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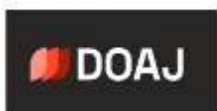Content
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Relationship between Stress Levels and Sleep Quality of Breast Cancer Patients Undergoing Chemotherapy at Dharmais Cancer Hospital, DKI Jakarta Province in 2022

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ABSTRACT

Breast cancer ranks first for women worldwide, with an incidence rate of 40 per 100,000 women with a death rate of 21.5% per year. It is estimated that around 15% of all female deaths worldwide are caused by breast cancer. Breast cancer causes physical and psychological problems simultaneously related to the disease or its treatment. One of the most common disturbances in breast cancer patients is stress. Stressors that breast cancer patients constantly face can impact the disruption of the hormone melatonin and increase adrenaline and cortisol hormones, resulting in disturbed sleep quality of cancer patients. Research objective: To determine the relationship between stress levels and sleep quality in breast cancer patients undergoing chemotherapy. Research method: Correlational quantitative research with a cross-sectional approach. The total sample is 156 breast cancer patients taken by purposive sampling technique. Results: The results of the univariate analysis showed that most breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital experienced severe stress (51.9%), and most had poor sleep quality (60.9%). The results of the bivariate analysis showed that there was a significant relationship between stress levels and sleep quality in breast cancer patients undergoing chemotherapy at the Dharmais Cancer Hospital in 2022 (p-value: 0.000). Conclusions and Suggestions: It is hoped that the hospital will carry out stress management in cancer patients by providing health education or with relaxation techniques. So, it is hoped that this can improve the sleep quality of cancer patients

INTRODUCTION

Breast cancer incidence ranks as the number one cancer in women globally, with an incidence rate of 40 per 100,000 women and 30.5% new cases found, with 21.5% deaths per year (Smith *et al.*, 2018). According to Isfahani, Hossieni Zare and Shamsaii (2020), breast cancer affects 2.1 million women annually and is the leading cause of cancer death in women. In 2018, it was estimated that about 15% of all female deaths worldwide were caused by breast cancer. Based on GLOBOCAN (Global Burden Cancer) data in 2018, the incidence of breast cancer in the world is around 12.7 million cases, with a death rate of 7.6 million, of which 56% of cases and 64% of deaths occur in developing countries. As many as 24% of all breast cancers are diagnosed in the Asia-Pacific region, with enormous numbers in China (46%), Japan (14%), and Indonesia (12%). Southeast Asia ranked fourth in these cases. Indonesia ranks third in Southeast Asia with 19,750 breast cancer cases (Kocarnik *et al.*, 2022). The Indonesian Ministry of Health in 2020 revealed that every year there is an increase in breast cancer cases in Indonesia. In 2018 the RISKESDAS results recorded that the incidence of breast cancer was 42.1 per 100,000 population (Nararta, Juliantara and Amelia, 2022). Data from the Hospital Information System

(SIRS) noted that breast cancer ranks first among diseases that cause inpatient and outpatient care in all hospitals in Indonesia, which is 28.7% (Dimyati and Haryatmi, 2014).

According to data from Dharmais Cancer Hospital, the top number of new cases is breast cancer patients; in 2019, there were 1,065 patients, in 2020 it increased to 1,116 patients; in 2021, it increased to 1,146 patients and in 2022, it increased to 1,152 patients, with the most types of cancer being Ca Mamae (Breast Cancer), Ca Cervix (Uterine neck Cancer), Ca Paru (Lung Cancer), Ca Thyroid (Thyroid Cancer) and the least amount is Central Nervous System Cancer.

The main cancer treatments include surgery, chemotherapy, radiation, and hormone therapy. All these treatments have side effects for cancer patients. Chemotherapy is one of the primary therapies in cancer patients given to patients with systemic cancer (Leukemia, myeloma, lymphoma) and cancer with clinical or subclinical metastases. According to the Indonesian Association of Oncology Surgeons (PABOI), chemotherapy is cancer management by administering anti-cancer drugs (cytostatic) to kill cancer cells. Chemotherapy therapy can cause side effects that can be detrimental to several physiological functions of the patient. Some side effects of chemotherapy therapy include bone marrow suppression, gastrointestinal symptoms such as nausea, vomiting, weight loss, changes in taste, constipation, diarrhea, and other symptoms (Gautama, 2022).

Lestari, Budiyarti and Ilmi, (2020) in her journal states that cancer can cause physical and psychological problems simultaneously related to the disease or its treatment. One of the most common disorders in cancer patients is stress. Stuart (2021) explains that stress is a worry or anxiety that is unclear and uncertain about an object, to which everyone will respond with different reactions to the same stressor.

Disease conditions, fatigue or the result of ongoing treatment can cause stressors in cancer patients. Septilia (2018) mentioned that chemotherapy is one of the treatments that can trigger stress in cancer patients. Some factors that cause it are the length of time or the treatment process, the effects of chemotherapy, and the patient's environment. In their journal, Septilia found that the stress level in breast cancer patients varies. His research found that 23.3% of cancer patients experienced moderate stress, 50% experienced severe stress, and 23.3% experienced very severe stress.

Stressors that cancer patients constantly face can have an impact on hormonal melatonin chaos and increased adrenaline and cortisol hormones and can result in disturbed sleep quality for cancer patients. If stress is unable to be controlled and overcome, it will have a negative impact; in cancer patients, the negative impact of stress cognitively includes difficulty concentrating; emotional impacts include difficulty motivating oneself, feelings of anxiety, sadness, and frustration and physiological impacts include decreased endurance and disturbed sleep patterns (Amelia *et al.*, 2023).

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Preliminary studies conducted at Dharmais Cancer Hospital by researchers on 10 breast cancer patients undergoing chemotherapy obtained data that all of them (100%) claimed to be anxious and stressed with the conditions they are currently facing, then as many as 9 patients (90%) claimed to have difficulty sleeping due to thinking about the condition of the disease and the chemotherapy they had to undergo.

Khairani, Keban and Afrianty (2019) in his journal found that all patients undergoing chemotherapy all experienced fatigue, one of which was caused by sleep disorders. This results in a decrease in the quality of life of cancer patients. Alifiyanti, Hermayanti and Setyorini, (2017) in his journal stated that of 83 cancer patients undergoing chemotherapy, 69 people (83.1%) had poor sleep quality.

From the background description and several studies on stress and sleep quality in cancer patients, researchers are interested in researching "The relationship between stress levels and sleep quality of breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital in 2022".

METHOD

This research design is a correlational quantitative study with a cross-sectional approach. The study population was all breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital Jakarta, averaging 220 patients per month. Based on the calculation of the Slovin formula with an error degree of 5%, a sample size of 156 respondents was obtained. The sampling technique uses purposive sampling, which is done with specific considerations. Alternatively, based on certain criteria that follow the research topic (Notoatmodjo, 2010b).

The instruments in this study were the DASS 21 stress level questionnaire used to identify the stress level of breast cancer patients and the Pittsburgh Sleep Quality Index (PSQI) sleep quality questionnaire. Data analysis conducted in this study was univariate analysis and bivariate analysis.

RESULT

Univariate Analysis Results

Table 1. Frequency Distribution of Characteristics (Age and Education) in Breast Cancer Patients Undergoing Chemotherapy

Age	frequency (n)	Percentage (%)
≥ 45 year	102	65,4
< 45 year	54	34,6
Education level		
Low	96	61,5
High	60	38,5
Total	156	100

Based on Table 1, it can be seen that out of 156 breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital, the majority of 102 patients were aged ≥ 45 years (65.4%), and the majority or 96 patients had low education (61.5%).

Table 2 Frequency Distribution of Stress Levels of Breast Cancer Patients Undergoing Chemotherapy

Stress Level	Number (n)	Percentage (%)
Severe	81	51,9
Moderate	58	37,2
Mild	17	10,9
Total	156	100

Based on Table 2, it can be seen that out of 156 breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital, the majority, or 81 patients experienced severe stress (51.9%).

Table 3 Frequency Distribution of Sleep Quality of Breast Cancer Patients Who Underwent Chemotherapy

Sleep Quality	Number (n)	Percentage (%)
Bad	95	60,9
Good	61	39,1
Total	156	100

Based on Table 3, it can be seen that out of 156 breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital, most or as many as 95 patients have poor sleep quality (60.9%).

Bivariate Analysis Results

Table 4 Relationship between Stress Level and Sleep Quality in Breast Cancer Patients Who Underwent Chemotherapy

Stress Level	Sleep Quality				P Value
	Bad		Good		
	n	%	n	%	
Severe	61	75,3	20	24,7	
Moderate	34	58,6	24	41,4	0,000
Mild	0	0,0	17	100,0	
Total	95	60,9	61	39,1	

Table 4 shows that out of 81 cancer patients with severe stress, 61 patients have poor sleep quality (75.3%). Of the 58 breast cancer patients with moderate stress, 34 had poor sleep quality. While of the 17 breast cancer patients with mild stress, there were no patients with poor sleep quality (0.0%).

The statistical test results obtained p value = 0.000, at α = 0.05 (p < α). It can be concluded that there is a significant relationship between stress levels and sleep quality in breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital in 2022.

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DISCUSSION

Univariate Analysis Results

A. Overview of Characteristics (Age and Education) in Breast Cancer Patients Undergoing ChemotherapyThe results showed that breast cancer patients undergoing hormonal therapy at Dharmais Cancer Hospital were mostly aged $\geq$ 45 years (65.4%). The results of this study follow the theory of Washbrook (2006), which states that age is one of the risk factors associated with the incidence of breast cancer. Breast cancer is relatively rare in women under the age of 40 but increases significantly at the age of over 40 years.

The risk of breast cancer increases as age affects the body's metabolism and the process of cell formation. The body's ability to control and repair gene damage decreases as we age. In addition, the age of 40 years and above is the premenopausal period. The hormone progesterone cannot be produced sufficiently, so the estrogen hormone becomes excess, which will trigger cancer (Trabert *et al.*, 2020).

Critchley *et al.*, (2020) also explained that women over the age of 40, especially those who are still experiencing the reproductive period, every month will experience menstruation, but not ovulation, so the progesterone hormone produced is not enough to counteract the estrogen hormone, which is a trigger for breast cancer.

The results showed that breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital had a majority of low education, as much as 61.5%. Notoatmodjo (2010a) states that lifestyle can be influenced by the level of education, which is indirectly related to motivation and attitudes toward maintaining health. Higher education makes it easier for someone to receive information and understand a concept to make the proper analysis that will positively impact health perceptions and behavior.

Shahin, Kennedy and Stupans, (2019) also states that education level is related to therapy compliance. This result happened because the education level directly affects knowledge and creates good compliance behavior. A person with higher education better understands the information provided and responds to that information.

The results of this study are more or less the same as those of Bidari and Virawati, (2023), which found that most breast cancer patients studied had a high education of 47.8%, then those with high school education were 44.8%. Those with low education were 7.4%. Heena *et al.*, (2019), in her journal, stated that the higher the education, the more awareness of the importance of screening in breast cancer patients. This result shows that the level of education greatly influences a person's awareness of their disease.

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Heena *et al.*, (2019) states that education shows the level of intelligence associated with a person's thinking power. Education is a determining factor in gaining knowledge. Education is a process of self-development of one's personality that is carried out consciously and responsibly to improve knowledge, skills and attitudes, and values to adapt to their environment.

B. Overview of Stress Levels in Breast Cancer Patients Undergoing Chemotherapy Stress levels in this study affect breast cancer patients' emotions, thought processes, and physical conditions related to breast cancer disease and chemotherapy treatment (Kozier *et al.*, 2015). The results showed that 51.9% of patients experienced severe stress, 37.2% experienced moderate stress, and 10.9% experienced mild stress. The results illustrate that the stress level in breast cancer patients undergoing chemotherapy varies, but the majority experience severe and moderate stress.

The results of this study are bythe theory of Hafsah (2022), which states that chemotherapy often causes psychological disorders for patients who undergo it, such as anxiety, depression and stress. Side effects from chemotherapy treatments, such as hair loss, uncomplicated infection, dry and itchy skin, nausea, abdominal pain, decreased fertility and sexual appetite, often trigger this psychological disorder. According to the Indonesian Association of Oncology Surgeons (PABOI), chemotherapy is cancer management by administering anti-cancer drugs (cytostatics) to kill cancer cells. Chemotherapy therapy can cause side effects that can be detrimental to several physiological functions of the patient. Some side effects of chemotherapy therapy include bone marrow suppression, gastrointestinal symptoms such as nausea, vomiting, weight loss, changes in taste, constipation, diarrhea, and other symptoms (Gautama, 2022).

Lestari, *et al.,* (2020) in her journal states that cancer can cause physical and psychological problems simultaneously related to the disease or its treatment. One of the most common disorders in cancer patients is stress. Miaskowski *et al.*, (2020) states that disease conditions, fatigue or the result of ongoing treatment can cause stressors in cancer patients. Cancer patients with chronic diseases such as cancer face a slight chance of life and prolonged physical and psychological suffering, so rejection, anxiety, stress and depression often occur.

Septilia (2018) mentioned that chemotherapy is one of the treatments that can trigger stress in cancer patients. Some factors causing it are the length of time or the treatment process, the effects of chemotherapy, and the patient's environment. Stress levels vary for breast cancer patients. His research found that 23.3% of cancer patients experienced moderate stress, 50% experienced severe stress, and 23.3% experienced severe stress.

Amelia *et al.*, (2023) states that if stress cannot be controlled and overcome, it will have a negative impact. In cancer patients, the negative impact of stress cognitively includes difficulty concentrating;

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emotional impacts include difficulty motivating oneself, the emergence of feelings of anxiety, sadness, and frustration and physiological impacts include decreased endurance and disturbed sleep patterns. Excessive stress in chemotherapy patients can also affect patient motivation in carrying out chemotherapy.

Stress in cancer patients undergoing chemotherapy needs attention and nursing intervention because this situation can impact therapy compliance and the quality of life of cancer patients. According to the researcher, mental or psychological preparation is essential when cancer patients undergo chemotherapy because mentally unprepared or unstable patients can trigger stress. One of the things that can be done to reduce stress levels in cancer patients undergoing chemotherapy is to provide health education about the benefits of chemotherapy measures. If cancer patients know that the benefits are more significant than the impact, it can reduce the stress levels of cancer patients who will undergo chemotherapy.

C. Overview of Sleep Quality of Breast Cancer Patients Undergoing ChemotherapySleep quality is a subjective description that states the ability to maintain sleep and the absence of disturbances during sleep objectively (Alifiyanti *et al.,* 2017). The results showed that most breast cancer patients undergoing chemotherapy had poor sleep quality (60.9%).

This study's results align with Alifiyanti *et al.,* (2017), who found that almost all breast cancer patients undergoing chemotherapy had poor sleep quality (83.1%). Mystakidou *et al.*, (2015) stated that sleep disturbance is a complication often found in more than 70% of patients with advanced cancer, either due to medical disorders or drugs used in treatment. Sleep problems in cancer patients are associated with mood changes, decreased tolerance to pain and decreased quality of life. Sleep is a critical need that must be fulfilled sufficiently, namely, 7-9 hours per day. If cancer patients have sleep disorders, it will affect their cancer cure.

Potter and Perry (2015) state that in ordinary people, prolonged sleep disturbances will result in changes in the biological sleep cycle, decreased endurance and work performance, irritability, depression, lack of concentration, and fatigue, and can affect the safety of oneself or others. Khairani *et al.,* 2019) in his journal stated that patients undergoing chemotherapy all experience fatigue, one of which is caused by sleep disorders. This results in a decrease in the quality of life of cancer patients.

Sun *et al.*, (2021) explains that sleep disorders can be present independently or medical or psychiatric disorders, such as chronic pain and depression. Insomnia is the most common sleep disorder and can be a persistent problem for patients with severe or life-threatening illnesses such as cancer. Chronic sleep disorders are heavy for patients, and the impact can affect physical, psychological, occupational, and economic well-being.

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Potter and Perry (2015) said that physiological functions will also be disturbed when there is sleep disturbance, such as decreased appetite, weight loss, irritability and difficulty in making decisions. Insufficient sleep quantity causes changes in natural and cellular immune function. Kwekkeboom *et al.*, (2018) also stated that sleep deprivation occurs due to difficulty initiating sleep or being unable to maintain sleep can interfere with the body's normal functions, which, if not treated immediately, can cause a decrease in neurological abilities, thus affecting the patient's quality of life, immune system, cognitive abilities, and ability to perform daily activities.

Bivariate Analysis Results

A. Relationship between Stress Level and Sleep Quality in Breast Cancer Patients Undergoing Chemotherapy

The results of the analysis of the relationship between stress levels and sleep quality in breast cancer patients showed that the percentage of poor sleep quality at the stress level, namely, in severe stress by 75.3%, in moderate stress by 58.6%, and in mild stress there were no patients with poor sleep quality. These results show that the higher the stress level, the greater the percentage of poor sleep quality. In other words, the higher the stress level of breast cancer patients, the worse their sleep quality. The statistical test results obtained p value = 0.000, so statistically, it can be concluded that there is a significant relationship between stress levels and sleep quality in breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital in 2022.

This study's results follow the theory of Potter and Perry (2015), which states that stress can cause sleep disturbances. Stressors that cancer patients constantly face can have an impact on hormonal melatonin chaos and increased adrenaline and cortisol hormones and can result in disturbed sleep quality in cancer patients. Suppose the stress in cancer patients cannot be controlled and overcome. In that case, it will have a negative impact, one of which is a physiological impact, namely decreased endurance and disturbed sleep patterns in cancer patients.

According to researchers, the side effects of chemotherapy for breast cancer patients cause their stress. Most breast cancer patients are women who consider their appearance and body image very important so when undergoing chemotherapy and experiencing side effects that damage their body image it can cause depression. Therefore, adaptation to side effects needs to be considered for breast cancer patients undergoing chemotherapy, and patients must have a coping strategy to overcome psychological pressures due to the side effects of chemotherapy.

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CONCLUSION

Based on the results of research on 156 breast cancer patients at Dharmais Cancer Hospital about the relationship between stress levels and the quality of sleep of breast cancer patients, researchers can draw that there is a significant relationship between stress levels and sleep quality in breast cancer patients undergoing chemotherapy at Dharmais Cancer Hospital in 2022.

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The Severity of Primary Dysmenorrhea among Middle Adolescent Students at Public Senior High School 5 Surakarta: An Overview

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A B S T R A C T

Dysmenorrhea refers to the experience of pain resulting from uterine cramps during menstruation. Typically, this pain arises at the start of the menstrual cycle and persists for several hours or even days until it reaches its highest intensity. The prevalence of primary dysmenorrhea is highest among individuals aged 15 to 25 during their late teenage years and early adulthood. This research provides an overview of the severity of primary dysmenorrhea among mid-adolescent students. This paper is an analytical observational research design with a cross-sectional approach. The target population comprised 578 female students aged fifteen to eighteen enrolled in Public Senior High School 5 Surakarta. The sample was 139 respondents by simple random sampling technique. Data analysis used the mean score method, and the research instrument utilized the NRS (Numeric Rating Scale) questionnaire. The results demonstrated the average age of the respondents was 16 years old. In addition, menarche, menstrual duration, and menstrual cycle were within the normal range, with menarche occurring at 12 years old, a menstrual duration of 6 days, and a menstrual cycle of 28 days. Furthermore, the mean dysmenorrhea pain scale in respondents was 4.89. In summary, most female students at Public Senior High School 5 Surakarta experienced primary dysmenorrhea but were still able to manage the pain during their daily activities.

INTRODUCTION

There are various disorders during menstruation, one of which is dysmenorrhea. Dysmenorrhea occurs when menstruation begins and lasts for several hours to several days until it reaches its peak. Solid and regular contractions of the uterine walls, as well as the presence of high levels of prostaglandin hormones, are the cause of dysmenorrhea (Larasati, T. A. and Alatas, 2016; Ferries-Rowe, Corey and Archer, 2020; Kho and Shields, 2020; McKenna and Fogleman, 2021).

According to the World Health Organization (WHO), in 2013, as stated in Syafriani's (2021) research, dysmenorrhea occurred in approximately 1,769,425 women worldwide, with about 10-15% experiencing severe dysmenorrhea. In Indonesia, the prevalence of dysmenorrhea reached 60-70%, with a primary dysmenorrhea incidence rate of 54.89% and a secondary dysmenorrhea rate of 45.11% (Wahyuni & Zulfahmi, 2021). Furthermore, dysmenorrhea incidence among high school-age adolescents in Surakarta was 67% (Noviandari and Winarni, 2015).

The peak occurrence of dysmenorrhea happens during late adolescence to early adulthood, with an age range of 15 to 25 years (Sahin *et al.*, 2014; De Sanctis *et al.*, 2016; Tsamara, Raharjo and Putri, 2020).

Most women who experience extremely severe premenstrual pain find it difficult to accept their condition. They struggle to control their emotions when experiencing premenstrual symptoms (Parazzini *et al.*, 1994; Sahin *et al.*, 2014; Angelhoff and Grundström, 2023). Emotional factors are associated with increased estrogen and prostaglandin hormones (Noviyanti *et al.*, 2021; Chopyak *et al.*, 2022; Roy and Mondal, 2023). During stress, estrogen and prostaglandin hormones can intensify uterine contractions, ultimately leading to menstrual pain (Sari, Nurdin and Defrin, 2015; Vannuccini *et al.*, 2022; Ruqaiyah *et al.*, 2023).

Every teenager has varying sensitivity to pain, ranging from mild pain that does not interfere with activities to severe pain that significantly disrupts their daily activities and requires medical examination. A novelty in this study is highlighting dysmenorrhea pain scores through the numeric rating scale. This approach describes the severity of dysmenorrhea experienced by adolescents in the middle phase, ages fifteen to eighteen. Therefore, this research provides an overview of the severity of primary dysmenorrhea among mid-adolescent students at Public Senior High School 5 Surakarta.

METHOD

This paper was an analytical observational research design with a cross-sectional approach. The target population comprised 578 female students aged fifteen to eighteen enrolled in Public Senior High School 5 Surakarta. The sample was 139 respondents by simple random sampling technique. The authors collected data from April to June 2023. Data analysis used the mean score method, and the research instrument utilized the NRS (Numeric Rating Scale) questionnaire. Figure 1 illustrates the Numeric Rating Scale, and Table 1 presents the severity of primary dysmenorrhea. The ethics committee approved this research with the ethical code 73/UNS27.06.11/KEP/EC/2023.

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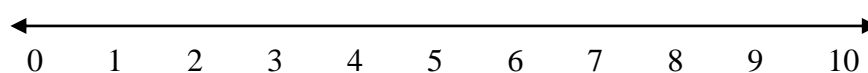
Figure 1. Numeric Rating Scale
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Table 1. The severity of primary dysmenorrhea is based on the numeric rating scale.

Dysmenorrhea pain Scale	Description
0	No pain
1 – 3	1. Almost unfelt pain (very mild), 2. Unpleasant pain is similar to being pinched. 3. The pain is still tolerable. Similar to being pricked or lightly punched in the face.
4 – 6	4. Distressing pain (pain felt deeply), like a bee sting or a toothache. 5. Intense, deep, and profoundly distressing pain. It is comparable to a muscle sprain or strain. 6. Intensifying pain (stabbing so solid and deep pain) that disrupts communication.
7 – 10	7. Extremely intense pain (felt so strongly). There may be a lack of self-care and minimal communication. 8. Pain that is so intense or genuinely excruciating. It prevents self-care and communication. 9. Pain is highly intense, agonizing, unbearable, and cannot be tolerated. 10. Intense pain leads to loss of consciousness and inability to express it.

RESULT

Table 2 shows the average age of the respondents is 16 years old. In addition, menarche, menstrual duration, and menstrual cycle are within the normal range, with menarche occurring at 12 years old, a menstrual duration of 6 days, and a menstrual cycle of 28 days.

Table 2. The characteristics of the respondents by age, menarche, menstrual duration, and menstrual cycle

The characteristics of the respondents	Mean	Minimum	Maximum	Standard deviation
Age (years old)	16.1	15	18	0.96
Menarche (years old)	12.12	10	14	0.871
Menstrual duration (days)	6.35	3	7	1.1
Menstrual cycle (days)	28.41	28	35	3.12

Table 3 indicates the mean dysmenorrhea pain scale in respondents of 4.89, indicating pain perceived intensely, resembling sensations like a bee sting or toothache. It may also be a robust, profound, and notably distressing pain like a muscle sprain or strain. The escalating pain with such acute and intense qualities can interfere with communication.

Table 3. The severity of primary dysmenorrhea.

Variable	Mean	Minimum	Maximum	Standard deviation
Dysmenorrhea pain Scale	4.89	0	10	2.24

DISCUSSION

In this study, respondents' average age of menarche was 12 years old. It indicated that most of them were within the range of regular menarche age. According to previous research, most females experienced menarche between 10 and 14 years old (Ravi *et al.*, 2020; Aslan and Ünüvar, 2021; Nuraida *et al.*, 2023). Moreover, the respondents in this paper had an average menstrual duration of 6 days, implying that most encountered a regular length of menstruation. Generally, females experience an average menstrual duration of 3 to 7 days (Hatmanti *et al.*, 2022; Habiba and Benagiano, 2023). Furthermore, the respondents' average menstrual cycle in this research was 28 days, indicating that most had a routine and appropriate menstrual cycle. Typically, a regular menstrual cycle for females is within the range of 28 to 35 days (Bull *et al.*, 2019; Patricio and Sergio, 2019; Itriyeva, 2022; Salamin *et al.*, 2022). In conclusion, this study's results indicated that most respondents experienced regular menstrual duration and cycle and normal menarche.

