for them (Dwiyanto et al., 2022). A lot of medical staff need to isolate themselves from families and their closest one even though they didn't have COVID-19. This is a really hard decision that could resulted in a significant psychological burden (Kang et al., 2020).

Each individual has their own coping mechanism in facing issue and each has different effect. The cause of medical staff who experienced anxiety are high work demands including long working hours the, the increased amounts of patients, the harder it is to get social support due to the negative stigma in the communities towards front liners, personal protective equipment that limits the movement, insufficient information regarding prolong infection to infected people, and the fear that the front liners working if they infect COVID-19 to their families and friends due to their work.

The limited knowledge that the community has regarding the infection and the prevention of COVID-19 is a factor that triggers the negative stigma to nurses who is actively engaged with COVID-19. Nurses are dubbed as someone who brings the disease to others.

Limitations

The research was conducted during the COVID-19 pandemic outbreak. The limited process of collecting research data is minimized contact between researchers and research respondents. However, researchers are still trying to optimize while complying with the COVID 19 health protocol. The administration of non-narcotic analgesic drugs (NSAIDs) in post-laparotomy patients may confound the respondents' pain intensity. The type, dose, and frequency of drug administration are carried out by doctors and cannot be controlled by researchers. However, researchers have attempted to exclude respondents by administering narcotic analgesic drugs to avoid bias.

CONCLUSION

This research shows that there is relation between stigma and anxiety on nurses in *Puskesmas*. The stigma could affect the nurses psychologically. Therefore, more attention is needed regarding this matter. Increasing public knowledge regarding infectious disease is one of the first steps in handling this issue as it could change the public perception regarding COVID-19 and its urgently needed to eliminate the negative stigma against nurses. for the next study, it can be a reference and research more about other factors that cause anxiety in nurses during the COVID-19 pandemic

Declaration of Interest

No conflict of interest

Acknowledgment

Researcher would like to thank all the head of Puskesmas who have given the research permits, head of the room and room nurses regarding the data collection and research process. In addition, researcher also would like to thank all parties who have supported. It is suggested that further research could examine other factors that cause anxiety during COVID-19 pandemic.

Funding

None

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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ORIGINAL

The Journal of Palembang Nursing Studies
https://jpns-journal.com/index.php/jpns
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The effect of drinking cold water on nausea and vomiting among patient with post-chemotherapy breast cancer

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Volume 1(3), 74-85

http://dx.doi.org/10.55048/jpns.v1i3.15

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : February 13, 2022
Revised : March 27, 2022
Accepted : May 4, 2022
In Press : June 14, 2022
Published: September 11, 2022

ABSTRACT

Background: Nausea, vomiting after chemotherapy is still major problem that interferes with the process of treating cancer, especially breast cancer. There are 2 things that can be done to reduce nausea, vomiting, pharmacologically and non-pharmacologically. Drinking cold water is one of the non-pharmacological ways for patients who experience nausea, vomiting after chemotherapy. These actions can reduce acute nausea and vomiting delayed due to chemotherapy
Purpose: The purpose of this study was to determine the effect of drinking cold water on nausea and vomiting after chemotherapy in breast cancer patients in RSUP M. Djamil Padang.
Methods: This research was a time series. Sampling by consecutive sampling and determination of intervention and control groups by randomization of simple subject allocations. The research sample consisted of 38 respondents, consisting of 19 respondents as an intervention group who were treated with cold drinking water for 3 days and 19 respondents as a control group
Results: Testing the difference in the decrease in the average score of nausea and vomiting in the intervention group using the repeated measure ANOVA test. The results showed an average decrease in the intervention group of < 0.001.
Conclusions: The conclusion significantly drinking cold water can reduce nausea and vomiting after chemotherapy in breast cancer patients in RSUP M. Djamil Padang. It is recommended that drinking cold water be applied as part of nursing intervention in providing nursing care to patients who experience nausea and vomiting after chemotherapy.

Keywords: cold water; chemotherapy; nausea; vomiting

INTRODUCTION

Breast cancer is the highest cause of death in women. According to WHO, the number of people breast people with cancer as many .522,000 people in 2012, there was an increase in 2015 to as many as 571,000 people. In one of the developed countries with the highest incidence rate in the United States in 2017 there are an estimated 252,710 new cases and about 40,610 women are estimated to die from breast cancer (WHO, 2022).

Nursing and Healthcare Practices

- *Monitoring and companion support should be provided by nurses during the implementation of cold-water drink intervention.*
- *To avoid aspiration, the correct procedure of cold-water drink intervention should be a concern.*
- *cold-water drink could be an effective and affordable intervention to redure nausea and vomiting among patient post-chemoteraphy.*

Indonesia is also a country that contributes to the number of sufferers as many as 61,682 people, one of which is west Sumatera area 2,285 people (Kemenkes RI, 2015).

In West Sumatera, RSUP M. Djamil Padang is one of the hospitals that became a referral center for several regions (Jambi, Bengkulu, Padang and Pekanbaru). Based on data on the number of breast cancer patients at M. Djamil Padang Hospital in 2014 (3,323 patients), 2015 (1,225 patients), 2016 (4,241 patients), in 2017 from January to September 1,721 patients. Outpatients who underwent chemotherapy in 2016 (614 people) and in 2017 from January to September as many as 510 people. The average breast cancer patient who was immunotherapy in 1 month was approximately 56 people.

Breast cancer is a disease with a disorder of growth of cells in the air out of control. This disease requires immediate action so as not to spread or get worse. Some activities can be done: surgery, chemotherapy, radiotherapy, and hormone therapy (Widayati et al., 2022). Chemotherapy is one of the most widely used and effective ways to overcome cancer because it kills cancer cells until they are not left.

In general, chemotherapy causes nausea and vomiting. Nausea and vomiting varies in severity, depending on the type of medication used. High and moderate doses of the drugs are cisplatin and doxorubicin, which can cause nausea and vomiting in 70% - 90% of patients) (Bayo et al., 2012; Hosseini et al., 2016). Nausea is part of the body's defence against toxins or toxins that enter. Vomiting is a protective reflex to expel or remove toxins from the intestines before absorption (Singh et al., 2016).

Nausea and vomiting after chemotherapy is categorized into acute, delayed, and anticipatory. Acute vomiting nausea is a symptom of nausea and vomiting that occurs less than 24 hours after chemotherapy. Delayed nausea is the onset of nausea symptoms of vomiting after 24 hours to 6 days after chemotherapy. Anticipatory is a symptom of nausea and vomiting that occurs before chemotherapy (Aapro, 2015). Several factors involved in the aetiology of nausea and vomiting include therapies such as opioid therapy, metabolic abnormalities, gastrointestinal irritation, increased intraatomic pressure caused by the tumor itself or by the presence of metastasis and treatment or neurosurgery. Nausea and vomiting relies heavily on the stimulation of the vagal afferent nerve (Aapro, 2015). Then, the substance cholecystokinin and, most importantly, *5-hydroxytryptamine* (5-HT3) are separated from enterochromaffin cells found in the gastrointestinal mucosa in response to chemotherapy. These mediators bind to 5-HT3 and *neurokinin-1* (NK1) receptors located at the afferent nerve endings of the vagal (Singh et al., 2016).

The impact if nausea and vomiting occurs prolonged in fear that there will be dangerous conditions, namely dehydration, worsening of nutritional status, decreased quality of life and physical function), disruption of treatment schedule (20% delayed treatment), reduced compliance, 30-40% of patients reported uncontrolled nausea and frequent vomiting, increased cost of treatment and loss of workdays; (Potter et al., 2016). In line with research Clark Snow et al., (2018) that says there are still 20% of patients experiencing changes in chemotherapy due to nausea, vomiting, and reporting visits to the emergency department / Hospital due to Uncontrolled nausea and vomiting.

Nausea and vomiting can be overcome with pharmacological and non-pharmacological therapy (Greenlee et al., 2017). Pharmacological treatment is given antiemetic. Non-pharmacological, according to American Cancer Society (2018a), recommends one of the treatments, namely cold drink water, dry bread, and yogurt. Cold water is the most preferred and chosen drink because the type of water does not contain many risks or counter-indications to other substances (Muaris, 2014).

Juartika, W. (2022). The effect of drinking cold water on nausea and vomiting among patient with post-chemotherapy breast cancer. *The Journal of Palembang Nursing Studies*, *1*(3), 74-85. http://dx.doi.org/10.55048/jpns.v1i3.15

The review (Eccles et al., 2013) said that cold rations in the mouth could provide a pleasant taste; related to thirst and refreshing effects. This is supported by research Pangesti & Sofiani (2016) by comparing three types of cold drinks with a temperature of 10-150C in 30 breast cancer patients who have undergone chemotherapy. Where divided into three groups with sweetened iced tea drinks, melon juice, and milk ice. This study explained that cold drinks provide a pleasing effect, open up an appetite, and stabilize emotions. In general cold beverages cause the body's response to vasoconstriction so that there is no excessive expenditure of calories. This is reinforced by Adams, (2014) that using a temperature of 150C in beverages affects fluid consumption in maintaining optimal hydration.

Drinking water on an empty stomach can pass through the colon and into the bloodstream within 5 minutes (especially if the water is more excellent than warm water). But if drinking water is done simultaneously as eating, you may have to wait up to 45 minutes before the water enters the intestines because the stomach must digest food first. Overall it takes an average of 5 minutes to a total of 120 minutes for the water to fully absorb into the bloodstream since drinking (Maughan et al., 2016).

Drinking cold water also affects endorphins and serotonin, which act as pleasure (Eccles et al., 2013). Endorphins and serotonin are receptors that the stimulate chemoreceptor trigger zone (CTZ) and the vomiting center (Gordon et al., 2014). The advantages of drinking cold water are that one of them is safe. But the need to drink cannot be equated. Research Cho & Yoo (2015) explained that the arrangement in the amount of drinking water could not be determined because each individual is different adjusted to the needs of the body. Giving cold water drinking has the same content as bottled water that is following standards. The water we drink quenches and benefits the body as the main blood component that supplies cells with oxygen and nutrients and carries food-waste out of the body.

The initial study on May 29, 2018, Chemotherapy Room RSUP M. Djamil Padang. All ten breast cancer patients complained of moderate and severe nausea and vomiting after chemotherapy. Four people never wanted to continue chemotherapy for the seven patients who experienced nausea and vomiting. A total of 3 patients experienced repeated hospitalization due to nausea and vomiting during the week; patients were lazy to drink eat and felt that chemotherapy aggravated their health problems.

Based on the results of the researcher's interview with the Chemotherapy Room nurse, it was obtained that so far, to overcome nausea given antiemetic therapy (collaborative action) has never been applied treatment. Non-pharmacological such as drinking cold water. Based on this, researchers conducted a study on the effect of drinking cold water on reducing vomiting nausea after chemotherapy in breast cancer patients at RSUP M. Djamil Padang.

METHODS

Design

This study uses a quantitative approach with a quasi-experimental design with time series. This study will divide the two groups into a treatment group and a control group as a comparison. Each treatment group will be carried out pretest-posttest, and in the control group will also be measured. After treatment in one group will be measured the results of the intervention as a form of the magnitude of the

Table 1. Characteristics of respondents (n=38)

Variable	Intervention (n=19)		Control (n=19)	
	n	%	n	%
Age				
Early Adult	4	21.1	6	31.6
Late Adult	5	26.3	5	26.3
Early Elderly	10	52.6	8	42.1
Education				
Low	4	21.1	6	31.6
High	15	78.9	13	68.4
Cancer Stage				
II	8	42.1	7	36.8
III	11	57.9	12	63.2
Chemotherapy Cycle				
Cycle 1	5	26.3	3	15.8
Cycle 2	3	15.8	4	21.1
Cycle 3	3	15.8	3	15.8
Cycle 4	1	5.3	3	15.8
Cycle 5	3	15.8	3	15.8
Cycle 6	4	21.1	3	15.8

Table 2. Average nausea score vomiting measurement of 12 hours up to 72 hours measurement of breast cancer patients in intervention group (n=19)

Measurement	Mean	SD	Min-Max
12 hours	18.26	2.130	14-22
24 hours	14.00	2.000	10-18
36 hours	12.05	1.545	10-15
48 hours	9.84	1.864	7-13
60 hours	6.37	1.802	3-10
72 hours	3.05	1.471	0-6

Table 3. Average vomit nausea score measurement of 12 hours up to 72 hours measurement of sixth breast cancer patient in the control group (n=19)

Measurement	Median	Min-Max
12 hours	20	12-25
24 hours	20	11-26
36 hours	19	15-22
48 hours	19	14-26
60 hours	21	15-28
72 hours	18	3-22

influence.

Sample and Setting

The sample is part or representative of the population studied (Dahlan, 2017). Research subjects are selected based on certain eligibility criteria (inclusion and exclusion criteria) in experimental research. Inclusion criteria consists of patients aged over 26-55 years, stage II-III, cooperative, experiencing acute or delayed nausea and vomiting Able to know place, person and time Patient able to write or read using chemotherapy drug doxorubicin by infusion Patients who are in the city field, this is to facilitate monitoring and observation Minimum use of antiemetics ondansetron, dexamethasone and ranitidine: to compare the use of antiemetics used by patients and in field studies the antiemetics that are often given are these drugs. Chemotherapy with usual emetogenic effect: 8 mg or 0.15 mg/kg BW by slow Intra venous (IV) injection. Chemotherapy with severe emetogenic effect: 8 mg IV or Intramuscular (IM) injection before chemo Maintenance dose can be given by infusion at 1 mg/hour for 24 hours , or by injection of 8 mg given 4 hours and 8 hours after the initial dose. Exclusion Criteria: Patients with other cancers such as digestive, liver, or pancreatic because patients with this disease are more prone to nausea, vomiting, experiencing dizziness, vertigo, Stage IV (four), previous experience of emesis that was not well controlled patients with previous experience of nausea and vomiting were more likely experience nausea and vomiting in response to a new treatment with monotherapy. The extent of any previously experienced side effects is very important. Suppose that emetic control is sufficient during previous chemotherapy. In such cases, the percentage of patients who did not develop emesis at subsequent chemotherapy was more significant than those whose last antiemetic treatment was insufficient. Gender and age are among the most important prognostic factors of nausea and vomiting; women are more likely to vomit nausea than men. Age was also a significant risk factor, as younger patients (<50 years) experienced more severe nausea and vomiting than older patients (>65 years). Alcohol intake, history of light alcohol use, patients with a history of consuming 0.1 ml of alcohol per day with a history of the last one year. Patients prone to motion sickness were responsible for motion sickness and reported greater frequency, severity, and duration of nausea and vomiting after treatment: anxiety, previous history of chemotherapy-induced emesis, motion sickness, emesis in the previous pregnancy. Consecutive sampling is the method used in sampling.

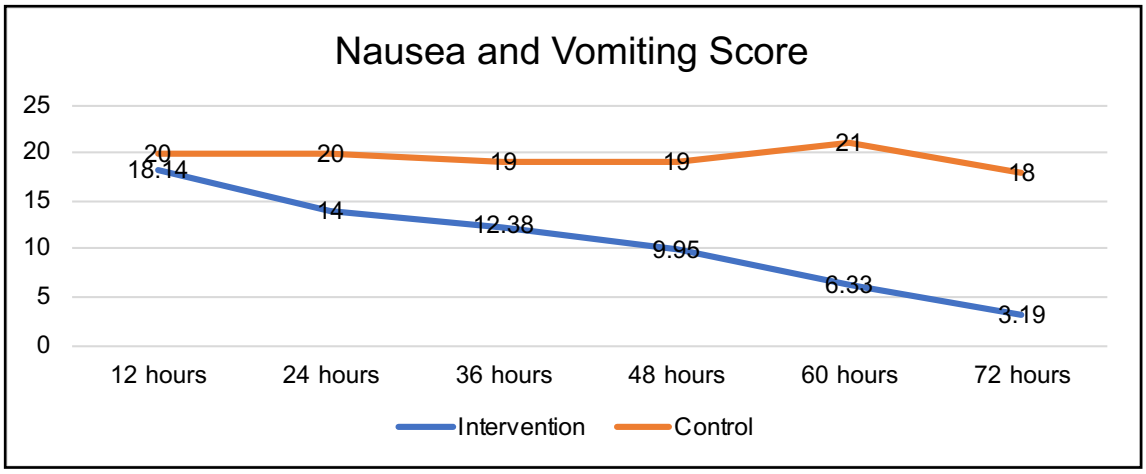

Figure 1. Vomiting score on intervention and control groups

Instruments

Nausea and vomiting in this study was measured using a questionnaire that is Rhodes index nausea, vomiting, and retching (INVR). This INVR questionnaire consists of 8 questions, where there are eight questions to measure nausea and vomiting with 5 Likert scales that are 0-4. The patient will fill out the questionnaire after being given a cold drink. The questionnaire will be evaluated six times per 12 hours, through direct observation and over the phone to see if there is a reduction in nausea and vomiting or not. In this study, researchers used Rhodes' INVR questionnaire. This questionnaire is a standard questionnaire widely used in studies related to vomiting nausea, so researchers do not conduct validity and reliability tests again. The validity test results obtained all valid question items (r>0.88) and reliability test results with a value of r Alpha (0.97), which is greater than the r table. Researchers use a transverse temperature measurement tool provided by the researcher himself to measure the water drinking temperature of 150C. How to check before drinking is to measure the temperature of the drink.

Intervention

Researchers selected respondents who fit the inclusion criteria. 1) Researchers determined the control group and the intervention group. Parents/companions from the intervention group were briefed on the administration of cold water, while the control group was not given the act of providing cold drinking water. 2) Researchers provided information about the study and asked for the willingness of the intervention group's companion/parent/child to engage in the study, give a drink of cold water, monitor and report nausea and vomiting patients. 3) Researchers are welcome to sign the consent sheet of both the intervention group and the control group. 4) Researchers began filling in the data while in the hospital. 5) Before chemotherapy began, researchers explained how to give water to respondents and asked about food/ beverage cooling facilities at home. If there are no researchers, facilitate the place and ice cubes (coolers) and measuring cups (measuring plastic). Researchers asked again how to provide interventions that had been taught to escorts. 6) Researchers explained the provision of cold water drinking, the purpose and intervention, and how to fill out questionnaires. 7) Researchers conducted a TTV examination and calculated the fluid requirement. 8) Make sure the patient has a beverage cooling facility or not. If there is no loaned ColdBox or the patient has a closed thermos at home. 9) Administration begins when nausea subsides (first nausea) after chemotherapy. Drinks temperature of 15^{0}C (measured with a king tool) is given 3 ml / 1 spoon if the patient feels sickness has begun to subside, increase the amount of fluid. 10) If the patient is going to eat, avoid drinking for 15-30 minutes before and after eating. 11) After chemotherapy, researchers gave drinking cold water. Respondents are encouraged to drink at least 24 hours as much as the number of patients needs to be measured. 12) After the first 12 hours from the start of the drinking is done fill out the first questionnaire, then the next 12 hours fill out the second questionnaire, and so on until filling out the sixth questionnaire. 13) Researchers gave a vomit nausea instrument

Table 4. Effect of drinking cold water on nausea and vomiting after chemotherapy in breast cancer patients (n=19)

Measurement	Mean	SD	*p*
12 hours	18.26	2.130	< 0.001
24 hours	14.00	2.000	
36 hours	12.05	1.545	
48 hours	9.84	1.864	
60 hours	6.37	1.802	
72 hours	3.05	1.471	

Table 5. Decrease in average vomiting nausea score after chemotherapy patients breast cancer in the intervention group (n=19)

Measurement	Mean Difference	95% CI	*p*
12 hours - 24 hours	4.143	3.053 - 5.232	< 0.001
12 hours - 36 hours	5.762	4.715 - 6.809	< 0.001
12 hours - 48 hours	8.190	6.998 - 9.383	< 0.001
12 hours - 60 hours	11.810	10.432 - 13.187	< 0.001
12 hours - 72 hours	14.952	13.629 - 16.275	< 0.001
24 hours - 36 hours	1.619	0.738 - 2.500	0.001
24 hours - 48 hours	4.048	2.919 - 5.176	< 0.001
24 hours - 60 hours	7.667	6.477 - 8.857	< 0.001
24 hours - 72 hours	10.810	9.827 - 11.792	< 0.001
36 hours - 48 hours	2.429	1.607 - 3.250	< 0.001
36 hours - 60 hours	6.048	5.166 - 6.929	< 0.001
36 hours - 72 hours	9.190	8.319 - 10.062	< 0.001
48 hours - 60 hours	3.619	2.617 - 4.621	< 0.001
48 hours - 72 hours	6.762	5.725 - 7.799	< 0.001
60 hours - 72 hours	3.143	2.511 - 3.775	< 0.001

(Rhodes INVR) to a companion, explained how to fill it, and provided the stationery needed. 14) Researchers monitored nausea and vomiting via phone and home visits on the third day after nausea and vomiting began and examined instruments performed by a companion.