This study measured the severity of primary dysmenorrhea in female students at Public Senior High School 5 Surakarta using the Numeric Rating Scale (NRS) questionnaire with a scale from 0 to 10. The data analysis showed that the average dysmenorrhea pain scale in respondents was 4.89. It indicated that most female students at Public Senior High School 5 Surakarta experienced primary dysmenorrhea but were still able to manage the pain during their daily activities. Some of the contributing factors to increased dysmenorrhea pain are menarche, menstrual cycle, and menstrual duration. A study conducted in 2022 revealed that there was a correlation between menarche and primary dysmenorrhea. Early menarche could increase the risk of experiencing severe primary dysmenorrhea (Duman, Yıldırım and

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Vural, 2022). The menstrual duration and cycle are also the risk factors of primary dysmenorrhea. The longer the menstrual duration and cycle, the higher the intensity of uterine muscle contractions. Further, it leads to the incidence of primary dysmenorrhea (Duman, Yıldırım and Vural, 2022).

CONCLUSION

In summary, most female students at Public Senior High School 5 Surakarta experienced primary dysmenorrhea but were still able to manage the pain during their daily activities. Middle adolescents could enhance their awareness and knowledge about managing dysmenorrhea by reading information in books and on the internet. They also could communicate with medical professionals to have a better understanding of how to cope with primary dysmenorrhea. Furthermore, healthcare professionals must provide health education about reproductive disorders, particularly dysmenorrhea, as a preventive measure and to control reproductive issues in women. In addition, further researchers should expand on predisposing factors of dysmenorrhea in middle adolescents.

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Analysis of Related Factors with The Performance of the Midwife in the Handling of Neonatoric Asphycia in the Area of the Health Service of Magelang Regency

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ARTICLE INFORMATION

ABSTRACT

The infant mortality rate in the Magelang Regency Health Office area will increase in 2020-2022 from 6.34/1000 KH to 7.38/1000 KH with details of the cause of death due to asphyxia neonatorum 27%. In handling neonatal asphyxia, the role of village midwives is needed to help reduce infant mortality. This study aims to determine the factors that influence the performance of midwives in the service of neonatal asphyxia in the Health Office of Magelang Regency. The type of research used is observational which is analytic in nature with a cross sectional approach. Data collection was carried out by interviews using a structured questionnaire that had been tested for validity and reliability. Sixty-five respondents were selected purposively with inclusion and exclusion criteria. The analysis used is the Chi Square test and multiple logistic regression. The results of the bivariate analysis showed that knowledge (p = 0.001), attitude (p = 0.0001), motivation (p = 0.0001), perceptions of supervision (p = 0.0001) were related to the performance of village midwives. Multivariate analysis showed that there was a joint relationship between knowledge (Exp.(B) 7.723) and motivation (Exp.(B) 8.324) and the performance of village midwives in handling neonatal asphyxia. The Health Service needs to provide technical guidance on a regular basis in the management of neonatal asphyxia and increase motivation by giving awards to midwives who work well in the service of neonatal asphyxia.

INTRODUCTION

Results of the 2007 Indonesian Demographic and Health Survey (IDHS) IMR 34/1,000 live births (Indonesia, 2019). Based on the Health Profile of Central Java Province, the IMR in 2008 was 9.17 per 1000 live births, while in 2009 it was 10.37 per 1000 live births with the biggest cause of death being LBW 31%, congenital abnormalities 9% and neonatal asphyxia 6%, disease others 54% (Dinas Kesehatan Provinsi Jawa Tengah, 2019). According to *the World Health Organization* (2006), every year 120 million babies are born in the world, approximately 3.6 million out of 120 million babies born experience asphyxia neonatorum and nearly 1 million of these babies die, overall, 4 million babies are stillborn, and 4 million others died within 30 days (late neonatal). Every 5 minutes, one neonate dies (Moshiro, Mdoe and Perlman, 2019). The causes of death were low birth weight (29%), asphyxia (27%), other diseases (44%) (Dinas Kesehatan Provinsi Jawa Tengah, 2019).

The most common causes of neonatal death are newborn asphyxia, *prematurity/* low birth weight babies and infections. Neonatal asphyxia is an emergency for newborns in the form of respiratory depression that continues to cause various complications (Moshiro, Mdoe and Perlman, 2019). Therefore, asphyxia

requires immediate intervention and resuscitation to minimize mortality and morbidity (Murniati, Taherong and Syatirah, 2021).

Treatment for asphyxia neonatorum is basically resuscitation, which is an effort to open the airway, try to get air (oxygen) into the baby's body by means of respiratory resuscitation and cardiac resuscitation until the baby can breathe spontaneously and his heart beats spontaneously regularly (Portiarabella, Wardhana and Pratiningrum, 2021). The type of action taken depends on the degree of severity of asphyxia suffered, because the basis for asphyxia is impaired gas exchange (Kumalasari and Rusella, 2022). One of the factors that influence the quality of handling asphyxia neonatorum in the public of center (*puskesmas*) area is the service provided by midwives, especially in this case the village midwife (Handriani, 2020). The good performance of village midwives in improving the management of newborn asphyxia will have an impact on reducing infant mortality with asphyxia, especially in reducing IMR, so that babies and children can grow optimally (Razak, 2021).

Based on a preliminary study at the public of center (*puskesmas)* in the Magelang District Health Office, it turned out that the management of neonatal asphyxia was not carried out completely, such as the equipment was not complete and met the requirements, did not cut the umbilical cord quickly when the newborn was not breathing or was gasping for breath and was not ready (Florencia *et al.*, 2022). family to refer the baby with the mother and not ventilate at intervals of every 30 seconds if the baby does not breathe spontaneously after 2-3 minutes of resuscitation (Dg Taha, Herini and Ismail, 2017).

Based on interviews with village midwives, it was revealed that there was no updated knowledge about asphyxia management so that it had an impact on the level of knowledge and skills that were felt to be lacking, besides that midwives revealed that there were still midwives who had not attended asphyxia management training, policies implemented by the Health Office Magelang Regency, out of 444 midwives in public of center (*puskesmas)* who have received neonatal asphyxia training, there are 209 midwives (47.07%), a coordination meeting is held once a month between the District Health Office and the coordinating midwife. existing procedures (Marwiyah, 2016).

The success of services for handling neonatal asphyxia is very dependent on the performance of the village midwife. Based on some of the problems above, the authors are interested in researching the analysis of factors related to the performance of village midwives in services for handling asphyxia neonatorum in the Magelang District Health Office area.

METHOD

The type of research used is observational which is analytic in nature with a *cross sectional approach*. Data collection was carried out by interviews using a structured questionnaire that had been tested for

validity and reliability. The population is all village midwives in Magelang Regency. Sixty-five respondents were selected purposively *with* inclusion and exclusion criteria. The analysis used is the *Chi Square test* and multiple logistic regression. Collecting data in this study using an instrument, namely a questionnaire containing a list of questions about factors related to midwives which include knowledge, motivation, resource support and perceptions of supervision.

RESULT

Description of Respondent Characteristics.

The research data used in this research is primary data obtained using a list of questions (questionnaires) that have been distributed directly. The average age of the respondents was 35 years with a standard deviation of 6.97, the youngest being 23 years and the oldest being 54 years.

Table 1. Distribution of Education Level Characteristics

Characteristics of Respondents	Amount	Percentage
Level of education		
1. DIII	63	96.9%
2. DIV	2	3.1%

Most of the respondents' education level was Diploma III in Midwifery (96.9%).

Bivariate Analysis.

Relationship Analysis.

To find out the relationship between the independent variables: knowledge, attitude, motivation, resource support, perception of supervision and the dependent variable: the performance of the village midwife, *Chi-Square* analysis was used because both the independent variables and the dependent variables were not normally distributed.

Relationship between Knowledge and Performance of Village Midwives

Table 2. Cross-tabulation of knowledge and performance of village midwives

Knowledge	Village Midwife Performance					
	Not enough		Good		Total	
	f	%	f	%	f	%
Not enough	34	72,3	13	27,7	47	100
Good	5	27,7	13	72,3	18	100
Amount	39	100	26	100	65	100

$X^2 = 8.993$, *p- value = 0.001*

Table 2 shows that the performance of village midwives with poor knowledge (72.3%) is greater than the performance of village midwives with good knowledge (27.7%). From the results of the analysis with the *Chi Square Test (continuity correction)* $X^2 = 8.993$ with *p-value = 0.001* (p <0.05) means that it can be concluded that there is a relationship between knowledge variables and midwives' performance variables in handling neonatal asphyxia.

Correlation between Attitudes and Performance of Village Midwives in Handling Asphyxia Neonatorum.

Table 3. Cross-tabulation of midwives' attitudes and performance of village midwives

Attitude	Village Midwife Performance					
	Not enough		Good		Total	
	F	%	f	%	f	%
Not enough	29	80.6	7	19,4	36	100
Good	10	34.5	19	65.5	29	100
Amount	39	100	26	100	65	100

X^2 =12.351, *p- value* = 0.0001

Table 3 shows that the performance of village midwives with less attitude (80.6%) is greater than the performance of midwives with less good attitude (34.5%). From the results of the analysis with the *Chi Square Test (continuity correction)* X^2 = 12.351 with *p-value* = 0.0001 (p <0.05) means that it can be concluded that there is a relationship between attitude variables and the performance of midwives in the implementation of neonatal asphyxia management.

Correlation between Motivation and Performance of Village Midwives in Handling Asphyxia Neonatorum.

Table 4. Cross-tabulation of midwives' motivation and performance of village midwives

Motivation	Village Midwife Performance					
	Not enough		Good		Total	
	F	%	f	%	f	%
Not enough	27	81.8	6	18,2	33	100
Good	12	37.5	20	62.5	32	100
Amount	39	100	26	100	65	100

X^2 =11.513, *p- value* = 0.0001

Table 4 shows that the performance of village midwives with less motivation (81.8%) is greater than the performance of midwives with less motivation (37.5%). From the results of the analysis with the *Chi Square Test (continuity correction)* X^2 = 11.513 with *p-value* = 0.0001 (p <0.05) means that it can be concluded that there is a relationship between motivational variables and the performance of midwives in the implementation of neonatal asphyxia management.

Relationship between Resource Support (funds, facilities, infrastructure) and Village Midwife Performance in Handling Asphyxia Neonatorum.

Table 5. Cross Tabulation of Support Resources (funds, facilities, infrastructure) with Midwife Performance

Resource Support	Village Midwife Performance					
	Not enough		Good		Total	
	f	%	f	%	f	%
Not enough	8	61.5	5	38.5	13	100
Good	31	59,6	21	40,4	52	100
Amount	39	100	26	100	65	100

X^2 =0.0001, *p- value* = 0.899

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Table 5 shows that the performance of village midwives who lack the support of resources (61.5%) is greater than the performance of village midwives who lack the support of good resources (59.6%). From the results of the analysis with the *Chi Square Test (continuity correction)* $X^2 = 0.0001$ with *p-value =* 0.899 (p > 0.05) means that it can be concluded that there is no relationship between the variable resource support and the performance of midwives in the implementation of neonatal asphyxia management.

Relationship between Perception of Supervision Variables and Performance of Village Midwives in Health.

Table 6. Cross-tabulation of Perceptions of Supervision and Performance of Village Midwives in Health in Magelang Regency

Supervision perception	Village Midwife Performance					
	Not enough		Good		Total	
	F	%	f	%	f	%
Not enough	26	83.9	5	16,1	31	100
Good	13	38,2	21	61.8	34	100
Amount	39	100	26	100	65	100

$X^2 = 12.234$, *p- value = 0.0001*

Table 6. shows that the performance of midwives with poor perceptions of less supervision (83.9%) is greater than the performance of midwives with poor perceptions of good supervision (38.2%). On the other hand, the performance of good midwives with perceptions of poor supervision (16.1%) is smaller than the performance of good midwives with good perceptions of good supervision (61.8%). This shows a tendency that respondents' perceptions of supervision affect the performance of respondents in the implementation of health services. From the results of the analysis with the *Chi Square Test (continuity correction)* $X^2 = 12.234$ with *p-value = 0.0001* (p <0.05) means that it can be concluded that there is a relationship between the variable perception of supervision and the performance of midwives in implementing health services in general and handling neonatal asphyxia in particular.

Recapitulation of Bivariate Relations of Independent Variables and Dependent Variables.

Table 7. Recapitulation of Bivariate Statistical Analysis Results Variable Relations Independent with Dependent Variable t (Performance of Village Midwife) with *Chi Test Square* at α 5%

No.	Free Variables	*Continuity Correction (X^2)*	Significance	Information
1.	Knowledge	8,993	0.001	There is a relationship
2.	Attitude	12,351	0.0001	There is a relationship
3.	Motivation	11,513	0.0001	There is a relationship
4.	Resource support	0.0001	0.899	No connection
5.	Supervision perception	12,234	0.0001	There is a relationship

Analysis of the Relationship between the Independent Variable and the Dependent Variable (Midwife Performance) Based on Logistic Regression Analysis. Summary of Bivariate Logistic Regression Analysis between independent variables and dependent variables with p ≤ 0.05.

Table 8. Recapitulation of Bivariate Analysis Between Knowledge, Attitudes, Motivation, Perceptions of Supervision with the Performance of Midwives.

Variable	B	SE	*Wald*	Df	*p-values*	*Exp* . B	Exp. B Lower	Upper
Knowledge	1917	.619	9,588	1	002	6,800	2021	22,881
Attitude	2063	.574	12,901	1	.000	7,871	2,553	24,267
Motivation	2015	.581	12046	1	001	7,500	2,404	23,401
Supervision perception	2.128	.602	12,477	1	.000	8,400	2,579	27,361

Table 8 shows that the results of the bivariate analysis of the variables of knowledge, attitudes, motivation, perceptions of supervision on the performance of midwives all have a *p-value <0.25,* so that all variables can be continued into multivariate analysis.

Logistic Regression Multivariate Analysis

Table 9. Results of Multivariate Statistical Analysis of Relationships with Variables Free with Dependent Variables with Multiple Logistic Regression Test at α 5%

Variable	B	SE	Wald	Df	*p-values*	Exp. B	Exp. B Lower	Upper
Knowledge	2044	.715	8.173	1	.004	7,723	1902	31,364
Motivation	2.119	.653	10,543	1	001	8,324	2.316	29,916
Constant	-6,320	1,589	15,822	1	.000	002		

Table 9. shows that only knowledge and motivation variables have a *p-value <0.05,* namely knowledge with *a p-value of* 0.004, Exp.(B) value of 7.723 and motivation *p-value of* 0.001, Exp.(B) value of 8.324. In conclusion, there is a relationship between knowledge and motivation with the performance of midwives in services for treating neonatal asphyxia. Based on the value of Exp (B), which has the greatest relationship is the variable motivation with Exp (B) 8.324 which is then followed by the knowledge variable with Exp (B) 7.723.

DISCUSSION

Knowledge level

The level of knowledge about asphyxia neonatorum in respondents is less (72.3%) compared to respondents who have a good level of knowledge (27.7%). In this study, most of the respondents were 96.9% having D III Midwifery education and respondents who had attended APN training 38.5% / management of neonatal asphyxia 61.5%. This does not support the knowledge of the respondents so that most of the respondents have less knowledge (Rustan, 2022).

Knowledge is needed in completing a job so that the respondent's knowledge about neonatal asphyxia (definition and causes) and its handling must be mastered if you want to complete the job properly. Knowledge is strongly influenced by the intensity of attention and perception of objects. However, it turns out that there are still respondents who have deficiencies in mastering several topics of knowledge

that support the implementation of the management of neonatal asphyxia. Thus it is necessary to increase the knowledge of midwives in handling neonatal asphyxia (Murniati, Taherong and Syatirah, 2021).

Attitude

Most of the respondents had a less attitude (55.4%) towards the Asphyxia Neonatorum Handling Services while there were those who had a good attitude (44.6%). This can be supported by the theory that attitude is an evaluative statement of a person towards a certain object, certain person or certain event, attitude is also a reflection of one's feelings towards something. Meanwhile, a person's attitude in responding to problems is influenced by a person's personality (Fattuoni *et al.*, 2015). Attitude is a mental readiness, which is learned and organized through experience, and has a certain influence on the way a person responds to other people. objects and situations related to them (Rustan, 2022).

Motivation

Respondents who had less motivation were 50.8% while those who had good motivation for the implementation of neonatal asphyxia management were 49.2%. There are quite a number of respondents who have less motivation, so this requires a deeper study, considering that the success of a program is largely determined by the motivation of the program actors themselves (Nufra and Ananda, 2021).

Motivation has a fundamental meaning as an initiative to drive one's behaviour optimally, this is because motivation is an internal, psychological and human mental condition such as various desires, hopes, needs, drives and preferences that encourage individuals to work to achieve satisfaction or reduce imbalances (Nufra and Ananda, 2021).

Support

Respondents who think that the support of good resources is 80% more than the number of respondents who think that the support of resources is lacking, namely 20%. This is supported by the results of observations with a checklist of 65 respondents who have infrastructure facilities of more than 70% and meet the standards that have been set even though most of the midwives buy themselves not help from institutions (Alfitri, Bakhtiar and Ngo, 2021).

Supervision

Most of the respondents had a good perception, namely 52.3% of the supervision carried out by superiors, but there were still 47.7% of respondents who had the perception that supervisory supervision in general was still lacking. A person's perception will greatly influence his behavior (Ye, Wang and Sun, 2022). Experience affects one's perception. This should make the attention of the Health Office to further improve routine supervision activities (Rustan, 2022).

Performance

In terms of performance, most of the respondents (60.0%) had poor performance, but there were still respondents (40.0%) who had good performance in handling neonatal asphyxia. The coordinating midwife must increase the knowledge and motivation of the midwife so that the handling of neonatal asphyxia can be more optimal (Arta Mutiara, Fitri Apriyanti, 2020).

Performance appraisal is the most trusted tool for coordinating midwives in controlling human resources and productivity (Kartika Sari, Sincihu and Ruddy, 2018). The performance appraisal process can be carried out effectively in directing employee behavior in order to produce nursing services in high quality and volume (Admasu *et al.*, 2022). Coordinating midwives can use the performance appraisal process to set the direction of work in selecting, training, career planning guidance, and awarding competent midwives. Performance is a combination of ability and effort to produce what is done (Walas *et al.*, 2020).

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the average age of the respondents is 38 years with a standard deviation of 6.97, the youngest is 23 years and the oldest is 54 years. Most of the respondents (96.9%) had the last Diploma III in Midwifery. Most of the respondents (72.3%) had insufficient knowledge about the handling of neonatal asphyxia, 55.4% had a lack of attitude, 50.8% had less motivation. The support of resources (funds, facilities, infrastructure) is mostly good (80%), 52.3% of respondents have a good perception of supervision. Most of the respondents (60%) had poor performance in handling neonatal asphyxia. There is a positive relationship between knowledge, attitudes, motivation, perceptions of supervision and the performance of midwives in handling neonatal asphyxia.

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Hermani Triredjeki - Analysis of Related Factors with The Performance of the Midwife in the Handling of Neonatoric Asphycia in the Area of the Health Service of Magelang Regency

Risk Factors Affecting the Incidence of Diarrhea in Children Under Five Years Old in the Working Area of Tarus Public Health Center, Kupang District, in 2022

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ABSTRACT

Diarrhea is a disorder of defecation characterized by defecation more than 3 times a day with the consistency of liquid stool, may be accompanied by blood. Until September 2022 Puskesmas Tarus had the highest incidence of diarrhea compared to other health centers with 126 cases of diarrhea in toddlers. The purpose of this study was to determine the risk factors associated with the incidence of diarrheal disease in children under five years of age in the working area of Puskesmas Tarus, Kupang Regency. This study was an analytic observational study using a case control study research design. This study was conducted in the working area of Puskesmas Tarus Kupang Regency in February-March 2023. The results showed a significant relationship between maternal knowledge ($p=0.000$; OR=3,974), maternal attitude ($p=0.000$; OR=4,594), hand washing behavior ($p=0.000$; OR=4,421), exclusive breastfeeding history ($p=0.001$; OR=3,632) and maternal education ($p=0.023$; OR=2,400) with the incidence of diarrhea in toddlers. There is no significant relationship between maternal employment status and the incidence of diarrhea in toddlers ($p=0,114$; OR=0,489). Conclusion, that the variables of maternal knowledge, maternal attitude. hand washing behavior, exclusive breastfeeding history and maternal education have a significant relationship with the incidence of diarrhea in toddlers, and the variable maternal employment status has no significant relationship with the incidence of diarrhea in toddlers in the working area of Puskesmas Tarus, Kupang Regency.

INTRODUCTION

Diarrhea means an increase in the frequency of bowel movements or a decrease in density in the form of stools (Suryaningsih, 2020). Children under five are prone to diarrhea or what is also called vomiting, vomiting or vomiting leakage. A child/toddler is said to have diarrhea when he/she defecates more than usual every day, has loose stools, soft to liquid stools, and is sometimes accompanied by vomiting. The vomiting may be short-lived, but diarrhea may continue for up to ten days (Wina Lestari *et al.*, 2021). In Indonesia, diarrhea is an endemic disease and a potential extraordinary event that is often associated with death.

Tarus health centers is one of the health centers in Kupang Regency with a working area covering 8 villages. Based on data from the Kupang Regency Health Office in 2019 Tarus health centers was recorded as having the highest number of diarrhea cases with 239 cases of diarrhea in children under five, then in 2020 it decreased to 188 cases of diarrhea in children under five and in 2021 it continued to decrease to 132 cases. Until September 2022, Tarus health centers had the highest incidence of diarrhea compared to other health centers with 126 cases of diarrhea in children under five (Kupang District Health Office, 2022). The incidence of diarrhea can be caused by direct factors and indirect factors.

Maternal factors also play a role in the incidence of diarrhea in children under five. The mother is the closest person to the toddler. Direct factors that can cause diarrhea are maternal knowledge, maternal attitudes, exclusive breastfeeding history, hand washing behavior, and hygiene sanitation (Hatta, 2020). Based on the problems listed in the background above, the researcher is interested in examining the Risk Factors Affecting the Incidence of Diarrheal Disease in Toddlers in the Tarus health centers Kupang Regency. It is hoped that this research will be used as information and insight about diarrhea in toddlers, so that mothers can prevent the incidence of diarrhea in their children and as input for the health center to make health programs and policies, especially in efforts to overcome diarrheal disease.

METHOD

This study was an analytical observational study using a case control research design. This study was conductedChange to a pa in the Tarus health centers working area of Kupang Regency in 2023. The research time was conducted in February-March 2023. This population is divided into a case population and a control population, where based on data at the Tarus Health Center, there are 126 toddlers who experience diarrhea.4,297 under-fives. The sample in this study was divided into two groups of cases an control with a ratio of 1:1. Based on the calculation of the sample size using the Lemeshow formula, 65 case samples and 65 control samples were obtained, so the number of samples needed was 130 samples. Data collection techniques were carried out by analyzing descriptively and analytically. Univariate analysis was used to describe the characteristics of mothers of toddlers and toddlers then displayed in the form of a frequency, distribution table. Analytic analysis used bivariate analysis, namely, to test the relationship between maternal knowledge, maternal attitudes, hand washing behavior, exclusive breastfeeding history, maternal education, maternal employment status with the incidence of diarrhea using the Chi Square test.

RESULT

1. Analysis univariate

Table 1. Frequency Distribution Based on Age of Toddlers in The Tarus health centers Working Area, Kupang Regency

Age of Toddler	Incidence of Diarrhea				Total	
	Case		Control			
	n	%	n	%	n	%
12-23 months	14	21,5	14	21,5	28	21,5
24-35 months	29	44,6	29	44,6	58	44,6
36-47 months	19	29,2	19	29,2	38	29,2
48-59 months	3	4,6	3	4,6	6	4,6
Total	65	100	65	100	130	100

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Table 1 shows that of the 130 toddlers, the most in the age group of 23-35 months as many as 58 toddlers (44.6%) consisting of 29 toddlers in the case group and 29 toddlers in the control group. The lowest distribution of respondents was in the age group of 48-59 months with a total of 6 toddlers (4.6%) consisting of 3 toddlers in the case group and 3 toddlers in the control group.

Table 2 Frequency Distribution Based on Gender of Toddlers in The Tarus Health Centers Working Area, Kupang Regency

| Gender of Toodler | Incidence of Diarrhea | | | | Total | |
| | Case | | Control | | | |
	n	%	n	%	N	%
Male	37	56,9	32	49,2	69	53,1
Female	28	43,1	33	50,8	61	46,9
Total	65	100	65	100	130	100

Based on Table 2 shows that of the 130 toddlers, 69 toddlers (53.1%) were male consisting of 37 toddlers in the case group (56.9%) and 32 toddlers in the control group (49.2%) and as many as 61 toddlers (46.9%) were female consisting of 28 toddlers in the case group (43.1%) and 33 toddlers in the control group (50.8%).

Table 3 Frequency Distribution Based on Age of Mother and Toddler in Working Area of Tarus Health Centers, Kupang Regency

| Mother's Age | Incidence of Diarrhea | | | | Total | |
| | Case | | Control | | | |
	n	%	n	%	n	%
25-29 years old	13	20,0	10	15,4	23	17,7
30-34 years old	30	46,2	27	41,5	57	43,8
35-39 years old	22	33,8	28	43,1	50	38,5
Total	65	100	65	100	130	100

Based on table 3 shows that the age group of mothers of toddlers is mostly found in age 30-34 years (43.8%) consisting of 30 mothers in the case group (46.2%) and 27 mothers in the control group (41.5%) while the lowest age group was in the age group 25-29 years as many as 23 mothers (17.7%) consisting of 13 mothers in the case group (20.0%) and 10 mothers in the control group (15.4%).

Table 4 Frequency Distribution Based on the Location of Residence of Mothers of Toddlers in the Working Area of Tarus Health Centers, Kupang Regency

| Village | Incidence of Diarrhea | | | | Total | |
| | Case | | Control | | | |
	n	%	n	%	n	%
Tarus	25	38,5	25	38,5	50	38,5
Tanah Merah	10	15,4	10	15,4	20	15,4
Penfui	8	12,3	8	12,3	16	12,3
Noelbaki	8	12,3	8	12,3	16	12,3
Oelnasi	6	9,2	6	9,2	12	9,2
Oelpuah	2	3,1	2	3,1	4	3,1
Mata air	2	3,1	2	3,1	4	3,1
Oebelo	4	6,2	4	6,2	8	6,2
Total	65	100	65	100	130	100

Table 4 shows that the location of residence of mothers of toddlers is mostly found in Tarus with a total of 50 mothers (38.5%) consisting of 25 mothers in the case group and 25 mothers in the control group, while the location of residence of mothers of toddlers is the lowest in Oelpuah and Mata Air villages with 4 mothers each.

Table 5 Frequency Distribution based on the Last education of Mothers of Toddlers in the Tarus Health Centers Working Area, Kupang Regency

Education Last Mom	Incidence of Diarrhea				Total	
	Case		Control			
	n	%	n	%	n	%
SD	11	16,9	4	0,2	15	11,5
SMP	31	47,7	18	27,7	49	37,7
SMA	18	27,7	32	49,2	50	38,5
Perguruan Tinggi	5	7,7	11	16,9	16	12,3
Total	65	100	65	100	130	100

Based on table 5, it shows that the last education of mothers of toddlers is mostly high school. 50 mothers (38.5%) consisting of 18 mothers in the case group (27.7%) and 32 mothers in the control group (49.2%) and the lowest number of mothers with tertiary education were 16 mothers (12.3%) consisting of 5 mothers in the case group (7.7%) and 11 mothers in the control group (16.9%).

Table 6 Frequency Distribution based on Type of Work of Mothers in the Tarus Health Centers Working Area, Kupang Regency

Type of Work Mom	Incidence of Diarrhea				Total	
	Case		Control			
	N	%	n	%	n	%
Housewife/not working	52	80,0	43	66,2	95	73,1
Farmer	8	12,3	13	20,0	21	16,2
Governments Employees	0	0	2	3,1	2	1,5
Private Employee	0	0	1	1,5	1	0,8
Enterpreneurship	5	7,7	6	9,2	11	8,5
Total	65	100	65	100	130	100

Table 6 shows that mothers of toddlers with the most jobs are housewives. With a total of 95 mothers (73.1%) consisting of 52 mothers in the case group (80.0%) and 43 mothers in the control group (66.2%), while the least type of maternal employment is private employees with a total of 1 mother in the control group (0.8%).

2. *Analysis Bivariate*

Table 7 Relationship Between Maternal Knowledge and The Incidence of Diarrhea in Toddler

Mother's knowledge	Incidence of Diarrhea				Total		OR 95% CI	p value
	Case		Control					
	n	%	n	%	n	%		
Not good	38	58,5	17	26,2	55	42,3	3,974 (1,894-8,339)	0,000
Good	27	41,5	48	73,8	75	57,7		
Total	65	100	65	100	130	100		

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Based on table 7 of 65 toddlers who had diarrhea, as many as 38 mothers of toddlers (58.5%) had poor knowledge and as many as 27 mothers of toddlers (41.5%) had good knowledge. While of the 65 toddlers who did not experience diarrhea there were 17 mothers of toddlers (26.2%) who had poor knowledge and as many as 48 mothers of toddlers (73.8%) had good knowledge. The results of the analysis of the relationship between maternal knowledge with the incidence of diarrhea in toddlers with chi square test obtained p value of 0.00 (p value <0.05) means that there is a significant relationship between maternal knowledge with the incidence of diarrhea in toddlers in the Tarus Health Center working area. Based on the results of the analysis obtained Odds Ratio value of 3.97 (OR value> 1) means that toddlers who have mothers with poor knowledge have a risk of diarrhea 3.97 times greater than toddlers with mothers who have good knowledge. The Confidence Interval value (1.894 - 8.339) passes the number one, which means that there is a significant relationship between maternal knowledge and the incidence of diarrhea in toddlers in the Tarus Health centers working area of Kupang Regency.

Table 8 Relationship between maternal attitude and the incidence of diarrhea in toddlers

Mom's attitude	Incidence of Diarrhea				Total		OR 95% CI	p value
	Case		control					
	n	%	n	%	n	%		
Negative	39	60,0	16	24,6	55	42,3		
Positive	26	40,0	49	75,4	75	57,7	4,594 (2,167-9,739)	0,000
Total	65	100	65	100	130	100		

Based on table 8 of 65 toddlers who had diarrhea, 39 mothers of toddlers (60.0%) As many as 26 mothers of toddlers (40.0%) had a positive attitude, while of the 65 toddlers who did not experience diarrhea, as many as 16 mothers of toddlers (24.6%) had a negative attitude and as many as 49 mothers of toddlers (75.4%) had a positive attitude. The results of the analysis of the relationship between maternal attitudes with the incidence of diarrhea in toddlers with chi square test obtained p value of 0.00 (p value <0.05) means that there is a significant relationship between maternal attitudes with the incidence of diarrhea in toddlers in the Tarus Health Center working area. Based on this analysis, the Odds Ratio value of 4.59 (OR>1) means that toddlers with mothers who have a negative attitude have a risk of diarrhea 4.59 times greater than toddlers with mothers who have a positive attitude. Confidence Interval (2,167-9,739) passes the number one, meaning that there is a significant relationship between maternal attitudes and the incidence of diarrhea in toddlers in the working area of Tarus Health centers Kupang Regency.

Table 9 Relationship between Handwashing Behavior and the Incidence of Diarrhea in Toddlers

Handwashing behavior	Incidence of Diarrhea				Total		OR 95% CI	p value
	Case		Control					
	n	%	n	%	n	%		
Bad	46	70,8	23	35,4	69	53,1		
Good	19	29,2	42	64,6	61	46,9	4,421 (2,114-9,245)	0,000
Total	65	100	65	100	130	100		

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Based on table 9 of 65 toddlers who experienced diarrhea, 46 mothers of toddlers (70.8%) As many as 19 mothers of toddlers (29.2%) have good hand washing behavior, while of the 65 toddlers who do not have diarrhea, as many as 23 mothers of toddlers (35.4%) have poor hand washing behavior and as many as 42 mothers of toddlers (64.6%) have good hand washing behavior. The results of the analysis of the relationship between hand washing behavior with the incidence of diarrhea in toddlers with chi square test obtained a p value of 0.00 (p value <0.05) means that there is a significant relationship between hand washing behavior with the incidence of diarrhea in toddlers in the Tarus health centers working area. Based on this analysis, the Odds Ratio value of 4.42 (OR>1) means that toddlers who have mothers with poor hand washing behavior have a risk of developing diarrhea 4.42 times greater than toddlers who have mothers with good hand washing behavior. The Confidence Interval value (2.114-9.245) passes the number one, meaning that there is a significant relationship between hand washing behavior and the incidence of diarrhea in toddlers in the Tarus health center working aria of Kupang Regency.

Table 10 Relationship between Exclusive Breastfeeding History and Incidence of diarrhea in toddlers

Breastfeeding history Exclusive	Incidence of Diarrhea				Total		OR 95% CI	p value
	Case		Control					
	n	%	n	%	N	%		
No breast milk Eksklusif	39	60,0	19	29,2	58	44,6	3,632 (1,751-7,531)	0,001
Eksklusif Breastfeeding	26	40,0	46	70,8	72	55,4		
Total	65	100	65	100	130	100		

Based on Table 10 of 65 toddlers who had diarrhea as many as 39 toddlers (60.0%) had a diarrhea diagnosis. As many as 26 toddlers (40.0%) with a history of exclusive breastfeeding, while of the 65 toddlers who did not experience diarrhea, 19 toddlers (29.2%) had a history of not receiving exclusive breastfeeding and as many as 46 toddlers (70.8%) with a history of exclusive breastfeeding. The results of the analysis of the relationship between exclusive breastfeeding history and the incidence diarrhea in toddlers with the chi square test obtained a p value of 0.001 (p value <0.05), meaning that there is a significant relationship between exclusive breastfeeding history and the incidence of diarrhea in toddlers in the Tarus health centers working area. Based on this analysis, the Odds Ratio value is 3.63 (OR>1), meaning that toddlers with a history of exclusive breastfeeding are more likely to have diarrhea history of not being exclusively breastfed has a risk of diarrhea 3.63 times greater than toddlers with a history of being exclusively breastfed. The Confidence Interval value (1.751-7.531) passes the number one, which means that there is a significant relationship between the history of exclusive breastfeeding and the incidence of diarrhea in toddlers in the working area of Tarus health centers Kupang Regency.

Table 11 Relationship between mother's education level and the incidence of diarrhea in toddlers

Mother's Education Level	Incidence of Diarrhea				Total		OR 95% CI	p value
	Case		Control					
	n	%	n	%	n	%		
Low	40	61,5	26	40,0	66	50,8	2,400(1,187-4,854)	0,023
High	25	38,5	39	60,0	64	49,2		
Total	65	100	65	100	130	100		

Based on table 11 of 65 toddlers who had diarrhea, as many as 40 mothers of toddlers (61.5%) as many as 25 mothers of toddlers (38.5%) have a high education, while of the 65 toddlers who do not experience diarrhea as many as 26 mothers of toddlers (40.0%) have a low education and as many as 39 mothers of toddlers (60.0%) have a high education. The results of the analysis of the relationship between the mother's education level with the incidence of diarrhea in toddlers with chi square test obtained a p value of 0.023 (p value <0.05) means that there is a significant relationship between the mother's education level with the incidence of diarrhea in toddlers in the Tarus Health Center working area. Based on the analysis, the Odds Ratio value is 2.400 (OR>1), meaning that toddlers with mothers who have low education have a risk of diarrhea 2.40 times greater than toddlers with mothers who have high education. The Confidence Interval value (1.187-4.854) passes the number one, which means that there is a significant relationship between the mother's education level and the incidence of diarrhea in toddlers in the working area of Tarus health centers Kupang Regency.

Table 12 Relationship between mother's employment status and the incidence of diarrhea in toddlers

Mother's Employment Status	Incidence of Diarrhea				Total		OR 95% CI	p value
	Case		Control					
	n	%	n	%	n	%		
Work	13	20,0	22	33,8	35	26.9	0,489 (0,220-1,083)	0,114
Not Working	52	80,0	43	66,2	95	73,1		
Total	65	100	65	100	130	100		

Based on Table 12 of 65 toddlers who had diarrhea, as many as 13 mothers of toddlers (20.0%) worked and as many as 52 mothers of toddlers (80.0%) who did not work, while of the 65 toddlers who did not experience diarrhea, 22 mothers of toddlers (33.8%) who worked and as many as 43 mothers of toddlers (66.2%) who did not work. The results of the analysis of the relationship between maternal employment status and the incidence of diarrhea in toddlers with the chi square test obtained a p value of 0.114 (p value >0.05), meaning that there is no significant relationship between maternal employment status and the incidence of diarrhea in toddlers in the Tarus health center work area.

DISCUSSION

1. Relationship between Maternal Knowledge and the Incidence of Diarrhea in Toddlers in the Tarus health centers Working Area, Kupang Regency

According to Notoatmodjo (2010) knowledge is the result of knowing and this occurs after doing the following sensing of a particular object. Sensing occurs through the five human senses; most human knowledge is obtained through the eyes (vision) and ears (hearing). Based on the results of statistical tests obtained results, there is a significant relationship between the level of maternal knowledge with the incidence of diarrhea in toddlers in the working area of Tarus health center Kupang Regency. The results of interviews with respondents in the working area of Tarus health center, Kupang Regency, many mothers of toddlers who experience diarrhea do not know the causes of diarrhea in toddlers, how to prevent diarrhea and the consequences of diarrhea and some mothers do not even know the definition of diarrhea. A mother's knowledge about diarrhea includes the definition of diarrhea, signs, and symptoms of diarrhea, causes and classification of diarrhea will greatly affect the actions that will be taken by a mother. Knowledge or cognitive domain is a domain factor that is very important in shaping a person's actions (over behavior) in terms of knowledge about preventing diarrhea in toddlers. The role of mothers is very important for the health of toddlers, because mothers are the closest people to toddlers both when eating, bathing, and playing mothers are more involved. The results of this study are in accordance with research from Arindari and Yulianto (2018) on the relationship between maternal knowledge and attitudes with the incidence of diarrhea in toddlers in the Punti Kayu Palembang Health Center work area showing that there is a significant relationship between maternal knowledge and the incidence of diarrhea in toddlers in the Punti Kayu Palembang Health Center work area. Research by Rahmaniu, Dangnga and Madjid (2022) on the relationship between maternal knowledge and the incidence of diarrhea in toddlers in the working area of the Lappadekota Parepare Health Center also found that there was a significant relationship between maternal knowledge and the incidence of diarrhea in toddlers in the working area of the Lappadekota Parepare Health Center.

2. Relationship between Maternal Attitudes and the Incidence of Diarrhea in Toddlers in the Working Area of Tarus Puskesmas, Kupang Regency

Attitude is a reaction or response that is still closed from a person to a stimulus or object. Attitude clearly shows the connotation of the suitability of reactions to certain stimuli which in everyday life are emotional reactions to social stimuli. The attitude is still a closed reaction, not an open reaction or open behavior. Attitude is a readiness to react to objects in a certain environment because of the attitude appreciation of the object (Siregar, 2020). The results of the analysis of the relationship between maternal attitudes and the incidence of diarrhea in toddlers showed that there was a significant relationship between maternal attitudes and the incidence of diarrhea in toddlers in the Tar us Health Center working area. The results of interviews with respondents in the working area of Tarus health centers Kupang Regency, many mothers of toddlers whose toddlers experience diarrhea have a negative attitude this is because many mothers who

answered disagree on the questionnaire statement about feeding little by little but often to children who are diarrhea, giving ORS to children as the first action of diarrhea treatment, hand washing behavior before feeding the child, especially after cleaning the child's stool, and there are mothers who answer disagree on the statement about bringing children with diarrhea to health facilities. This is in line with research conducted by Ridawati and Nugroho (2021) on the relationship between maternal attitudes and efforts to prevent diarrhea in toddlers in the working area of the Air Lais Health Center, it was found that there was a relationship between maternal attitudes and the prevention of diarrheal diseases in toddlers. Research by Rismayani, Arlenti and Elvina (2022) on the relationship between attitudes, education, and the environment with the incidence of diarrhea in toddlers, also found that there was a relationship between maternal attitudes and diarrhea in children at the Sukamerindu Bengkulu Health Center location.

3. The Relationship between Handwashing Behavior and the Incidence of Diarrhea in Toddlers in the Tarus health centers Working Area, Kupang Regency

Hand washing behavior is an activity carried out by someone in cleaning the palms, backs of hands and fingers to make them clean from dirt and kill disease-causing germs that are detrimental to human health and make hands smell good (RI, 2007). The results of the analysis of the relationship between hand washing behavior and the incidence of diarrhea in toddlers in the Tarus health centers work area of Kupang Regency found that there was a significant relationship between the relationship between hand washing behavior and the incidence of diarrhea in toddlers in the Tarus health centers work area. The results of interviews with mothers of toddlers in the working area of Tarus health centers Kupang Regency, many mothers of toddlers still do not wash their hands before feeding their children. This study is in line with the research of Sartika (2020) on the relationship between knowledge and hand washing behavior of mothers with the incidence of diarrhea in children under five in the Banjarmasin Terminal Health Center work area, the results showed that there was a relationship between the mother's hand washing behavior and the incidence of diarrhea in children under five in the Banjarmasin Terminal Health Center work area, 2000 year. Research conducted by Pratiwi (2019) with the title of the relationship between hand washing behavior and the incidence of diarrhea in children under five in TK -TB-TKIT Salman Alfarisi District Umbulharjo Yogyakarta City also obtained the results of the analysis that there is a relationship between the mother's hand washing behavior and the incidence of diarrhea in children under five.

4. The Relationship between Exclusive Breastfeeding History and the Incidence of Diarrhea in Toddlers in the Tarus Health Centers Working Area, Kupang Regency

Exclusive teastfeeding means that infants are fed only breast milk, without additional liquids such as water, formula, tea water, orange, honey, and without additional solid foods such as milk porridge, rice

porridge, team, papaya biscuits and bananas. Early solid/additional feeding can interfere with exclusive breastfeeding and increase infant morbidity. After six months of exclusive breastfeeding, breastfeeding should not be stopped. Along with the introduction of food to the baby, breastfeeding is still carried out, preferably breastfeeding for two years according to WHO recommendations (Umar, 2021). The results of the analysis of the relationship between exclusive breastfeeding history and the incidence of diarrhea in toddlers in the Tarus health centers working area of Kupang Regency found that there was a significant relationship between the exclusive breastfeeding history and the incidence of diarrhea in toddlers in the Tarus health centers working area. Based on the results of interviews with mothers of toddlers, there are still mothers who give drinks other than breast milk to toddlers, for example, formula milk has been given to toddlers during the first 6 months. This study is in line with research conducted by Sari (2021) on the relationship between exclusive breastfeeding history and the incidence of diarrhea in toddlers at Ibunda Hospital, Bagan Sinembah District, Rokan Hilir Regency, it was found that there was a significant relationship between exclusive breastfeeding history and the incidence of diarrhea in toddlers at Ibunda Hospital, Bagan Sinembah District, Rokan Hilir Regency. Research by Chodijah (2022) on the relationship between exclusive breastfeeding and maternal education level with the incidence of diarrhea in toddlers at Pakjo Palembang health centers also obtained the results of the analysis that there was a significant relationship between exclusive breastfeeding and the incidence of diarrhea in toddlers at Pakjo Palembang health centers in 2022.

5. Relationship between Mother's Education Level and the Incidence of Diarrhea in Toddlers in the Working Area of Tarus Health Centers, Kupang Regency

Education is an effort to develop personalities and abilities inside and outside of school (both formal and non-formal, lasting a lifetime). Education is a process of changing the attitudes and behavior of a person or group and an effort to mature humans through teaching and training efforts. Education affects the learning process. The higher a person's education, the easier it is for that person to receive information. With higher education, a person will tend to get information, both from other people and from the mass media. The more information that enters, the more knowledge is obtained about health (Budiman, 2013). The results of the analysis of the relationship between maternal education level and the incidence of diarrhea in toddlers showed that there was a significant relationship between maternal education and the incidence of diarrhea in toddlers in the Tarus Health Center working area, Kupang Regency. This study is in line with the research of Fitriani, Darmawan and Puspasari (2021) on the analysis of risk factors for diarrhea in toddlers in the Pakuan Baru health centers work area of Jambi City with the results showing that there is a significant relationship between the mother's education level and the incidence of diarrhea in toddlers in the Pakuan health centers Region. New Jambi City in 2020. Research conducted by Supernova (2022) with

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the title of the relationship between socio-economic and maternal education with the incidence of diarrhea in toddlers who come for treatment at the Maha Prana Lubuk Linggau Health Center also found that there was a significant relationship between maternal education and the incidence of diarrhea in toddlers who came for treatment at the Maha Prana Lubuk Linggau health centers.

6. Analysis of the Relationship between Maternal Employment Status and the Incidence of Diarrhea in Toddlers in the Tarus health centers Working Area, Kupang Regency

Work is something that is done to earn a living or livelihood by individuals to meet their daily needs, work is generally related to the level of education and income (RI, 2007). Mothers who work from morning to evening do not have enough time for children and family (Rahayu *et al.*, 2018). Analysis of the relationship between maternal employment status and the incidence of diarrhea in toddlers showed that there was no significant relationship between maternal employment status and the incidence of diarrhea in toddlers in the working area of Tarus health centers, Kupang Regency. Based on this, researchers assume that mothers who do not work or housewives have more free time and full time to pay attention and care for their children, with activities outside the home, making the mother's activities to nurture and care for toddlers limited, respondents may be assisted by their families. Parenting done to toddlers apart from the mother (respondent) is also from her family so that there may be changes in parenting patterns. This study is in line with research conducted by Evayanti, Purna and Aryana (2014) with the title of factors associated with the incidence of diarrhea in toddlers who seek treatment at the Tabanan General Hospital Agency, the results of the analysis show that there is no relationship between maternal work and the incidence of diarrhea in toddlers who seek treatment at BRSU Tabanan. Research conducted by Fitriani, Darmawan and Puspasari (2021) on the analysis of risk factors for the occurrence of diarrhea in toddlers in the Pakuan Baru Health Center work area of Jambi City also obtained analysis results showing that there was no significant relationship between the mother's employment status and the incidence of diarrhea in toddlers in the Pakuan Baru Health Center Area of Jambi City in 2020.

CONCLUSION

Conclusion, that the variables of maternal knowledge, maternal attitude, hand washing behavior, breastfeeding history exclusive and maternal education there is a significant relationship with the incidence of diarrhea in toddlers, and the variable of maternal employment status has no significant relationship with the incidence of diarrhea in toddlers. It is expected that the community, especially mothers of toddlers, pay more attention to the living environment, clean living behavior such as washing hands before and after giving children to eat and increasing knowledge by participating in socialization or counseling activities from posyandu or existing health workers.

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Support for The Comprehensive School Health Model to Increase Reproductive Health Knowledge of Elementary School Children as A Primary Prevention Effort

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ABSTRACT

The research explores the impact of the Comprehensive School Health model on enhancing the reproductive health knowledge of primary school children as a primary prevention effort. In an era of rapid social and technological changes, early-age reproductive health awareness is crucial. This study aims to evaluate the effectiveness of the Comprehensive School Health model in improving the reproductive health knowledge of primary school children. The study employs a pre-experimental design with a One Group Pretest-Posttest Design. Data was collected through observations, interviews, and documentation. The sample consists of sixth-grade students from an elementary school in Sorong District, selected using total sampling. Statistical analysis included Wilcoxon tests and rank biserial correlation. The results indicate a significant improvement in the reproductive health knowledge of primary school children following the intervention. The Wilcoxon test showed a p-value of <0.001, and the mean difference was -35.0, signifying a substantial increase in knowledge. The effect size was 1.62, indicating a significant impact, and a strong negative rank biserial correlation of -1.00 revealed a robust correlation between the intervention and knowledge improvement. This study concludes that the Comprehensive School Health model is effective in significantly enhancing the reproductive health knowledge of primary school children, with a substantial effect size and a strong correlation between the intervention and knowledge improvement. These findings emphasize the importance of early-age reproductive health education and highlight the potential of this model as an effective strategy for primary prevention in the field of reproductive health.

INTRODUCTION

The reproductive health of primary school children is a profound and crucial issue in the context of public health. Along with rapid social and technological changes, children's knowledge and understanding of reproductive health is becoming increasingly important. Reproductive health education in primary schools has a strategic role in equipping children with knowledge that can protect them from potential reproductive health risks in the future (Mbizvo et al., 2023). Therefore, this study aims to evaluate the impact of the Comprehensive School Health model on increasing reproductive health knowledge in elementary school children as a primary prevention effort.

In the context of discipline, this research is relevant because it brings together two key aspects, namely health and education. Reproductive health is an integral part of public health, and education is an important tool for conveying information and understanding to children. Therefore, interdisciplinarity involving health and education experts is crucial to understand and address this problem effectively (Bendowska & Baum, 2023; Carr et al., 2018).

The Comprehensive School Health model is a holistic and holistic approach to promoting health in schools. Although there has been much research on this model in other contexts, research focusing on its effect on reproductive health knowledge of primary school children is limited. This creates a knowledge gap that needs to be filled to understand the effectiveness of this model in addressing reproductive health issues in this population (Miedema et al., 2020; Wong et al., 2021).

This study also draws on previous research indicating that a comprehensive approach to the school environment can have a positive impact on understanding reproductive health in children. However, this study has limitations in its focus on older age groups, leaving primary school children with unique needs in the context of reproductive health.

In addition, previous research has also revealed controversy in the selection of the most effective methods and approaches in improving reproductive health knowledge of elementary school children (Janighorban et al., 2022). Therefore, this study is expected to provide deeper insight into the contribution of the Comprehensive School Health model to primary prevention efforts in the field of reproductive health of elementary school children (Margaretha et al., 2023).

In this regard, the study not only has academic implications, but also significant practical implications in aiding the development of more effective education and health programs for primary school children. In addition, this study also tries to overcome the weaknesses of previous studies with a more specific focus on the population of elementary school children (Taber, 2018). However, this study is also faced with some limitations, such as limited resources and the possibility of limited generalization of the results of this study to various school contexts.

Lastly, this research arises from a personal interest in promoting children's well-being and the belief that primary prevention in the context of reproductive health in children can provide long-term benefits for future generations. Thus, this research aims to evaluate the effectiveness of the Comprehensive School Health model in improving the reproductive health knowledge of primary school children and expected to make a valuable contribution in efforts to improve the reproductive health of primary school children and society.

METHOD

The research method used in this study was pre-experiment with One Group Pretest-Posttest Design. This design was chosen to measure the impact of the application of the Comprehensive School Health model on reproductive health knowledge of primary school children before and after the intervention. This research will be conducted from March 2023 to April 2023.

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The population that was the focus of the study was all grade 6 students at SDN X Sorong Regency. This study used a total sampling technique, where all grade 6 students were willing to be the subjects of the study. There are seventy-two students who participated as respondents in this research.

The intervention implemented for the students involved a comprehensive health education program integrated into the regular curriculum during scheduled class hours. Aligned with the Curriculum of Unit Level Education (KTSP) and conforming to the content standards specified in the Ministry of National Education Regulation number 22 of 2006, this educational initiative aimed to foster a holistic approach to health among students. The curriculum focused on enhancing students' knowledge, cultivating positive attitudes, and instilling values related to maintaining a healthy lifestyle. Students were educated on various vital aspects, including the importance of cleanliness, the significance of immunization, identification of nutritious foods, awareness about diseases like diarrhea, dengue fever, and influenza, maintaining environmental hygiene both at school and home, responsible waste disposal, understanding methods to maintain reproductive health, recognizing the health hazards associated with smoking, alcohol consumption, drug abuse, and educating them on how to reject and handle instances of sexual harassment. This multifaceted health education intervention was designed to equip students with comprehensive knowledge and skills essential for leading healthy lives and making informed decisions regarding their well-being.