Data Analysis

Anova Repeated Test statistical test is used to test the mean difference over two normal distributed paired groups (Dahlan, 2017). To find out the effect, the Repeated Anova Test with a 5% error rate was used to see the impact and difference in vomit nausea score in the group of cold water drinking. Testing assumptions by taking pretest and posttest data on the last measurement.

Ethical Consideration

This study uses humans as subjects, and it must not be contrary to ethics, the purpose of the research must be ethical, meaning that the rights of respondents must be protected. We received ethical approval from RSUP Dr. M. Djamil Padang with number 116/ KEPK/2019. In this study, the steps taken after obtaining the researcher's approval were asking permission to explain the purpose and benefits of the researcher and then asking for the willingness of the respondents to participate in the study, ethical issues in this study would be implemented such as research consent sheet, anonymous, confidentiality, privacy, fair treatment, self-determination.

Juartika, W. (2022). The effect of drinking cold water on nausea and vomiting among patient with post-chemotherapy breast cancer. *The Journal of Palembang Nursing Studies*, *1*(3), 74-85. http://dx.doi.org/10.55048/jpns.v1i3.15

Table 6. Average vomiting nausea score after chemotherapy in breast cancer patient control group (n=19).

Measurement	Median	Min-Max	*p*
12 hours	20	12-25	0.144
24 hours	20	11-26	
36 hours	19	15-22	
48 hours	19	14-26	
60 hours	21	15-28	
72 hours	18	3-22	

Table 7. Comparison of average vomiting nausea score between intervention and control group (n = 38).

Variable	Vomiting Nausea Score		*p*
	Mean	SD	
Intervention	12.21	1.134	< 0.001
Control	19.53	2.170	

RESULTS

The intervention group was more in the early elderly age, namely 10 people (52.6%), more than half of highly educated 15 people (78.9%), more than half of stage III as many as 11 people (57.9%) and more in chemotherapy cycle 1 as many as 5 people (26.3%). Meanwhile, in the control group, more respondents were in the early elderly, 8 people (42.1%), more than half of higher education 13 people (68.4%), more than half of stage II as many as 12 people (63.2%) and many in the second cycle of chemotherapy, 4 people (21.1%) (Table 1).

Table 2 showed average nausea and vomiting in the highest intervention group on the 12-hour measurement (18.26 with SD 2,130) and the lowest on the 72-hour measurement (3.05 with SD 1.471).

Table 3 showed the average nausea and vomiting in the highest intervention group on the 60-hour measurement (21) with a min-max value (15-28) and the lowest on the 72-hour measurement (18) with a min-max value (3-22).

Based on figure 1, there was a decrease from the 12-hour measurement to 72 hours, while the control group saw an increase in the 60-hour measurement, a 36-hour measurement.

Based on table 4 there was an average decrease from the 12-hour measurement (18.26 ± SD 2.130), the 24-hour measurement (14.00 ± SD 2.000), the 36-hour measurement (12.05 ± SD 1.545), 48-hour measurement (9.84 ± SD 1.864), measurement (6.37 ± SD 1.802) and 72-hour measurement (3.05 ± SD 1.471). Further analysis showed an average decrease between 12-hour measurements, 24-hour measurements, 36-hour measurements, 48-hour measurements, 60-hour measurements, and 72-hour measurements by cold water drinking interventions or in other words significantly giving cold water drank an effect on reducing vomiting nausea scores of p < 0.001.

Based on the table 5 the first measurement compared to the second occurred an average decrease in score of 4.143. The first measurement compared to the third occurred an average score reduction of 5.762. The first measurement compared to the fourth occurred an average decrease in score of 8.190. The first measurement compared to the fifth occurred an average score reduction of 11.810.

The first measurement compared to the sixth occurred an average decrease in score of 14.952. The second measurement compared to the third occurred an average decrease in score of 1.619. The second measurement compared to the fourth occurred an average decrease in score of 4.048. The second measurement compared to the fifth occurred an average score reduction of 7.667. The second measurement compared to the sixth occurred an average score reduction of 10.810.

The third measurement compared to the fourth occurred an average score of 2.429. The third measurement compared to the fifth occurred an average score reduction of 6.048. The third measurement compared to the sixth occurred on average a score reduction of

9.190. The fourth measurement compared to the fifth occurred an average score reduction of 6.762. The fourth measurement compared to the sixth occurred an average score reduction of 3.143. The difference in the decrease in the score is real because the p < 0.05.

Based on table 6 obtained median data in the control group vomit nausea score measurement 12-24 hours by 20, measurement score 36-48 hours by 19, measurement score 60 hours by 21, and measurement 72 hours by 18. Further analysis showed no decrease between the 12-hour measurement, the 24-hour measurement, the 36-hour measurement, the 48-hour measurement, the 60-hour measurement, and the 72-hour measurement in the control group of p = 0.144.

Based on table 7 shows the average difference in vomiting nausea in the group given drinking cold water with no done, namely p < 0.001 (<0.05).

Discussion

The study results obtained similar to the previous Pangesti & Sofiani (2016) showed the score decreased before the lowest giving was four and the highest was 7. And it is known that the amount of nausea and vomiting after giving a cold drink 10-15ºC the lowest is one and the highest is 3, as well as the value of p < 0.001.

Giving cold drinks is more quickly absorbed in the body than warm water. It helps in rehydration to provide a fresh taste and open appetite and stabilize emotions in overcoming nausea and vomiting. By Aapro (2015) nausea and vomiting often occurs after chemotherapy is done. Nausea and vomiting or another name is nausea and vomiting, is nausea and vomiting that can not be controlled and can affect the therapeutic response to the cure rate of cancer. The reflex response to vomiting by spouting the stomach's contents through the mouth, usually starting from the sensation of nausea. Where nausea is a disorder of the central nervous system receiving and processing emetic stimuli (Potter et al., 2016).

This system produces efferent signals sent to several organs and tissues that eventually result in vomiting. The vomiting method does not depend on a unique area but involves several areas of the body (Babic & Browning, 2014). These areas are the trigger zone of the chemoreceptor and vomiting center in the brain, as well as vagal afferent pathways and enterochromaffin cells in the gastrointestinal system (Silbernagl & Lang, 2016).

Based on Singh et al., (2016) explained that nausea and vomiting is the primary and most crucial response after administering chemotherapy agents, both acute and emesis phases. And it was concluded that there was no association between adherence in taking antiemetics and the reaction to nausea and vomiting. Non-pharmacological therapy can be one of the companions in reducing the problem of nausea and vomiting in patients after chemotherapy. One of them is drinking cold water recommended by several cancer associations (American Cancer Society, 2018a; Greene et al., 2017; Tsuji et al., 2018). This study is one of the good ways to vomit nausea patients after chemotherapy.

Dehydration can affect the brain's work, where 75% of the brain is water. Maughan et al., (2016) that the temperature of drinks has been shown to increase fluid consumption. Low fluid intake can even affect cognition and mood (Greenlee et al., 2017). The cold effect provided also causes a pleasing effect. Endorphins and serotonin influence this pleasure. In nausea, vomiting serotonin plays a role in the central meaning of vomiting. If there is a decrease in rations against serotonin, then nausea and vomiting will also have an effect (Navari, 2016; Newman, 2017; Pangesti & Sofiani, 2016).

Water enters through the body the way we consume it. About 0.5 litters of water are produced daily. Water intake from drinking can vary within an extensive limit of 0.5 litters – 15 litters per day. Water disappears from the body through evaporation, vomiting urine, and others. When the state of vomiting, the body will sweat and increase body temperature due to the vomiting expenditure so that the centre of the brain works to control all activities of the body.

The ideal temperature may be culturally conditioned, but more water is consumed at a temperature of 5ºC–15ºC (Maughan et al., 2016) explains that dehydration can negatively impact fluid activity and balance. Drinking during exercise has been shown to improve performance during exercise. The results of Backes & Fitzgerald, (2016) supported this study using cold temperatures. A temperature of 150C makes the intake of fluids higher (optimal hydration level); this temperature is highly recommended. So from previous research, we can make it a reference where with spoiled hydration, the body can maintain and increase the activity of patients who experience nausea

and vomiting.

In an overview of the observation sheet in the intervention group, the amount of fluid entered was monitored by the planned target. Monitoring carried out by the family is by meeting the needs that have been set (Wulandari et al., 2022). The results of monitoring the intake of incoming fluids are obtained from the drink given and metabolic water obtained directly from the patient's body. At the overall output, the highest amount of vomiting is 600 cc and decreases to the end of the measurement. The patient's intake control was also seen from drinking water and water metabolism on the observation sheet. The number of vomiting patients reached 860 cc.

On the observation sheet, nausea and vomiting was found above 18.00 WIB after 6 - 8 hours. This is by Aapro (2015) Acute CINV, acute nausea, and vomiting occur within minutes to a few hours after receiving chemotherapy and usually do not last more than 24 hours. Symptoms typically reach a maximum intensity of 5 - 6 hours after receiving chemotherapy.

Nausea and vomiting is an unwanted thing undergoing chemotherapy and an unavoidable something. Compliance in pharmacological therapy is felt to have not eliminated complaints of vomiting nausea. Drinking cold water is a simple way that can help reduce nausea and vomiting. Drinking overcomes dehydration caused by nausea and vomiting.

At the time of this study, several things were found, such as the fear of drinking water with cold temperatures. Opinion from some respondents, that hard water can cause ulcers to recur. Thus, nausea or vomiting that exists is caused by induction from chemotherapy and the psychic patient himself.

Based on the results of research between confounding variables (age, education, stage, and cycle of chemotherapy) statically not obtained an association with vomiting nausea, namely the value of p = 0.308 (> 0.005), but in the researchers that from several confounding variables contributed to the incidence of nausea and vomiting. Based on age, old age is when there are changes in digestive function and the body's response to incoming ingredients. Education affects the level of understanding and knowledge. The stage is influential because of the amount of dose given to the patient and the cycle of chemotherapy affects. After all, the period of average cells returns.

In the results of research conducted by Singh et al., (2016), his study found an average age of 49 years or the same as the elderly early. Supported by the results of the (Moradian et al., 2014), which took actions aimed at managing vomiting nausea in the acute and delayed phase, the study reported data on the age of respondents at an average age of 49 years (early elderly).

In line with research conducted by Rahmatya et al., (2015) saw the relationship of age with the breast cancer pathology clinic picture in the Surgical Section of M. Djamil Padang Hospital. The study results found that most patients were over 40 years (78.3%) or had an average of 46.87 years. The risk factor for breast cancer is one of them is age factor. Age <65 years and can increase up to 80 years. Another age-related factor is a personal history of early-stage breast cancer at age <40 years (American Cancer Society, 2018b).

This is supported by research conducted by Tsuji et al., (2018) where the research was conducted on respondents with an age range of 24-83 years. The results revealed that <60 years is a significant risk of vomiting nausea associated with this acute and delayed phase. Using first-generation 5-HT3 receptor antagonists without NK-1 receptor antagonists is a considerable risk factor.

The study results are in line with (Shin et al., 2016) where the results of the study are as much as 31.5% high school level and 26.6 college levels that have a lot of breast cancer. In line with the research Hosseini et al., (2016) conducted research on risk factors for slow vomiting due to chemotherapy in breast cancer patients and found undergraduate education (high) as much as 28.3%.

A total of 11 people (57.9%) in the intervention group and 12 people (63.2%) in the control group showed that the respondents' stages were most in stage III. Supported by sari research, (Sari et al., 2015) conducted research on the decrease in acute vomiting nausea after the aroma delivery of peppermint therapy. The study was conducted in November 2014 with a sample of 15 respondents. The result obtained is that patients with stage III are the most found at 46.7%.

According to (American Cancer Society, 2018c) nearby tissue (skin above the breast or muscles below it) has spread to many surrounding lymph nodes. One treatment performed at this stage begins with neoadjuvant therapy or before surgery with chemotherapy. Chemotherapy aims to shrink the size of the

tumor.

Based on this, researchers can assume that the symptoms of breast cancer are less felt in the early stages, so no early detection is done. As a result, many patients are found too late and even afraid to get checked health. Based on these circumstances, the patient comes into a state with an advanced stage.

Based on the study results, the chemotherapy cycle of the intervention group was mainly in the first chemotherapy cycle as many as five people (26.3%) and in the control group in the second chemotherapy cycle as many as four people (21.1%). Research in line with Rapoport (2017) where CINV is delayed, is very complex. The reflexes involved the external pathways of both the central and peripheral nervous systems. This problem will always arise when the patient undergoes chemotherapy. Based on the assumptions of researchers, the cycle of chemotherapy cannot be underestimated, with the experience of undergoing chemotherapy affecting the physical and psychological of the patient.

Nausea and vomiting is affected by three main groups of neurotransmitter receptors involved in this process: dopamine, serotonin, and the P-substance receptor (Noman et al., 2021). Antiemetics are already known effects on dopamine receptors such as phenazine, benzamide and butyrophenone groups. The 5-HT3 receptor antagonist acts on the digestive tract and central nervous system, playing an essential role in the process of vomiting through the vagal afferent pathway. The NK1 receptor (target P-substance) is another major determinant of nausea and vomiting, and specific antagonists have been developed (Aapro, 2015).

One way to affect increased serotonin rationing is cold drinking water. The goal of drinking cold water is to speed up rehydration, speed up fluid absorption, reduce physiological stress, and speed up the recovery of fatigue (Cho & Yoo, 2015). The temperature of the water is the determinant of the amount consumed. The ideal temperature commonly used most ideal is 5^{o}C – 15^{o}C.

There was a decrease and increase between some measurements in the control group. This is due to the amount of water consumed. In the intervention group, the companion gave fluids gradually so that fluids were met to hydrate, while in the control group, the amount of fluid was not monitored. In the control group, fluid fulfilment compliance was seen in patients if not given management. Even the drinking water used is regular, so it does not desire to consume more water continuously. The amount of fluid that enters affects the production of toxic substances that enter the body and the number of out put-outs that come out of the body.

In researchers' view, drinking cold water is one alternative in reducing nausea and vomiting. For example, in a treatment that can be done at home issued by the American Cancer Society which states that drinking cold water is one way that can be applied to reduce nausea and vomiting due to chemotherapy at home (American Cancer Society, 2018c). Based on the findings, it is expected that drinking cold water can be applied to help patients to reduce nausea and vomiting due to chemotherapy.

Conclusions

Form the our study, it could be concluded that the average vomit nausea score in the intervention group of cold water drinking decreased from a 24-hour measurement to a 72-hour measure. Thus, the average vomit nausea score in the control group did not decrease or increase on the 24-hour measurement; there was an increase in the 36-hour measurement and the 48-hour measurement and the 60-hour measurement, then there was a decrease in the 72-hour height. Based on the statistical analysis, we found that there was an effect of giving cold water to reduce vomiting and nausea after chemotherapy in breast cancer patients at M. Djamil Padang Hospital. In addition, there was a difference in vomiting nausea scores between the intervention and control groups. This study is expected to be developed in the future in the form of drinks that are easy and practical to use for patients in overcoming nausea and vomiting.

Declaration of Interest

No conflict of interest

Acknowledgment

I would like to thank the respondents who participated in the study.

Funding

None

Data Availability

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

Juartika, W. (2022). The effect of drinking cold water on nausea and vomiting among patient with post-chemotherapy breast cancer. *The Journal of Palembang Nursing Studies*, *1*(3), 74-85. http://dx.doi.org/10.55048/jpns.v1i3.15

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ORIGINAL

The Journal of Palembang Nursing Studies
https://jpns-journal.com/index.php/jpns
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The correlation between knowledge and nurse compliance in the use of personal protective equipment level 2

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Volume 1(3), 86-93

http://dx.doi.org/10.55048/jpns.v1i3.25

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : March 31, 2022
Revision : April 21, 2022
Accepted : May 4, 2022
In Press : July 4, 2022
Published : September 11, 2022

ABSTRACT

Background: Personal Protective Equipment (PPE) is divided into 3 levels, the use of which is adjusted to the location of health services due to the COVID-19 pandemic. The second level of PPE is intended for health workers who work in patient care rooms. One of the causes of high cases of nurses contracting viral infections is the lack of knowledge and compliance in using PPE.
Purpose: The aim of this study was to find out the correlation between knowledge and nurse compliance in the use of PPE level 2.
Methods: This study was a quantitative research with correlational analytic type. The number of respondents was 62 nurses. Collecting data using a knowledge (8 questions) and compliance (10 questions) questionnaire of nurses in the use of PPE level 2. The analysis used was univariate and bivariate analysis with the Pearson Product Moment test with level of significance at the alpha = 0.05.
Results: The results of the univariate analysis of knowledge obtained a mean value of 6.16 with a standard deviation of 1.04 and nurses' compliance obtained a mean value of 34.67 with a standard deviation of 3.56. The results of the study concluded that there was no significant correlation between knowledge and nurse compliance in the use of PPE level 2 in Petala Bumi Hospital, Riau Province with p = 0.513 and r = 0.085.
Conclusions: This study suggests that nurses increase knowledge and compliance with the use of level 2 PPE in providing nursing services by attending training, seminars and workshops on preventing disease transmission, especially during the COVID-19 pandemic.

Keywords: knowledge; compliance; personal protective equipment; nurse

INTRODUCTION

Coronavirus disease (COVID-19) which has become a new outbreak around the world since 2019 has forced changes in all aspects of life. COVID-19 can be transmitted through close contact and droplets. Furthermore, medical procedures that trigger aerosols such as bronchoscopy, nebulization and others can also trigger the risk of airborne transmission.

Nursing and Healthcare Practices

- *Nursing coverage includes bio-psycho-socio-cultural*
- *Nurses are at the forefront of handling COVID-19 should be considering universal precaution*
- *Sense of knowledge become an important aspect for nurses and healthcare workers during impletementation of personal protective equipment*

COVID-19 is characterized by symptoms of viral pneumonia such as fever, fatigue, dry cough, and lymphopenia. The World Health Organization (WHO) in March 2020 declared COVID-19 a global pandemic. This case was first discovered in December 2019 in Wuhan, China, with 41 cases. Meanwhile, WHO in February 2020 reported and confirmed that there had been more than 80,000 cases of COVID-19 worldwide (Cucinotta & Vanelli, 2020).