Data collection techniques in this study include three main methods, namely observation, interviews, and documentation. Observations were used to directly observe children's participation in Comprehensive School Health model activities. The interviews were used to gain deeper insight into their understanding of reproductive health before and after the intervention consisting of 10 questions with true and incorrect answer choices. Meanwhile, documentation is used to collect historical data and supporting materials relevant to the research.

The data analysis technique to be used involves a comparative analysis between pretest and posttest results from reproductive health knowledge of elementary school children with the help of SPSS. The data will be analyzed using descriptive and inferential statistics to identify significant changes in children's knowledge after the implementation of the Comprehensive School Health model.

RESULT

A total of 72 respondents participated in the study. The data are presented in Table 1 below.

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Table 1 Characteristics of Respondents

Variable	n	%
Gender		
Male	39	54.2 %
Female	33	45.8 %
Mother's Education		
Primary school	2	2.8 %
Junior High School	5	6.9 %
Senior High School	49	68.1 %
College	16	22.2 %
Father's Education		
Junior High School	5	6.9 %
Senior High School	33	45.8 %
College	34	47.2 %
Menstruation		
Not menstruating yet	12	16.7 %
Already menstruating	21	29.2 %
No Menstruation	39	54.2 %

The results of respondent characteristics show an important picture of the sample used in this study. In terms of gender, it was found that as many as 54.2% of respondents were men, while 45.8% were women. In the context of research on the reproductive health of primary school children, this comparison can affect research results because gender differences can affect understanding and experience related to reproductive health.

In terms of maternal education, most respondents (68.1%) have mothers who have completed High School, while only 2.8% have mothers with a primary school background. This showed significant variation in respondents' mothers' education levels, which could also affect children's understanding and knowledge of reproductive health.

In terms of paternal education, most respondents (47.2%) had a father with a college background, while only 6.9% had a father with a junior high school background. This indicates that most fathers of respondents have a higher level of education, which may have an impact on children's knowledge of reproductive health.

Then, in terms of menstrual status, as many as 54.2% of respondents have not experienced menstruation, while 29.2% have experienced menstruation. This menstrual status is important in the context of reproductive health research, as it can affect respondents' level of knowledge and understanding of the topic. Differences in menstrual status may also affect research results as there may be differences in levels of knowledge and involvement in reproductive health interventions.

Table 2. Differences in Reproductive Health Knowledge

			Statistic	p	Mean difference	SE difference	Effect Size	
PRE	POST	Wilcoxon	00.00	< .001	-35.0	1,62	Rank biserial correlation	-1.00

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The results of the analysis showed significant differences in reproductive health knowledge in primary school children before and after the intervention. The results of Wilcoxon's statistical test showed that this difference was very significant, with a p value of less than 0.001, indicating that this result was not a coincidence. In addition, it was found that the average difference in knowledge scores between before and after the intervention was -35.0. These results show that the Comprehensive School Health model intervention has succeeded in significantly increasing the reproductive health knowledge of primary school children.

In addition, the resulting effect size is 1.62. This is an indicator that the effect of an intervention on primary school children's reproductive health knowledge can be considered a major effect, indicating that it has a substantial impact in improving their understanding of reproductive health.

In the case of a Rank biserial correlation value of -1.00, this indicates a strong correlation between intervention variables (before and after) and increased knowledge of reproductive health. A negative correlation value indicates that the higher the intervention (after value), the greater the increase in knowledge achieved by primary school children.

Thus, these results confirm that the Comprehensive School Health model has succeeded in significantly increasing reproductive health knowledge in primary school children, with great effect, and a strong correlation between interventions and increased knowledge. These results support the effectiveness of interventions in primary prevention efforts in the field of reproductive health of primary school children.

DISCUSSION

The results of this study refer to the main purpose of the study, which is to evaluate the impact of the Comprehensive School Health model on increasing reproductive health knowledge in elementary school children as a primary prevention effort. The results of the analysis showed significant differences in reproductive health knowledge between before and after the intervention. This clearly answers the problem statement and research questions, indicating that the intervention was successful in improving children's understanding of reproductive health.

In the table presented, important data such as a p-value of less than 0.001 and an average difference in scores of -35.0 highlight the success of the intervention in achieving significant changes in children's knowledge. The high effect size, which was 1.62, showed that this intervention had a substantial impact in increasing their knowledge about reproductive health.

These positive results create a positive reaction in the context of primary prevention efforts in the reproductive health of primary school children. The Comprehensive School Health model can be an effective solution in improving understanding of reproductive health in elementary school children (Widyatuti et al., 2018).

This research consistently supports findings from previous studies that have proposed that the Comprehensive School Health model can be one of the effective solutions in improving understanding of reproductive health in elementary school children (Obach et al., 2022; Shimpuku et al., 2023; Wilkins et al., 2022). The findings of this study are in line with previous studies that highlight the importance of early reproductive health education in primary prevention efforts in the field of children's reproductive health (Hall et al., 2023; Meherali et al., 2021; Paton et al., 2020; Rabbitte & Enriquez, 2019).

Several previous studies have also shown that interventions carried out in the school environment can have a positive impact on reproductive health knowledge of primary school children (Austrian et al., 2021; Mulubwa et al., 2020). In this context, the Comprehensive School Health model applied in this study can be considered as one of the effective approaches in achieving this goal.

Meanwhile, a negative result to note is that several respondents still do not menstruate. However, this reflects the diversity of conditions of the subjects of the study. The negative reaction to these results is that these interventions may not be able to influence children who have not yet menstruated in terms of reproductive health knowledge.

What is interesting about these results is that there is a strong correlation between interventions and increased knowledge of reproductive health, with correlation values reaching -1.00. This suggests that the higher the level of intervention (after grades), the greater the increase in knowledge acquired by primary school children.

The results of this study are consistent with the findings of previous studies that have identified a positive correlation between reproductive health education interventions in the school environment and increased knowledge of reproductive health in children (Widyatuti et al., 2018). The strong correlation with scores reaching -1.00 in this study reinforces the concept that the greater the level of intervention or exposure of children to reproductive health education, the greater the increase in knowledge they can gain.

Previous studies that have involved similar intervention models in the context of reproductive health education in primary school children have also reported similar findings, although with correlation values that may vary (Abdurahman et al., 2022). However, the results of this study make an important contribution in strengthening understanding of the importance of these interventions in the context of primary prevention of reproductive health.

Overall, the results of this study confirm that the Comprehensive School Health model can be an effective tool in increasing reproductive health knowledge in primary school children. These findings enrich the existing knowledge structure in this field and make a significant contribution in the context of primary prevention of reproductive health of primary school children. In conclusion, the results of this study strongly support efforts to improve understanding of reproductive health at the primary education level to reduce the risk of reproductive health problems in the future.

CONCLUSION

The research identified and analyzed the impact of this model as a primary prevention effort. The findings revealed a significant positive effect of the intervention on the children's understanding of reproductive health, indicating the model's potential effectiveness in improving this aspect of knowledge. However, limitations in subject coverage, confined to the Sorong Regency and a specific age group, imply caution in generalizing the results. Further research expanding the geographical scope and subject population is recommended for broader representation. The study highlights the importance of early reproductive health education and suggests integrating this model into the educational curriculum. Implementing policies that support the Comprehensive School Health model could significantly contribute to primary prevention efforts in enhancing the reproductive health knowledge of elementary school children.

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The Influence of Reproductive Health Education Using Chain Whispering Methods on Knowledge and Attitudes of Young Women

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ABSTRACT

Health Education is an activity to create health education that seeks to make young people aware of how to take care of their health, how to avoid or prevent things that are detrimental to their own health, one of the problems of young women is the lack of knowledge of reproductive health. This study aims to determine the effect of reproductive health education using the whisper chain method on the knowledge and attitudes of young women. The design of this research is pre-experimental. The design of this study uses the Pre-test – Post-test Design. The population of all grades VI students is 22 students. The sampling technique was carried out by purposive sampling with 21 female students who met the inclusion and exclusion criteria as respondents. Data was collected using knowledge and attitude questionnaires before and after the provision of reproductive health education. Reproductive health education using the chain whisper method was carried out for 1 time for 120 minutes. Statistical test using the Wilcoxon Test ≤ 0.05. The results of the research on knowledge of young women before being given reproductive health education (poor) after (good) p=0.001, attitudes of young women before being given reproductive health education (negative) after (positive) p=0.000. This means that there is an influence of reproductive health education using the chain whisper method on the knowledge and attitudes of young women. The researchers hope that this research can be used as a form of routine activity to add insight to female students about reproductive health.

INTRODUCTION

Adolescence is a period of transition from childhood to adulthood, not only in a psychological sense, but also physically. In fact, the physical changes that occur are the primary symptoms in adolescent growth. Meanwhile, psychological changes arise, among others, as a result of changes in physical growth (Yulia Dewi Nurjanah, 2013). Among the secondary signs in young women, one of them is menstruation (Asih, 2014). Survey institutions in Indonesia state that a portion of the number of adolescents in Indonesia at the age of 10 to 24 years behaves unhealthy (Puji, 2016). Reproductive health is physical, mental and social health as a whole, not solely free from disease or disability related to reproductive systems, functions and processes (KemenKes RI, 2015).

According to WHO, adolescents are residents in the age range of 10-19 years (WHO, 2022), according to Regulation of the Minister of Health of the Republic of Indonesia Number 25 of 2014, adolescents are residents in the age group of 10-18 years (Permenkes RI, 2014), and according to the Population Agency and Family Planning (BKKBN), the age range for adolescents is 10-24 years old and unmarried (Ministry of Health Republic of Indonesia 2015). Data from the Ministry of Health of the Republic of Indonesia for

2017 shows that 17% of Indonesia's population is aged 10-19 years, with a percentage of 8.7% male and 8.3% female (RI Ministry of Health, 2018).

Indonesia is ranked 2nd in ASEAN, and ranked 8th in the world for cases of young marriage (child marriage). There has never been health education about reproductive health for young women so that young women's knowledge about reproductive health is still low. The impact of misunderstanding about menstruation and sexuality in adolescents makes them try to experiment with sexual problems without realizing the dangers that arise from their actions, and when problems caused by their sexual behavior begin to emerge which can affect reproductive health such as sexual behavior with multiple partners. Premarital sex which causes unwanted pregnancies (abortions, as well as the risk of contracting sexually transmitted infections (STIs). Pregnancy in adolescence can have a negative impact on the health of adolescents and their babies, as well as social and economic impacts. Pregnancy at a young age includes risks of birth premature birth, low birth weight babies (LBW), and childbirth bleeding, which can increase maternal and infant mortality.Pregnancy in adolescents is also associated with unwanted pregnancies and abortions (KemenKes RI, 2015).

Handling is one of the ways that reproductive health education can help delay the first sexual intercourse in adolescents. Zelnik (Letisa Azelia Astri, 2016) states that adolescents who have received reproductive health education tend to rarely have sex, but adolescents who have never received reproductive health education tend to experience more unwanted pregnancies. Another study by Fox and Inazu (Letisa Azelia Astri, 2016) also showed the same result, if reproductive health education is given to adolescents from an early age and starts from the family, sex can be prevented.

One of the preventions can be done by providing reproductive health education using a chain whisper method to the knowledge and attitudes of young women. Reproductive health education can be carried out for students through various methods. Methods that can be used include the game-based learning method, which is a learning method that uses game applications that have been specifically designed to assist the learning process (Tetty, 2015). Games do have enormous potential in building motivation in the learning process of students, especially elementary school (SD) students. This is because learning for children of primary school age can be done with a play approach so students don't feel bored in following the lesson. Game-based learning (games) can also make students understand the material and achieve learning goals in a more interesting and fun way. The existence of fantasy and challenge elements in games leads to greater interest for students and increases learning efficiency. One example of the application of the game-based learning method that can be made by teachers in elementary schools, namely: (Whispering) Through this method of learning by games, whispering in chains (chain messages) can train children's listening skills with satisfying results, moreover, it can encourage children to concentration when receiving learning

material, so that children who initially get bored quickly and even lack interest in any subject become interested in any subject.

METHOD

This research is a quantitative non-experimental study with a pre-experimental design with a pre-test post-test design. The population in this study were female adolescents aged 10-13 years who experienced a lack of reproductive health knowledge at UPT SD Negeri 60 Gresik, Cerme District, Gresik Regency, as many as 22 students. The sample of this research is 21 female students with purposive sampling technique. Samples that meet the inclusion criteria: 1) Teenagers who are willing to be respondents and follow research procedures until the final stage; 2) Adolescents who have not been given reproductive health education counseling at all. Exclusion criteria: 1) Exclusion criteria from this study are: 1) Adolescents who do not attend school; 2) Young women who have received menstrual health education and free sex. The independent variable of reproductive health education and the dependent variable is the knowledge and attitudes of young women. The research instrument was the SAP chain whisper and the attitude knowledge questionnaire prepared by researchers who had previously tested the validity of the reliability. The researcher explained the procedure of the chain whisper game by dividing into 4 groups, 1 group consisting of 5-6 people. Health education with a chain whisper method is carried out for 1 time 120 minutes. Previously, it was explained about the meaning of health education, the purpose of health education, the puberty of young women, the meaning of menstruation, the meaning of free sex, the impact of menstruation, the impact of free sex, steps to avoid sexual intercourse before marriage. After that the researcher asked questions related to the explanation that had been given to the young woman, the researcher pointed to one of the children who raised her hand to answer the question from the researcher. The researcher asked the child who answered the question to come forward. New questions from researchers for the next child are 4 children who come forward. After that the researcher asked the child who came forward to appoint/choose 5-6 of his friends to be made into the Whisper Chain group and so on. The researcher arranged the distance per group and lined up, so they weren't close together. The researcher did a chain whisper game by calling child 1 from each group to take turns to come forward and the researcher gave a sentence to be whispered to his friend behind him alternately the friend behind him who submitted the sentence to the researcher in front counted by the researcher 10 seconds had to submit the sentence to the researcher. Continue in order until the last player. The last player must say the words or sentences or story that was whispered. This game can be contested in groups. This game trains listening or listening skills. And the researcher gives the score with the most who is the winning group. Before the chain whisper game begins, I first explain material related to reproduction, and we, as researchers, ensure that the material that I convey can be clearly understood by grade VI students, for

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example, a question-and-answer session related to the material is held first. And of course, before the game starts, I explain in advance the rules and procedures for the game to the students. For knowledge assessment: Good if the value is $\geq$ 76-100%; Enough if the value is 60 – 75%; Less if the value is $\leq$ 59 %. Positive attitude assessment: SS (4), S (3), TS (2), STS (1) T $\geq$ 50; Negative: SS (1), S (2), TS (3), STS (4) T < 50. Data were processed and statistically analyzed Wilcoxon test with p value < 0.05. DF reliability validity test results: (N-2) Respondents: 21-2 = 19 (R Table = 0.432) significant 0.05 (Knowledge Validity Results Valid) and (Knowledge Reliability Results)> 0.6 with a result of 0.923 said Reliable. DF: (N-2) Respondents: 21-2=19 (R Table = 0.432) significant 0.05 (Attitude Validity Results Valid) and (Attitude Reliability Results)> 0.6 with a result of 0.814 is said to be Reliable.

RESULT

Table 1 shows that most of the respondents were 12 years old, with 17 respondents (81.0%). based on information obtained by class VI young women obtained from peers as many as 10 respondents (47.6%).

Table 1. Characteristics of Respondents in Class VI Young Girls at UPT SD Negeri 60 Gresik on February 4, 2023

No	Category	F	%
1	Age		
	10th	0	0
	11th	4	19
	12th	17	81
	113th	0	0
2	Information Source		
	School	5	23.8
	Media	4	19.05
	Health Workers	2	9.5
	Friends	10	47.6

Based on the table 2 that from 21 respondents before being given menstrual reproductive health education and free sex by distributing knowledge questionnaires, it was found that 15 respondents (71.4%) lacked knowledge. After being given Health Education, 17 respondents (81.0%) had good knowledge. It can be concluded that there was a change in which the increase in respondents' knowledge was getting better after being given menstrual reproductive health education and free sex using the chain whisper method. The value of P=0.001 was obtained, meaning p<0.05 that there was an effect of reproductive health education using the chain whisper method on the knowledge of young women.

Table 2 Knowledge Analysis of Class VI Young Girls Before and After Being Given Reproductive Health Education

Category	Pre-Test		Post Test	
	F	%	F	%
Good	3	14.3	17	81
Enough	3	14.3	2	9.5
Not Good	15	71.4	2	9.5
Total	21	100	21	100
N	21		21	
Mean	2.5714		1.2857	
Std.Deviation	76.642		64.365	
Uji Wilcoxon	p=0,001			

Table 3 shows that before being given menstrual reproductive health education and free sex by distributing attitude questionnaires, it was found that most of the respondents were categorized as negative, namely 19 respondents (90.5%). After being given health education, 19 respondents were categorized as positive (90.5%). The results of data analysis using the Wilcoxon test on respondents' attitudes towards menstruation and free sex obtained a value of P = 0.000 meaning p = <0.05, so there is an influence of reproductive health education using the chain whisper method on the knowledge and attitudes of young women.

Table 3. Analysis of the Attitudes of Class VI Young Girls Before and After Being Given Reproductive Health Education

Category	Pre-Test		Post Test	
	F	%	F	%
Positive	2	9.5	19	90.5
Negative	19	90.5	2	9.5
Total	21	100	21	100
N	21		21	
Mean	1,9048		1,0952	
Std.Deviation	30,079		30,079	
Uji Wilcoxon	p=0,000			

DISCUSSION

Knowledge and Attitudes of young women before being given reproductive health education.

Based on table 2, it can be explained that knowledge before being given menstrual reproductive health education and free sex by distributing knowledge questionnaires found that most of the respondents were categorized as lacking (71.4%), namely 15 respondents. The condition of the respondent is categorized as lacking, the condition of the respondent's knowledge is lacking because there are several factors that can cause adolescents' knowledge about menstrual reproduction and free sex including unclear information, mass media that are not necessarily facts, the influence of the closest people, parents, friends, and discussions (Tofa, 2012).

Based on table 3, it can be explained that the attitude before being given menstrual reproductive health education and free sex by distributing attitude questionnaires found that most of the respondents were

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categorized as negative (90.5%), namely 19 respondents. The condition of the respondent is categorized as negative. The attitude of the respondents is negative because there are several factors that can cause adolescent attitudes about menstrual reproduction and free sex including personal experience, the influence of other people, cultural influences, mass media, emotional factors (Saptiawan, 2010).

Based on table 1, out of 21 female respondents in class VI, they were given menstrual reproductive health education and free sex using the chain whisper method. Most were at the age of 12 as many as 17 respondents (81.0%) The normal age for a woman to get menstruation for the first time at the age of 12 or 13 years, but there were also those who experienced it earlier at the age of 8 years or later at the age of 18 year. (Hasanah, 2016). And a small portion at the age of 11 years as many as 4 respondents (19.0%). This is because those aged 11 and under are not fully mature and do not understand the changes that will come during puberty, namely menstruation and free sex.

The results of previous researchers for age from Lestisa Azelia Astri's 2016 study showed that at the age of 11 there were 30 respondents (55.6%), aged 12, there were 13 respondents (24.1%). With the brainstorming method in implementing the brainstorming method, gets more attention from students. Based on the observations of researchers, students were more enthusiastic about participating in reproductive health education using the brainstorming method. The researcher used colored paper media which was distributed to each student, so that students were immediately interested in giving their opinions. The results obtained were that the knowledge of the respondents got results, but the attitude of the respondents was not equivalent to their knowledge. When the group discussion took place, the average student was less active in the group, this was because grade 5 elementary school students were not yet able to discuss independently. The material provided is about the early signs of puberty, physical changes when entering puberty, emotional changes when entering puberty, namely (menstruation), and free sex that occurs in teenage pregnancy and its consequences. This is based on Miswanto (2014) in Nurfitrianie's research, which states that success in conveying information is largely determined by the nature and quality of the information received and this in turn is determined by the nature and quality of the relationships between the individuals involved.

Knowledge and Attitudes of young women after being given reproductive health education.

Based on table 2, it can be explained that knowledge after being given menstrual reproductive health education and free sex by distributing knowledge questionnaires found that most of the respondents were categorized as good (81.0%), namely 17 respondents. The condition of the respondent is categorized as good. Adolescents who have correct knowledge about reproductive health can be careful in their steps, especially when they say that it is puberty, namely menstruation. Teenagers will be able to provide an assessment of whether it is appropriate to have sexual relations with their partners before marriage. The assessments made by the youth were made consciously and not under compulsion (Frantin, 2012).

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Based on table 3, it can be explained that the attitudes after being given menstrual reproductive health education and free sex by distributing attitude questionnaires found that most of the respondents were categorized as positive (90.5%), namely 19 respondents. The condition of the respondent is categorized as positive, a good (positive) attitude will make someone not take negative actions related to reproductive health (Aritonang, 2015).

From game-based learning that knowledge and attitudes about reproduction for young women will improve and increase. Through this method of learning by whispering games (chain messages) this can train children's listening skills with satisfactory results, moreover it can encourage children to concentrate when receiving learning material, so that children who initially get bored quickly and even lack interest in any lesson, become interested in any subject. Which has been specifically designed to assist the learning process (Prasetya et al, 2013). One example of the application of the game-based learning method that can be made by teachers in elementary schools is the chain whisper. Games do have enormous potential in building motivation in the learning process of students, especially elementary school (SD) students.

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Tables 2 and 3 show that based on the results of the Wilcoxon statistical test, it is known that the average value (mean) before being given menstrual reproductive health education and free sex and distributing knowledge questionnaires was 2.5714 with a standard deviation value of 76.642 while the average value (mean) after being given menstrual reproductive health education and free sex and distributing knowledge questionnaires, namely 1.2857 with a standard deviation value of 64.365. The research results obtained from the analysis with the Wilcoxon test obtained a significant value of P = 0.001, meaning $p < 0.05$, then H1 is accepted, meaning that there is an influence of reproductive health education using the chain whisper method on the knowledge and attitudes of young women.

Provision of menstrual reproductive health education and free sex using the chain whisper method to class VI teenage girls. To find out the knowledge and attitudes of young women before and after being given reproductive health education. The researcher measured the knowledge and attitudes of grade VI young girls by distributing knowledge and attitude questionnaires. Before being given the knowledge and attitude questionnaire, most of the sixth-grade girls experienced a decrease in knowledge, especially about menstruation and free sex, to an increase about reproduction, especially menstruation and free sex. The benefits of health education, especially reproductive health for grade VI girls, is to equip and make children aware of the importance of maintaining their health, welfare and dignity by instilling self-protection. a hope that changes will occur in the knowledge, attitudes and behavior of individuals, families, and communities in maintaining healthy living behaviors or an active role as an effort to manage

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optimal health status (Sarowono, 2020). The effect of health education on adolescent knowledge about reproductive health in 2018 (Danang Ari Setyawan 2018).

The effect of providing reproductive health education on the level of knowledge of early elementary school adolescents in the tourist area of Bandungan, Semarang Regency, October 2016 (Letisa Azelia Astri, Sri Winarni, Yudhy Dharmawan 2016). So that the results of research conducted after being given menstrual reproductive health education and free sex with the chain whisper method to class VI adolescent girls experienced an increase in knowledge, indicating an increase in knowledge before and after being given health education about adolescent reproductive health, this proves that in addressing the respondent's ability In receiving and understanding adolescent reproductive health material that is given differently, health education is an effective method for increasing adolescent knowledge. According to Notoadmodjo (2012) the delivery of information is influenced by the method used in which the method and media for delivering information can have a significant effect on increasing knowledge.

CONCLUSION

Knowledge before being given Health Education was in the less category while after being given Health Education it was in the good category. The attitude of adolescents before being given health education was in the negative category, while after being given health, the attitude of adolescents became positive. The knowledge of class VI adolescents UPT SD Negeri 60 Gresik has experienced a good increase so that it is maintained. However, to increase their knowledge, adolescents must play an active role in seeking information about reproductive health such as reading books, reading articles from the internet and information from electronic media. It is intended that the information obtained by adolescents is not wrong and can be used as a reference for adolescents to socialize properly. For young women to take better care of themselves, especially at the beginning of puberty (menstruation). So that the results of this study can be used as basic data in developing science and adding to the author's insight regarding knowledge about reproductive health. This research is expected to be able to facilitate more information about adolescent reproductive health such as increasing reading in the library and increasing counseling activities about adolescent reproductive health.

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The Influence of Video Media Counseling on Knowledge and Attitudes About Marriage in Adolescents at SMA N 1 Doro, Pekalongan Regency

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ABSTRACT

Early marriage is a phenomenon that appears among teenagers. Cases of early marriage are caused by external factors, namely socio-cultural, environmental, inappropriate media sources and lack of exposure to information about early marriage. One way to increase teenagers' knowledge and attitudes about early marriage is by providing health education through video media. The purpose of this study is to determine the effect of video media counseling on teenagers' knowledge and attitudes about early marriage at SMA N 1 Doro, Pekalongan Regency. The type of research used is pre-experimental one group pre-test and post-test design. The sample for this research was 76 respondents from class. This research obtained an average knowledge before 12.9 and after 28.3. The results of increasing knowledge before and after were 15.4 while attitudes were 12.6. The results of the Wilcoxon test obtained p value = 0.000 < 0.05 which shows that there is an influence before and after being given counseling using video media about early marriage to teenagers at SMA N 1 Doro, Pekalongan Regency. Conclusion: It is hoped that related institutions, academics, and researchers can use video media as reference material in providing education about early marriage. To increase the knowledge and attitudes of teenagers to avoid getting married at an early age.

INTRODUCTION

Adolescence is the period between childhood and adulthood. This transition process is the cause of change so that teenagers feel more stressed (WHO, 2019). In the process of adolescent development, many changes occur in development fine motor and gross motor skills related to maturity or puberty, cognitive, intellectual, social and emotional development (Sunaryo, 2014).

Incompatibility with adolescent development tasks will cause problems that arise such as anti-social behavior in adolescents, drug abuse, being easily moved into destructive behavior, and falling into promiscuity such as smoking, drinking alcohol, brawls and sexual behavior (Budiman, 2019). One of the impacts of promiscuity is early marriage. Adolescents who are forced to marry or under certain conditions are under 18 years of age will be vulnerable to access to education, health conditions and have the potential to experience domestic violence (UNICEF, 2018).

In Indonesia itself, nationally the trend of early marriage has increased due to the Covid-19 pandemic. According to the Ministry of National Development Planning/*Bappenas*, there were 400-500 girls aged between 10-17 years carrying out early marriages from 2019-2020 during Covid-19. The percentage of early marriages in 2019 reached 11.21% and in 2020 there were more than 64 thousand applications for marriage relief for underage children. This figure is still categorized as high (Bappenas, 2020). BPS stated

that the target for reducing child marriage is no more than 8.74% in 2024 and 6.94% in 2030. According to the BBKBN, the minimum marriage age is 21 years for women and 25 years for men.

In Central Java, the number of early marriages in 2018-2020 decreased from 321 thousand to 275 thousand people(Central Java BPS, 2020). Meanwhile, in 2021 the number of early marriages increased again rapidly with the number of 9,868 cases, the highest figure occurred in Cilacap, namely 724 cases. Cases of early marriage in Pekalongan Regency alone were 9.8 thousand people in 2018 and decreased to 8.2 thousand people in 2020, but this figure is still in the high category (Central Java BPS, 2020). According to data obtained from the Religious Affairs Office, Doro District, Pekalongan Regency, in 2021, 10 incidents of early marriage between the ages of 17 and 19 were found.

External factors that influence early marriage are socio-cultural, environmental, inappropriate information and media sources, which will influence thought patterns and lifestyles that are at risk of the knowledge, attitudes and behavior of teenagers themselves regarding the impact of early marriage (Syefinda Putri, 2021). According to (WHO, 2020) pregnancy and childbirth in the age range between 10 years and 19 years have a greater risk of eclampsia, puerperal endometritis, and systemic infections than those aged 20-24 years. Unhealthy sexual behavior among teenagers tends to increase. Several studies have expressed concern about the phenomenon of sexual behavior among Indonesian teenagers. The research results showed that the forms of behavior carried out by teenagers were 84% holding hands, 68% hugging, 71% kissing, 35% touching sensitive body parts, 27% petting, 29% oral sex, 24% sexual intercourse, 21% sexual violence.

Changes in teenagers' sexual attitudes and behavior result in sexual problems, the spread of venereal disease and pregnancy. This problem has negative impacts, namely abortion or early marriage (Kusrina, 2017). This is because teenagers aged 16-18 years have a desire to date, develop deep feelings of love, and fantasize about sexual matters.

Teenagers who lack knowledge and information about early marriage will also have an impact on teenagers' attitudes towards early marriage, because positive knowledge and attitudes are determinants of behavior towards early marriage. Due to this phenomenon, efforts are needed to prevent and overcome sexual behavior that causes marriage in teenagers.

METHOD

This research uses a pre-experimental type of research with a one group pretest posttest design which aims to find out whether there is an influence of video media counseling on teenagers' knowledge and attitudes about early marriage at SMA N 1 Doro, Pekalongan Regency. The research was carried out from November 2022 to January 2023. The population in this study was all class XII students of SMA N 1 Doro for the 2022/2023 academic year with a total of 216 students. The sample in this study was class Data was

collected using questionnaires and questionnaires distributed to respondents to obtain data regarding respondents' knowledge and attitudes about early marriage. Data analysis uses univariate analysis to describe the frequency distribution of each variable. Bivariate analysis to determine the effect of the independent variable and the dependent variable using the Wilcoxon test.

RESULT

Table 1 Frequency Distribution of Knowledge about Early Marriage Before and After the Intervention.

Knowledge level	Pretest		Posttest	
	Frequency	Percent	Frequency	Percent
Not enough	71	93.4%	3	3.9%
Good	5	6.6%	73	96.1%
Total	76	100%	76	100%

Source: (Primary Data 2023)

Based on table 1 above, the research results showed that respondents' knowledge about early marriage at SMA N 1 Doro before being given intervention was mostly in the poor category, namely 71 (93.4%) respondents, and in the good category, namely 5 (6.6%) respondents. Knowledge after being given intervention was mostly in the good category, namely 73 (96.1%) respondents and a small part was in the poor category, namely 3 (3.9%) respondents. So, there was an increase in knowledge before the counseling was carried out and after the counseling was carried out by 89.5%.

Table 2 Frequency Distribution of Attitudes about Early Marriage Before and After Giving Counseling

Attitude	Prettest		Posttest	
	Frequency	Percent	Frequency	Percent
Negative	72	94.7%	12	15.8%
Positive	4	5.3%	64	84.2%
Total	76	100%	76	100%

Source: Primary Data (2023)

Based on table 2, it shows that most respondents' attitudes about early marriage before being given intervention were in the negative category, namely 72 (94.7%) respondents and a small portion were in the positive category, namely 4 (5.3%) respondents. Attitudes regarding early marriage after being given intervention were mostly in the positive category, namely 64 (84.2%) and a small number were in the negative category, namely 12 (15.8%) respondents. So, it is known that most respondents' attitudes on the pretest were negative and the attitudes of respondents on the posttest were positive.

Table 3 Bivariate Analysis of the Effect of video media counseling on knowledge about early marriage among teenagers at SMA N 1 Doro, Pekalongan Regency

Variables	Group	Mean	Standard deviation	N	P value
Knowledge	Before	12.9	3.24	76	0,000*
	After	28.3	2.46	76	

Based on table 3, it shows that the comparison of knowledge before and after being given the intervention there was a change, the average before being given the intervention was 12.9 and after being given the

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intervention the average was 28.3, while the standard deviation before the intervention was 3.24 and the standard deviation after the intervention was 28. ,3. The statistical test results obtained a p value of 0.000 (<0.05) so it was concluded that there was a significant influence before and after being given counseling using video media on knowledge about early marriage.

Table 4 Bivariate Analysis of the Effect of Video Counseling on attitudes about early marriage among teenagers at SMA N 1 Doro, Pekalongan Regency

Variables	Group	Mean	Standard deviation	N	P value
Attitude	Before	26.5	5.26	76	0,000*
	After	39.1	5.82	76	

*Wilcoxon test

Based on table 4, it shows that the comparison of attitudes before and after being given the intervention there was a change, the average before being given the intervention was 26.5 and after being given the intervention the average was 39.1, while the standard deviation before the intervention was 5.26 and the standard deviation after the intervention was 5.82. The statistical test results obtained a p value of 0.000 (<0.05) so it was concluded that there was a significant influence before and after being given counseling using video media on attitudes about early marriage.

DISCUSSION

Knowledge or cognitive is a very important domain for the formation of a person's actions. A person's knowledge about an object contains two aspects, namely positive aspects, and negative aspects (Wawan and Dewi, 2010). In this study, it was shown that the frequency value of the less category was 71 respondents. This is because there are several factors that influence knowledge, including education, mass media/information, social culture and economics, environment, experience, and age (Rahayu, 2017). The pretest results showed that knowledge was in the poor category as many as 71 (93.4%), 5 (6.6%) in the good category, after being given the intervention, 73 respondents had good knowledge. Where the average knowledge before and after the intervention increased by 15, 4%, which means that after being given counseling, knowledge increased from poor knowledge to good knowledge. This increase in knowledge was influenced by the answers to the questionnaire which experienced a lot of improvement before being given counseling, there were 96.1% of respondents.

The results of the posttest which increased according to Martanegara (2018) revealed that knowledge and interesting media used in providing information can influence the increase in scores obtained from questionnaire questions. This is in line with research conducted by Fitriani (2020), that one of the successes of an extension can be influenced by mass media and presenters. According to Heriana (2020), good knowledge is obtained from the ease of obtaining information, thereby speeding up a person's

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increase in knowledge. This is also in accordance with research (Martilova, 2020), states that information is a source of a person's knowledge which will increase when they get a lot of information.

Attitude is an assessment process carried out by an individual towards an object. The process of a person's assessment of an object can be in the form of positive and negative assessments. Manifestations of attitudes cannot be seen directly, but can only be interpreted first from closed behavior (Sulaiman, 2020). The pretest results showed that attitudes were in the negative category as many as 72 (94.7%), positive as many as 4 (5.3%), after being given health education using video media about early marriage, there was a significant increase, namely there were 12 (15.8%) respondents in the negative and positive categories were 64 (84.2%).

Martilova (2020), states that a person's attitude is influenced by beliefs, emotions, thinking tendencies, beliefs, and emotions which play an important role in a person's attitude. Human attitudes are not formed through social processes that occur during their lives, where individuals gain information and experience. This process can take place within the family, school, or community. When a social process occurs, a reciprocal relationship occurs between individuals and their surroundings. These interactions and relationships then form patterns of individual attitudes towards those around them (Notoatmojo, 2018).

Results of data analysis using the Wilcoxon test. For knowledge, pretest and posttest, a p-value of 0.000 (≤ 0.05) was obtained, so it is concluded that H0 is rejected, and Ha is accepted, which means there is a significant influence before and after being given video media counseling on knowledge about early marriage. This shows that counseling using video media can influence teenagers' knowledge about early marriage at SMA N 1 Doro, Pekalongan Regency.

The results of this study are in accordance with research (Johari, 2020) regarding the effect of providing videos on the impact of early marriage in Yogyakarta, where a p-value of 0.000 (<0.05) was obtained, so it was concluded that there was a significant difference between the control group and the intervention group.

Video media is an effective medium in conveying information on reproductive health education, counseling using video media increases teenagers' knowledge of early marriage. This is also in accordance with research (Johari, 2020), which states that educational videos can increase the average knowledge from 59.47 to 78.31. The increase in knowledge occurs because the sense of sight will channel knowledge of approximately 75-87%, 13% from the sense of hearing and 12% from other senses. Educational videos contain images and sound so that respondents are able to absorb around 88% of the information provided, while e-modules only contain writing and images so respondents are only able to absorb around 75% of the information provided (Tuzzahroh, 2019).

Results of data analysis using the Wilcoxon test. For attitudes, pretest and posttest, a p-value of 0.000 (<0.05) was obtained, so it was concluded that H0 was rejected, and Ha was accepted, which means there

was a significant influence before and after being given video media counseling on attitudes about early marriage. This shows that counseling using video media can influence teenagers' attitudes about early marriage at SMA N 1 Doro, Pekalongan Regency.

Similar to research conducted by (Sari, 2019), before and after being given the intervention there was an increase of 25 respondents (100%), seen from the p-value of 0.00 (<0.05) which means there was a significant effect before and after being given counseling about early marriage.

Factors that influence a person's attitude are personal experience, the influence of other people, culture, mass media, education, religion, and emotional factors. Attitude is a person's closed response to a stimulus or object and involves the relevant opinion and emotional factors (Azwar, 2018).

Health education is an application of educational concepts that aims to change detrimental behavior towards beneficial behavior (Notoatmojo, 2018). The existence of health education for teenagers can gain better health insight and knowledge about early marriage.

Videos are a substitute for the natural environment and can show objects normally, videos can describe a process accurately and can be remembered easily, so they can encourage and increase students' motivation to keep watching them (Fatimah et al., 2019).

Providing counseling using video media is an effective medium because at the time of the intervention several respondents had high enthusiasm for seeing the contents of video media shows. Attitudes will be formed when someone has been exposed to repeated information so that a positive attitude will be formed (Fibriana L, 2016).

The results of this research provide important information about the influence of counseling using video media on adolescent knowledge and attitudes. So that teenagers can prepare and understand the impact of marriage on themselves for their physical and psychological health.

The results of research using the Wilcoxon test obtained a p-value = 0.000 ≤ 0.05, which means that there is an influence of video media counseling on knowledge and attitudes about early marriage at SMA N 1 Doro, Pekalongan Regency.

The limitation in this research is that it uses direct counseling using video media, where the researcher must collect samples from the class. This is because the researcher had difficulty collecting samples because at the time of the research it coincided with the students' first day of school after the odd semester break, so with help from the teacher, more Specifically, it is the student affairs sector that collects samples so that researchers can carry out outreach.

CONCLUSION

Based on the results of this research, it can be concluded that the majority of 96.1% of respondents had good knowledge after being given counseling using video media. Most teenagers' attitudes about early

marriage after being given counseling using video media were in the positive category as much as 84.1%. There is an influence of counseling using video media on knowledge about early marriage among teenagers at SMA N 1 Doro, Pekalongan Regency. There is an influence of counseling using video media on attitudes about early marriage among teenagers at SMA N 1 Doro, Pekalongan Regency. Suggestions for institutions: Can use video media to increase students' knowledge and attitudes about early marriage when providing education at school and/or counseling guidance.

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Differences in Halothane and Isofluran Anesthesia on Hemodynamic Status

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ARTICLE INFORMATION

ABSTRACT

Halothane and Isoflurane are two frequent inhalation agents used as maintenance anesthesia during surgery. After experiencing anesthesia, many patients experience decreased hemodynamic status as pressure blood, respiration, and pulse. Because that study this expected could determine proper anesthesia for use. Evaluates differences in hemodynamic status post-anesthesia consequence use of halothane and isoflurane. This is a study with quasi pre-post design experiment with a control group design. The sample study is all patients undergoing Installation Surgery at Sele Be Solu Hospital, Sorong City, which uses the general anesthesia technique with inhalation of halothane or isoflurane for as many as 21 people. Instrument study use sheet observation to measure pressure, blood, respiration, and pulse During surgery. The Wilcoxon test obtained a score of 0.157 on the pressure blood respondent after getting anesthesia halothane and respondents after getting anesthesia isoflurane, i.e., 0.007. Mann Whitney test shows changes in blood pressure, pulse, and respiration in anesthetized respondents who used halothane and isoflurane score significance of 0.784, 0.576, and 0.307. There is a difference in blood pressure at first and end anesthesia use of isoflurane. No, there is a difference in frequency pulse, initial pulse, and respiration anesthesia, and end anesthesia uses isoflurane. No there is a difference in pressure blood, pulse, and respiration at the beginning and end anesthesia uses halothane. There is no difference in blood pressure, pulse, and respiration after general anesthesia uses isoflurane and halothane.

INTRODUCTION

A drug is something substance that affects the chemistry and changes the function of biologics. Drugs could be synthesized in the body (e.g., hormone) or as substances incoming chemistry from beyond the so-called xenobiotics. Every substance chemistry is a characteristic poison (toxic), and its occurrence of poisoning is determined by the dose and method gift (Benjamin et al., 2022).

Data from the World Health Organization (WHO) report that the number of incident surgeries in the world ranged from 5% to 34%. in the period (Dobson, 2020; Haugen et al., 2015). January until December 2022, numbers incident surgery at Sele Be Solu Hospital, from whole total patient take care stay recorded as many as 270 patients. Almost all action surgery is conducted under the influence of anesthesia, among others conducted with anesthesia in general.

Agent anesthesia general could use through injection, inhalation, or through combined injection and inhalation. general Anesthesia frequent inhalation used in the world is halothane, Isoflurane, sevoflurane, desflurane, diethyl ether, and nitrous oxide. Anesthesia is generally given in a manner injection covers barbiturates (thiopental, methohexital, and pentobarbital), cyclohexane (ketamine, tiletamine), etomidate, and propofol (Miller et al., 2022; Sorrenti et al., 2021).

One shape of frequent anesthesia used is anesthesia inhalation. Anesthesia inhalation is medicine in the form of gas or fluid easy evaporates, given through a breathing patient. Anesthesia inhalation has superiority in its high potency and concentration that can be controlled through the machine, allowing titration dose to produce the desired response (Brown et al., 2018; Scheiermann et al., 2018) .

Anesthesia generally needs attention in Thing hemodynamic because, influential in a manner, mobile; Anesthesia generally reverses changes in the physiological status body, which is marked by loss of consciousness (sedation). Perception pain (analgesia), loss of memory (amnesia), and relaxation (Staheli & Rondeau, 2022).

Anesthesia has this narrow index, producing toxic effects on several organs, eg, the heart. How it works drug anesthesia inhalation to speed heart with change in a manner live speed depolarization of the sinoauricularis node (SA node), or with swipe balance activity system nerve autonomous. Several examples of anesthesia inhalation are halothane and Isoflurane (Becker & Reed, 2012; Becker & Rosenberg, 2008).

Halothane is a potent anesthetic with a weak analgesic effect. Halothane, in a manner that lives, hinders muscle heart and muscle vessels blood as well as lower the activity of nerve sympathetic. Decline pressure blood happens because of two things, namely (1) depression living with myocardial and (2) inhibition of its reflex baroreceptors to hypotension. Besides, halothane also causes bradycardia because of increased vagal activity. Halothane causes vasodilation of blood vessels in the muscle's skeleton and brain, so Genre blood to the brain and muscles increases (Miller et al., 2022).

Isoflurane, including halogenation ether causes depression and minimum heart. Cardiac output maintained with enhancement frequency pulse heart through maintenance Partial from baroreflex carotid. Using Isoflurane is more stable and more fast recovery compared with halothane (Aronson, 2016; Eis & Kramer, 2022; Hudson et al., 2019).

Inhalation with Isoflurane in many Things has more pharmacology good than halothane. Isoflurane has minimal effect side. For a reason, this security isoflurane is more often used, though eat costs higher (Hawkley et al., 2022; Villeneuve & Casanova, 2003).

Most surgeries performed in Installation Surgery Sele Be Solu General Hospital, Sorong City, are conducted with an anesthesia general. Halothane and Isoflurane are two frequent inhalation agents used as maintenance anesthesia general During surgery. After experiencing anesthesia, many patients experience decreased hemodynamic status as pressure, blood, breath, and pulse. In general, the number of patients undergoing surgery who use anesthesia will be as many as 143 in 2022, with an average of 12 people per month.

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Attention major in anesthesia is the security and safety of the patient; one factor is stability hemodynamic. During action induction, anesthesia goes on. Hemodynamic parameters include blood systole pressure, diastolic blood pressure, artery average, heart rate, and saturation oxygen (Hansen et al., 2022).

According to (Hafen & Sharma, 2022) blood average arteries and a 20% decrease in saturation oxygen arteries in 30 seconds. Meanwhile, on giving induction inhalation, halothane declines blood pressure on average arteries and saturation oxygen arteries up to 2 times more than Isoflurane. That is, giving anesthesia inhalation, Isoflurane safer for changing hemodynamic than halothane (Morimoto et al., 2022; Shoroghi et al., 2011).

According to research, (Franzén et al., 2022) stated that at the administration of 1 vol % up to a dose maximum of 7 vol %, Isoflurane gives change better hemodynamic stable than gift dose maximum of 5 vol % halothane. Of course, you can influence the results obtained in the study, different concentrations, and types of second anesthesia. Based on this will conduct a study on the ratio influence of anesthesia with halothane and Isoflurane on hemodynamic status. Inhalation with Isoflurane in many Things has more pharmacology good than halothane. Isoflurane has minimal effect side. Halothane and Isoflurane are two frequent inhalation agents used as maintenance anesthesia during surgery. After experiencing anesthesia, many patients experience decreased hemodynamic status as pressure, blood, breath, and pulse. For a reason, this security isoflurane is more often used, though eat costs higher. The purpose of the study is to evaluate the difference in hemodynamic status post-anesthesia consequence use of halothane and Isoflurane.

METHOD

The draft study is pre-experimental with approach quasi-experiment pre and post-test with control group design. The sample in the study is patients' surgery aged 16-55 years without systemic disease, deep vital signs, normal limits, results in the inspection of blood routine, and description of blood edge in normal limits. Patients with a disease malignancy who carried out surgery <1 hour or >3 hours and experienced bleeding >20 % and received patient transfusion blood before or when surgery was not entered in a study. As many as 21 respondents in the study recruited using technique accidental sampling. Study this done in room surgery house sick sele be solu city Sorong, on the June- July 2022. Instruments used in the study are a Bedside monitor, Calculator, Stopwatch, and Observation sheet. The observation sheet contains the hemodynamic status patient During surgery. The observation sheet this filled out every 15 minutes. Study this assisted by doctor anesthesia. The Subject Fasted 6 hours before surgery and installed infusion since fasting. They were given premedication with oral diazepam 5 mg in the room 2 hours before surgery. After arriving at the room, the surgery evaluated the first vital signs. Induction anesthesia intravenously with a total of 5 mg/kg BW (solution made new) was injected for more than 30 seconds until awareness and

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reflex hair eye loss and then given drug paralyzing muscle traction 0.5 mg/kg BW and fentanyl 1.5 µg/kg BW. Ventilation using O_2 and N_2O concentration of 50%:50%, continued then gift inhalation agent halothane or isoflurane concentration 1-1.5 MAC (start counted minute 0). Intubation endotracheal was conducted after the 3rd minute. In the 15th minute, complete the evaluation second vital signs second. Then surgery started, and after 60 minutes of evaluation third vital signs after surgery finished conducted extubation. Room recovery after aware complete (with criteria Aldrete Score) was evaluated fourth vital signs Distribution data analysis frequency respondent containing Age, Type gender, Education, Occupation, Type anesthetics and drugs Anesthesia used. For test differences, use the Wilcoxon and Mann-Whitney tests.

RESULT

Characteristics of respondents will be explained in the study. This covers age, type of gender, education, occupation, gender anesthesia, type of drug anesthesia, and post-vital signs anesthesia. The distribution frequency characteristics respondent study served in Table 1 follows.

Table 1 Distribution frequency characteristics respondents (n=21)

No	Characteristics	n	%
1	Age (years)		
	16-25 years	8	38.1
	26-35 years	4	19
	36-45 years	4	19
	46-55 years	3	14.3
	56-65 years	1	4.8
	>65 years	1	4.8
2	Gender		
	Man	13	61.9
	Woman	8	38.1
3	Education		
	Junior high school	3	14.3
	Senior high school	12	57.1
	University	6	28.6.
4	Profession		
	Not work	9	42.9
	Civil Servant	4	19
	Private	8	38.1
5	Type anesthesia		
	General anesthesia	21	100
6	Drug Anesthesia		
	Halothane	5	23.8
	Isoflurane	16	76.2

Table 1 shows that the respondents in this study were dominated by males aged 16-25 years, with high school education and not working. All respondents who received general Anaesthesia received isoflurane. Analysis bivariate in a study for now hemodynamic status (pressure, blood, pulse, and respiration) post-anesthesia halothane hemodynamic status (pressure, blood, pulse, and respiration) post-anesthesia halothane and isoflurane.

1. Hemodynamic status (pressure blood, pulse, and respiration) beginning and end anesthesia halothane and isoflurane.

Pressure blood

Table 2 Influence pressure blood beginning anesthesia and end anesthesia halothane and isoflurane

No	Type anesthesia	n	Variable	Means	$P*$
1	Halothane	5	Pressure blood	1.50 0.00	0.157
2	Isoflurane	16	Pressure blood	4.50 0.00	0.007

Table 2 shows that based on the Wilcoxon test, a score of 0.157 significant from level 95% significance (p<0.05) was obtained for pressure blood respondents who got anesthesia halothane. The opposite result was found under pressure blood respondents who got anesthesia isoflurane, i.e., 0.007 more small than level 95% significance (p<0.05).

Table 3 Influence pulse beginning anesthesia and end anesthesia halothane and isoflurane.

No	Type anesthesia	n	Variable	Means	P
1	Halothan	5	Pulse	0.00 0.00	1,000
2	Isoflurane	16	Pulse	1.00 0.00	0.317

Table 3 shows that based on the Wilcoxon test, obtained score significance of 1.000 and 0.317 bigger from level 95% significance (p<0.05) on pulse respondents who got anesthesia halothane and isoflurane.

Respiration

Table 4 Influence respiration beginning anesthesia and end anesthesia halothane and isoflurane.

No	Type anesthesia	n	variable	mean	P
1	Halothan	5	Respiration	0.00 0.00	1,000
2	Isoflurane	16	Respiration	0.00 2.00	0.083

Table 4 shows that based on the Wilcoxon test, obtained score significance of 1,000 and 0,083 were more considerable than level 95% significance (p<0.05) on respiration respondents who got anesthesia halothane and isoflurane. Influence of hemodynamic status (pressure blood, pulse, and respiration) anesthesia halothane and isoflurane.

Table 5 Effect of hemodynamic status (pressure blood, pulse, and respiration) anesthesia halothane and isoflurane.

No	Type anesthesia	n	variable	P
1	Halothan	5	Pressure blood	0.784
	Isoflurane	16		
2	Halothan	5	Pulse	0.576
	Isoflurane	16		
3	Halothan	5	Respiration	0.307
	Isoflurane	16		

Table 5 shows that based on the Mann-Witney test no, there is a difference in change pressure blood, pulse, and respiration in anesthetized respondents who used indicated halothane and isoflurane with through with number significance of 0.784, 0.576, and 0.307 more significant from level significance *p<0.05.*

DISCUSSION

Research results thus show a difference in pressure blood at first anesthesia and end anesthesia use of Isoflurane. However, no, there is a difference in pulse frequency and breathing. Studies also find no difference in blood pressure, pulse, and respiration at the beginning and end of anesthesia use of Halothane. Research results find no difference in blood pressure, pulse, and respiration after general anesthesia use of Isoflurane and Halothane.

Almost all action surgery was conducted under anesthesia, among them general anesthesia. Consequences influential in a manner cellular, general anesthetic need get attention. Anesthesia general circumstances reversible changes in the physiological status body, which is marked by loss of consciousness (sedation). According to the research on pain (analgesia), loss of memory (amnesia), and relaxation, this patient undergoing general anesthesia generally used Halothane and Isoflurane.