Indonesia reported that the first case was detected in March 2020 and up to November 2020, 511,836 positive cases have been reported (WHO, 2021). According to the Health Office Riau Province, the number of reported COVID-19 cases was 22,082 (Pekanbaru, 2020). The number of COVID-19 cases has become the latest source of transmission in all health care facilities including hospitals, especially individuals who are in close contact with patients or health workers who treat COVID-19 patients. Several countries have reported health workers in their countries contracting COVID-19. China's National Health Commission reported that 1,716 of their health workers had contracted COVID-19 with 80% showing mild symptoms. Indonesia reported that there were 105 health workers who died in handling COVID 19 cases until September 2020 and it is estimated that this will continue to increase (Ministry of Health RI, 2020).

The existence of the COVID-19 pandemic, in handling the use of personal protective equipment (PPE) by health workers, both those who are directly or indirectly involved in handling patients, especially those who have confirmed COVID-19, are important. The emergence of policies on the use of PPE in all health facilities currently causes the price of all types of PPE increase and become scarce due to hampered supply. WHO estimates that the need for medical masks during this pandemic is around 89 million, examination gloves around 76 million and protective glasses at 1.6 million per month (Ministry of Health RI, 2020). To overcome this, WHO and CDC issued several guidelines for the rational and effective use of PPE and its alternatives for health workers. Based on this, the Ministry of Health together with the National Working Group on Infection Prevention and Control compiled technical instructions for the use of PPE in handling the COVID-19 outbreak by adopting and modifying several guidelines issued by WHO, CDC and other sources. Each health care facility can make its own standard operating procedure (SOP) by referring to these technical instructions based on local conditions while still using the principles of standard precautions and isolation precautions (Ministry of Health RI, 2020).

The provision of effective and efficient PPE for health workers is one of the efforts to prevent the spread and transmission of COVID-19. The selection of PPE used must meet certain principles, including being able to provide protection against certain hazards, the weight of PPE as light as possible so as not to cause excessive discomfort, can be used flexibly. In addition, PPE also does not pose additional hazards, is not easily damaged, does not limit movement and is easy to maintain and meets the existing standard criteria. In choosing the right PPE, it is necessary to identify the potential for exposure to transmission and understand the basis of its work (Ministry of Health RI, 2020).

The current increase in COVID-19 cases has led to the gradual use of PPE for health workers starting from the first, second and third levels. The use of the first level of PPE is intended for health workers who work in general practice places with activities that do not generate aerosols. The PPE used in this first level includes surgical masks, gowns, and gloves. The second level of PPE is intended for health workers such as doctors, nurses and laboratory workers who work in patient care rooms. The PPE used consisted of head coverings, protective eyewear, surgical masks and disposable gloves. Meanwhile, at level three, the PPE used is intended for health workers who work in direct contact with suspected or confirmed COVID-19 patients

Mardiansyah, M., Febtrina, R., Yanti, S., & Kharisna, D. (2022). The correlation between knowledge and nurse compliance in the use of personal protective equipment level 2. *The Journal of Palembang Nursing Studies*. *1*(3), 86-93. http://dx.doi.org/10.55048/jpns.v1i3.25

and perform surgical procedures that produce aerosols. The PPE used includes headgear, face shield, eye protection, N95 masks, cover all, surgical gloves and waterproof boots (Widyawati, 2020). The high risk of health workers being infected with COVID-19 can be caused by various factors, including the length of exposure to the virus and the large number of viruses (Tan, 2020). Health workers still lack knowledge about protocols for handling COVID-19 and the transmission of this new type of virus. Scarcity of PPE, lack of knowledge about the use of PPE are also risk factors for transmission (Gupta & Kakkar, 2020). Besides, the procedures for health workers in wearing the wrong personal protective equipment or not according to procedures are also a risk factor (Tan, 2020). The level of practice of applying standard precautions applied by nurses will differ from one nurse to another. This can be related to nurses' knowledge of universal precautions or can also be influenced by the type of training received by each nurse (Vaz et al., 2010). The government and professional organizations of health workers need to increase knowledge and skills in the use of PPE for health workers (Guan, Chen, & Zhong, 2020).

When treating patients, healthcare workers can protect themselves by following infection prevention and control practices. This includes administrative, environmental and engineering controls and the proper use of PPE. The use of appropriate PPE includes selecting the type of PPE, how to use it, how to remove it and how to dispose of or wash PPE (Ministry of Health RI, 2020). Several factors that influence nurses' compliance with using PPE are knowledge, education and years of service (Iriani, 2019).

Compliance with the use of PPE is very important so that health workers who are susceptible to infection in treating patients avoid viral infections. PPE used is standard PPE based on risk assessment. Matters that must be complied with in the use of PPE include determining the use of PPE by taking into account the risk of exposure and the dynamics of transmission, airborne transmission, the correct way of wearing, the correct way of removing it and the method of retrieval (disposal) afterwards (Ministry of Health RI, 2020). The hospital as a reference in its services, hospital management implements and provides the use of level 3 PPE for nurses on duty in the COVID-19 treatment room and level 2 PPE in other treatment rooms. This is done so that health workers who provide health services and nursing actions avoid the transmission of this virus. However, this is not followed by the establishment of standard operating procedures (SOPs) in the use of PPE. This study aims to determine the correlation between knowledge and nurse compliance in the use of personal protective equipment (PPE) level 2 in Petala Bumi Hospital, Riau Province.

METHOD

Design

This study was a type of correlation analytic research using a cross sectional approach.

Sample and Setting

It was undertaken at the Petala Bumi Hospital, Riau Province, with the research sample consisted of 62 nurses. The sampling method used in this study was non-probability with consecutive sampling technique. The inclusion criteria of this study were nurses who worked in the treatment room, while the exclusion criteria were nurses who were on leave and on duty in the COVID-19 treatment room.

Instruments

The instrument used in this study was an instrument that measures the knowledge and compliance of nurses in the use of PPE level 2. The instrument is developed by author and has been tested for validity and reliability on 20 respondents at Mesra Hospital Pekanbaru. The results of the test of the validity of the knowledge questionnaire obtained the value of r count > 0.4438 on 8 question items and 10 questions on the compliance questionnaire. The Cronbach Alpha value of the knowledge questionnaire is 0.846 and the compliance is 0.900, this indicates that both questionnaires are reliable.

Knowledge questionnaire consist of yes or no choices. Each answer to a positive question if answered yes is given a value of 1 and no is given a value of 0, while for a negative question, if answered yes is given a value of 0 and no value is given a value of 1. Questions to assess compliance consist of positive statements and negative statements with answer choices of always, often, rarely and never. Positive statements are always answered with a score of 4, often a value of 3, rarely a value of 2 and never a value of 1. In a negative statement, if answered, always a value of 1, often a value

Table 1. Frequency distribution based on characteristics of respondents (n = 62)

Variables	n	%
Age		
26 – 35	34	54.8
36 – 45	22	35.5
46 – 55	5	8.1
56 – 65	1	1.6
Gender		
Female	47	75.8
Male	15	24.2
Education		
Vocational	37	59.7
Profesional (Indonesian Register Nurse)	25	40.3
Work Experience		
< 6 years	6	9.7
6 – 10 years	23	37.1
> 10 years	33	53.2

Table 2. Description of respondents' average value based on knowledge and compliance of nurses in using personal protective equipment level 2 (n = 62)

Variable	Mean	Median	SD	Min-Max
Knowledge	6.16	6	1.04	4 – 8
Compliance	34.67	35	3.56	27 – 40

Table 3. Correlation between knowledge and nurse compliance in the use of personal protective equipment level 2

Variable	Compliance		
	r	R^2	*p*
Knowledge	0.085	0.007	0.513

of 2, rarely a value of 3 and never a value of 4. The results of the compliance assessment are stated based on the average number -average or mean value.

Data Collection

The research was conducted at the Petala Bumi Provincial Hospital Riau from 03 May – 18 June 2021. Data collection was carried out by giving direct questionnaires to respondents who were selected according to the inclusion criteria.

Data Analysis

Bivariate analysis was carried out using the Pearson Product Moment statistical test to see the closeness or degree of strength of the correlation and the direction of the correlation between the independent variable, namely knowledge and the dependent variable, namely compliance.

Ethical Consideration

Before collecting data, the researcher first went through the ethical clearance process by submitting to pass the ethics test to the health research ethics unit of STIKes Payung Negeri Pekanbaru. After being declared to have passed the ethical test with letter number 0004/ STIKES PN/KEPK/IV/2021.

RESULTS

Based on table 1, it can be seen that the majority of respondents aged between 26-35 years are 34 people (54.8%). Most of the respondents were female as many as 47 people (75.8%). The majority of the respondents' last education level was vocational nurse, which was 37 people (59.7%) and work experience of

respondents who were less than 10 years and more than 10 years was the same, namely 31 people (50.0%).

Table 2 indicates the average knowledge of respondents about level 2 PPE is 6.16 with a standard deviation of 1.04. The lowest value on the knowledge variable is 4.00 and the highest value is 8.00. Based on the results of the study, the average value of respondents' compliance in the use of PPE level 2 was 34.67 with a standard deviation of 3.56. The lowest score of compliance is 27 and the highest score is 40.

Table 3 asserts the correlation between knowledge and nurse compliance in the use of PPE level 2 shows that there is no correlation or weak correlation (r = 0.085) with the direction of the correlation between the two variables being positive, it implies that the higher the knowledge value, the higher the nurse's compliance in the use of PPE level 2. coefficient with a determination of 0.007 means that the line equation explains 0.7% variation in nurse compliance in the use of PPE level 2. The statistical test results found that there was no significant correlation between knowledge and nurse compliance in the use of PPE level 2 in Petala Bumi Hospital, Riau Province (p value = 0.513).

DISCUSSION

Dealing with the research result that has been conducted on nurses, the largest age group is 26-35 years (54.8%) which is included in the category of early adulthood. In this study, the average age of the respondents was 37.20 years with a standard deviation (SD) of 5.80. This age group is an age group in the productive age range. Knowledge and obedience of an individual can be influenced by various factors both internally and externally. Age is one of the factors that can affect a person's knowledge and obedience. The use of PPE at the Sultan Imanuddin Hospital Pangkalan Bun, Central Kalimantan, which stated that 56% of respondents aged 26-35 years had good knowledge of 80% and compliance at 60% compliance. Responding to the results of the study, the most gender was female, namely 75.8%. Gender is an inherent trait of men or women that is socially and culturally constructed. Directly or indirectly, gender is related to a person's level of knowledge about something. In addition, psychologically gender states that women are more willing to obey authority and men are more aggressive (Vaz et al., 2010). Apriluana et al (2016) stated that 76.1% of 92 female respondents had good behavior and 78.8% of 33 male respondents had good behavior in the use of PPE in Banjarbaru Hospital. This implies that there is no correlation between gender and the behavior of using PPE (p = 0.940). This study is not in line with Iriani's research (2019) which shows that the gender of the respondents is 84% female with a good knowledge level of 56% and a good compliance level of 66% regarding the use of PPE at Harum Sisma Medika Hospital.

The results of this study indicated that the education level of the respondents was vocational nursing as much as 59.7% and profesional nursing as much as 40.3%. One of the factors that influence knowledge is education. Education will affect the learning process, the higher a person's education, the easier it is to receive information (Agus & Budiman, 2014). In addition, the level of education will affect a person's ability to work (Robbins & Judge, 2014). This ability consists of intellectual ability and physical ability. Intellectual ability has a big role in work that can shape behavior, one of which is one's obedience (Suryoputri, 2011). This is in accordance with research on nurses at the Kanjuruhan Kepanjen Hospital, Malang Regency regarding the use of PPE. The results obtained an average of 88.3% of respondents' education, namely vocational nursing having good knowledge of 68.04% and compliance to the obedient category 74.4% (Astuti, Yuliwar, & Dewi, 2018). The factors that influence nurse compliance in the use of PPE at Ulin Hospital Banjarmasin stating that the education level of respondents vocational nursing is 66.7% and Bachelor of Nursing 33.3% has a compliance level in the obedient category of 50.8 % with good knowledge 41.3%.

In this study, the average length of work of respondents was more than 10 years as many as 33 people (53.2%). The working period is divided into 3 categories, namely the new tenure of less than 6 months, the medium term of 6-10 years and the long term of more than 10 years. The working period can have a positive and negative impact on the workforce. The positive impact is that the longer a person works, the more experienced he will be in his field of work. In addition, it will also improve the knowledge and skills of these workers. While the negative impact is that the longer you work, the more bored you will be. The working period is closely related to the experience gained in

the workplace. The longer a person works, the more experience and the higher his knowledge and skills. Experience is a source of knowledge obtained by repeating the knowledge that has been obtained in solving problems encountered in the past. This can be developed by learning so that it will provide professional knowledge and skills and can develop decision-making abilities (Agus & Budiman, 2014). The results of this study are supported by (Apriluana, Khairiyati, & Setyaningrum, 2016) at the Banjarbaru Hospital stated that the respondent's service period was more than 10 years as many as 57.1% had good behavior in the use of PPE and the service period was less or equal to 10 years 84.4% had good behavior in the use of PPE. The results of this study indicate that the average knowledge of respondents is 6.16 with a standard deviation of 1.04. The lowest value on the knowledge variable is 4.00 and the highest value is 8.00. Based on the results of this study, it can be concluded that the respondents' knowledge about the use of personal protective equipment is said to be good with an average value of knowledge above 6.16 as much as 42.0% and said to be poor with an average value of less than 6.16 as much as 58.0%. This is not in accordance with research conducted by (Iriani, 2019) which states that 56% of respondents have good knowledge about the use of PPE. Knowledge is the result of knowing that is produced after the individual has sensed a certain object. This can occur through the five human senses which include the senses of sight, smell, hearing, taste and touch (Notoatmodjo, 2012).

Currently, the COVID-19 pandemic demands the use of PPE in each treatment room to be adjusted to the health service area, profession and activities of health workers. In addition, the use of PPE is also adjusted to the level of use where there are three levels, namely the first, second and third levels. The high risk of health workers being infected with COVID-19 can be caused by low knowledge of COVID-19 handling protocols and lack of knowledge regarding the use of PPE (Gupta & Kakkar, 2020). In addition, health workers do not understand correctly about how to wear PPE or use PPE that is not in accordance with procedures (Tan, 2020). Notoatmodjo (2012) states that new information about something will provide a new cognitive foundation for the formation of knowledge.

According to the researcher, the lack of knowledge of respondents in the current use of PPE level 2 is due to a change in policy where previously PPE was used not simultaneously but depending on the actions to be taken. However, currently every treatment room requires health workers to use PPE according to their level. This can be seen from the results of this study that 41.9% of respondents did not understand the types of PPE used by nurses which were included in level 2 PPE. Respondents stated that level 2 PPE consisted of head coverings, protective eyewear, surgical masks and gloves. While the use of PPE level 2 should not only use PPE, health workers are also required to wear gowns when working. In addition, there are 43.5% of respondents who do not understand that eye protection and head protection cannot be reused after being used in taking action to patients.

Dealing with the results of the study the average value of compliance was 34.67 with a standard deviation of 3.56. The lowest score of compliance is 27.00 and the highest score is 40.00. This study shows that nurses compliance consist of 51.6% and it is asserted to be obedient with an average value above 34.67 and 48.4% are said to be non-compliant. with a value below the average of 34.67. This is in accordance with Astuti's research. et al (2018) which states that 74.4% of respondents have a level of compliance in the obedient category. Compliance is a form of behavior that can be measured from individuals who obey or obey because they have understood the meaning of an applicable provision. Compliance is also a form of obedience to rules or discipline in carrying out established procedures (Mariana, Miswan, & Andri, 2018).

According to the researcher, the good level of respondent compliance in the use of PPE level 2 is due to policies from hospitals to protect nurses at work and reduce the increasing number of cases of medical personnel exposed to the current COVID-19 virus. Many factors can affect the level of compliance of nurses, including communication patterns with other professions that will affect compliance in carrying out actions, one of which is the use of level 2 PPE. Support from the hospital also affects nurse compliance, including the internal community of nurses, namely other health workers, patients, as well as support from health service leaders and nurses who provide PPE facilities so that nurses are obedient in their use. This can be seen from the respondent's statement, namely 53.2% of respondents always use PPE starting from the

antero room and removing PPE in the antero room and 33.9% of respondents often use PPE even though they are not in direct contact with patients.

The bivariate analysis in this study based on the results of statistical tests of the correlation between knowledge variables and nurse compliance in the use of PPE level 2 showed no correlation or weak correlation (r = 0.085). The results of statistical tests found that there was no significant correlation between knowledge and nurse compliance in the use of PPE level 2 in Petala Bumi Hospital, Riau Province (p = 0.513). This is in accordance with Mariana's research. et al (2018) stated that there was no correlation between knowledge and the use of PPE for nurses at Mokopido Hospital, Tolitoli Regency with (p value = 0.099; = 0.05). Knowledge is a result of curiosity obtained through sensory processes, especially the eyes and ears for certain objects. Knowledge is an important domain for the formation of open behavior (Anugrahwati & Hakim, 2019). Meanwhile, compliance is a form of obedience to rules or discipline in carrying out established procedures. An individual's compliance can be influenced by gender, type of work, profession, length of work, education level, individual ability and motivation (Suryoputri, 2011). In addition, compliance can also be influenced by the attitude of the individual.

According to the researcher, there is no correlation between knowledge and nurse compliance in the use of PPE level 2 is because compliance is not only influenced by one's knowledge. Although respondents have poor knowledge of 58.0% with an average value of less than 6.16, respondents remain obedient in using level 2 PPE. One of the factors that affect a person's compliance is attitude. Attitude is a behavior related to a person's perception, personality and motivation. Attitude plays an important role because it can change and be shaped so that it affects a person's behavior. In addition, the compliance shown by nurses in using PPE level 2 can be seen from the attitude of nurses as much as 61.3% stated that they never did not use masks and face shields when they did not take care of patients. Good respondent compliance in using PPE is due to the motivation of nurses to protect themselves so as not to contract the disease with 59.7% of nurses stating that they always use eye protection at certain times to avoid the risk of being splashed or sprayed when performing procedures that produce aerosols. The existence of the COVID-19 pandemic makes nurses have good experience while working to avoid the risk of transmission so that they comply with the current use of PPE level 2. Furthermore, the availability of sufficient PPE can also be the basis for nurses to comply with existing policies in using level 2 PPE to protect themselves from contracting COVID-19.

CONCLUSION

The results of this study indicated that there was no significant correlation between knowledge and nurse compliance in the use of PPE level 2 in Petala Bumi Hospital, Riau Province. Nurse compliance in using PPE level 2 can be influenced by the motivation, experience, and underlying attitude of the nurse itself. The results of this study are expected to be used as basic data for further research with a different research design by adding variables related to knowledge and compliance in the use of personal protective equipment at level 1 or level 3 such as the availability of information sources, the availability of SOP in agency and the availability of management support.

Declaration of Interest

No conflict of interest

Acknowledgment

The researcher would like to thank the Chairperson of the STIKes Payung Negeri Pekanbaru, the Head of Research and Community Service STIKes Payung Negeri Pekanbaru, and the Director of Petala Bumi Hospital in Riau Province who have facilitated this research.