Isoflurane and Halothane are the agents of frequent inhalation used as maintenance anesthesia during surgery besides enflurane. Inhalation with Isoflurane in many Things has affected pharmacology more than Halothane. However, the study finds different things: pressure blood experience decreased at 60 minutes after getting anesthesia isoflurane but not on pulse and breathing. Isoflurane enters the lungs to the blood, influencing the center Settings respiration and heart in the pons and medulla oblongata. It will cause blood to be accommodated inside the heart; however, the heart slows down and affects the pulse's speed. So the pressure heart will increase to fulfil the need network will blood (de Souza Valente, 2022; Klincová et al., 2022).

Research results in this different from (Watanabe et al., 2022) show that Isoflurane has more influence on the enhancement pulse. Besides that, the use of Isoflurane causes tachycardia or enhanced frequency pulse heart, increases pressure in blood arteries, and needs oxygen to increase.

Anesthesia use of Halothane did not show a change in significant vital signs in a study compared with Isoflurane. Several theories support the results study this that is except for Halothane, everyone drug of anesthesia has lower resistance to vascular systemic cause decline pressure blood and produce reflex tachycardia.

During anesthesia with Halothane, resistance vascular systemic no change, and through the stimulation vagus nerve, bradycardia and rhythm node generally happen. Not a drug for anesthesia inhalation, Halothane causes sensitization heart to affect arrhythmogenic from catecholamines and ventricles ectopic

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saw (Moen et al., 2022). Catecholamine levels in high circulation could cause tachycardia ventricular or fibrillation ventricles, especially in the circumstances of hypercarbia, which can occur in a breathing patient spontaneously with Halothane.

In many Things rated, Isoflurane is an inhalation agent that has effect more side low; however, in a study, this did not show a significant difference. Anesthesia inhalation with Halothane causes a decline of bulk heart and then causes a decline of an artery caused by the slightest change in prisoner vascular systemic (Amsterdam et al., 2015)

Halothane, in a manner, gradually pushes respiration. There is tachypnea with volumes of sleep reduced and alveolar ventilation. Halothane no creates irritation on the channel breathing and no enhancement secretion of saliva or bronchial, which usually happens. Reflex pharynx and larynx very fast, and not aware (Fröhlich, 2022; Ullal et al., 2022)

This causes bronchodilation, Hypoxia, acidosis, or apnea may develop During deep anesthesia. Halothane reduces blood pressure and often lower pulse. The bigger concentration medicine, the clearer change this happened. Atropine could reverse bradycardia. Halothane also causes widening vessels, skin, and muscles framework (Cirino et al., 2023; Shimizu et al., 2022).

Halothane is an anesthesia inhalation, Induction and recovery are fast, and deep anesthesia could with fast changes. Halothane does not cause the release of catecholamine from shop adrenergic.

Halothane also causes widening vessels' skin and muscles framework. Arrhythmia heart possibly happens During anesthesia Halothane. This includes nodal rhythm, AV dissociation, extrasystole ventricles, and tick heart. Halothane synthesizes system conduction myocardial for action epinephrine and norepinephrine, and their combinations could cause arrhythmia heart severe (Shoroghi et al., 2011).

Halothane increases pressure fluid cerebrospinal. Halothane produces moderate relaxation muscle. Relax muscle is used as an additive to maintain light anesthesia. Halothane adds action relaxant, nondepolarizing, and ganglionic blocking agent. Study this own limitation that is not determining respondents evenly, and Time is too short to study this, so the total respondent still needs to fulfil the standard study experiment.

CONCLUSION

Based on the results study this is what we conclude that not there is the influence of anesthesia halothane to pressure blood, pulse, and respiration; however, there is an influence of isoflurane under pressure blood, and no there is difference in pulse and not their difference change in pressure blood, pulse, and respiration in anesthetized respondents use halothane and isoflurane. We suggest that Need conduct a study continuation of surgeries with longer time against anesthesia with halothane and isoflurane to know if the decline in vital signs occurs due to drug anesthesia or other underlying factors such as preparation surgery.

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Relationship Between Coffee Consumption Habits and Farmers' Blood Glucose Levels in Jenggawah Village, Jenggawah Subdistrict, Jember Regency

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A B S T R A C T

Diabetes mellitus (DM) is a chronic metabolic disorder and a major global problem. Coffee contains several bioactive compounds, such as caffeine, chlorogenic acid, trigonelline, cafestol, and kahweol, associated with a reduced risk of type 2 DM. This study aimed to assess the relationship between coffee consumption habits and blood glucose levels of farmers in Jenggawah Village, Jenggawah Subdistrict, Jember Regency. We used a cross-sectional study design. The sample of this study was 137 farmers who were taken by purposive sampling. Assessment of coffee consumption habits was conducted using a questionnaire. At the same time, data on random blood glucose levels were obtained from medical records of the Bakti Sosial Akbar dan Pengobatan Gratis Agromedis activities in Jenggawah Village in June 2022. Statistical analysis was performed using the Kruskall-Wallis test, and multivariate analysis using linear regression. The results showed that there was no statistically significant difference in random blood glucose levels between groups based on the variable type of coffee consumed (p=0.212), the level of coffee consumption (p=0.211), and the amount of sugar added to the coffee (p=0.086). However, the linear regression test results showed that the amount of added sugar in coffee had the greatest relationship with blood glucose levels compared to other independent variables (p=0.031). In conclusion, there was no relationship between coffee consumption habits and random blood glucose levels of farmers in Jenggawah Village. Further research is needed to confirm these findings.

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder that is a global problem with enormous social, health, and economic consequences. It is characterized by persistent hyperglycemia caused by impaired insulin secretion, insulin action, or both (Reed et al., 2021). The number of diabetes patients has been rapidly increasing across the world. The International Diabetes Federation in 2021 reported 537 million people with diabetes, predicted to increase by 783 million in 2045. Indonesia itself ranks fifth in the top 10 countries with the highest number of people with DM, with 19.5 million suffering from this disease (International Diabetes Federation, 2021). Furthermore, according to the data from Riset Kesehatan Dasar (Riskesdas) in 2018, the prevalence of diabetes mellitus based on the type of work as a farmer in Indonesia was 12.6% (Kemenkes RI, 2019).

Dietary intervention has been considered an effective strategy to prevent the occurrence of DM and its complications. Coffee is one of the most popular drinks worldwide, with an estimated consumption of 500 billion cups annually (Forouhi et al., 2018; Ramli et al., 2021). Bioactive compounds in coffee, such as caffeine, chlorogenic acid, trigonelline, cafestol, and kahweol, have received special consideration

regarding their beneficial effects on various chronic diseases, particularly type 2 DM. Several studies have reported that dose-dependent coffee consumption has been shown to lower the risk of developing type 2 DM (Bae, 2021; Reis et al., 2019). However, many of these studies did not clearly describe the type of coffee they investigated.

Coffee processed differently can produce different chemical compositions (Shi et al., 2020). In Indonesia, processed coffee widely circulated in the market is usually available in two forms, which are ground coffee and instant coffee. Ground coffee is served by mixing ground coffee beans with boiling water. Meanwhile, most Indonesians consume instant coffee as a mixture of sugar and coffee, including 3-in-1 coffee, a mixture of coffee, sugar, and milk or creamer (Sudiyarto et al., 2012). According to one prospective cohort study conducted on the Korean population, men who consumed 3-in-1 coffee had a lower risk of developing high fasting blood glucose levels than those who did not (Tan et al., 2021). In contrast to these results, a cross-sectional study also conducted in Korea showed that 3-in-1 coffee consumption in DM patients was positively correlated with the increase in fasting blood glucose levels (Yoo & Park, 2022). This suggests that the findings are still inconclusive and further research is needed.

Jenggawah Village is in Jenggawah Subdistrict, Jember Regency. Most of the villagers of Jenggawah work as farmers or farm laborers, as many as 2,519 people, which makes this village one of the Agromedicine-fostered villages (BPS Kabupaten Jember, 2022). Given the high number of Indonesians employed in the agricultural sector, to our knowledge, there are no studies assessing the association between coffee consumption habits in farmer populations. Based on this background, we are interested in conducting further research on the relationship between coffee consumption habits and blood glucose levels among farmers in Jenggawah Village, Jenggawah Subdistrict, Jember Regency.

METHOD

This study used a cross-sectional approach to analyze the relationship between coffee consumption habits and farmers' blood glucose levels. The population of this study is all people who work as farmers and attend the Bakti Sosial Akbar dan Pengobatan Gratis Agromedis activities in June 2022 in Jenggawah Village. The inclusion criteria of this study were Jenggawah villagers who worked as farmers or farm laborers, aged ≥18 years, were willing to participate in this study and had signed the informed consent sheet. While the exclusion criteria were participants who were diagnosed with DM through history taking and blood glucose examination, consumed more than one type of coffee, and had incomplete data. Based on these criteria, 137 samples were obtained using the purposive sampling technique. This study has received ethical approval from the Health Research Ethics Commission of the Faculty of Dentistry, University of Jember, with number 1826/UN25.8/KEPK/DL/2022.

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This study used a combination of primary and secondary data. The independent variables studied were coffee consumption habits assessed based on the type of coffee consumed, the level of coffee consumed daily, and the amount of added sugar in coffee obtained from filling out questionnaire sheets through interviews. The research questionnaire has been tested for validity and reliability with a corrected item-total correlation value of more than 0.3 and Cronbach's alpha value of more than 0.7. Meanwhile, the dependent variable was random blood glucose levels obtained from medical record data of the Bakti Sosial Akbar dan Pengobatan Gratis Agromedis activities in Jenggawah Village. For the assessment of coffee consumption habits, participants were asked about the type of coffee consumed, including 1) non-drinkers, 2) mixed instant coffee, and 3) ground coffee; the level of coffee consumption, comprising 1) non-drinkers, 2) <1 cups/day, 3) 1-2 cups/day, and 4) ≥3 cups/day; as well as the amount of added sugar in coffee, that is 1) non-drinkers, 2) mixed instant coffee, 3) <3 teaspoons, and 4) ≥ 3 teaspoons.

Statistical analysis was performed using SPSS version 26 (IBM Corp, Armonk, NY). The univariate analysis used in this study involved analysis of the frequency and percentage of age, gender, and coffee consumption habits. Meanwhile, bivariate analysis was conducted using the Kruskall-Wallis test with an alpha value of 0.05. Then, multivariate analysis was carried out with linear regression tests to see the relationship between several independent variables and the dependent variable, and determine which independent variable had the greatest influence on the dependent variable.

RESULT

Based on Table 1 below, most of the samples were dominated by the age group 45-64 years (63.5%), and according to gender, the proportion of samples that were female (70.1%) was greaterT compared to men (29.9%).

Table 1. Demographic characteristics of the study participants

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
18-44	23	16.8
45-64	87	63.5
≥65	27	19.7
Gender		
Male	41	29.9
Female	96	70.1
Total	137	100

In addition, Table 2 demonstrates that 56 samples (40.9%) were non-coffee drinkers. By type, ground coffee was the sample's most consumed coffee (41.6%). Furthermore, according to the level of coffee consumption, most of the samples (27.7%) in this study drank 1-2 cups of coffee daily. Moreover, based on the amount of added sugar in coffee, 24 samples (17.5%) were drinkers of mixed instant coffee. In contrast, for those who consumed ground coffee, the majority (23.4%) added ≥3 teaspoons of sugar to their

coffee. The Kruskall-Wallis test results indicated that there were no significant differences in blood glucose levels according to the type of coffee consumed (p=0.212), the level of coffee consumed daily (p=0.211), and the amount of added sugar in coffee (p=0.086).

Table 2. Kruskall-Wallis test results of the relationship between coffee consumption habits and farmers' blood glucose levels

		N (%)	Median (min-max)	P value
Types of coffee consumed	Non-coffee drinkers	56 (40.9)	116 (68-168)	0.212
	Mixed instant coffee	24 (17.5)	102.5 (77-189)	
	Ground coffee	57 (41.6)	113 (78-184)	
Coffee consumption levels	Non-coffee drinkers	56 (40.9)	116 (68-168)	0.211
	<1 cups/day	31 (22.6)	113 (77-189)	
	1-2 cups/day	38 (27.7)	106 (78-172)	
	≥3 cups/day	12 (8.8)	123 (90-178)	
Amount of added sugar in coffee	Non-coffee drinkers	56 (40.9)	116 (68-168)	0.086
	Mixed instant coffee	24 (17.5)	102.5 (77-189)	
	<3 teaspoons	25 (18.2)	107 (78-172)	
	≥3 teaspoons	32 (23.4)	117.5 (78-184)	
Total		137 (100)		

We further conducted a multivariate analysis using a linear regression test with enter method, as seen in Table 3.

Table 3. Linear regression test results of the relationship between coffee consumption habits and farmers' blood glucose levels

Variables	Standardized beta coefficient	P value
Types of coffee consumed	-0.628	0.089
Coffee consumption levels	-0.024	0.885
Amount of added sugar in coffee	0.684	0.031
F	1.728	0.164
R Square	0.038	

Table 3 indicates that simultaneously there was no significant relationship between the variables of type of coffee consumed, level of coffee consumption, and amount of added sugar in coffee with blood glucose levels (p=0.164). In addition, it is also known that the coefficient of determination or R Square is 0.038 or 3.8%, which means that all the independent variables tested have a very weak relationship with blood glucose levels. However, the analysis obtained that the variable amount of added sugar in coffee has the largest standardized beta coefficient value, which is 0.684, meaning that the more sugar added to coffee, the higher the blood glucose level of the sample (p=0.031).

DISCUSSION

This cross-sectional study investigated the relationship between coffee consumption habits and blood glucose levels in farmers not diagnosed with DM. Over the past few decades, much literature has supported the association between coffee consumption habits and a reduced risk of type 2 DM. Several mechanisms have been proposed to explain the effects of coffee consumption on glucose metabolism. Caffeine may affect blood glucose levels by decreasing appetite and increasing basal metabolic rate or

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thermogenesis by activating the sympathetic nervous system. In addition, caffeine is also known to reduce glucose production in the liver by inhibiting adenosine A2B receptors and stimulating glucose transport through the activation of cyclic adenosine monophosphate (cAMP)-dependent protein kinase α-1. However, there is evidence that acute caffeine consumption may increase postprandial blood glucose levels by transiently impairing insulin sensitivity (Feyisa et al., 2019; Kolb et al., 2021).

Chlorogenic acid and trigonelline have similar effects on glucose metabolism, reducing the digestion and absorption of carbohydrates in the gastrointestinal tract by inhibiting the enzymes amylase, α-glucosidase, and sodium-glucose cotransporter (SGLT) channels. In addition, both compounds can also inhibit glucose release in the liver by inhibiting the enzyme glucose-6-phosphatase. It has also been shown that both compounds can improve insulin sensitivity and stimulate glucose transport in skeletal muscle through adenosine monophosphate-activated protein kinase (AMPK) activation. Both caffeine, chlorogenic acid, and trigonelline can also reduce oxidative stress through their antioxidant capabilities (Lu et al., 2020; Sanlier et al., 2019; Zhou et al., 2012). Moreover, the major diterpenes in coffee, cafestol, and kahweol may also increase glucose uptake in muscle via activation of AMPK, which in turn may indirectly stimulate glycolysis via activation of the enzyme phosphofructokinase-2 (Ren et al., 2019).

Our research findings showed no significant relationship between the type of coffee consumed by the sample and blood glucose levels. This result is similar to the study by Cornelis and van Dam (2020), which showed no significant association between coffee consumption and fasting blood glucose levels, regardless of the type of coffee consumed (Cornelis & van Dam, 2020). On the other hand, a systematic review of clinical trials conducted by Reis et al. (2019) reported that short-term consumption of caffeinated coffee or black coffee might lead to an increase in the area under the curve (AUC) of glucose. While in the long term, coffee consumption can improve glucose metabolism by lowering glucose AUC and improving insulin response (Reis et al., 2019).

This study also revealed that there was no significant relationship between the level of coffee consumption and blood glucose levels. This result aligns with a study by Yamashita et al. (2012), who reported no significant correlation between coffee consumption and fasting blood glucose levels (Yamashita et al., 2012). Contrary to these results, several other observational studies have shown that coffee consumption is significantly inversely correlated with fasting blood glucose or blood glucose levels 2 hours after an oral glucose tolerance test (OGTT) (Ghavami et al., 2021; Kabeya et al., 2022; Shin et al., 2019; Takami et al., 2013; Yarmolinsky et al., 2015). In theory, coffee consumption is related to the amount of bioactive content entering the body. To date, there is no specific recommendation for coffee consumption levels to prevent type 2 DM, but a meta-analysis by Ding et al. (2014) mentioned that people who consumed 1-6 cups/day of coffee had a relative risk (RR; 95% CI) of developing diabetes of 0.92 (0.90-0.94), 0.85 (0.82-0.88), 0.79 (0.75-0.83), 0.75 (0.71-0.80), 0.71 (0.65-0.76), and 0.67 (0.61-0.74) compared to those who did

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not or rarely consumed coffee (Ding et al., 2014). However, the United States Food and Drug Administration (US FDA) states that the safe limit for adults to consume coffee is 4-5 cups/day or equivalent to 400 mg of caffeine (US FDA, 2018).

This study also found no significant relationship between the amount of added sugar in coffee and blood glucose levels. However, based on the results of multivariate analysis with linear regression test, the amount of added sugar in coffee had the greatest association with blood glucose levels compared to other independent variables studied. This finding aligns with a cross-sectional study by O'Connor et al. (2018), which showed that sugar added to coffee, tea, and cereal was positively correlated with glycemia and inflammatory markers (O'Connor et al., 2018). In addition, two other cross-sectional studies conducted in Korea showed that consumption of mixed instant coffee containing added sugar and creamer was associated with an increased risk of obesity and abdominal obesity, metabolic syndrome, decreased high-density lipoprotein (HDL) levels, increased fasting blood glucose levels, and hemoglobin A1c (HbA1C). The association observed in the study may be due to excess calorie intake from added sugar and creamer. High sugar intake can lead to an increase in glycemic index and a decrease in HDL levels by disturbing insulin sensitivity. The high saturated fatty acid content of creamer is also associated with reduced anti-inflammatory properties of HDL cholesterol (Kim et al., 2014; Yoo & Park, 2022).

The lack of a significant relationship between coffee consumption habits and blood glucose levels in this study could be due to several factors. The different species, processing methods, and brewing techniques of coffee participants consume are known to affect the quality and composition of coffee. The roasting process can reduce most of the polyphenol content in coffee while causing no significant change in caffeine content (Hu et al., 2019; Shi et al., 2020). In addition, there may be participants who forgot to recall their coffee consumption habits, so recall bias cannot be excluded from this study. The predominance of the female gender may also affect the results of this study. In women, estrogen is known to protect against insulin resistance by activating estrogen receptor α (ERα). Estrogen also has antioxidant properties that protect pancreatic β-cells from apoptosis and prevent insulin deficiency (Lionardi et al., 2020; Tramunt et al., 2020). The impact of habitual coffee consumption may also not be observed in apparently healthy samples with normal glucose metabolism (Yamashita et al., 2012). This is supported by the fact that, in general, agricultural populations have higher levels of occupational and physical activity, and healthier traditional diets than other occupation groups, which in turn have a lower risk of developing DM (Davis-Lameloise et al., 2013).

This study has several limitations; the use of a cross-sectional study design cannot determine the direction of causality because exposure and outcomes are assessed simultaneously. Also, participants were not asked to provide information on caffeine's presence, coffee consumption duration, and total daily energy intake. Other than that, we only focused on coffee consumption habits as a determinant of farmers' random blood

glucose levels, whereas there are several other important factors, such as physical activity level, smoking and alcohol consumption history, comorbidities, and certain restrictions that may alter the diet. Nevertheless, observational studies conducted directly in humans can also provide credible information because they are assessed based on clinical conditions in the community.

CONCLUSION

In conclusion, there was no significant relationship between coffee consumption habits and blood glucose levels assessed by the type of coffee consumed, the level of coffee consumption in a day, and the amount of added sugar in coffee. However, the results of multivariate analysis showed that the amount of added sugar in coffee had the highest relationship with blood glucose levels than other independent variables. Further observational studies or clinical trials with a randomized controlled trial (RCT) design and a larger sample considering other factors not examined in this study are needed to determine a more precise relationship.

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The Correlation between Knowledge and Compliance with Personal Protective Equipment (PPE) Use in Construction Workers at EMC Alam Sutera Hospital, South Tangerang City

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A B S T R A C T

Construction work has a high-risk workplace. Construction workers are often faced with difficult and dangerous working situations. One of the efforts to protect workers in Occupational Safety and Health (OSH) is by supplying Personal Protective Equipment (PPE). This study analyzes the correlation between knowledge and compliance with personal protective equipment (PPE) used in construction workers. This paper correlated quantitative research with a cross-sectional approach. The study population was all construction workers at EMC Alam Sutera Hospital, South Tangerang, totaling 70 people. There were 70 respondents with a total sampling technique. The instruments were PPE compliance observation sheets and PPE knowledge questionnaires. Data analysis was univariate and bivariate analysis. Results showed that most respondents were 40 or older (60%). In addition, half of them had secondary and tertiary education (54.3%). Most also had good knowledge about PPE (65.7%). Of the 46 construction workers with good PPE knowledge, 42 complied with PPE use (91.3), and only four were not compliant (8.7%). Meanwhile, of the 24 construction workers with poor knowledge of PPE, 11 were not compliant with PPE use (45.8%), and 13 were compliant (54.3%). The statistical test results obtained were p=0.001. Thus, there was a significant correlation between knowledge and compliance with PPE use in respondents. In conclusion, knowledge correlates compliance with PPE uses among construction workers in EMC Alam Sutera Hospital, South Tangerang City. The hospital should provide recommendations to construction companies at EMC Alam Sutera Hospital, South Tangerang City, regarding using full PPE for construction workers.

INTRODUCTION

The implementation of Occupational Health and Safety (OHS) is one form of effort to create a workplace that is safe, healthy, and free from environmental hazards to prevent work accidents and occupational diseases. Thus, OHS can increase work efficiency and productivity (Diana, 2016). Data from the International Labor Organization (ILO) in 2018 reported that every year, there were 250 million cases of work accidents and 160 million cases of workers getting sick due to workplace hazards, and more than one person died due to illness and accidents at work (ILO, 2018). In Indonesia, referring to data from the Social Security Agency for Employment (here and after called *BPJS Ketenagakerjaan*), it was noted that cases of work accidents continued to increase, from 114,000 cases in 2019 to 177,000 in 2020. The number was based on the data of claims of workers who had work accidents, meaning that the actual number of work accidents was more significant because not all workers were participants of *BPJS Ketenagakerjaan* (BPJS Ketenagakerjaan, 2021).

According to the Occupational Safety and Health Administration (OSHA), Banten Province in 2018 ranked first in the most significant number of cases of work-related accidents. There were increased work-

related accidents in Banten Province, from 1,483 in 2017 to 1,539 in 2018. Most cases of work accidents in Banten Province occurred in the industrial sector. Most work accidents are due to insufficient OHS understanding and awareness among workers and companies (Disnakertrans Provinsi Banten, 2019).

Work in the construction sector is still a goal for many job seekers. Construction involves building design, material procurement, and construction implementation. Construction work is labour-intensive, and this work is carried out manually and also using machines. This construction work has a high-risk workplace where workers often face difficult and dangerous working situations and conditions. Therefore, safe work behaviour is essential for construction workers (Tarwaka, 2017).

One of the efforts to protect workers in Occupational Safety and Health (OSH) is by supplying Personal Protective Equipment (PPE). Providing PPE to the workforce is the last resort if engineering efforts and safe work practices have been maximized (Vadlin, 2019). PPE is crucial, especially in work environments with potential occupational health and safety hazards, such as construction. Companies are required to provide PPE as mandated in the Regulation of the Minister of Manpower Number 08/MEN/VII/2010, which states in Article 2 Paragraph 3 that "PPE, as referred to in paragraph (1), must be provided by employers free of charge" (Kemenakertrans RI, 2010).

However, the importance of PPE for personal safety does not make all workers wear it while working. A study by Mariana (2018) found that the number of workers who did not use PPE while working is based on several factors, including the lack of company policies and supervision and aspects of the workers themselves. The study showed workers were reluctant to use PPE because it was uncomfortable. The second reason was that workers felt they did not need PPE because they had many years of work experience and never had a work accident. The third reason was that the PPE looked unattractive and did not fit well. Another reason was ignorance, or they did not know that the PPE must be used.

Astiningsih's research (2018) on construction workers in the Ahmad Yani Semarang Airport Parking Building Development found that the level of non-compliance with the use of PPE in construction workers was still high, reaching 54%. In addition, the results of Rahmawati's research (2022) on workers at PT Abadi Prima Intikarya The Canary Apartment Project in Tangerang City found that 47.1% of workers were not compliant with using PPE. The study also stated that one of the factors influencing workers' non-compliance in using PPE is the lack of workers' knowledge about PPE.

Knowledge involves awareness or understanding gained through experience and learning. Cahyani's research (2020) found that knowledge affected compliance with PPE. In addition, a study by Hakim and Febriyanto (2020) showed a positive and significant correlation between knowledge and compliance with PPE in workers at the Samarinda Shipyard. Furthermore, an investigation by Saliha, Joseph and Kalesaran (2018) stated that the knowledge of Manado - Bitung Toll Road workers correlated with their compliance

with PPE. Thus, the better the knowledge, the better the workers' compliance in using PPE to reduce the risk of work accidents.

EMC Alam Sutera Hospital is one of the private hospitals in the South Tangerang City area, where the authors are the nurses. EMC Hospital renovates and constructs to improve hospital service facilities. A preliminary study showed that several construction workers did not use full PPE, especially PPE that was considered trivial, such as masks and helmets. Dust can harm construction workers because it can cause respiratory problems such as Acute Respiratory Infection (ARI). In addition, not using a helmet also increases the risk of head injury due to falling objects or building equipment. From the interviews with ten workers about the reasons for not wearing PPE, six workers did not wear PPE because they felt that PPE was uncomfortable to wear, and two workers reasoned that they forgot to use PPE. Two workers felt that no accidents would occur by not using PPE because they were used to their work. This study analyzes the correlation between knowledge and compliance with personal protective equipment (PPE) use in construction workers.

METHOD

This paper was correlational quantitative research with a cross-sectional approach. The study population was all construction workers at EMC Alam Sutera Hospital, South Tangerang, totalling 70 people. There were 70 respondents with a total sampling technique. The instruments were PPE compliance observation sheets and PPE knowledge questionnaires. Data analysis was univariate and bivariate analysis. This research has been approved by the Ethics Commission of YATSI Madani University with the ethical code 022/LPPM-UYM/XII/2022.

RESULT

Table 1 indicates that of 70 construction workers at EMC Alam Sutera Hospital, South Tangerang City, most are 40 or older (60%). In addition, half of them have secondary and tertiary education (54.3%).

Table 1. The Characteristics of Respondents by Age and Educational Levels

Characteristics	Frequency (n)	Percentage (%)
Age		
< 40 years old	28	40
≥ 40 years old	42	60
Educational Levels		
Primary education (Elementary School - Junior High School)	32	45.7
Secondary and tertiary education (High School and college)	38	54.3
Total	70	100

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Table 2 shows that out of 70 construction workers at EMC Alam Sutera Hospital, South Tangerang City, were most compliant with PPE use (78.6%).

Table 2. Compliance with Personal Protective Equipment (PPE) Use in Construction Workers

PPE Compliance	Frequency (n)	Percentage (%)
non-compliant	15	21.4
compliant	55	78.6
Total	70	100

Table 3 shows that out of 70 construction workers at EMC Alam Sutera Hospital, South Tangerang City, most have good knowledge about PPE (65.7%).

Table 3. PPE Knowledge in Construction Workers

PPE Knowledge	Frequency (n)	Percentage (%)
Poor	24	34.3
Good	46	65.7
Total	70	100

Table 4 explains that of the 46 construction workers with good PPE knowledge, 42 comply with PPE use (91.3), and only four are not compliant (8.7%). Meanwhile, of the 24 construction workers with poor knowledge of PPE, 11 are not compliant with PPE use (45.8%), and 13 are compliant (54.3%).

Table 4. The Correlation between PPE Knowledge and Compliance in Construction Workers

PPE Knowledge	PPE Compliance				Total		p	OR
	non-compliant		compliant					
	N	%	N	%	N	%		
Poor	11	45.8	13	54.3	24	100	0.001	8.885
Good	4	8.7	42	91.3	46	100		
Total	15	21.4	55	78.6	70	100		

The statistical test results obtained $p= 0.001$. Thus, there was a significant correlation between knowledge and compliance with PPE use in construction workers at EMC Alam Sutera Hospital, South Tangerang City, in 2022. The analysis results also obtained an OR (Odd Ratio) value = 8.885. It indicates that workers with poor knowledge about PPE were at risk 8.885 times more for not complying with using PPE than workers with good knowledge.

DISCUSSION

The results showed that most construction workers at EMC Alam Sutera Hospital in South Tangerang City were 40 or older (60%). Thus, they were adults who should have worked long enough and had sufficient experience in construction. Hurlock states that age describes the experience in individuals. Older individuals will be more mature in thinking and working. In this study, the age was differentiated according to Hurlock (2017). The age criteria are divided into two based on their developmental tasks: 20-40 years (young adults) and 41-60 years (middle adults). Workers aged ≥ 40 years (middle adulthood) should have more experience than workers aged < 40 years (young adulthood) because middle adulthood

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workers are considered to have worked longer. According to Notoatmodjo (2018b), a person's age will affect a person's absorption and mindset toward the information provided. The older the age, the more a person's attention span and mindset develop. Potter and Perry (2015) also stated that critical thinking skills increase regularly during adulthood.

In addition, half of the respondents had secondary and tertiary education (54.3%). Nursalam (2011) states that the higher a person's level of education, the easier it is to receive information, so the more knowledge they have. Sufficient education will make it easier for a worker to receive information from various sources and do his job more effectively and efficiently. Meanwhile, a lack of education will hinder the development of a person's attitude toward newly introduced values. The prior research by Syekura and Febriyanto (2021) on shipyard workers in Samarinda showed that education levels were associated with PPE compliance. Education is a process of self-development in individuals that is carried out consciously and responsibly to improve knowledge, skills, attitudes, and values to adapt to their environment.

Furthermore, most construction workers at EMC Alam Sutera Hospital, South Tangerang City, were compliant in using personal protective equipment (PPE) (78.6%). It indicated that most construction workers realize that PPE is essential. Construction work is a job with a high risk of work accidents, so workers must be able to protect themselves from the threat of work accidents. Ammad *et al.* (2021) states that using PPE is critical, especially in work environments with potential occupational health and safety hazards, such as construction. Several factors that make workers complain in using PPE include, among others, having good PPE knowledge. Good PPE knowledge can raise awareness about the importance of using personal protective equipment (PPE) for their safety. Workers also know that the potential for accidents in their field of work is high, so their vigilance is also high. Thus, workers have good personal protective equipment (PPE) use behavior.

However, 21.4% of construction workers were not compliant in using PPE. This condition should be avoided because it will endanger workers. By not complying with PPE while working, workers are at high risk of serious injury in the event of a work accident. This study's results align with the previous research by (Hakim and Febriyanto, 2020). The research found that 22.5% of shipyard workers of PT Anugrah Wijaya Berjaya Samarinda were not compliant with using PPE. In addition, an investigation by Cahyani (2020) on PT PLN Persero Surabaya workers found that 24.4% of workers did not comply with using PPE. Saliha (2018) stated several factors could cause non-compliance with using PPE in workers. The factors were low PPE knowledge, forgetting or rushing, lack of PPE provided by the company, and discomfort. Other factors were workers feeling they had work experience and had never experienced a work accident, so they thought they did not need PPE.

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Knowledge in this study was everything that construction workers know about PPE to prevent work accidents. The results showed that most construction workers at EMC Alam Sutera Hospital, South Tangerang City, had good PPE knowledge (65.7%). It indicated that construction workers realized using PPE is necessary to protect themselves from work accidents. Thus, improving the knowledge of workers is vital. Notoatmodjo (2018) states that knowledge dramatically influences a person's behavior, in this case, using PPE when working to protect themselves from work accidents. Knowledge plays a vital role in thinking and taking the right action.

However, 34.3% of construction workers had poor PPE knowledge. Poor PPE knowledge makes workers ignorant of using PPE while working, which can endanger them. Many factors can cause a lack of knowledge about PPE, including low educational levels and lack of exposure to sources of information such as print and electronic media. Notoatmodjo (2018b) states that knowledge can be obtained through formal and non-formal education, experience, and mass media. Previous research by Rahmawati (2022) on construction workers at PT Abadi Prima Intikarya also showed that 47.1% of workers had poor knowledge about PPE. In addition, a study by Hakim and Febriyanto (2020) found that 27.5% of shipyard workers of PT Anugrah Wijaya Berjaya Samarinda lacked knowledge about PPE. Good PPE knowledge is an effort to protect workers from work accidents. Workers must understand that every job has a risk of work accidents. With adequate knowledge, they will tend to use PPE when working. They know that using PPE can prevent them from fatal injuries in the event of a work accident (Cahyani, 2020).

The results showed that construction workers with poor PPE knowledge were more non-compliant in using PPE than those with good PPE knowledge. Meanwhile, respondents with good knowledge were more compliant with PPE use. In addition, the statistical test results obtained $p=0.001$, so statistically, there was a significant correlation between knowledge and compliance with PPE use in construction workers at EMC Alam Sutera Hospital, South Tangerang City. The statistical analysis also showed that workers with poor PPE knowledge were at risk 8.885 times more for not complying with using PPE than workers with good knowledge. Notoatmodjo (2018a) states that knowledge is vital to forming a person's actions or behavior. With good knowledge, a person can decide something appropriately. In this study, construction workers with good knowledge about the benefits of PPE to protect against severe injuries due to work accidents tend to be obedient in using PPE.

This study's results align with Rahmawati's research (2022) on construction workers at PT Abadi Prima Intikarya. That research showed an association between knowledge and compliance with PPE use ($p=0.001$). In addition, Tri Cahyani and Widati (2021) found a correlation between knowledge and compliance with the use of PPE in PT PLN Surabaya workers ($p=0.044$). The results of Hakim and Febriyanto (2020) also showed a significant relationship between knowledge and compliance with the use

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of PPE in workers at the Samarinda Shipyard. Furthermore, an investigation by Saliha, Joseph and Kalesaran (2018) revealed that the knowledge of Manado - Bitung Toll Road workers correlated with their compliance with using PPE. Knowledge is the basis for people to take action against something. A person's behaviour is based on their knowledge. The better the knowledge, the better the workers' compliance in using PPE to reduce the risk of work accidents.

However, some construction workers with good knowledge did not comply with using PPE. It could be because of forgetting or rushing, lack of PPE provided by the company, or PPE discomfort when used. Other factors could be caused by workers feeling that they have work experience and have never experienced a work accident, so they think they don't need PPE (Saliha, Joseph and Kalesaran, 2018).

CONCLUSION

Knowledge correlates compliance with PPE use among construction workers in EMC Alam Sutera Hospital, South Tangerang City. The hospital should provide recommendations to construction companies at EMC Alam Sutera Hospital, South Tangerang City, regarding using full PPE for construction workers.

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The Correlation between Sputum Retention and Oxygen Saturation in Nasopharyngeal Cancer Patients with Tracheostomy at The Emergency Department of Dharmais Cancer Hospital in 2022

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ABSTRACT

The Global Burden of Cancer Study (Globocan) stated that nasopharyngeal cancer is the fifth most common cancer in Indonesia, with an incidence of 19,943 cases. One of the therapies for patients with nasopharyngeal cancer is a tracheostomy. Post-tracheostomy care is critical because blockage in the cannula due to accumulation of secretions impact decreasing oxygen saturation and result in death. This study analyzes the correlation between sputum retention and oxygen saturation in nasopharyngeal cancer patients with tracheostomy at the Emergency Department of Dharmais Cancer Hospital in 2022. It was correlational quantitative research with a cross-sectional approach. The study population was all nasopharyngeal cancer patients with tracheostomy at the Emergency Department, Dharmais Cancer Hospital, from August to November 2022, totaling 65 respondents. There were 65 respondents with a total sampling technique. The data collection used secondary data, namely the level of sputum retention and oxygen saturation in nasopharyngeal cancer patients with tracheostomy. Data analysis was univariate analysis and bivariate analysis through chi-square test. The result showed that most respondents experienced poor sputum retention (61.5%) and moderate hypoxemia (63.1%). The chi-square test obtained a $p=0.000$ ($p<0.05$). Thus, there was a correlation between sputum retention and oxygen saturation in respondents. In conclusion, sputum retention correlates with oxygen saturation in nasopharyngeal cancer patients with tracheostomy at the Emergency Department of Dharmais Cancer Hospital. The hospital should continue improving the ability of nurses to manage airway blockage through regular training.

INTRODUCTION

Nasopharyngeal cancer is a malignancy with unique epidemiological characteristics. Its incidence varies according to race and geographical differences (Sudiono and Hassan, 2013). In general, nasopharyngeal cancer is located in the cavity behind the nose and back of the palate of the oral cavity. In the Ear Nose Throat (ENT) Department, nasopharyngeal cancer incidence is the most common or highest malignancy throughout, affecting more men than women, with a ratio of three to one. Some etiological factors are smoking, alcohol, genetics, pollution, combustion fumes, consumption of burned food, food preserved by salting, smoking, or formalin, and Epsteinbar Virus (EBV) or viruses in the nasopharyngeal area (Jia and Qin, 2012).

Global Burden of Cancer Study (Globocan) from the World Health Organization (WHO) estimated the incidence of nasopharyngeal cancer globally was less than 1 per 100,000 annually. The prevalence of nasopharyngeal carcinoma was higher in some regions, such as China, Hong Kong, and Southeast Asia, with a 10-30 times higher incidence compared to other areas. In addition, 81% of new cases occurred in

Asia, and 9% occurred in Africa yearly. While in the UK, the incidence of nasopharyngeal carcinoma tended to be lower, which was 0.25 per 1,000,000 population each year (Chang *et al.*, 2021). According to the Globocan, the incidence of nasopharyngeal cancer is the fifth most common cancer disease in Indonesia (Adham *et al.*, 2012). The first place was breast cancer (65,858), followed by cervical cancer (36,633), lung cancer (34,783), liver cancer (21,392), and nasopharyngeal cancer (19,943) (Andinata *et al.*, 2023). Dharmais Cancer Hospital is a cancer hospital located in DKI Jakarta province. The incidence of nasopharyngeal cancer in 2020 was 189, while it increased to 197 in 2021. It indicated that nasopharyngeal cancer has grown every year (Hospital, 2022).

In patients with nasopharyngeal cancer, there are early and advanced symptoms. Early symptoms usually include ringing and feeling full in the ears and decreased hearing ability. In addition, the patient's nose can be blocked due to chronic colds or mucus mixed with blood (Makkawaru and Yunita, 2019).

One of the therapies for nasopharyngeal cancer is surgical therapy, namely by tracheostomy. Tracheostomy is a surgical procedure by inserting a tube through an opening into the trachea to overcome upper airway obstruction, maintain the airway, or use continuous mechanical ventilation (Rahmi, 2022). According to Novialdi (2019), the benefits of tracheostomy include improving patient comfort, oral hygiene, and communication. In addition, It improves the possibility of oral feeding and easier and safer treatments. Tracheostomy also has the potential to decrease the use of sedation and analgesic drugs to facilitate the weaning process and avoid pneumonia due to mechanical ventilators.

Phlegm/mucus in the throat is usual, but their production sometimes increases. The increased sputum can cause disorders and discomfort in the throat (Widjaja, 2008). According to Law (2003), the clinical signs of sputum retention are rapid respiratory distress and shallow breathing. Kozier explain that excess sputum affects the airway, including airway obstruction, impacting decreasing oxygen saturation characterized by cyanosis (Kozier *et al.*, 2010). Thus, sputum retention leads to hypoxia or hypoxemia, where oxygen saturation is below 95%. The previous research conducted by Septimar (2018) found that the mean oxygen saturation in patients before suction was 95.78%, while after suction was 97.25%, so there was a significant difference in the mean oxygen saturation among critical patients in the ICU before and after suction (p=0.000). In addition, a study conducted by Wulan and Huda (2022) found that the mean oxygen saturation before suction was 93.38%, while after suction was 94.19%, with p=0.009 (α=0.05). It also indicated a significant influence before and after suction on oxygen saturation among hospitalized patients in the Intensive Care Unit, RSUD RAA Soewondo Pati.

An essential first step to managing respiratory failure is alertness to circumstances and situations that can lead to respiratory failure. According to Maisyaroh and Widianto (2020), patients with decreased consciousness or artificial airways are at risk of airway obstruction. Suctioning is necessary to clear the

airway, maintain a patent airway, and prevent infection due to sputum accumulation in critically ill patients who experience life-threatening organ failure. A preliminary survey of 5 patients with nasopharyngeal cancer with a tracheostomy who came to the Emergency Department (Emergency Room) of Dharmais Cancer Hospital showed their complaint was shortness of breath. In addition, all of them experienced hypoxia; 2 respondents had mild hypoxia (91-94%), and 3 had moderate hypoxia (85-90%). When suctioning, some sputum could be quickly removed, and some were not. So, giving a nebulizer was critical first to dilute the sputum in the patient's airway. This study analyzes the correlation between sputum retention and oxygen saturation in nasopharyngeal cancer patients with tracheostomy at the Emergency Department, Dharmais Cancer Hospital, in 2022.

METHOD

This study was correlational quantitative research with a cross-sectional approach. The study population was all nasopharyngeal cancer patients with tracheostomy at the Emergency Department, Dharmais Cancer Hospital, from August to November 2022, totaling 65 respondents. There were 65 respondents with a total sampling technique. The data collection used secondary data, namely the level of sputum retention and oxygen saturation in nasopharyngeal cancer patients with tracheostomy. Data collection was through observation of the Management Information System of Dharmais Hospital. Data analysis was univariate analysis and bivariate analysis through chi-square test. The Ethics Commission of Dharmais Hospital has ethically tested this study. It has been declared to have passed the ethical test with the Ethical Code 054/KEPK/II/2023.

RESULT

Table 1 shows that of the 65 respondents of nasopharyngeal cancer patients with tracheostomy at the Emergency Department, most of them had poor sputum retention (61.5%).

Table 1. Frequency Distribution of Sputum Retention in Nasopharyngeal Cancer Patients with Tracheostomy at the Emergency Department

Sputum Retention	Frequency (f)	Percentage (%)
Good	25	38.5
Poor	40	61.5
Total	65	100

In addition, table 2 declares that of the 65 respondents of nasopharyngeal cancer patients with tracheostomy at the Emergency Department, most have moderate hypoxemia oxygen saturation, as many as 41 respondents (63.1%).

Table 2. Frequency Distribution of Oxygen Saturation in Nasopharyngeal Cancer Patients with Tracheostomy at the Emergency Department

Oxygen Saturation	Frequency (f)	Percentage (%)
Mild Hypoxemia	24	36.9
Moderate Hypoxemia	41	63.1
Total	65	100

Of the 25 patients with nasopharyngeal cancer with a tracheostomy with good sputum retention, 17 had mild hypoxemia (68%). Meanwhile, of the 40 respondents with poor sputum retention, 33 experienced moderate hypoxemia (82.5%) (Table 3).

Table 3. The Correlation between Sputum Retention and Oxygen Saturation in Nasopharyngeal Cancer Patients with Tracheostomy at the Emergency Department

Sputum Retention	Oxygen Saturation				Total		p	OR and CI
	Mild Hypoxemia		Moderate Hypoxemia					
	f	%	f	%	n	%		
Good	17	68.0	8	32.0	25	100		10.018 (3.106-32.311)
Poor	7	17.5	33	82.5	40	100	0.000	
Total	24	36.9	41	63.1	65	100		

The chi-square test obtained a p=0.000 (p<0.05). Thus, there was a correlation between sputum retention and oxygen saturation in nasopharyngeal cancer patients with tracheostomy in the Emergency Department of Dharmais Cancer Hospital. The statistical tests also obtained an Odds Ratio (OR) value of 10.018 and a Confidence Interval (CI) value of 3.106-32.311. Thus, nasopharyngeal cancer patients with a tracheostomy who experienced good sputum retention had a 10.018 times greater chance of experiencing mild hypoxemia than nasopharyngeal cancer patients with a tracheostomy who had poor sputum retention. The lowest chance value was 3.106, and the highest chance value was 32.311 times greater.

DISCUSSION

This study found that of the 65 respondents of nasopharyngeal cancer patients with tracheostomy at the Emergency Department, most of them had poor sputum retention (61.5%). Nasopharyngeal carcinoma is a malignancy in the nasopharyngeal region (above the throat and behind the nose) (Sudiono and Hassan, 2013). Some of the treatments for nasopharyngeal cancer, according to Rowshan and Baur (2010), include surgery through tracheostomy. Sputum (phlegm) is material released from the lungs and trachea through the mouth (Muttaqin, 2008). Good sputum quality was evaluated by observing sputum characteristics (color, viscosity, and amount of sputum). Poor sputum is greenish-yellow or mucopurulent, thick or mucoid, and amounts to 3-5ml (Rab, 2012).

Kozier et al. (2010) explain the complications of excess sputum can affect the airway, namely airway obstruction and limited airflow. The classification of sputum and its possible causes, according to Price and Wilson (1978), the yellowish sputum is likely an infectious process. In addition, bleeding sputum or

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hemoptysis is often found in Tuberculosis. The color (mucopurulent) is yellow-greenish, indicating that antibiotic treatment can reduce symptoms. Meanwhile, milky white or opaque mucus usually means that antibiotics will not effectively treat symptoms. Yellow-greenish and milky white sputum can be related to bacterial or viral infections, although current research does not support that generalization. Furthermore, white foamy sputum may stem from obstruction or even edema.

Some factors that can trigger increased sputum production, according to Widjaja (2008), are inflammation in the respiratory tract or surrounding areas, throat exposure to infections or allergies to foreign substances, stomach disorders, sinusitis inflammation, and the body's lack of fluids. Muttaqin (2008) explains how to remove sputum retention, including deep breathing, coughing, and suctioning.

The authors found that nasopharyngeal cancer patients with tracheostomy mostly had poor sputum quality or abnormal trachea secretion (color, viscosity, and amount). Most of the sputum was yellow and greenish-yellow. There was also pink, white foamy, and milky white mucus. There was also poor sputum viscosity. In addition, the amount of sputum was between 3 to 5 ml. The results of these observations indicated that the respondents had abnormalities in the respiratory tract, either experiencing inflammation in the respiratory tract, allergies to foreign objects or stomach disorders, and so on. It is crucial to do deep breathing exercises or cough to naturally remove phlegm in the body to clear the airway in patients with good sputum retention. Meanwhile, health workers perform suction for poor sputum retention, which an authorized doctor treats.

In addition, this paper revealed that of the 65 respondents of nasopharyngeal cancer patients with tracheostomy at the Emergency Department, most had moderate hypoxemia (63.1%). Tracheostomy is a procedure where a hole is made into the trachea. The term tracheostomy is when an indwelling tube is inserted into the trachea. The decision to perform a tracheostomy can generally be made within seven days of intubation (Smeltzer, 2010).

The previous research by Sari and Ikbal (2019) revealed that the mean oxygen saturation before suction in the control group was 94.77 and 99.48 after suction. In addition, Kitu, Rohana and Widyaningsih (2020) study found that the mean oxygen saturation after the endotracheal tube (ETT) secretion suction increased from 94% to 97.87%.

The author found that most respondents had moderate hypoxia; their oxygen saturation was between 86% and 94%. Thus, the respondent's oxygen saturation was categorized as moderate hypoxia, between 85 to 90%. It indicated that the respondents had an airway disorder, one of which was sputum retention. Thus, suctioning is critical to clear the airway so the oxygen exchange process can run well.

Furthermore, of the 25 respondents in this study with good sputum retention, 17 had mild hypoxemia (68%). Meanwhile, of the 40 respondents with poor sputum retention, 33 experienced moderate

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hypoxemia (82.5%). The statistical analysis obtained a p=0.000 (p<0.05). Thus, there was a correlation between sputum retention and oxygen saturation in nasopharyngeal cancer patients with tracheostomy in the Emergency Department of Dharmais Cancer Hospital. It might be because nasopharyngeal cancer patients had difficulty removing sputum or sputum retention.

Sputum retention is when patients cannot clear secretions from their respiratory tract independently or with assistance. The color, consistency, and volume of sputum can support the diagnosis and management of a patient's clinical condition. Airway obstruction is one of the most common symptoms of excess sputum, causing decreased oxygen saturation (Muttaqin, 2008).

Decreased oxygen saturation due to airway obstruction can decrease diffusion, resulting in hypoxemia. Unwell management of hypoxemia has a high potential to become hypoxia or tissue oxygen insufficiency (inability to carry out its functions adequately) for body metabolism. Further, hypoxia is a cause of injury and cell death. Cells depend on a continuous supply of oxygen. Therefore, without oxygen, cell maintenance and synthesizing activities stop quickly (Price and Wilson, 1978). Without oxygen for a particular time, body cells will experience damage that causes death. The most sensitive organ to a lack of oxygen is the brain. If the brain does not get oxygen for more than 5 minutes, permanent brain cell damage can occur (Kozier *et al.*, 2010).

In previous research conducted by Dengo, Suwondo and Suroto (2018), oxygen saturation due to sputum retention was abnormal (70.0%). In addition, a study by Sari and Ikbal (2019) indicated that the mean oxygen saturation in the control group before the suction was 94.77, while after the suction was 99.48. Thus, there was an influence between suctioning and oxygen saturation with a p=0.000.

The oxygen saturation of arterial blood with PaO2 100 mmHg is about 97.5%, while that of venous blood with PaO2 40 mmHg is about 75%. The affinity of hemoglobin to oxygen can affect oxygen release. When hemoglobin has a greater affinity for oxygen, there is reduced oxygenation to tissues. Conditions such as increased pH, decreased temperature, and decreased carbon dioxide partial pressure will increase hemoglobin's affinity for oxygen and limit oxygen to tissues, and hypoxemia occurs. Thus, hypoxemia can occur due to reduced blood oxygen pressure (PaO2) (Kozier *et al.*, 2010).

CONCLUSION

In conclusion, sputum retention correlates with oxygen saturation in nasopharyngeal cancer patients with tracheostomy at the Emergency Department of Dharmais Cancer Hospital. The hospital should continue improving the ability of nurses to manage airway blockage through regular training.

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Repidawati Sinaga - The Correlation between Sputum Retention and Oxygen Saturation in Nasopharyngeal Cancer Patients with Tracheostomy at The Emergency Department of Dharmais Cancer Hospital in 2022

Correlation between Husband's Support and Primipara's Willingness to Provide Exclusive Breastfeeding

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A B S T R A C T

Exclusive breastfeeding is the right of children and mothers. Unfortunately, the realization is not easy, especially for primipara. Several factors greatly influence its success, including the husband's support. This study aims to determine the correlation between husbands' support and mothers' willingness to provide exclusive breastfeeding. This research is an analytic-descriptive study with a cross-sectional approach. The population of this study was breastfeeding mothers at Yuni Astuti's Independent Midwife Practice, located in Sewon, Bantul, Yogyakarta, primiparous mothers with babies aged 0-6 months. Data was collected using a questionnaire consisting of 21 questions. Respondents' answers are indicated by statements of agreement on four scales (strongly agree, agree, disagree, strongly disagree). Univariate data were analyzed using percentages, and bivariate data using the Chi-Square test. The research results find that the husband's support is related to the mother's willingness to provide exclusive breastfeeding. Mothers willing to give exclusive breastfeeding receive good support from their husbands. Although her husband's support strongly influences a mother's willingness to provide exclusive breastfeeding, several other variables still need to be considered. It is suggested that future researchers conduct a detailed study of the success factors of exclusive breastfeeding so that the public can take the results as a recommendation for mothers to do the same.