Funding

None

Data Availability

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

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The Journal of Palembang Nursing Studies
https://jpns-journal.com/index.php/jpns
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COVID-19 status and its prevention among Indonesian adults

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Volume 1(3), 94-100

http://dx.doi.org/10.55048/jpns.v1i3.17

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : March 18, 2022
1st Revision : April 5, 2022
2nd Revision : May 4, 2022
Accepted : May 31, 2022
In Press : July 6, 2022
Published : September 11, 2022

ABSTRACT

Background: The world has now impacted by COVID-19. Indonesia is one of the countries predicted to be affected over a longer period. The rapidly screening of COVID-19 status among Indonesians is important to prevent the massive spread of COVID-19.
Purpose: The study aimed to investigate the covid status, and its prevention among Indonesians.
Methods: A cross-sectional study was performed among Indonesians using a web-based survey that was randomly distributed using social media after a year of the outbreak of COVID-19 in Indonesia. There were 247 respondents enrolled this study. An emerging COVID-19 tool was utilised for data collection. Descriptive statistics and linear regression were applied with the significance value of 0.05.
Results: From a total of 247 participants, 89 respondents had a travel history to the red zone area of COVID-19. 33% of them felt good but isolating after COVID-19 exposure. Most of them used facemasks (50.2%) and washing hands (36%) as health prevention during the COVID-19 outbreak.
Conclusions: Identification of Covid status is important to prevent COVID-19 exposure.

Keywords: COVID-19; covid status; behaviour; COVID-19 prevention; Indonesia

INTRODUCTION

The World Health Organization (WHO) declared a new virus as Corona Virus Disease (COVID-19) since pneumonia-associated coronavirus was reported in Wuhan, China, in the last 2019. The pandemic of COVID-19 rapidly spread across China and around the world (Huang et al., 2020; Li et al., 2020; Weber et al., 2020). Until the first week of December 2020, 167 countries and territories were affected by COVID-19, resulting in more than 1 million cases with more than 100,000 deaths (WHO, 2020).

Based on the published study, the aetiology of COVID-19 is still unclear, with the common signs and symptoms include fever, dry cough, fatigue, and shortness of breath (Wu et al., 2020; Zu et al., 2020). About 14 days was the incubation period for COVID-19. In extreme cases, COVID-19 can cause rapid

Nursing and Healthcare Practices

- *Identification of COVID-19's status is required to prevent COVID-19 exposure*
- *Doing self-isolation and adequating prevention behaviour are essential.*
- *Seeking medical attention for people with contact history to person tested positive for COVID-19 are recommended.*

progression to organ dysfunction, include shock, acute cardiac and kidney injury, respiratory distress syndrome, pneumonia and even death (Huang et al., 2020; Zu et al., 2020).

Indonesia has recently become one of the countries that have been affected by COVID-19. By March 2, 2020, the first COVID-19 cases were confirmed and directly announced by President Joko Widodo when the two females were infected by a Japanese visitor. The case has increased rapidly to 34 provinces, there have been 1.790 cases confirmed, with 170 deaths within a month. Jakarta, West Java, and Banten were the top three highest cases in Indonesia (897, 223, and 164, respectively) where the three provinces are close together. Now there are 72.015 cases with 16.945 death after a year of the outbreak of COVID-19 in Indonesia (Kementerian Kesehatan Republik Indonesia, 2020). The study aimed to investigate the covid status and it's prevention among Indonesian adults.

METHOD

Design , Samples, and Settings

A cross-sectional web-based study was performed among Indonesian adults during the outbreak of COVID-19 in Indonesia. The sample was randomly selected by simple randomization technique. The inclusion criteria of this study was Indonesian adults aged from 18 years. About 247 respondents completed the survey and were included in the study.

Instruments and Data Collection

An emerging COVID-19 tool was developed using emerging respiratory viruses (COVID-19) materials that were provided by the World Health Organization course (WHO, 2020). The instrument content consisted of a 10-item check list including travelling history to the red zone of COVID-19, the affected symptoms of COVID-19, self-isolation steps and its prevention. The tool was distributed randomly to Indonesians using social media, it required 3 minutes to complete. Informed consent was given before conducting the study.

Data Analysis

All collected data were analyzed using IBM SPSS statistics V22.0 for windows. Descriptive statistics were applied to calculate the frequencies and proportions of each database. The linear regression test was also used to investigate the association among variables.

Ethical Consideration

Ethical approval from the research ethics committee was obtained before conducting the study with number 070/256/B.Kes/2020. The purpose and study information was provided by the researcher. The study was performed following the reporting results of internet e-surveys guidelines. Eligible respondent in this study was voluntary and was not compensated. Informed consent was obtained from each respondent, data were recorded confidentially.

RESULTS

Respondent's Characteristics

There was 172 female, and 75 male Indonesians enrolled in the study with a mean age of 27.31 (SD 6.87). Almost all of them were living with family and friends. A total of 17 respondents had an occupational background as a health professional (e.g., Doctors and Nurses) (Table 1).

Risk Factors of COVID-19, COVID Status, and Symptoms

About 36% of respondents had a travel history to the red zone area of COVID-19 within the previous week; 2 out of 247 respondents had a contact history with the person who tested positive for COVID-19. Respiratory disorders, including Asthma and Bronchitis, were the most common comorbidities reported by the respondents. Almost all of the respondents were feeling well, however 13.3% of them isolating themself. Over half of respondents had no clinical symptoms of COVID-19

Table 1. Characteristics of particpants (n = 247)

Characteristics	n	%
Age (27.31±6.87, Min 19, Max 54)		
18-39	236	95.5
40-59	11	4.5
Gender		
Female	172	69.6
Male	75	30.4
Occupation		
Students	134	54.3
Health professional	17	6.9
Lecturer/ teacher	42	17.0
Others	54	21.8
Living arrangement		
Alone	29	11.7
Family/ friends	218	88.3

(59.7%), while other respondents exist. The cough was the most common symptoms (16%) followed by the sore throat and flu. About 9 respondents experienced more than one of clinical symptoms (Table 2).

Prevention Steps of COVID-19

Most of the respondents only go out for work, groceries and pharmacy (30%), 67.4% working/ studying from home during the outbreak of COVID-19. Using facemask was the most common prevention steps of COVID-19 reported by the respondents followed by washing hand (50.2% and 36%, respectively). However, only 13% of respondents seek medical attention after COVID-19 exposure (Table 3).

Association between Travel History, Risk Factors, Symptoms, Self-Isolation, and Behaviour with COVID-19 Status

This study found that self-isolation steps, working from home, commorbidities, seeking medical attention, contact history, and behaviour associated were the most significant factors associated with COVID-19 status (r = 0.69) (Table 4).

DISCUSSION

The present study illustrated that the majority of heart failure patients felt anxious in daily This study described that all of the respondents had a travel history to the red zone area of COVID-19 within March 2020, some of them had underlying diseases including respiratory disorder, heart disease, diabetes, and annual flu. This can be possible factors in respondents' exposure to COVID-19. Chinazzi's (2020) stated that the Domestic and International spread of the COVID-19 outbreak is related to individuals travelling daily. While, Indonesia issued an International travel restriction on January 27, 2020, and a domestic travel restriction for Jakarta on April 10, 2020, as an epicentre province of COVID-19 in Indonesia (Kementerian Kesehatan Republik Indonesia, 2020). Previous studies also found that persons with comorbidities such as hypertension, diabetes, and chronic diseases were highly at risk to get infected by COVID-19 (Dong et al., 2020; Li et al., 2020; Wu et al., 2020; Zhu et al., 2020).

Moreover, half of the respondents were still not sure whether having contact with the person who tested positive for COVID-19, while two respondents who were nurses reported had contact history with the COVID-19 patients. The first nurse was female, had been living with her friend, she felt good and only went out for work using public transportation. She had no medical check-up for COVID-19 status since she took care of patients with COVID-19. The second nurse was male,had been living with his spouse, he had no underlying diseases, but he got sore throat symptom after having contact with the COVID-19 patient and had a medical check-up for COVID-19 status. He only went

Table 2. Risk factors of COVID-19, COVID status, and symptoms (n = 247)

Variables	n	%
Travel history to the red zone area of COVID-19		
Yes	89	36
No	158	64
Contact with person positive for COVID-19		
Yes	2	1
Not sure	101	40.8
None	144	58.2
Comorbidities		
Respiratory disorder	18	7.2
Heart disease	5	2.6
Diabetes	2	1
Annual flu	13	5.2
None	209	84
COVID-19 Status		
Feeling well	199	80.5
Feeling well but isolating after COVID-19 exposure	33	13.3
Feeling unwell but didn't think it's COVID-19	13	5.2
Feeling better but thinking had positive COVID-19	2	1
COVID-19 Symptoms		
Fever >38^{o}C	1	0.5
Cough	40	16
Sore throat	18	7.2
Flu	26	10.5
Shortness of breath	5	2.6
More than one symptoms	9	3.5
None	148	59.7

out for work commute by motorcycle. These two samples have shown that the respondents did medical check-up when the clinical symptoms of COVID-19 exist. This also can be a potential factor of respondent exposure to COVID-19. Inline to the Ministry of Health (Indonesia), which reported that the first cases of COVID-19 in Indonesia had a contact history to Japanese visitors who tested positive for COVID-19 (Kementerian Kesehatan Republik Indonesia, 2020).

Furthermore, most of the respondents had no clinical symptoms of COVID-19, while some of them experienced fever, cough, sore throat, flu, and shortness of breath. This finding in line to some previous report which stated that fever, coughing and shortness of breath were the most common signs and symptoms of COVID-19 reported by the participants, while come of cases were asymptomatic (Dong et al., 2020; Holshue et al., 2020; Perlman, 2020; Sun et al., 2020).

For self-isolation steps, half of respondents were staying at home, avoiding group of people, and reducing contact with people, while some of them still go out for work, groceries, and pharmacy. Almost all respondents commute by motorcycle and public transportation during normal work, but during the outbreak of COVID-19, they only work or study from home. According to the World Health Organization about emerging respiratory viruses (COVID-19) and self-isolation during the pandemic of COVID-19 can adequately prevent the spreading of the virus. All of these self-isolation steps also implemented in Indonesia since the third week of March 2020.

In addition, there have been six healthy

Table 3. Prevention steps of COVID-19 (n = 247)

Variables	n	%
Self-isolation		
Not leaving house	58	23.5
Only go out for work/groceries/pharmacy	74	30
Avoiding group of people	30	12.2
Minimal contact with people	52	21
None	33	13.3
Working now		
Not working/ studying	48	12.4
Working/ studying from home	147	67.4
Commute by public transportation	3	1.1
Commute by motorcycle or own car	44	14.6
Commute by walking or bike	5	4.5
Daily behaviour		
Taking multivitamine	21	8.5
Using facemask	124	50.2
Wash hand or using hand sanitizer	89	36
None	13	5.2
Seek medical attention		
Hospital	10	4
Public health centre/ clinic	20	8
BNPB centre	2	1
None	215	87

Table 4. Contributin factors of travel history, risk factors, symptoms, self-isolation, and behaviour with COVID-19 status (n = 247)

Variables	*p*	*R*
Travel history	0.45	0.69
Contact history	0.78	
Comorbidities	0.84	
Clinical Symptoms	0.33	
Self-isolation steps	0.91	
Daily behaviour	0.73	
Working now	0.86	
Medical check-up	0.81	

behaviours implemented by the respondents during the outbreak of COVID-19 including using facemask when go out, doing wash hand or using hand sanitizer, and taking multivitamin and exercise. This finding in line to previous studies which stated that improving personal hygiene, using a facemask, adequate rest can effectively prevent COVID-19 (Ji et al., 2020; Sun et al., 2020). Furthermore, only few respondents were seeking health professionals, while other respondents were not. This might be happening due to most of them had no clinical symptoms of COVID-19 even though they had a travel history to the red zone area of COVID-19. Almost all of the respondents felt good, some of them isolating themself after COVID-19 exposure. Thirteen respondents felt unwell, while two respondents were thinking had positive for COVID-19 but they did not take any medical check-up for

COVID-19 status. According to the Ministry of Health (Indonesia), people have to check their COVID-19 status when they felt unwell and the clinical symptoms appear.

CONCLUSION

This study found that people still well for their health status after had a travel history to the red zone area of COVID-19, while some of them experienced COVID-19 symptoms including fever, cough, sore throat, flu, and shortness of breath. Doing self-isolation steps like staying at the home, avoiding a group of people, reducing contact with people, and working from home was essential. Adequate prevention behaviour also important during this time; doing personal hygiene (e.g., wash hand or using hand sanitizer), using facemask when to go out, taking multivitamin and exercise, and adequating rest. Seeking medical attention especially for those who had contact history to the person tested positive for COVID-19 with underlying diseases like respiratory disorder, heart diseases, diabetes and other chronic illness was also recommended.

Declaration of Interest

No conflict of interest

Acknowledgment

The author(s) acknowledge the LPPM UM Bengkulu. We also thanks to all participants for their voluntary participation in providing the essential information for this study.

Funding

None

Data Availability

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

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The relationship between body temperature and diet on typhoid fever among toddlers aged 3 – 5 years

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Volume 1(3), 101-106

http://dx.doi.org/10.55048/jpns.v1i3.28

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : May 9, 2022
Revision : June 13, 2022
Accepted : August 12, 2022
Published : September 11, 2022

ABSTRACT

Background: Typhoid fever is a significant health problem in many countries. Globally, it is estimated that 21 million toddlers suffer from this disease each year.
Purpose: This research aimed to analyze the relationship between handling body temperature and diet on the length of stay for typhoid fever among toddlers.
Methods: This research was a cross-sectional study design. The population in this study were 87 toddlers with typhoid fever Lepo-Lepo Health Care Center. The sampling technique was purposive sampling and obtained a total sample of 46 children under five.
Results: We found that Treatment of body temperature on length of stay (X^2 = 5.642; p = 0.003) and diet management on length of stay (X^2 = 4.920; p = 0.001) at the level of confidence 95% (α = 0.05). It means that there is a relationship between handling body temperature and diet with the length of stay in toddlers with typhoid fever.
Conclusions: This study provides information about the body temperature and diet contributing to toddlers with typhoid fever. Clinical and community nursing can provide intervention by considering temperature and diet.

Keywords: typhoid fever; length of stay; toddler; body temperature; diet

INTRODUCTION

Typhoid fever or typhus abdominalis is an infectious disease characterized by symptoms of fever for seven days and usually occurs in the digestive tract, gastrointestinal disturbances and impaired consciousness (Longley et al., 2020). This disease is caused by salmonella typhosa and is only found in humans (Marchello et al., 2019). Transmission of this disease almost always occurs through contaminated food and drink. Typhoid fever is a significant health problem in many countries. Globally, it is estimated that 21 million people suffer from this disease each year and 222,000 cause death. In developed countries, an estimated 5,700 cases occur annually, and typhoid fever cases affect about 21.5 million people yearly (Atikilt Yemata et al., 2021).

The incidence of typhoid fever in the world is quite significant.

Nursing and Healthcare Practices

- *During illness condition, body temperature on toddlers bocome an important data for nurses and health care teams.*
- *Body temperature and diet management monitoring should be initiated by nursing during assessment and implemented nursing intervention.*
- *Providing proper intervention to reduce body temperature among toddlers should be performed by nurses.*

Typhoid fever worldwide in 2002 was around 16 million per year, 600,000 of which caused deaths (Antillón et al., 2017). In 2007 typhoid fever became 17 million cases and 600 thousand deaths annually worldwide and caused 216,510 deaths in children. According to WHO, the incidence of typhoid fever reaches 16-600 deaths yearly. In Asia, typhoid fever is still relatively high. In Southeast Asia and Africa, the risk factors for abdominal typhus infection are lack of handling body temperature, contact with typhoid patients, eating unhealthy and clean food such as oily food and food sold on the roadside, and open and dusty food. Indonesia's health profile in 2016 shows the incidence of typhoid fever is 358,810/100,000 cases per year, and typhoid fever ranks 3rd out of the ten most disease patterns of hospitalized patients in Indonesia (Marchello et al., 2019).

Appropriate and comprehensive handling of typhoid patients, not only by giving antibiotics but also excellent and correct nursing care and proper diet settings to accelerate the healing process of patients with typhoid fever. Handling body temperature is the handling of abnormally increased body temperature that exceeds the standard limit, which is more than 38^{o}C (Steele et al., 2016). In handling body temperature, nursing care needs to be done to monitor the patient's body temperature to find out the patient's vital signs and condition (Pakkanen et al., 2012). This is adjusted to determine the patient's progress every day during hospitalization and as a reference to assess the general condition of patients with typhoid fever (Duff et al., 2020). Ineffective handling of body temperature increases the length of stay in patients with typhoid fever, where fever can be an early sign of infection. Still, fever can also be caused by metabolic disorders and other causes (Pakkanen et al., 2012).

The typhoid fever diet is a diet that serves to meet the food needs of typhoid sufferers in the form of low-fibre soft foods. The types of diets included in the digestive system disorder diet are gastric, low waste, and low fibre. The primary purpose of the typhoid fever diet is to meet the nutritional needs of typhoid fever sufferers and prevent recurrence (Barac et al., 2018). The management of typhoid fever diet is a diet that serves to meet the food needs of typhoid sufferers in the form of low-fibre soft foods. Patients with typhoid fever during treatment must follow the diet instructions recommended by the doctor for consumption (Brockett et al., 2020).

The data of Lepo-Lepo Health Care Center showed that the cases of typhoid fever that received treatment in the inpatient room were extensive where typhoid fever was a disease that was always included in the ten most diseases at the Lepo-Lepo Health Center from year to year. The data recorded in the inpatient register of the Lepo-Lepo Health care Center in the inpatient register of inpatients totalled 282 cases. Among those diagnosed with typhoid fever were 87 people in the inpatient register of the Lepo-Lepo Health Care Center in the average register. On average, patients with typhoid fever are treated for 4-5 days (Amzal Mortin Andas et al., 2020; Mulyana, 2022). This study aimed to determine the relationship between body temperature treatment and diet on the length of stay for typhoid fever among toddlers in the Lepo-Lepo Health Center inpatient room.

METHOD

Design

This study uses an analytical survey method that uses quantitative methods with a cross-sectional design.

Sample

The population in this study were all patients with a positive diagnosis of Typhoid Fever who were registered in the Lepo-Lepo Public Health Center, Kendari City In Indonesia inpatient room and recorded in the medical

records of 87 people. The sampling technique in this study was purposive sampling because the researchers drew samples based on the following criteria: parents with toddlers with typhoid fever can be invited to communicate and are willing to be respondents in this study.

Instruments

The research instrument in the form of a questionnaire was made by the researcher and used to obtain data in this study. Respondents will be measured for handling body temperature and proper diet when hospitalized.

Data Analysis

Univariate analysis was carried out to describe each variable; namely, the dependent variable was the handling of body temperature and diet management, while the independent variable was the length of hospitalization. In addition, a bivariate analysis was conducted to determine whether or not there was a relationship between handling body temperature and diet on the length of stay for typhoid fever in children under five in the Lepo-Lepo Health Center inpatient room. The analysis used is the chi-square test with a significance value of 0.05.

Ethical Consideration

Ethical Clearance for this study was obtained from the Bani Saleh University (Ref No: EC.0183/KEPK/STKBS/VI/2021). The confidentiality of participants is strictly protected. Informed consent was given to the toddler's parents.

RESULTS

Univariate Analysis

The univariate analysis was based on the relationship between handling body temperature and diet on the length of stay for typhoid fever in children under five in the Lepo-Lepo Health Care Center inpatient room. Table 1 shows that among the 46 research respondents aged 0-24 months, there are 26 respondents (56.6%), and at the age of 25-60 months, there are 20 respondents (43.4%). Based on the distribution of respondents' gender groups, it can be seen in Table 1 that of the 46 research respondents, the number of female respondents was more than male; 27 were female respondents (58.7%). In comparison, 19 respondents were male (41.3%).

Table 1. Distribution of age and gender (n=46)

Variables	n	%
Age		
0-24 Months	26	56.6
25-60 Months	20	43.4
Gender		
Male	19	41.3
Female	27	58.7

Bivariate Analysis

Analysis of the Relationship between Handling Body Temperature and Length of Hospitalization for Typhoid Fever in Toddlers in the Lepo-Lepo Health Center inpatient room, Kendari City, which was analyzed by Chi-Square test, the result in table 2 shows that in this study, from 46 respondents who were treated with low temperature with the length of stay five days totaled one respondent (3.3%) and treatment with good temperature with the length of stay five days amounted to 10 respondents (66.7%). On the other hand, the respondents who handled the temperature less with a length of stay > five days totalled 30 respondents (96.7%), and good temperature treatment with a length of stay > 5 days amounted to 5 respondents (33.3%) (Table 2).

Based on statistical tests using the chi-square test, the calculated X^2 value is 5,642 > X^2 table = 3,481, with a value of 0.003 at a 95% confidence level (α = 0.05) which means there is a relationship between body temperature handling and length of time care for toddlers with typhoid fever (Table 2).

Analysis of the Relationship between Diet Management and Length of Hospitalization for Typhoid Fever in Toddlers in the Lepo-Lepo Health Center inpatient room, Kendari City, was analyzed by testing (Chi-Square), as shown in table 3. The analysis results in table III show that in this study, from 46 respondents who were treated with an inadequate diet with length of stay of 5 days, one respondent (3.3%) and good diet treatment with length of stay of 5 days amounted to 11 respondents (68.8%). Meanwhile, the respondents who had poor diet handling with a length of stay > 5 days were 29 respondents (96.7%), and good diet management with length of stay > 5 days were 5 respondents (31.2%) (Table 3).

Based on the results of statistical tests using the chi-square test, the value of X2 count is 4.920 > X^2 table = 3.481, with a value of

Table 2. Relationship between handling body temperature and length of stay in toddlers with typhoid fever

Body Temperature Handling	Length of Treatment				Total		X2 Hits	X2 Table	p
	5 days		> 5 days						
	n	%	n	%	n	%			
Not enough	1	3.3	30	96.7	31	100			
Good	10	66.7	5	33.3	15	100	5,642	3,481	0.003
Total	11	23.9	35	76.1	46	100			

Table 3. Relationship between diet management and length of stay in toddlers with typhoid fever

Diet Management	Length of Treatment				Total		X2 Hits	X2 Table	p
	5 days		> 5 days						
	n	%	n	%	n	%			
Not enough	1	3.3	29	96.7	30	100			
Good	11	68.8	5	31.2	16	100	4.920	3,481	0.001
Total	12	26.1	34	73.9	46	100			

0.001 at a 95% confidence level (α = 0.05) it meaning there is a relationship between diet management and length of stay in toddlers with typhoid fever (Table 3).

DISCUSSION

Typhoid fever temperature can be more than 38° c, which usually appears in the afternoon and evening. This fever lasts more than 3 days or even more than 7 days. In handling body temperature, nursing care needs to be done to monitor the patient's body temperature to find out the patient's vital signs and condition. This is adjusted to determine the patient's progress every day during hospitalization and as a reference to determine the general condition of patients with typhoid fever (Raab et al., 2022). According to research, giving warm compresses to patients aims to help lower body temperature through evaporation. Evaporation itself is the loss of heat by the process of sweating occurs because the sweat in that part of the skin evaporates. Warm compresses can be applied to the forehead, groin, axilla, and even rubbed all over the body using a towel. Thus speeding up the evaporation process because there are large blood vessels in that area. The length of stay of typhoid fever patients is determined by the symptoms accompanying typhoid fever, such as fever (Opara, 2021).

This results same with Nurwahuni's 2009 research, which explains that there is a body mechanism for warm compresses to reduce body temperature, namely by giving warm compresses to areas of the body that The signal is sent through the spine to the hypothalamus, causing stimulation of heat receptors located in the hypothalamus which in turn the effector system causes a peripheral vasodilation reaction and sweating as a signal. Vasodilation occurs due to the influence of the anterior hypothalamus causing changes in blood vessel size which are regulated by the vasomotor center in the medulla oblongata of the brain stem. The impact of vasodilation causes a waste of energy or heat through the skin (sweating). This is expected to lower body temperature so that it reaches normal conditions.

The typhoid fever diet is a diet that serves to meet the food needs of typhoid sufferers in the form of low-fibre soft foods. Infectious diseases can cause loss of appetite, so food intake is inadequate, even though diet management in patients with infectious diseases increases. Changes in diet often occur in patients with infectious diseases who are hospitalized at the Public Health Center. Food intake from hospitals is one of the factors for changes in dietary status that occur in inpatients at hospitals and health centers.

Our results in this research are accordance with other studies regarding the level of energy and protein adequacy with the length of treatment for typhoid fever patients. So the diet therapy given to typhoid fever patients is adjusted to the disease, which is expected to be able to help to heal.

Limitation of Study

This study has several limitations, including the lack of samples. Nevertheless, in this study, one should be able to see a more profound effect, not only limited to the relationship between variables.

CONCLUSION

The result of this study at Lepo-Lepo Health Care Center in Kendari City, it can be concluded that there is a relationship between handling body temperature and diet on the length of stay for typhoid fever in children under five in the Lepo-Lepo Health Care Center inpatient room.

Declaration of Interest

None

Acknowledgment

Authors are responsible for disclosing any interests that may affect their ability to present the data objectively. This research uses independent funds. Diversified mutual funds or investment trusts do not constitute a conflict of interest. If there is any doubt about whether an interest is relevant or significant, it is wise to disclose it. Readers will benefit from transparency, including knowing the affiliations of authors and contributors. The data source in this study was obtained from the Lepo-Lepo Public Health Center, Kendari City.

Funding

None

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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ORIGINAL

The Journal of Palembang Nursing Studies
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The relationship between operation duration and shivering in post-spinal anaesthesia patients

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Volume 1(3), 107-114

http://dx.doi.org/10.55048/jpns.v1i3.29

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : May 25, 2022
Revision : June 14, 2022
Accepted : September 8, 2022
Published : September 11, 2022

ABSTRACT

Background: Giving spinal anaesthesia is an effort to relieve pain to create optimal conditions for surgery operation consciously. A shivering event frequently follows the phenomenon of the long duration of the operation.
Purpose: The study aimed to determine the relationship between operation duration and shivering in post spinal anaesthesia patients.
Methods: The study design is a quantitative study and uses a cross-sectional approach. Sampling used a systematic sampling technique on the population of patients undergoing surgery under spinal anaesthesia. The instrument used Croessley and Mahajan's observation sheet. This study uses Spearman rank rho as the statistical test with a significant value of p=0.05.
Results: The study showed almost respondents, as many as 86.15 respondents (56 patients) experienced shivering. Based on the Spearman statistical test, the p-value is 0.046.
Conclusions: It can be concluded that there was a relationship between operation duration and incidence of shivering. Therefore, to reduce the occurrence of shivering, it is necessary to take measures such as giving warm blankets, warm fluids, and tools to maintain body temperature (force air warming).

Keywords: operation duration; shivering; spinal anaesthesia

INTRODUCTION

Technological advances have developed health services, especially in terms of anaesthesia and surgery. Anaesthesia is an effort to relieve pain consciously (spinal anaesthesia) or unconsciously (general anaesthesia) to create optimal conditions for surgery (Widiyono, et.al., 2020). Anaesthesia is the loss of all modalities of sensation, including pain sensation, touch, temperature, and position. It is divided into general anaesthesia, regional anaesthesia, and local anaesthesia. Spinal anaesthesia is the administration of local Anaesthetic drugs into the subarachnoid. It is widely used for surgical procedures in the 21st century (le Roux, et.al., 2022).

Widiyono et.al., (2020) states that spinal anaesthesia is widely used in various surgical procedures, with more than

Nursing and Healthcare Practices

- *Shivering among patient with post-spinal anaesthesia should be a concerned by nurses and other health care team.*
- *Optimization operation duration could prevent the shivering condition.*
- *Tight observation post-spinal anaesthesia should be a critical point for nurses.*

80% of operations performed using spinal anaesthesia techniques. Spinal anaesthesia is still the main choice for cesarean sections, abdominal surgery, and lower extremities because it makes the patient still conscious, then faster recovery period and quick mobilisation (Mashitoh, et.al., 2018). The recovery period after spinal anaesthesia is an important time for physiological stress in many patients. In addition to having advantages, spinal anaesthesia can cause complications (Winarni, 2020).

Post Anaesthetic Shivering (PAS) incidence in spinal anaesthesia patients amounts to 33-56.7%. It can occur due to several factors, including cold environmental exposure, ASA physical status, age, nutritional status and low body mass index, gender, and duration of surgery. In addition, the long duration of surgery causes longer Anaesthetic time. This condition will increase exposure duration to cold temperatures, more Anaesthetic agents, and prolonged use of drugs or Anaesthetic agents (Mashitoh, et.al., 2018).

Shivering is often encountered in anaesthesia, both spinal anaesthesia and general anaesthesia. After giving spinal anaesthesia, shivering usually occurs in the intraoperative and postoperative periods. The incidence varies wildly between 5% to 65%. Shivering causes detrimental physiological effects such as peripheral vasoconstriction, increased oxygen demand compensation up to five times, resulting in increased carbon dioxide production, decreased arterial oxygen saturation, decreased drug metabolism, interfered clotting factors formation, decreased immune response, impaired wound healing, increased protein breakdown and ischemic heart muscle (Prasetyo et.al., 2017).

The number of patients undergoing spinal anaesthesia at Anaesthesia Installation of Saiful Anwar Hospital Malang every month is about 65 patients. As 40 patients of whom experienced hypothermia. Patients who experience hypothermia have variations in the length of surgery and surgical cases, including urological surgery, digestive surgery, gynaecological surgery and orthopaedic surgery. Based on interviews with nurses on duty at Anaesthesia Installation in January, there were 65 patients with spinal anaesthesia. Moreover, data showed shivering was still relatively high, with the duration of surgery between 30 minutes to more than 120 minutes. Based on clinical data, five out of ten patients (50%) underwent surgery with spinal anaesthesia experienced shivering.

Practical nursing care to overcome shivering after spinal anaesthesia needs to be carefully prepared, especially before major surgery, which lasts more than 1 hour (60 minutes). Improving hemodynamics, metabolism and maintaining body temperature is the best approach (Syauqi et.al., 2019). In addition, according to Winarni (2020) non-pharmacological approaches can be carried out by heating methods, including blanket warmers, oxygen humidification, and heating of intravenous fluids. Intervention to prevent hypothermia and shivering with a non-pharmacological approach is called rewarming technique (Ekorini & Lumadi, 2021). Shivering is usually triggered by hypothermia related prolonged duration of surgery. However, it occurs even in normothermic patients during the perioperative period. The aetiology of shivering has been understood insufficiently. Another potential mechanism is pain and acute opioid withdrawal (especially with short-acting narcotics). Besides, that shivering is poorly understood, and the gold standard for treatment and prevention has not been defined yet. Perioperative hypothermia prevention is the first method to avoid shivering (Lopez, 2018).

From the description above, shivering can occur due to a long duration of surgery, spontaneously causing more prolonged Anaesthetic action. Besides, that shivering can also cause other side effects such as discomfort and pain. Therefore, this study determined the relationship between the length of surgery and the incidence of shivering in post-anaesthesia patients.

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METHOD

Design

The study design was a descriptive-analytic method with a cross-sectional design.

Sample and Setting

The population was all patients who underwent surgery with spinal anaesthesia. The study occurred in October 2021 as 65 patients at the Anaesthesia Installation of dr. Saiful Anwar Hospital. Sampling technique using probability sampling with systematic sampling technique, sample selected by inclusion and exclusion criteria as follows:

Inclusion Criteria

- Patients undergoing moderate to long-term surgery under spinal anaesthesia.
- Male and female gender.
- Age 18-55 years.
- Physical status (American Society of Anesthesiologists) 1 and 2
- Did not receive antipyretic premedication

Exclusion Criteria

- Patients with decreased consciousness.
- Patients taking medications that potentially affect thermoregulation (e.g., Clonidine, phenothiazine, meperidine).

Variables

Independent variable was the duration of the operation. The dependent variable was shivering incidence in post-spinal anaesthesia.

Instruments

Instruments used an observation sheet of operation duration and the Modified Crossley and Mahajan Scale.

Data Collection

Data collection was carried out by researchers and enumerators (anaesthetist nurses and anesthesiologist interns). In addition, enumerator training has been carried out to equalise perceptions while implementing data collection.

Data Analysis

The statistical test used the spearman rho correlation test. Level of significance or confident interval (CI) 95% or = 0.05.

Table 1. Characteristics of respondents (n=65)

Characteristics	n	%
Gender		
Male	34	52.31
Female	31	47.69
Age		
18 - 35 years	28	43.08
36 - 45 years	13	20.00
46 - 55 years	24	36.92

Table 2. Criteria of operation duration (n=65)

Criteria	n	%
Short time (<60 minutes)	0	0.00
Moderate (60-120 minutes)	47	72.31
Long-time (>120 minutes)	18	27.69

Table 3. Criteria of shivering incidence (n=65)

Criteria	n	%
None	9	13.85
Shivering	56	86.15

Ethical Consideration

This study has passed the research ethics test by the Health Research Ethics Committee of dr. Saiful Anwar Malang Hospital and has received approval number: 400/195/K.3/302/2021 on October 2, 2021.

RESULTS

Based on table 1, most respondents were male amount 34 patients (52.31%). Most respondents were in the 18-35 years age range as 28 (43.08%) patients. Results showed most of the respondents as 47 patients (72.31%) with operation duration between 60-120 minutes (moderate) (Table 2). Results showed that almost all respondents, 86.15% of respondents (56 patients), experienced shivering and only 13.85% of respondents (9 patients) did not experience shivering (Table 3). Based on table 4 amount 38 respondents (80.85%) who experienced shivering underwent surgery in the moderate category (60-120 minutes).

Table 5 shows the p-value was 0.046 < 0.05, which means H1 was accepted. Therefore, it can be concluded that there is a significant relationship between operation duration and shivering incidence in the Anaesthesia Installation of dr. Saiful Anwar Malang Hospital. The strong relationship between the two

Table 4. Cross-tabulation of operation duration with shivering incidence

Operation Duration	Shivering Incidence		Total
	None n (%)	Shivering n (%)	
Moderate (60 -120 minutes)	9 (19.15%)	38 (80.85%)	47 (100%)
Long-time (>120 minutes)	0 (0.00%)	18 (100%)	18 (100%)

Table 5. Statistical test

	Shivering Incidence	p-value
Operation Duration	r = 0.248 sig = 0.046 n = 65	p < 0.05

variables was 24.8% (0.248), so it was declared a weak category. The association was positive synergies, longer duration of operation, and more frequent shivering occurring in the Anaesthesia Installation of dr. Saiful Anwar Malang Hospital.

DISCUSSION

Identification of Operation Duration in Post-Spinal Anaesthesia Patients

Spinal anaesthesia is a technique widely used in various surgical procedures, more than 80% of operations are performed using spinal anaesthesia techniques compared to general anaesthesia (Widiyono, et.al., 2020). Spinal anaesthesia techniques are still the main choice for cesarean sections, abdominal surgery, and lower extremities. This technique makes the patient conscious so that the recovery period is faster and can be mobilised more quickly. Based on the study result, the relationship between the length of surgery and incidence of shivering at Dr Saiful Anwar Hospital showed of 65 respondents, the majority were 47 respondents (72.31%) with the duration of operation between 60-120 minutes (moderate) and remaining 18 respondents (27.69%) with operating time > 120 minutes (long-time).

This study found many moderate surgery categories, including orthopaedic, obstetric, and gynaecological surgery. In addition, those are classified as long-time operations, namely digestive surgery and some orthopaedic cases, which are affected by significant surgery, complicated operations, profuse bleeding, decreased patient condition, and accumulation of Anaesthetic drugs.

Identification of Shivering Incidence in Post Spinal Anaesthesia Patients

Postoperative recovery is a time with a high risk of developing anaesthetic complications. Anaesthetic complications occurred in at least 2.5% of patients. One of the complications that often occur in general and regional anaesthesia is shivering. Post-anaesthesia shivering or post-anaesthesia shivering is a repetitive and involuntary muscle movement that aims to compensate for hypothermia caused by an excessive decrease in body temperature. Spinal anaesthesia causes vasodilatation, causing a redistribution of heat from the core to the periphery. Thus, hypothermia in spinal anaesthesia is caused by the redistribution of body heat from the core to the peripheral surface. In spinal and epidural anaesthesia, the threshold for vasoconstriction and shivering responses is reduced to 0.6°C, it higher than in general anaesthesia (Hidayah et.al., 2021).

Results of the study showed from 65 respondents, almost all respondents, amount 56 respondents (86.15%) experienced shivering. This study is in line with research (Mashitoh, et.al., 2018) in which more respondents experience shivering than those who do not. The incidence of shivering is also influenced by gender. The results of the odd ratio calculation show that women have a 3.2 times more risk of experiencing hypothermia than men. This can be influenced because in women, there is a lot of fat accumulation where shivering is mediated by fat tissue (Valencak, et.al, 2017)

Shivering is also influenced by several things, including age and weight, type and length of a surgical procedure causing temperature changes, operating room temperature (less than 20°C), the specific gravity of the drug solution used can reduce the vasoconstriction

threshold and increase the cold sensation threshold (Qi et al., 2022). Cold fluids will cause a decrease in temperature and an increase in the average cold sensation, this amount of bleeding causes the body to run out of fluids so it can cause hypothermia, and hypothermia is an early sign of shivering.

Analysis of Relationship between Operation Duration and Shivering Incidence

Post anaesthesia shivering causes discomfort and increases pain due to traction on the surgical wound. This repetitive muscle movement can also increase metabolic heat production to 500-600% of basal value, increase oxygen consumption and carbon dioxide production, cause lactic acidosis, increase heart rate, and trigger vasoconstriction, which causes increased vascular resistance. This will be a problem in patients with limited cardiopulmonary function. In addition, shivering disrupts the ECG monitoring, blood pressure, and oxygen saturation during surgery (Gunadi, et.al., 2015).

Results of the study indicate a p-value of 0.046 < (0.05), which means that H1 is accepted. Therefore, it can be concluded that there is a significant relationship between operation duration and shivering incidence. The strong relationship between the two variables is 24.8% (0.248) in the weak category. The relationship is positive synergy, higher duration of operation, and higher incidence of shivering in Anaesthesia Installation at Dr Saiful Anwar Hospital. Based on the analysis using the Spearman Rho test, there was a correlation between operation duration and incidence of shivering in patients after spinal anaesthesia. The study results align with this study Mashitoh, et.al., (2018), which shows a significant relationship between operation duration and the incidence of shivering in post-spinal anaesthesia patients at the Yogyakarta City Hospital.

Respondents who underwent major surgery (>60 minutes) experienced shivering. This is in line with Mashitoh, et.al., (2018), who stated that post-spinal anaesthesia shivering mostly occurred in respondents who underwent surgery with a duration of 61-120 minutes. Shivering is an unpleasant phenomenon that occurs during the perioperative period. Shivering has several harmful physiological effects, such as increasing SVR, left shifting of oxygen saturation curve, changing mental status, impaired renal function, delayed drug metabolism, impaired wound healing, and increased risk of infection. Perioperative shivering can increase oxygen consumption by fivefold and may decrease arterial oxygen saturation associated with increased myocardial ischemia (Azam et al., 2018).

The action of spinal anaesthesia can eliminate the adaptation process and disrupt the physiological mechanisms of thermoregulatory function. Spinal anaesthesia also affects three thermoregulation elements: afferent input elements, regulation of signals in the central area and efferent responses, and shifts threshold for responses to vasoconstriction, shivering, vasodilation, and sweating processes. During anaesthesia, the thermoregulatory threshold is lower in geriatric patients when compared to younger patients, which is about 10°C. As a consequence, the patient's body temperature during surgery becomes poikilothermic. It will follow ambient temperature. Almost all anaesthetic drugs interfere with thermoregulatory responses. For example, lidocaine, bupivacaine, and tetracaine are the leading local Anaesthetic agents used for spinal blockade. Lidocaine is effective for 1 hour, and bupivacaine and tetracaine are effective for 2 to 4 hours. At the end of anaesthesia, lidocaine, bupivacaine, and tetracaine sometimes cause hypothermia to chills. This is due to the effects of anaesthetic drugs that cause thermoregulation disorders (Widiyono, et.al., 2020).

In this study, results showed a significant relationship between operation duration and incidence of shivering in the Anaesthesia Installation of dr. Saiful Anwar Hospital showed a p-value of 0.046 <(0.05), which means H1 is accepted, so it can be concluded that there is a significant relationship between operation duration and incidence of shivering. The strength of the relationship between variables is 24.8% (0.248), in the weak category. Therefore, the association is positive, longer duration of surgery, higher incidence of shivering at Anaesthesia Installation of dr. Saiful Anwar Hospital. It is caused by several factors, including length of surgical procedure, age and weight, type of operation, operating room temperature, specific gravity, drug solution, use of cold fluids, and amount of bleeding.

According to the researcher's assumption, shivering is experienced by patients due to

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exposure to low temperatures in the operating room. Injured tissue during surgery can release pyrogenic substances, which can increase the onset point in the thermoregulatory system and induce post anaesthetic shivering. The more prolonged operation is carried out, the more post-anaesthetic shivering occurs. Another assumption is significant surgery (>60 minutes), following the theory that shivering is a response to hypothermia during surgery between blood and skin and core body temperature. Surgery with prolonged spinal anaesthesia increases the body's exposure to cold temperatures, causing changes in body temperature. Results showed a relationship between the surgery duration and posted anaesthetic shivering incidence.

The combination of spinal anaesthesia and operation duration causes a disturbance in regulating body temperature, which leads to a decreased body temperature, causing shivering. The risk of shivering is higher if the period of more extended surgery. It will increase the time of exposure to exposed cold temperatures and cause an accumulation of side effects of spinal anaesthesia (Lenhardt, 2018). This generally occurs in moderate or significant surgery requiring more than 1 hour (60 minutes). In addition to operation duration, high anaesthetic doses accelerate the onset of action and increase the duration of sensory and motor blockade. The greater possibility of systemic toxicity limits an increase in Anaesthetic dose. Anaesthesia decreases the core temperature by reducing the body's natural ability to regulate its body temperature. Spinal anaesthesia causes vasodilation which can increase blood flow to the skin resulting in increased heat loss. A high dose of anaesthetic can cause an increase in blockade level, which further increases vasodilating effect, thereby increasing the possibility of shivering (Hermanns et al., 2018).

Shivering is more common in women because the tolerance level of thermoregulation in women is lower than in men. Women's skin temperature is 1-2^{o}C lower than men's. It is related to vasoconstriction, which is more clearly seen in women, thereby reducing arterial blood flow to extremities such as hands and feet so that women are more susceptible to cold injuries. In addition, the different distribution of body fat between women and men is also one of the causes increase risk of post Anaesthetic shivering because shivering is also mediated by fat tissue (Valencak, et.al., 2017). In this study, patients who underwent surgery at dr. Saiful Anwar Hospital rarely used a heating blanket during the duration of the operation, the patient's body was more exposed to cold temperatures. The long duration of the surgery will cause more prolonged anaesthesia and increase the time exposed to freezing temperatures in operating room, thereby increasing the risk of shivering.

However, shivering does not occur in all patients with spinal anaesthesia because it is influenced by age and individual weight factors. In infants, children, and late adulthood to the elderly, shivering is mediated by fat tissue. While in adolescents and early adults, shivering is mediated through body heat which is influenced by the thyroid gland. As a result, the shivering threshold in older age is 1 degree Celsius lower (Levy & Leonard, 2022).

Reducing the occurrence of shivering complications in spinal anaesthesia can be carried out by pharmacological and non-pharmacological management. Pharmacological management often includes opioids, namely pethidine injection and ketamine administration (Ramanathan et al., 2022). Ketamine which is equivalent to pethidine prevents postoperative shivering. Meanwhile, non-pharmacological management can be carried out, including giving warm blankets, either electric or passive heating blankets in the form of cotton cloth to avoid releasing heat to the environment, giving warm fluids, and using medical devices/tools to increase body heat (forced air warming) (Lopez, 2018).

CONCLUSION

Based on the study it can be concluded there was a significant relationship between operation duration and incidence of shivering p value = 0.046 ($p<0.05$). The strength of the relationship between the two variables is 24.8% (0.248). It is a weak category. The relationship is positive synergy, longer duration of surgery, the incidence of shivering in Anaesthesia Installation of dr. Saiful Anwar Hospital.

Based on study, it can be considered that patients who undergo surgery and experience shivering can use pharmacological therapy through consultation with the medical team and non-pharmacological treatments such as using warm blankets, warm fluids, use of devices to maintain body temperature and reduce more serious complications.

Results of the study are expected to use

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as information material in the nursing field of dr. Saiful Anwar Hospital Malang. Nurse implementation more alert to patients at risk of shivering after spinal anaesthesia by conducting intensive observation during operation and immediately providing nursing care by providing warm blankets, warm fluids, and a device to maintain body temperature. It helps the patient to feel comfortable until the operation is complete.

Results of this study are expected to be used as information in developing research on factors that influence the incidence of shivering in post-spinal anaesthesia patients, such as the amount of bleeding and type of use. For further researchers, it is recommended to conduct research with additional variables such as age, gender and BMI (Body Mass Index) that affect the incidence of shivering and selected just in one type of surgery and increase the number of samples involved.

Declaration of Interest

None

Acknowledgment

The researcher would like to thank you for permission to conduct the study at Anaesthesia Installation Dr Saiful Anwar Malang Hospital.

Funding

None

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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ORIGINAL

The Journal of Palembang Nursing Studies
https://jpns-journal.com/index.php/jpns
OPEN ACCESS

Assessment of knowledge, attitudes, and willingness of pre-clinical nursing students to provide nursing care for people living with HIV/AIDS

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Volume 1(3), 115-124

http://dx.doi.org/10.55048/jpns.v1i3.52

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : June 17, 2022
Revision : June 27, 2022
Accepted : September 8, 2022
Published : September 11, 2022

ABSTRACT

Background: HIV/AIDS as a global pandemic forced the nursing student to have appropriate knowledge and attitudes toward caring for people living with HIV/AIDS (PLWHA).
Purpose: This study aims to explore the level of knowledge, attitudes, and willingness of pre-clinical nursing students to provide nursing care for PLWHA.
Methods: A descriptive and cross-sectional study is conducted. A total of 185 pre-clinical nursing students enrolled in Bachelor of Science in Nursing (BSN), and Associate Degree in Nursing (ADN) programs were recruited. Data was collected from April to May 2019 using a self-reported questionnaire and analysed with descriptive statistics, a t-test, and Pearson's correlation test with a significant level of 0.05.
Results: Overall pre-clinical nursing students had moderate knowledge about HIV/AIDS, but students had a negative attitude toward HIV/AIDS. The students' mean score of willingness to care for PLWHA was 5.45. BSN students had better knowledge than ADN students, and the difference was significant. However, differences in attitudes and willingness to manage between BSN and ADN students were insignificant. In addition, the differences in knowledge, attitudes, and desire to care between males and females were insignificant. The result revealed that attitudes and willingness to care for PLWHA were significantly correlated.
Conclusions: Based on the study results, it is essential for nursing students to have accurate knowledge about HIV/AIDS and positive attitudes toward people with HIV/AIDS to ensure that they can provide high-quality and effective care for PLWHA as well as protect themselves from being infected with HIV.

Keywords: knowledge; attitudes; willingness; HIV/AIDS

INTRODUCTION

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) have been a global pandemic for the last 30 years (Jin et al., 2021). However, due to the availability of antiretroviral therapy, HIV is now considered a chronic disease, which means that all medical personnel will

Nursing and Healthcare Practices

- *It is essential for nursing students to have accurate knowledge about HIV/AIDS and positive attitudes toward people with HIV/AIDS to ensure that they can provide high-quality and effective care for PLWHA.*
- *Intervention to enhance the knowledge, attitude, and willingness to care PLWHA should be initiated.*

come into contact with HIV-infected patients throughout their careers. This requires all medical personnel to have adequate and correct HIV/AIDS knowledge, as well as a professional attitude toward patients free of fears, stigma, and misconceptions (Arifin et al., 2022). In addition, a better understanding of students' prior knowledge and attitudes toward HIV/AIDS will be used to develop better educational programs that address stigma and encourage patient empathy. HIV has infected over 70 million people and killed approximately 35 million people since the epidemic's inception, and 36.9 million people live with HIV worldwide. Worldwide, 0.8% of adults aged 15–49 years are infected with HIV, though the epidemic's impact varies greatly between countries and regions (Unaids, 2018; Unicef, 2016). In 2016, Cambodia had an HIV/AIDS incidence of 1200, a prevalence of 75000, and a mortality rate of 1500. In 2017, the incidence of HIV infection was 1000, the majority was 74000, and the mortality rate was 1400. In 2018, the incidence was 1000, the prevalence was 73,000, and the mortality rate was 1300. Myanmar had 11,000 new HIV infections, 220,000 people living with HIV, and 6,700 AIDS-related deaths (Unaids, 2021; Unicef, 2016).

In 2016, Cambodia had 713 new HIV infections, 70 498 people living with HIV, and 1807 deaths due to HIV. More than 80% of people living with HIV are aware of their HIV status, and 97% receive antiretroviral therapy. However, the HIV epidemic remains concentrated, with a higher prevalence among key populations such as people who inject drugs, female sex workers, transgender women, and men who have sex with men (Jin et al., 2021). Previous studies also found discrimination, misunderstanding, and a lack of knowledge among nurses (Kaihlanen et al., 2019; Kok et al., 2018; Lenartz et al., 2021). Unfortunately, no studies to date have investigated the level of knowledge, attitude, and willingness of pre-clinical nursing students to provide care for people living with HIV/AIDS. Thus, this study aimed to assess pre-clinical nursing students' knowledge, attitude, and willingness to care for people living with HIV/AIDS

METHOD

Design

A descriptive cross-sectional design was used in this study to assess knowledge, attitudes toward HIV/AIDS, and willingness to care for patients living with HIV/AIDS (PLWHA) among pre-clinical nursing students.

Sample and Setting

The study was conducted at Technical School for Medical Care (TSMC), Phnom Penh, Cambodia. This study employed convenient sampling, with a total sample size of 185 pre-clinical nursing students (2018-2019) enrolled in both the Association Degree in Nursing (ADN) and the Bachelor of Science in Nursing (BSN) programs.

Instruments

A self-administered questionnaire was used to collect the data. In addition, a structured survey questionnaire was designed to identify demographic characteristics (5 items), background information (2 items), knowledge (20 things) and attitude (14 items) about HIV/AIDS, and willingness to care for PLWHA (1 item).

HIV/AIDS knowledge scale has 20 items designed to determine the respondent's level of knowledge about HIV, the spreading of AIDS, and the prevention of AIDS. The participants were asked to mark one of the options 'true', 'false', or 'don't know' for each of the 20 questions. Participants who responded that they didn't know the answer were considered to have answered the question incorrectly. A correct answer was given a score of '1' and a score of '0' for 'false' or 'don't know' responses. The score ranged from 0 to 20, and answers were summed up for total scores.

The AIDS Attitude Scale (AAS) has 15 items developed for nursing and medical students (Bliwise et al., 1991). The AAS consisted of 3 subscales: fear of contagion (items 1-5),

Table 1. Demographic data of the respondents (n = 185)

Variable	Category	n	%
Sex	Male	52	28.1
	Female	133	71.9
Religion	Buddhism	180	97.3
	Christianity	3	1.6
	Islam	2	1.1
Marital Status	Single	185	100
	Married	0	0
Program	BSN	95	51.4
	ADN	90	48.6
Age		Mean ± SD	Range
		19.49 ± 1.48	16-26

Table 2. Source of get HIV/AIDS information

Variable	Category	n	%
Source of Information	Teacher	122	65.9
	Books	102	55.1
	Radio/TV	85	45.9
	Nursing Course	59	31.9
	Doctor	58	31.4
	Newspa-pers/Magazines	44	23.8
	Friend	31	16.8
	Parents	25	13.5
	Other	20	10.8
Know someone with HIV/ AIDS	Yes	124	67
	No	61	33

negative emotions (items 6-9), and professional resistance (items 10 - 15). The AAS items were on a six-point Likert scale (strongly disagree to agree strongly). High total scores imply that individuals' attitudes towards AIDS were negative. In this study, 1 item was excluded from the contagion subscale because it was unrelated to our sample.

Willingness to care for HIV/AIDS patients was a visual analogue scale with points ranging from 0 to10 (0: I'm not willing at all to 10: I'm very willing). The instrument used in this study was found to be reliable and valid. Cronbach's alpha was reported to be 0.82, and the internal consistency coefficient was = 0.86.

Data Collection

The pilot study was conducted among 20 nursing students at Technical School for Medical Care (TSMC) by using the questionnaire in the Khmer language to make sure our questionnaire was validity and easy to understand. The questionnaires were given to the students who presented in class and were accompanied by the research team. The purpose of the study was explained to the participants, and they were informed that their participation was voluntary and that they could withdraw at any time without any restriction. The respondents were free to refuse to answer any questions that made them feel uncomfortable. It took 15 to 20 minutes to answer the questions. Data was collected from April to May 2019.

Data Analysis

Data were coded by number in each question and analysed using Statistical Package for the Social Science® (SPSS), version 25.0 (SPSS Inc., Illinois). Descriptive statistical information (means, percentage, and variability) was performed for all variables. Independent T-test statistics were used to compare knowledge,

Table 3. Nursing student's knowledge on HIV/AIDS: correct responses (n = 185)

Item	Statement	Response	n	%
1	AIDS always occurs in a human infected with HIV.	T	153	82.7
2	HIV can be transmitted through blood, semen and vaginal fluid.	T	181	97.8
3	The most effective way to avoid HIV is to abstain from unprotected sexual intercourse.	T	168	90.8
4	When one has HIV/AIDS, his/her body becomes more susceptible to other infections.	T	146	78.9
5	AIDS has a definitive treatment.	F	171	92.4
6	The virus is likely to infect the fetus in a pregnant woman with HIV.	T	109	58.9
7	Needles used for a patient with AIDS cause the infection.	T	175	94.6
8	Many people can have HIV or a sexually transmitted infection but symptoms may not appear.	T	80	43.2
9	HIV/AIDS can be transmitted to another person by the use of personal items such as a toothbrush or razor.	T	124	67.0
10	An HIV-positive mother can transmit the infection to her baby through breast-feeding.	T	149	80.5
11	The correct use of condoms is effective in the prevention of HIV.	T	154	83.2
12	It is possible to prevent AIDS by vaccination.	F	157	84.9
13	A person who is infected with HIV may not have AIDS symptoms for 10 or more years.	T	42	22.7
14	HIV/AIDS can be transmitted by social kissing and cuddling.	F	180	97.3
15	Ear-piercing with non-sterile instruments can pose a risk for HIV infection.	T	138	74.6
16	Anti-HIV antibodies in the blood of an HIV-infected person can be seen within the first month after the infection.	T	73	39.5
17	Those infected with HIV should have good nutrition and regular exercise in order to prevent AIDS from developing.	T	86	46.5
18	HIV/AIDS can be transmitted to people through blood transfusions.	T	173	93.5
19	A person who is infected with HIV may seem healthy or feel good.	T	119	64.3
20	A person can be infected with HIV by swimming in the same pool or using the same toilet as an HIV infected person.	F	172	93.0

attitude, and willingness to care for PLWHA between education programs (BSN & ADN) and gender (male & female). Pearson's correlation statistics examined relationships between knowledge, attitude, and willingness to care for PLWHA. P-value <0.05 was set to determine statistical significance.

Ethical Consideration

The rector approved the study of the University of Health Sciences (UHS), and which approval letter was given to the research team before conducting their data collection. This letter was sent to TSMC. Then they let us complete the

survey with pre-clinical nursing students.

RESULTS

Characteristics of Participants

The demographic variables of the respondents are presented in Table 1. Among 185 pre-clinical nursing students, 28.1% were male, and 71.9% were female. Participants mean age was 19.49 years, SD ± 1.38, and range16-26 years. The majority of participants' religion was Buddhism (97.3%). All of the participants were unmarried. 51.4 % of participants were in BSN, and 48.6% were in the ADN program.

Information about Participants

The sources of received information on HIV/AIDS are presented in Table 2. In this study, the question where they get the information about HIV/AIDS is a multiple selection format in which participants select more than one option. Teachers (65.9%) and books (55.1%) were the most common source; 67% of the participants reported that they knew someone with HIV/AIDS.

Participants' Knowledge about HIV/AIDS

The results of participants' correct responses related to HIV/AIDS knowledge are presented in Table 3. The highest rates of correct responses were as follows: "HIV can be transmitted through blood, semen and vaginal fluid" (97.8%); "HIV/AIDS can be transmitted by social kissing and cuddling" (97.3%); and "needles used for a patient with AIDS cause the infection." (94.6%). The students revealed a lack of knowledge of HIV/AIDS knowledge in the following statement: "HIV-infected person may not have AIDS symptoms for ten or more years" (22.75%); "anti-HIV antibodies in the blood of an HIV-infected person can be seen within the first month after the infection" (39.5%); and "many people can have HIV or a sexually transmitted infection, but symptoms may not appear" (43.2%).

Agreement Status of The Participants with The Statements on The AAS attitude Scale

The participants' attitudes toward HIV/AIDS were measured with 6-point Liker Scale. The results of the participant responses are presented in Table 4. The majority of students showed a negative attitude on the contagion subscale by agreeing with all these statements: "despite all I know about how AIDS is transmitted, I'm still afraid of catching it" (89.7 %) and "AIDS makes my job a high-risk occupation." (75.7%). However, 40 % of participants agreed that "I would be willing to eat in a restaurant where I know the chef has AIDS", and 55.1 % of them chose that "Even following strict infection control measures, it is likely that I would become infected with HIV if I were working with AIDS patients over a long period of time."

On the professional resistance subscale, almost students (91.4%) had a negative attitude toward the statement: "it is best to train a few specialists who would be responsible for the treatment", 34.1% of them agreed with to statement, "I would consider changing my professional speciality/position if it became necessary to work with AIDS patients", and 39.5 % of participants agreed that "Given a choice, I would prefer not to work with AIDS patients."

On the negative emotion subscale, less than half of students agreed that "I sometimes find it hard to be sympathetic to AIDS patients (43.2%), and "I would feel resentful of AIDS patients accounted for a significant part of my caseload" (41.1%).

The Participants' Mean Scores of Knowledge, Attitudes, and Willingness to Care

The mean score of knowledge, attitudes toward HIV/AIDS, and willingness to care for the patient with HIV/AIDS were presented in Table 5. The mean score for HIV/AIDS knowledge was 14.89, and the desire to care for HIV/AIDS was 5.45, indicating that the students had adequate knowledge and a strong desire to help people with HIV/AIDS. Otherwise, the results showed that students have a negative attitude toward HIV/AIDS, as evidenced by the high mean score of student attitudes (Nubed & Akoachere, 2016; Wawrzuta et al., 2021).

Comparison of Participants' Knowledge, Attitudes, and Willingness to Care

An independent sample t-test was performed to compare knowledge, attitudes, and willingness

Table 4. Attitudes toward HIV/AIDS among participants

AIDS Attitude Scale	Agree	
	n	%
Contagion Subscale		
AIDS makes my job a high-risk occupation	140	75.7
Despite all I know about how AIDS is transmitted, I'm still afraid of catching it	166	89.7
I would be willing to eat in a restaurant where I know the chef has AIDS	74	40
Even following strict infection control measure, it is likely that I would become infected with HIV, if I were working with AIDS pa-tients over a long period of time.	102	55.1
Professional resistance subscale		
I would rather work with a better class of people than AIDS pa-tients.	116	62.7
I would prefer to refer persons with AIDS to my professional col-leagues.	147	79.5
Given a choice, I would prefer not to work with AIDS patients.	73	39.5
I would consider changing my professional specialty/position if it became necessary to work with AIDS patients.	63	34.1
It is best to train a few specialists who would be responsible for the treatment	169	91.4
I don't want those at higher risk for AIDS such as IV drug users and homosexuals, as patients.	60	32.4
Negative emotional subscale		
I sometimes find it hard to be sympathetic to AIDS patients.	80	43.2
I would feel resentful of AIDS patients accounted for a significant part of my caseload	76	41.1
I often have tender, concerned feelings for people with AIDS	35	18.9
I feel angry about the risk of AIDS which homosexuals have imposed on the straight community.	60	32.4

Table 5. Mean score of HIV/AIDS knowledge, attitudes, and willingness to care

Variable	M ± SD	Range
Knowledge	14.89 ± 2.24	0 - 20
Attitudes*	22.18 ± 2.66	14 - 28
Willingness	5.45 ± 1.49	0 - 10

**The higher score indicated negative attitude*

to care between the education program BSN and ADN programs. The results are presented in Table 6. The mean knowledge score of BSN students was higher than ADN students. The difference was statistically significant (t = 5.61, p = 0.00). The mean attitude score of BSN students was similar to ADN students, and the difference was insignificant (t = -.44, p = 0.66). The mean willingness score of BSN students was similar to that of ADN students, and the difference was insignificant (t = 1.03, p = 0.30).

An independent sample t-test was conducted to compare males' and females' knowledge, attitudes, and willingness to care. The results are presented in Table 7. The mean knowledge score of male students was higher than female students. The difference was insignificant (t = 1.88, p = .62). Mean attitude score of male students was higher than female students, and the difference was insignificant (t = 1.84, p = 0.06). The mean willingness score of male students was similar to that of female students, and the difference was insignificant (t = 1.40, p = 0.16).

Table 6. Attitudes toward HIV/AIDS among participants

Variable	Male (n = 52)	Female (n = 133)	df	t	p
	M ± SD	M ± SD			
Knowledge	15.73 ± 2.02	14.01 ± 2.12	183	5.61	0.00
Attitudes*	22.09 ± 2.80	22.26 ± 2.50	183	- 0.439	0.66
Willingness to care	5.56 ± 1.44	5.33 ± 1.52	183	1.028	0.30

**The higher score indicated negative attitude*

Table 7. Descriptive statistics and t-test result between sex (male, female)

Variable	BSN (n = 95)	ADN (n = 90)	df	t	p
	M ± SD	M ± SD			
Knowledge	15.38 ± 2.39	14.70 ± 2.16	183	1.88	0.62
Attitudes*	22.75 ± 3.00	21.95 ± 2.48	183	1.84	0.06
Willingness to care	5.69 ± 1.89	5.35 ± 1.28	183	1.40	0.16

**The higher score indicated negative attitude*

Table 8. Relationship of knowledge, attitudes, and willingness to care

Variable	1	2	3
Knowledge	1.000		
Attitudes	- 0.003	1.000	
Willingness to care	0.057	- 0.338**	1.000
Mean	14.89	22.17	5.45
SD	2.24	2.65	1.48

***Correlation is significant at the 0.01 level (2-talied)*

Correlation between Participants' Knowledge, Attitudes, and Willingness to Care

The results of Persons' correlation statistics are presented in Table 8. There was a negative correlation between attitude and willingness to care, and the relationship was significant (r = -0.338, p = 0.00). However, the relationship between knowledge and attitudes, knowledge and willingness were insignificant.

DISCUSSION

HIV/AIDS-related Knowledge

In this study, most nursing students had only a basic understanding of HIV/AIDS (Table 5). This finding was similar to that of nursing students in India (Dharmalingam et al., 2015). Some studies found inconsistent results regarding nursing students' knowledge of HIV/AIDS (Abolfotouh et al., 2013). Between BSN and ADN students, BSN students had more overall knowledge than ADN students, and female and male students were comparable (Pickles et al., 2012). This is because BSN students had more time in the hospital for learning and practicum than ADN students, and those experiences may have led to them knowing about HIV/AIDS.

Perceptions of HIV/AIDS (also Difference Reference and Comparison)

The current study found that nursing students negatively viewed people living with HIV/AIDS. A similar study found that nursing students had a negative attitude toward people living with HIV/AIDS (Abolfotouh et al., 2013; Pickles et al., 2012). On the other hand, nursing students in Australia and Greece had a positive attitude toward people living with HIV/AIDS, according to studies conducted in those countries (Chan et al., 2012; Turhan et al., 2010). Even though BSN and ADN students had similar attitudes. Female students were more positive than male students, but the differences were insignificant (Tables 7 and 8).

Willingness to Care PLWHA

The willingness of nursing students to care for people with HIV/AIDS was greater than that of nursing students in Turkey (5.45 vs 4.30) (Kok et al., 2018). In this study, BSN students' willingness to care for people with HIV/AIDS was comparable to that of ADN students (5.56 vs 5.33). In addition, male students were equally willing to care for people with HIV/AIDS as female students (5.69 vs 5.35). However, the differences were insignificant (Tables 7 and 8). The study presented the same result with the previous study that conducted in Indonesia (Sukartini et al., 2021).

Relationship between Knowledge, Attitudes, and Willingness to Care

Nursing students face an occupational risk of HIV infection as a subset of health care professionals due to direct contact with blood and body fluids during clinical practice. According to the literature, students who received adequate education and knowledge about HIV/AIDS had more positive attitudes and were more willing to care for HIV/AIDS patients (Eriksson & Damm Grundin, 2010). As a result, nursing students must have accurate knowledge of HIV/AIDS and positive attitudes toward people living with HIV/AIDS to provide high-quality and effective care for PLWHA and protect themselves from becoming infected with HIV. Most students got their information from the teacher, books, and radio/TV (Ibrahim et al., 2022; Olii et al., 2021). However, only one-third of nursing students received HIV/AIDS information. Therefore, the nursing student should be expected to get most of their information from the nursing education curriculum rather than from radio or television

CONCLUSION

The current results revealed that nursing students had moderate knowledge about HIV/AIDS, and they had negative attitudes. Their negative attitudes may result from inaccurate knowledge about HIV/AIDS and fear of possibly becoming infected with HIV. There was a significant and negative correlation between the attitudes toward HIV/AIDS and the willingness to care for people with HIV/AIDS. This result emphasised that nursing students' desire to provide care will be increased when their positive attitude toward HIV/AIDS is increased. However, this study found an insignificant relationship between knowledge and attitudes toward HIV/AIDS and between ability and willingness to care for people with HIV/AIDS. This study can contribute to curriculum development work in nursing schools to promote practical education for nursing students to improve their knowledge and attitudes about HIV/AIDS and willingness to care for people with HIV/AIDS.

Declaration of Interest

None

Acknowledgment

Researchers would like to sincerely thank the University of Health Sciences Management team who gave the research permits and nursing students regarding the data collection and research process. In addition, researchers also would like to thank all parties who have supported them. It is suggested that further research could also be recommended to explore the effect of the background variable on pre-clinical nursing students' knowledge, attitudes, and willingness to care for PLWHA and repeat this study in other universities. Thus, pre-clinical nursing students from different schools might have different knowledge, attitudes, and desire to care for people with HIV/AIDS. Before nursing students go out to clinical practice, they should get accurate knowledge about HIV/AIDS. Explore the differences in knowledge, attitudes, and willingness to care between those who have been met with someone living with HIV/AIDS and who do not. The school must revise the nursing curriculum by adding subjects on infectious diseases, primarily HIV/AIDS, to nursing students before they practice at the hospital. The first year, semester 2 for the associate degree in nursing (ADN), Second year, semester 2 for bachelor of science in nursing (BSN).

Funding

None

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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REVIEW

The Journal of Palembang Nursing Studies
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Post-operative pain management with non-pharmacological interventions in patients undergoing breast cancer surgery: A systematic scoping review

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Volume 1(3), 127-133

http://dx.doi.org/10.55048/jpns.v1i3.24

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : March 29, 2022
Revised : April 21, 2022
Accepted : June 15, 2022
In Press : July 11, 2022
Published: September 11, 2022

ABSTRACT

Background: Breast cancer become the most incident of cancer among women, especially in Indonesia. Non-pharmacological therapy becomes the additional intervention to address the pain after breast cancer surgery.
Objective: The purpose of this study was to determine various non-pharmacological therapeutic interventions that can be performed in pain management in post-operative breast cancer patients.
Design: The design used in this literature review is a systematic scoping review.
Data Sources: This study used a scoping review system where after obtaining articles from three databases there are CINAHL, Pubmed, and Proquest.
Review Methods: The articles will be synthesized and assessed using the clinical appraisal tools of Joanna Briggs Institute (JBI). JBI version of Randomized controlled trial.
Results: From the total of 577 articles searched in the database, we obtained seven articles included in the study. The interventions to reduce pain include music therapy and progressive muscle relaxation therapy, acupuncture, foot reflexology, massage and meditation, autology, mindfulness-based cognitive therapy (MBCT), and neuromuscular taping on musculoskeletal (NMT). Apart from relieving pain various interventions that can be done can improve well-being, reduce stress, and reduce the length of treatment or treatment.
Conclusions: The result of this study can be an additional intervention that can be applied by nurses and other health care workers.

Keywords: management pain; non-pharmacological; breast cancer

INTRODUCTION

Breast cancer is a type of cancer that attacks the soft tissues of the breast. Breast cancer is formed from abnormal cell growth in the breast and the growth is double (Ataollahi, Sharifi, Paknahad, & Paknahad, 2015). The prevalence of

Nursing and Healthcare Practices

- *Non-pharmacological intervention can be sollution for nurses and healthcare to reduce pain among post-op breast cancer surgery.*
- *Music therapy, progressive muscle relaxation therapy, acupuncture, foot reflexology, massage and meditation, autology, MBCT, and NMT considering for pain management.*
- *Suggested for nurses and healthcare to implement non-pharmacological intervention as additional treatment.*

breast cancer is 58,256 cases or 16.7% of the total 348,809 cancer cases (Glare et al., 2014). Data from the Global Cancer Observatory 2018 shows that 2.1 million women experience breast cancer every year, and in 2018 there were 2,088,849 new cases, then there were 626,679 women who died from breast cancer, or about 15% of the total deaths who died from cancer (Alkabban & Ferguson, 2022).

Pain is a common symptom that debilitates the condition of breast cancer patients including postoperative pain (Glare et al., 2014). Untreated pain will have an impact on anxiety, depression, hopelessness, the desire to end life, and fear in patients and families (Andersen & Kehlet, 2011). One of the nursing interventions that can be done to reduce pain is pain management (Park et al., 2020). Pain management can be done in two ways, namely through pharmacology and non-pharmacology (Quinlan-Woodward et al., 2016).

One of the non-pharmacological interventions in reducing pain in breast cancer patients is brief pain management. Based on previous research, which carried out a pain management brief to reduce pain scores in breast cancer patients, it was found that there were differences in scores before and after the intervention (Richard, Harbeck, Wuerstlein, & Wilhelm, 2019). The effectiveness of pain management is shown by an increase in the Self Efficacy score and a decrease in pain distress and brain recording activity shows that after the intervention session the brain is more resistant to breast cancer pain-related stimuli (Chan, McCarthy, Devenish, Sullivan, & Chan, 2015).

Non-pharmacological interventions can be therapeutic in reducing and controlling pain. Even non-pharmacological interventions can't cause side effects if given properly. Based on these conditions, researchers are interested in reviewing the findings of methods, research, and systematic studies that are expected to provide an overview of non-pharmacological interventions that can be given and carried out to reduce postoperative pain in patients with breast cancer. The purpose of this study is to describe interventions that can be done to reduce postoperative pain in breast cancer patients.

METHODS

Design

A systematic scoping review was undertaken. It was a methodological technique that functions to explore new topics that are currently developing rapidly (Tricco et al., 2018). The framework used in this scoping review consists of 5 stages, namely the identification of research questions, identification of relevant study results, study selection, mapping data, compiling, summarizing, and reporting results (Bradbury-Jones et al., 2021).

Search methods

The databases used in this literature study consisted of CINAHL, PubMed, and ProQuest. The author collects articles on relevant topics after eliminating study results that do not meet the inclusion criteria. The research question is what are the non-pharmacological interventions to reduce postoperative pain in breast cancer patients? The article search process is carried out using several relevant keywords based on PICO. The keywords used in this study were "Breast cancer" OR "mastectomy" AND "Non-Pharmacology" AND "Intervention" OR "Management" OR "Treatment" AND "Post-operative Pain" OR "Acute pain"

Inclusion and exclusion criteria

This literature review uses PRISMA Extension for Scoping Reviews (PRISM-ScR), which serves to identify various topics that discuss non-pharmacological interventions to treat postoperative pain in breast cancer patients. Articles were selected based on inclusion and exclusion criteria. The inclusion criteria for this study were patients with breast

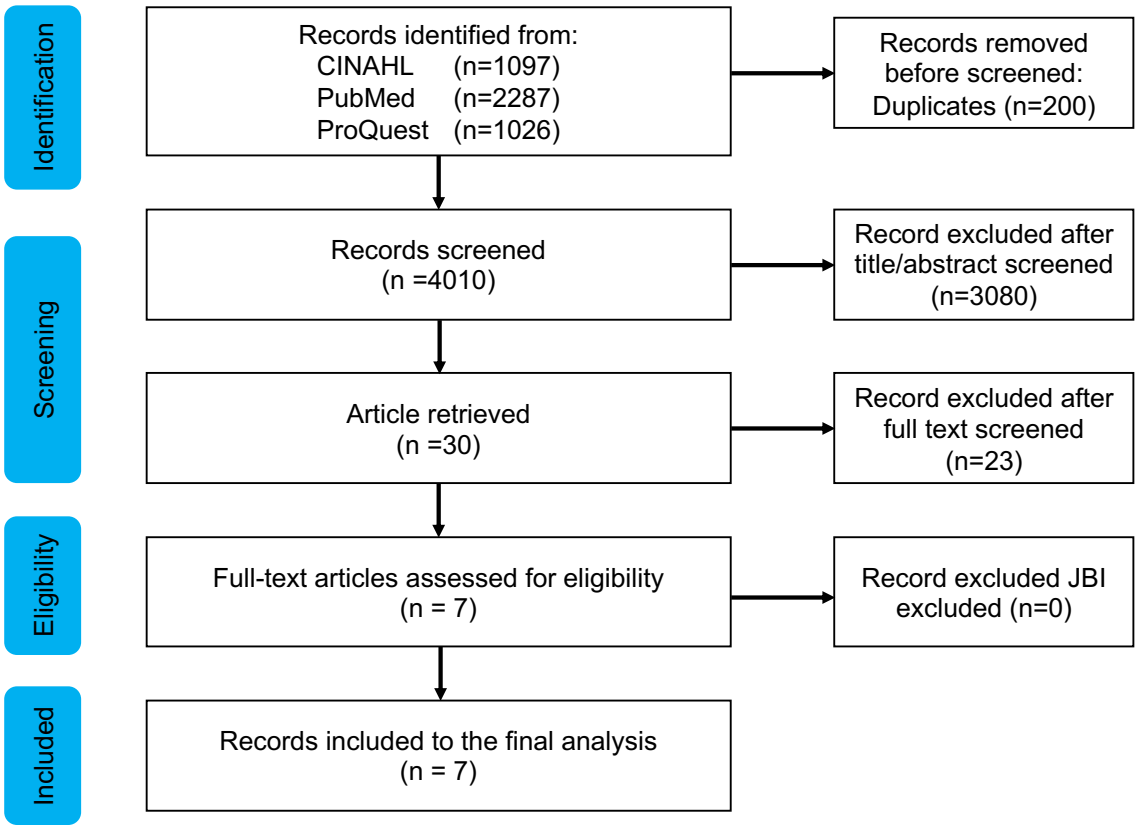

Figure 1. PRIMA flow chart

cancer, the article was a primary study, non-pharmacological interventions to relieve pain, using English, full text, and setting the last 10 years from 2013 to 2022.

Data extraction

The articles were extracted in tabular form including title, author, year, country, study design, population and sample, procedure, intervention, and important results.

Quality appraisal

Journals were analyzed using the JBI critical assessment method with good article standards if above 75% based on criteria and topic relevance Table 1.

Data analysis

The collected articles are then read in full and analyzed. Then after being analyzed, the intervention is classified based on similar interventions and then described.

RESULTS

The literature used consists of seven articles that discuss postoperative pain management interventions. The results of the extraction of the seven articles obtained were 577 populations. The various pain assessments given in this research article are the visual analogue scale (VAS) and the numeric rating scale (NRS). The research was conducted in the short term and long term. In the short term (12 hours, 48 hours, 3 days) and in the long term (6 weeks, 5 weeks and 8 weeks).

All the characteristic included in this study were patients with breast cancer as survivors, before surgery, after surgery, for both metastatic and non-metastatic cancer. The various interventions given in the research in this article are using music therapy and progressive muscle relaxation therapy to reduce pain, anxiety and length of stay; acupuncture to reduce pain, nausea, anxiety and treat conditions on the first day of surgery and postoperatively; foot reflexology to

Table 1. Synthesis and data extraction (n = 7)

Author	Country	Study Design	Sample (n)	Respondents	Intervention	Duration	Tools	Results	JBI
(Zhou et al., 2015)	China	RCT	38	Patients with breast cancer	Music therapy and progressive muscle relaxation training	48 hours	Visual Analogue Scale (VAS)	Music therapy and progressive muscle relaxation training can reduce depression, anxiety and length of stay in female breast cancer patients after radical mastectomy.	84.6% (11/13)
(Quinlan-Woodward et al., 2016)	Chicago	Pilot RCT	120	Patients underwent appendectomy	acupuncture	12 hours	Visual Analogue Scale (VAS)	Acupuncture can reduce pain, nausea, anxiety, and increase the ability to cope on the first postoperative day and pain on the second postoperative day after mastectomy surgery.	76.9% (10/13)
(Ozturk et al., 2018)	Turkey	RCT	120	Patients undergoing appendectomy	Reflexology	3 days	Visual Analogue Scale (VAS)	Foot reflexology is effective for improving well-being and reducing pain in female patients after abdominal hysterectomy.	92.36% (12/13)
(Dion et al., 2016)	USA	Pilot RCT	70	Patients underwent appendectomy	Fast breathing, therapeutic massage and gratitude meditation	3 days	Visual Analogue Scale (VAS)	Postoperative massage is beneficial in patients recovering from surgery. Meditation and massage done through practice to be effective. Meditation and massage should be in cancer patients after recovery from surgery can reduce stress and pain felt by patients.	76.9% (10/13)

Hikman, R., Rahayu, U., Pebrianti, S., Cahyani, E. M., Sari, C. P., & Afrilla, G. (2022). Post-operative pain management with non-pharmacological interventions in patients undergoing breast cancer surgery: A systematic scoping review. *The Journal of Palembang Nursing Studies. 1*(3): 127-133. http://dx.doi.org/10.55048/jpns.v1i3.24

Table 1. Synthesis and data extraction (n = 7) *(continue...)*

Author	Country	Study Design	Sample (n)	Respondents	Intervention	Duration	Tools	Results	JBI
(Conejo et al., 2018)	Spain	RCT	40	Patients with breast cancer	Aromatase Inhibitors and Neuromuscular Taping (NMT)	5 weeks	VAS	The results showed that after 5 weeks of NMT therapy, AI-treated patients had an improvement in their pre-existing musculoskeletal symptoms, especially the subjective sensation of pain.	76% (10/13)
(Johannsen et al., 2017)	Denmark	RCT	129	Patient with breast cancer	Mindfulness-based cognitive therapy (MBCT)	8 weeks	Numeric Rating Scale (NRS)	This cost-effective mindfulness-based cognitive therapy (MBCT) for pain reduction is pain-reducing as well as cost-effective with an 85% probability with the additional value of women achieving MCID set to zero remaining cost-effective with a 70% to 82% probability when a smaller effect is assumed and higher cost of MBCT	76% (10/13)
(Shenouda et al., 2022)	Amerika serikat	RCT	60	Patients with breast cancer	Tart cherry (TC)	6 weeks	Visual Analogue Scale (VAS)	Tart cherries can significantly increase AIA in nonmetastatic breast cancer patients.	76% (10/13)

Hikman, R., Rahayu, U., Pebrianti, S., Cahyani, E. M., Sari, C. P., & Afrilia, G. (2022). Post-operative pain management with non-pharmacological interventions in patients undergoing breast cancer surgery: A systematic scoping review. *The Journal of Palembang Nursing Studies. 1*(3): 127-133. http://dx.doi.org/10.55048/jpns.v1i3.24

improve well-being and pain relief; massage and massage to reduce stress and pain; tart cherry (TC) in aromatase inhibitor induced arthralgia (AIA) for reducing musculoskeletal pain mindfulness-based cognitive therapy (MBCT) for pain relief, treatment or medication; and neuromuscular taping on musculoskeletal (NMT) to reduce pain.

The number of articles that can be obtained from the search is 4410 articles. After duplication, there were 210 of the same articles and the remaining 4200 articles. After adjusting for the inclusion and exclusion criteria, there were 122 articles. Then after checking the title and abstract, 9 articles were obtained, and after reading the entire article, 8 articles were obtained which will be synthesized based on the author's name and year of publication, research design, country, sample, and intervention (Figure 1). Researchers conduct and classify the results of article reviews obtained. The result of the analysis is presented in the following table 1.

DISCUSSION

Therapy with Media

Therapy by listening to music performed within 48 hours after the radical mastectomy delivered by the researchers using an MP3 player. Music plays twice a day, once in the morning (6-8am) and once in the evening (9pm), Complementary therapy Progressive Muscle Relaxation (PMR) can significantly reduce pain scale in breast cancer patients, this therapy can be done periodically (Erfina et al., 2020).

There is a 15-minute digital video disc (DVD) about fast breathing. When the DVD is finished, the massage therapist instructs the participants in a gratitude meditation. Instructions are followed by individual massage for 20 minutes per session. The therapist signals the patient to do gratitude meditation in the middle of the 20 minutes. After completing the 3-day session, the patient was given a copy of his DVD. They were encouraged to continue practicing meditation until after discharge from the hospital. Yoga can also be a meditation practice that helps improve cognitive function and psychological health for cancer patients and cancer survivors (Z, Rachmawaty, & Syam, 2018).

As well, as with the NMT intervention, collecting clinical data from medical history, grip strength, algometric measurements, questionnaires, and VAS scales. Three interventions were carried out before the study was completed in 5 weeks. Tapping (tapping) can stimulate fibers in the A-beta nerve which is transmitted to the dorsal column nucleus and nerve impulses that can be transmitted to the lemniscus via collaterals connected to the periaqueductal gray area (PAG). PAG stimulation can produce enkephalin, in the form of opium in the body so that it can reduce pain (Safitri & Machmudah, 2021).

Therapy with Relaxation

Reflexology is given on the first, second and third postoperative days. Pain levels, anxiety levels were evaluated before surgery, immediately after surgery (30 minutes) and half an hour after surgery (minimum 60 minutes). This form of mindfulness is relaxation. Chang et al stated that the relaxation response activity resulted from a decrease in autonomic and psychological nervous activity, catecholamine and glucocorticoid levels, thereby lowering blood pressure, metabolism, and respiratory rate. So that it affects the autonomic nervous system which in turn can reduce pain intensity (Chang & Asher, 2021; Wilson et al., 2016).

Traditional Therapy

The acupuncture intervention was given twice during the postoperative hospital at least every 12 hours. In line with the other study, that acupuncture can significantly reduce cancer pain (Andriastuti, Mirasanti, & Nareswari, 2020). The heterogeneity in the results of the meta-analysis occurs due to the varying outcomes of acupuncture, so it is thought that (Safitri & Machmudah, 2021).

Aromatherapy

Using intervention tart cherry (TC) concentrate in aromatase inhibitor induced arthralgia (AIA) and syrup supplied in vials labeled A or B and dispensed by clinical trial staff conducted for a minimum of 4 weeks and a minimum of 6 weeks of additional pre-planned AIA therapy. According to previous research, there is an effect of combination therapy of progressive muscle relaxation and lemon aromatherapy on reducing the pain scale of cancer patients (Melastuti, Viyanti, & Suyanto, 2021).

Based on the seven intervention articles above, the use of interventions using DVD media watching videos combined with gratitude meditation can significantly reduce pain and

stress experienced by breast cancer sufferers during postoperative recovery (Melastuti et al., 2021; Tola, Chow, & Liang, 2021). It doesn't cost a lot, it doesn't need an expert such as an acupuncturist so that it can be intervened by a nurse, reducing the length of stay, and can be done until the patient returns home to finish his recovery period in the hospital because the video on DVD can be brought home to the patient and can do it again (Wilson et al., 2016; Zhou et al., 2015).

CONCLUSION

There are seven articles that discuss non-pharmacological interventions that can be used to relieve pain in postoperative breast cancer patients. The interventions that can be done are music therapy and progressive muscle relaxation therapy, acupuncture, foot reflexology, massage and meditation, autology, MBCT, and NMT. Apart from relieving pain. various interventions that can be done can improve well-being, reduce stress, reduce the length of treatment or treatment. The nursing implication in this study is that nurses provide nursing care by taking into account the basic human needs of patients, namely a sense of security and comfort by reducing pain through non-pharmacological interventions. The suggestion from this study is that further research is needed on the factors that cause postoperative pain in breast cancer patients in order to find the most effective non-pharmacological intervention according to the cause.

Declaration of Interest

None

Acknowledgment

The authors appreciated the University Padjadjaran, Bandung, West Java, Indonesia, and National Library of Indonesia for facilitating the database search to this review.

Funding

None

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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PERSPECTIVE

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Overview of post-partum mother adaptation: A healthy lifestyle needs

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ABSTRACT

Natural transition from labour to post-partum can cause lifestyle changes that impact the mother's physiological and psychological effects. Physical changes that include changes in diet, fluids, elimination, and obesity, as well as psychological changes such as anxiety, sleep disturbances, and depression, are common during this transitional period. For this reason, we use the Healthy Lifestyle approach to provide an overview and information regarding the mother's adaptation during the post-partum period. Healthy lifestyle emphasizes that lifestyle has an important impact on health in which there is a role for individuals and others. In this case, nurses have a vital role in identifying and conducting analysis to determine the proper lifestyle and make mothers adapt easily during the transitional period from childbirth to post-partum. The main point of the intervention is to improve the well-being of the mother and baby.

Keywords: postpartum; adaptation; lifestyle

Mothers experienced the period of pregnancy, childbirth, and post-partum (the perinatal period). During the perinatal period, the mother must be healthy (physical, psycho, social, economic, cultural, and spiritual) to remain productive throughout her life. The mother's role also changed during this period. This role will be disrupted if they get sick or face difficulties. The Maternal Mortality Rate (MMR) in developing countries in 2017 was 415 deaths per 100,000 live births (WHO, 2019). In Indonesia, in 2019 and 2020, there was an increase in the MMR from 4,221 to 4,627 (Kemenkes, 2021).

The cause of maternal death is complications that occur during the perinatal period. The main complications that cause 80% of maternal deaths are bleeding, infection, and preeclampsia (WHO, 2019). In Indonesia in 2020, the most causes of maternal death are bleeding, hypertension in pregnancy, and circulatory system disorders (Kemenkes, 2021). Post-partum haemorrhage is 61%, with 78% occurring in the critical period in the first 24-48 hours (Cabero-Roura & Rushwan, 2014). Post-partum complications in Indonesia were 11.4%, including birth canal bleeding, discharge from the birth canal, swelling of the hands and face, headaches, convulsions, fever for more than two days, swollen breasts, and hypertension (Riskesdas, 2018).

Volume 1(3), 134-138

http://dx.doi.org/10.55048/jpns.v1i3.59

e-ISSN 2827-8100
p-ISSN 2827-8496

Received : July 6, 2022
Revision : August 20, 2022
Accepted : September 10, 2022
Published : September 11, 2022

Rosnani, R., & Mediarti, D. (2022). Overview of post-partum mother adaptation: A healthy lifestyle needs. *The Journal of Palembang Nursing Studies*. *1*(3),134-138. http://dx.doi.org/10.55048/jpns.v1i3.59

Nursing and Healthcare Practices

- *Mother and children well-being should be a concern for nurses and healhcare teams.*
- *Understanding mothers need will provide information for nurses to arrage proper nursing intervention care.*
- *Nurse should have well-known the concept of healthy lifestyle.*

Post-partum mothers' physical problems can cause psychological disorders (Shahar et al., 2015). The bodily complaints of post-partum mothers vary widely, depending on the mother's ability to adapt to her physical and psychological changes. The mother's burden also influences her adaptation in carrying out her role. Mothers who experience fatigue, lack of time, feelings of stress, and low household income, and those with three children experience obstacles to a healthy lifestyle (Stevens et al., 2021). Other studies have shown that healthy lifestyle scores are associated with lower anxiety and depression in Iranian adults (Ebrahimpour-Koujan et al., 2022).

Previous study in United Kingdom mentioned that online exploring the lifestyle of post-partum mothers found that 72.3% of mothers gained weight (average 4.61 – 5.56 kg) during post-partum. The mother experienced a decrease in Basal Metabolic Index (BMI) to 46.7%. Only 2.2% of mothers followed the guidelines for physical activity, and 73.7% did not fulfil the recommended five times a day of fruit and vegetables. They consumed a high-calorie diet and missed a meal with significantly higher post-partum than before pregnancy (Stevens et al., 2021). Another study found in the Middle East region that cultural expectations cause mothers to have lower physical activity and exercise (Hung & Lu, 2014; Schulenkorf & Siefken, 2019).

This requires the role of health workers to help mothers carry out new healthy patterns post-partum. Supervision is carried out on mothers starting from the early post-partum period. Nurses need to consider maternal sociodemographic characteristics, pre-pregnancy health status, and nutritional knowledge and focus on those who experience more barriers to healthy eating (Stevens et al., 2021).

Healthy Lifestyle of Post-partum Needs

Healthy lifestyle is a generalized set of health-related behavioral patterns that people choose based on the possibilities that are accessible to them given their life circumstances. The actions that result from these decisions may have either favorable or unfavorable effects on a person's health, but they nonetheless form a general pattern of healthy habits that make up a lifestyle (Cockerham, 2013; Cockerham, 2005). In the postpartum settings, we tried to emerge some indicators about healthy lifestyle needs among post-partum mother namely healthy diet, healthy body weight, healthy physical activity, and healthy psychological management (Gila-Díaz et al., 2021; Moseholm et al., 2022; Teh et al., 2021) (Figure 1).

Diet quality was determined by extracting dietary patterns. Two diet patterns: healthy (fruit, vegetables, fish, and whole grains) and unhealthy (sweets, refined grains, high energy drinks, and fast food). In the relationship between dietary patterns and symptoms of depression, it was found that the results of an unhealthy diet were associated with an increase in depressive symptoms at 32 weeks of gestation (Baskin et al., 2017). Food ratings were collected using the Willett format 106-item semi-quantitative food frequency questionnaire. Food intake FFQ (Food Question) contains information on the frequency of consumption of food or side dishes and the portion sizes used. The daily value for each item is calculated based on the composition of the meal, the specific portion size, and the average reported frequency. Nutrient intake is calculated by adding up the nutritional content of all foods and dishes.

Healthy body weight to measure post-partum mother is BMI (underweights: <18 Kg/m2; Normal BMI: 18.5-22.9 Kg/m2; Overweight: 23.0-24.9 Kg/m2; Obesity: ≥25 Kg/m2) (Pawalia et al., 2015). Previous research has stated that BMI is used as an indicator to see the health status of post-partum mothers (Lacoursiere et al., 2006; Wojcicki, 2011). Mostly in the post-partum period, mothers can experience excess weight due to improper eating patterns (Faria-Schützer et al., 2018). In addition, it is also due to a lack of knowledge that during the breastfeeding phase, mothers must consume

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more food (quantity preference). Not only that, but post-partum mothers with depression also show significant weight loss and have an impact on maternal and child health (Herring et al., 2008). This condition needs a concern for health workers, especially nurses in providing maternity nursing care.

Maternal physical activity was assessed by providing a physical activity rating focused on current general activity. Physical activity categories were classified into four categories: active (>3 hours/week), moderately active (1–3 hours/week), moderately inactive (<1 hour/week), and inactive (no physical activity). The amount of mother's activity was assessed based on the type and intensity of their physical activity.

Psychological distress was assessed using the General Health Questionnaire (GHQ). The GHQ-12 is a short, simple, and easy-to-fill instrument for measuring primary and current mental health that asks mothers if they have recently experienced specific symptoms of psychological distress. Each item consists of a four-point scale (less than usual, no more than usual, more than usual, or more than usual) (Stevens et al., 2021). The coping mechanism that the mother will take against the psychological pressure she is experiencing is through a nursing care approach involving the family (Rosnani, 2017; Wulandari et al., 2022)

Factors that can affect the healthy lifestyle of post-partum mothers are patriarchal culture and economic and cultural burdens. The results showed that post-partum mothers took care of themselves by following the traditions that existed in the family (Rosnani, 2017). In a patriarchal society, women are second-class citizens in the domestic (reproductive) area and men in the public (productive) area. This condition seems to be the nature of the reality of the pattern of relations between men and women. Therefore, when a woman works or carries out activities in the public sphere to earn money, she is still obliged to do household work (household responsibilities are still a burden on women). This is the reason why mothers make fulfilling their duties and responsibilities a priority compared to maintaining healthy lifestyle.

Economic factors are one of the factors that encourage women to work. Family needs that the husband does not fulfil will, directly and indirectly, impact the wife to join in working to earn a living for her family. Many wives are also the breadwinner of the family. The results of the qualitative research show that many mothers gain weight during pregnancy and try to lose weight independently. They reported being highly motivated to achieve a healthy lifestyle during pregnancy. Mothers said that improving diet is easier to do and maintain than exercise. To obtain healthy lifestyle changes in mothers, service support is needed. Forms of support include motivation to change behaviour, social support, barriers to change (intrinsic, extrinsic, and clinically related), lifestyle, and post-partum needs (Goldstein et al., 2021).

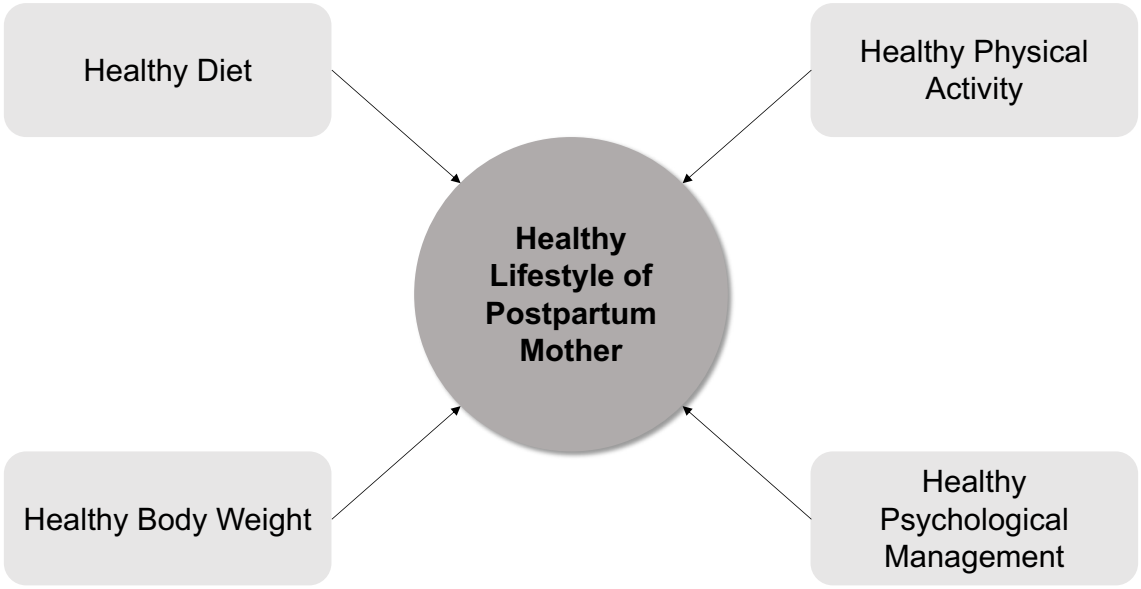

Figure 1. Healthy lifestyle needs of post-partum mothers

Declaration of Interest

None

Acknowledgment

None

Funding

None

Data Availability

Not applicable

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Volume 1 Number 3: September 2022

SUBJECT INDEX

Volume 1 Number 3: September 2022

ISSN 2827-8496

Published by
Palembang MediRose Publisher
Indonesia

PUBLISHER