INTRODUCTION

Exclusive breastfeeding for newborns is an important practice for optimal health and development (Hu et al., 2021; Wu et al., 2022). Breast milk provides complete nutrition and protection from disease and strengthens the bond between mother and baby (Wood et al., 2021; Zahra et al., 2022); however, in many countries, the rate of exclusive breastfeeding is still low, including Indonesia, which is around 42% in 2020 (Kemenkes, 2020). Therefore, a better understanding of the factors influencing a mother's decision to provide exclusive breastfeeding to her baby is needed.

One factor that influences a mother's decision to provide exclusive breastfeeding is support from her husband (Pakilaran, 2022). The husband's support in this context includes emotional aspects, knowledge, and involvement in baby care (Rahman et al., 2020). Previous research has shown that spousal support significantly contributes to increased exclusive breastfeeding by mothers. For example, a study by Setegn, T., Gerbaba, M., & Belachew (2018) found that strong spousal support was associated with increased duration and success of exclusive breastfeeding. However, there are still gaps in research regarding the correlation between husbands' support and primiparous mothers' plans to provide exclusive breastfeeding. Primiparous or first-time mothers often face new challenges in breastfeeding and caring for their babies.

Therefore, it is important to understand how a husband's support can influence primiparous mothers' plans to provide exclusive breastfeeding.

A study by Adu-Gyamfi, E. P., Okyere, P. A., & Tenkorang (2020) examines the relationship between the husband's support and primiparous mothers' plans to provide exclusive breastfeeding. The results of this study indicate that positive and active husband support contributes to an increase in primiparous mothers' intention to provide exclusive breastfeeding. Primiparous mothers who experience support from their husbands typically have stronger plans to offer exclusive breastfeeding and feel more confident. In addition, a study by Oche, M. O., Umar, A. S., & Ahmed (2017) found that husbands' knowledge about the benefits of breastfeeding and their role in supporting exclusive breastfeeding played an important role in the mother's decision to provide exclusive breastfeeding. Husbands with good knowledge about the benefits of breastfeeding and their involvement in helping mothers can increase the likelihood of successful exclusive breastfeeding.

This study explores new aspects of the relationship between husbands' support and primiparous mothers' plans to provide exclusive breastfeeding. Although several previous studies have identified a link between a husband's support and exclusive breastfeeding, this study emphasizes a deeper understanding of how a husband's support can specifically influence primiparous mothers' plans for breastfeeding. This study provides a more specific focus on the primiparous population of mothers. Mothers giving birth for the first time often face special challenges and concerns in breastfeeding, and this research seeks to understand how husbands' support can be key in overcoming these challenges and improving mothers' decisions to breastfeed exclusively. By gaining a deeper understanding of the role of the husband's support in primiparous mothers' plans to provide exclusive breastfeeding, this research can significantly contribute to our understanding of the factors that influence the success of exclusive breastfeeding practices. The results of this study can provide a basis for developing more effective interventions and programs to increase spousal support and optimal breastfeeding practices in the primiparous population of mothers. The aim of this research is to find out the correlation between a husband's support and a primipara's willingness to provide exclusive breastfeeding.

METHOD

This study used descriptive and cross-sectional analysis of the population of primiparous women at Yuni Astuti's Independent Midwife Practice, located in Sewon, Bantul, Yogyakarta. There were 30 research subjects obtained through purposive sampling with inclusion criteria: primiparous mothers with babies aged 0-6 months. Data was collected using a questionnaire consisting of 21 questions. Respondents' answers are indicated by statements of agreement on four scales (strongly agree, agree, disagree, strongly disagree). Univariate data were analyzed using percentages, and bivariate data using the Chi-Square test.

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This research has received ethical permission from the Health Research Ethics Committee of the Muhammadiyah University of Purwokerto No KEPK/UMP/27/VIII/2023.

RESULT

Table 1 shows that most of the respondents were 26-30 years old, high school education as well as husband, housewife, husband as a private worker, and baby aged 4 months.

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics	n	%
Age (years)		
< 20	2	6,7
20 – 25	13	43,3
26 – 30	14	46,7
> 30	1	3,3
Education status		
Elementary School	1	3,3
Junior high school	7	23,3
Senior High School	20	66,7
Bachelor	2	6,7
Respondents Occupation		
Housewife	18	60,0
Laborer	4	13,3
Privat employee	5	16,7
government employees	3	10,0
Husband's education		
Elementary School	1	3,3
Junior high school	5	16,7
Senior High School	23	76,7
Bachelor	1	3,3
Husband's Occupation		
Farmer	1	3,3
Laborer	7	23,3
Private employee	14	46,7
Government employee	2	6,7
Entrepreneur	5	16,7
Child ages (months)		
2	4	13,3
3	4	13,3
4	17	56,7
5	5	16,7
Total	30	100

Based on table 2, most of the husband respondents provided good support, namely 20 respondents with a percentage of 66.7%. In addition, eight husband respondents (26.7%) provided sufficient support, and two (6.7%) provided poor support.

Table 2. Husband Support

No	Husband Support	n	%
1.	Good	20	66,7
2.	Enough	8	26,7
3.	Bad	2	6,7
Total		30	100,0

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Table 3 shows that mothers who want to provide exclusive breastfeeding are 24 respondents with a percentage of 80.0%. Meanwhile, 6 other respondents (20.0%) did not want to provide exclusive breastfeeding.

Table 3. Mother's willingness to exclusively breastfeed

No	Willingness to exclusively breastfeed	n	%
1.	Want to give exclusive breastfeeding	24	80,0
2.	Refuse to give exclusive breastfeeding	6	20,0
	Total	30	100,0

Table 4 shows that out of 20 respondents with the support of good husbands, all are willing to give exclusive breastfeeding. Of the eight respondents with sufficient husband support, four respondents (50.0%) wanted to give exclusive breastfeeding, and four respondents (50.0%) did not want to give exclusive breastfeeding. Meanwhile, of the two respondents with poor husband support, all of them did not want to give exclusive breastfeeding.

Table 4. Husband's Support Relationship with Primivara Mother's Willingness to Give Exclusive Breastfeeding

No	Husband Support	Willingness to Give Exclusive Breastfeeding				Total	
		Yes		No			
		n	%	n	%	n	%
1	Good	20	100,0	0	0,0	20	100
2	Enough	4	50,0	4	50,0	8	100
3	Bad	0	0,0	2	100,0	2	100
	Total	24	80,0	16	20,0	30	100

Table 5 earned a value $X^2{}_{hitung}$ of 17,500 with a sig (p_{value}) value of 0,000. With $df = 2$ and significance level (α) of 5% (0,05), $X^2{}_{tabel} = 5,591$. This result means a relationship exists between the husband's support and the primary mother's plans to give exclusive breastfeeding.

Table 5. Hasil Uji *Chi Square*

Uji	$X^2{}_{hitung}$	Nilai sig. (p_{value})	Nilai Koefisien *Contingency*
Chi Square	17,500	0,000	0,607

The closeness of the relationship between the husband's support and the primipara plan to provide exclusive breastfeeding can be seen from the large value of the contingency coefficient. Based on table 10, the value of the contingency coefficient is 0.607. According to Sugiyono (2006), if the contingency coefficient is between 0.60 – 0.799, the relationship between the two variables is strong. The contingency coefficient value in this study is 0.607 or between 0.60 – 0.799. Therefore, there is a strong relationship between the husband's support and primiparous mothers' plans to give exclusive breastfeeding.

DISCUSSION

The results of this study indicate that their husbands provide 66.7% of respondents' good support. Husbands advise mothers to continue breastfeeding exclusively because husbands know the importance of exclusive breastfeeding. Husbands also provide information about breastfeeding, for example, the importance of breastfeeding and how to store expressed breast milk. Because most of the mothers who become respondents work as laborers, the husbands encourage mothers to express breast milk so that babies continue to get exclusive breastfeeding. The husband wants to accompany the mother even in the middle of the night because, according to the husband, the child's responsibility is a shared responsibility.

The results of this study follow Otsuka et al. (2018), who found that husbands' support had a positive correlation with mothers' willingness to provide exclusive breastfeeding. This research shows that husbands' support in recognizing and appreciating the importance of exclusive breastfeeding can increase mothers' motivation to do so. These findings confirm the important role of husbands in providing strong emotional support to mothers in breastfeeding practices. This opinion is also in line with research by Ahmad et al. (2017), who found that a husband's support has a significant influence on the willingness of mothers to provide exclusive breastfeeding. This research shows that a husband's support in helping with household tasks related to breastfeeding, such as taking care of the baby and housework, can strengthen a mother's motivation to continue exclusive breastfeeding. The response of a wife whose husband provides support is shown by her willingness to provide exclusive breastfeeding because she feels she is not alone. As stated by Goto, A. (2019) and Ali, S., et al (2021), the husband's support has a positive relationship with the willingness of mothers to provide exclusive breastfeeding. This study found that the husband's support in the form of active involvement in infant care and providing positive encouragement towards breastfeeding practices can influence mothers' intentions and decisions in providing exclusive breastfeeding.

Most (80.0%) of respondents want exclusive breastfeeding. Respondents will continue to provide exclusive breastfeeding even if they work without providing any additional food for the first six months because they know the importance of exclusive breastfeeding and the benefits of breastfeeding for babies; for example, babies don't get diarrhea easily, have adequate nutrition for the first six months, and are frugal (Otsuka et al., 2018).

These results align with Alzaheb (2020) that the willingness of mothers to provide exclusive breastfeeding is influenced by factors such as knowledge about the benefits of breastfeeding, confidence in the mother's ability to breastfeed, and social support received. This study confirms these factors' importance in shaping mothers' intention and commitment to providing exclusive breastfeeding. A study by Tessema et al, (2019) found that the factors influencing mothers' willingness to provide exclusive breastfeeding included social support, knowledge about breastfeeding practices, and mothers' perceptions of the benefits of

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breastfeeding, which is in line with this research. The results of this study highlight the importance of proper education and support in increasing the motivation and commitment of mothers to provide exclusive breastfeeding. Research by Kavle, et al (2020) shows that a mother's willingness to provide exclusive breastfeeding is influenced by factors such as the mother's education, knowledge about breastfeeding practices, and support from health workers. This study emphasizes the importance of supporting mothers with accurate information and consistent support to increase the intention and practice of exclusive breastfeeding. A mother's willingness to provide exclusive breastfeeding is influenced by factors such as her confidence in her ability to provide exclusive breastfeeding the accessibility of adequate health services, and support from family and the surrounding environment. These findings emphasize the importance of identifying and addressing these factors to improve community breastfeeding practices (Aryeetey, R., 2021). Basrowi, N. D., et al, (2020) found that the factors that influence the willingness of mothers to provide exclusive breastfeeding include mothers' knowledge and attitudes towards breastfeeding practices, support from husbands and families, and social and cultural factors. This study emphasizes the need for a holistic approach to raising mothers' awareness and strengthening support systems to encourage exclusive breastfeeding practices.

CONCLUSION

The husband's support is related to the mother's willingness to provide exclusive breastfeeding. Mothers willing to give exclusive breastfeeding receive good support from their husbands. Although her husband's support strongly influences a mother's willingness to provide exclusive breastfeeding, there are still several other variables that need to be considered, such as socioeconomic status, family support, the mother's perception of her physical appearance, the mother's career or work activities, the mother's health behavior during breastfeeding, and other variables. It is suggested that future researchers conduct a detailed study of the success factors of exclusive breastfeeding so that the public can take the results as a recommendation for mothers to do the same. The study has limitations in sample size and depth of study. It is hoped that future researchers can continue this research by examining the obstacles experienced by husbands in providing support for exclusive breastfeeding.

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Analysis of Factors Related to The Accuracy of Triage Assessment at The Emergency Room

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A B S T R A C T

Triage assessment in the emergency department plays an important role in providing appropriate and effective services for emergency patients. However, the factors that affect the accuracy of triage assessments still need to be further understood, especially in the context of the COVID-19 pandemic. This study aims to analyze the relationship between nurse response time, nurse knowledge level, and respondent characteristics with the accuracy of triage assessment in the emergency room. This study used an analytical observational approach with a cross-sectional study approach. The sample consisted of 24 emergency room nurses who were selected using a nonprobability sampling technique, namely consecutive sampling. Data were collected through questionnaires and observation sheets and analyzed using the chi-square test. The analysis showed that nurse response time had a significant relationship with the accuracy of triage scoring ($p<0.001$). In addition, the level of knowledge of nurses was also significantly related to the accuracy of triage assessment ($p = 0.017$). However, no significant association was found between respondent characteristics such as age, gender, and education and the accuracy of triage assessments. The results of this study concluded that nurse response time and nurse knowledge level contributed to the accuracy of triage assessment in the emergency room. Nonetheless, respondent characteristics such as age, gender, and education did not affect the accuracy of triage scoring. This research provides a deeper understanding of the factors that influence the accuracy of triage assessments, which can help improve the quality of emergency services and more accurate decision-making in emergency departments.

INTRODUCTION

The Emergency Department (IGD) acts as the main entrance in hospitals that provide emergency services with their own characteristics where the patient's clinical condition requires immediate medical action to save lives and further records (Law of the Republic of Indonesia number 44 concerning hospitals, 2009). IGD is an installation that has quality health facilities in terms of patient referral system from pre-hospital. The emergency room provides 24-hour services tailored to the needs of patients who experience respiratory and circulatory disorders as part of the acute disease process or trauma, so it is necessary to get immediate, fast, and appropriate action, because if not done it can cause death or permanent disability in patients (Pigoga et al., 2020; Seyed-Nezhad et al., 2021).

The emergency room is unique in terms of its operation where its service is around the clock with dense and unscheduled patient attendance and high patient turnover. One of the services carried out by emergency room nurses during the COVID-19 pandemic is triage. These patients range from critical cases requiring immediate rescue intervention to relatively stable patients. Care services are based on the level of urgency and criticality of the patient's illness (Mulyadi et al., 2022; Quah et al., 2020). Hospitals, especially emergency rooms, aim to achieve optimal health services for patients quickly and precisely in

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handling emergency levels to be able to prevent the risk of disability and death (*to save life and limb*) with a response time of < 5 minutes and a definitive time of ≤ 2 hours (Ashcraft et al., 2021; Jeschke et al., 2020). Death and illness of patients can be minimized or prevented by various improvement efforts in the field of health services, one of which is by improving emergency services (Panagioti et al., 2019; Rodziewicz et al., 2022).

Services in the emergency room can be more structured and standardized, triage is needed which in the process is led by trained doctors and / or nurses, which when handling patients can categorize quickly and precisely based on care needs. Triage serves to distribute patients in several groups based on the level of patient emergency that is prioritized by assessing the presence or absence of Airway (A), Breathing (B), and Circulation (C) disturbances and triage is also carried out to assess the presence or absence of aspects of patient virulence levels that can be assessed by looking at the presence or absence of Early Wearning System (EWS) Covid-19 Screening indicators (Fekonja et al., 2023; Reay et al., 2020; Yancey & O'Rourke, 2023) So that the knowledge of a nurse in handling patient responses in the emergency room is very necessary (Molina-Mula & Gallo-Estrada, 2020) There are a number of triage allagrhythms based on the level of urgency assumed by the triage nurse. An effective triage process can improve efficiency in the emergency department which can directly affect length of stay, outcomes, and even patient satisfaction (AlSerkal et al., 2020; Savioli et al., 2023). In providing good services related to triage measures for patients who have emergency conditions, adequate nurse resources are needed. With adequate nurse resources, it will greatly contribute to improving the quality of service and the level of patient satisfaction in the emergency department. The speed and accuracy of help provided to patients who come to the emergency department requires standards in accordance with their competence and ability so as to guarantee an emergency treatment with a fast nurse response time and appropriate handling (Bahlibi et al., 2022; Bijani & Khaleghi, 2019; Özhanlı & Akyolcu, 2020).

Some factors that can affect the accuracy of triage assessments include age, education, and length of service. The length of work is the period that a person has passed since pursuing work. The length of work can describe a person's experience in mastering his field of duty. In general, officers with a lot of work experience do not need guidance compared to officers with little work experience (Cetin et al., 2020; Duko et al., 2019; Lindberg et al., 2021).

The longer a person works in an organization, the more experienced the person will be so that his work skills are better. The length of work of a health worker in the emergency room is expected to have adequate knowledge and work experience, have the competence to compete, especially in global competition and increasingly diverse consumer demands. The manifestation of the workforce development function, human resources owned by the organization must pay attention to the level of

education and work experience of employees as well as possible (Davidescu et al., 2020; Piwowar-Sulej, 2021; Torraco & Lundgren, 2020).

The results of research by Annisa, et al (2020) show that there is a correlation between the application of red triage and nurse response time, while there is no correlation between the application of yellow triage and nurse response time. So it is recommended to apply triage based on the category of the patient's condition so that the risk of death can be prevented (Annisa et al., 2020).

In another study, it was found that emergency management experience related to nurses' competence, especially case-based education programs, can provide emergency situation stimulation for nursing student (Huh & Kang, 2019; Unver et al., 2018; Wang et al., 2023). Meanwhile, the conclusion of Sutriningsih, Wahyuni, Haksama's (2020) research results is that knowledge, work experience and training greatly affect the perception of emergency room nurses in the triage system (Sutriningsih et al., 2020).

Based on a preliminary study conducted in February 2022, data from Sele Be Solu Hospital obtained patient visits to emergency room services from January to December 2021 were 7,425 patients with an average monthly visit of 619 or around 21 patients per day and a total of 78 patients died (12.6%). Around 49 patients with true and false emergency status, the higher visits of patients with false emergency caused services to be slow and handling was not in accordance with the patient's emergency priorities.

The aim of this research is to investigate the potential factors that may influence the accuracy of triage assessments within healthcare settings, considering the findings from preliminary interviews and observations. The preliminary study revealed that nurses continue to operate using outdated triage procedures not adapted to the COVID-19 pandemic. It was observed that some nurses lack understanding of the differences and specific processes involved in triage during the pandemic, leading to instances where patients are not triaged due to their ability to walk or absence of evident COVID-19 symptoms, resulting in self-determination by nurses that these cases are non-emergency. This emphasizes the critical need for updated emergency training for nurses, particularly in the context of triage protocols during the COVID-19 pandemic.

METHOD

This study employed an analytical observational research methodology with a cross-sectional study approach. The research population comprised all nurses within the Emergency Department (ED) of Sele Be Solu Hospital. The samples were obtained using nonprobability sampling techniques, specifically consecutive sampling, considering inclusion criteria such as willingness to participate, strong communication skills, and proficiency in reading and writing in Bahasa Indonesia.

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A total of 24 individuals were selected as samples for this research based on the criteria. The study was conducted in the emergency room of Sele Be Solu Hospital, situated in Sorong City, during May 2023.

To collect data, various measuring instruments were utilized, including questionnaires, observation sheets, stopwatches, and data processing software. The questionnaire consisted of two parts: Part A contained demographic data of respondents, encompassing age, gender, education, and length of work, while Part B comprised questions related to triage knowledge. Additionally, observation sheets were used to record nurses' response times.

This research has passed the ethical feasibility test from the Research Ethics Commission of the Poltekkes Kemenkes Sorong with registration number DM.03.05/6/027/2023. Data analysis was performed using SPSS software using the chi-square test, which was used to analyze the relationship between nurse response time variables and the accuracy of triage scoring.

RESULT

There were 24 respondents who participated in this study. The distribution of research respondents is described in Table 1 below.

1. Characteristics of Respondents

Table 1 characteristics of respondents

Variable	n	%
Age		
<56 years old	24	100
≥56 years old	0	0
Gender		
Man	16	67
Woman	8	33
Education		
Diploma	11	46
Bachelor of Nursing	4	17
Registered nurse	9	37
Length of Work		
≤5 years	3	12
≥5 years	21	88
Knowledge		
Enough	20	83
Good	4	17
Nurse Response Time		
Fast	19	79
Slow	5	21
Accuracy of Triage Assessment		
True	19	79
Not Exactly	5	21
Total	24	100

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In terms of respondents' age, all (100%) were in the age group of less than 56 years, while none were 56 years old or older. In terms of gender, 67% of the total respondents were men, while the remaining 33% were women. The education level of respondents is also recorded in this table, where 46% have a Diploma, 17% have a Bachelor of Nursing, and 37% have a registered nurse. In terms of length of work, the majority (88%) of respondents have had more than 5 years of work experience, while only 12% have less than or equal to 5 years of experience. Regarding knowledge, 83% of respondents have a level of knowledge that is considered sufficient, while another 17% have a good level of knowledge. Nurse response time in the context of this survey was also measured, and 79% of respondents responded quickly, while 21% responded slowly. Finally, in assessing triage accuracy, 79% of respondents viewed triage scoring as appropriate, while 21% stated that triage assessment was inappropriate.

2. Relationship of Age, Sex, Education, length of work with accuracy of triage assessment

Table 2 Analysis of the Relationship of Age, Sex, Education, length of work with accuracy of triage assessment

| Variable | Accuracy of Triage Assessment | | | | Total | | P Value |
	True		Not Exactly				
Age							
<56 years old	19	79	5	21	24	100	0,585
≥56 years old	0	0	0	0	0	0	
Gender							
Man	12	50	4	17	16	67	0,477
Woman	7	29	1	4	8	33	
Education							
Diploma	9	37	2	8	11	45	0,951
Bachelor of Nursing	3	12	1	4	4	16	
Registered nurse	7	31	2	8	9	39	
Length of Work							
≤5 years	3	12	0	0	3	12	0,342
≥5 years	16	68	5	20	21	88	
Knowledge							
Enough	4	16	0	0	4	16	0,261
Good	15	64	5	20	20	84	

Based on the analysis of the table, it can be observed the relationship between the variables of age, gender, education, and length of work with the accuracy of the triage assessment. In relation to respondents' age, there did not appear to be a significant pattern linking age to the accuracy of triage scoring. In both the group of respondents who were less than 56 years of age and in the group of respondents who were 56 years of age or older, the comparison between appropriate and improper triage assessments did not show a noticeable difference.

In terms of gender, the analysis showed that there was no notable difference in the accuracy of triage scoring by sex. The percentage of correct and inappropriate assessments was relatively similar in both male and female groups.

Based on education level, there is no clear trend linking education to the accuracy of triage assessments. Groups of respondents with different educational backgrounds such as Nursing Diploma, Bachelor of Nursing, and Registered Nurse did not show consistent differences in terms of appropriate or inappropriate triage assessments.

In the context of length of work, there is no strong relationship between length of work and the accuracy of triage assessment. Although most respondents who had more than 5 years of work experience gave an appropriate triage assessment, the difference was not noticeable when compared to the group who had less than or equal to 5 years of work experience.

The level of knowledge of respondents also does not expressly impact the accuracy of triage assessments. Respondents with a good level of knowledge do not always give a more precise assessment than those with a sufficient level of knowledge.

Overall, based on the data, there does not appear to be a single dominant factor influencing the accuracy of triage scoring. This analysis shows the complexity of the interactions between these variables in the context of triage assessments and indicates that other factors may also contribute to the accuracy of these assessments.

3. The Relationship of Nurse Response Time to the Accuracy of Triage Assessment

Table 3. Analysis of the Relationship of Nurse Response Time with Triage Assessment Accuracy

Variable	Accuracy of Triage Assessment				Total		P Value
	True		Not Exactly				
Nurse Response Time							
Fast	19	79	0	0	19	79	0,000
Slow	0	0	5	21	5	21	

Table 3 explains the relationship between nurse response time and accuracy of triage assessment in a study involving 24 respondents. The results of this analysis present significant findings. The table highlights the relationship between nurse response time and the accuracy of triage assessments. In the "Quick" response time group, it was seen that 79% of respondents gave appropriate triage ratings, while none of them gave inappropriate ratings. However, in the "Slow" response time group, the results were very different, where none of the respondents gave an appropriate triage rating and 21% of the total respondents gave an improper assessment. In addition, the p-value was 0.000, which indicates that the difference in the accuracy of the triage assessment between these two groups was very statistically significant. Overall, the results of the analysis showed that nurse response time had a very significant impact on the accuracy of triage assessments. The group of respondents who gave a quick response tended to give a more precise triage assessment compared to the group that gave a slow response. These findings provide a strong indication of the importance of responding quickly to triage to ensure accurate assessment and appropriate action taken on patients.

DISCUSSION

The primary aim of this research was to investigate the various factors influencing the accuracy of triage assessments within the Emergency Department (ED) setting. In pursuit of this objective, a comprehensive analytical observational research methodology with a cross-sectional study approach was employed. The study focused on understanding the correlation between several variables, including age, gender, education level, work experience, knowledge level, and nurse response time, and their impact on the precision of triage evaluations.

The core findings of this research indicate that there is no singular dominant factor significantly influencing the accuracy of triage assessments in the emergency department. Despite exploring the relationships between variables such as age, gender, education, and work experience with triage accuracy, there were no consistent or significant patterns indicating a direct correlation between these factors and the level of accuracy in triage assessments.

One of the primary discoveries of this study is that nurse response time has a remarkably significant impact on the accuracy of triage assessments. Respondents who reacted promptly tended to provide more accurate triage evaluations compared to those with slower response times. This underscores the importance of swift responses in determining precise assessments, which, in turn, can affect appropriate actions towards patients in emergency settings.

Several previous studies, such as those conducted by (Saban et al., 2019; Soemah, 2023), have shown a relationship between nurse response time and the accuracy of triage assessments. The results of this study confirmed that nurse response time has a significant correlation with the accuracy of triage assessment at the emergency room of Sele Be Solu Hospital, Sorong City. These findings are in line with the literature emphasizing the importance of responding quickly to triage to ensure proper patient prioritization. However, what is interesting is the significant role nurses' level of knowledge plays in influencing the accuracy of triage assessments. While not an anticipated result, it is consistent with the views of several previous studies that highlight the importance of knowledge in the triage process.

Unexpectedly, nurses' work experience was not shown to have a significant impact on the accuracy of triage assessments. This contrasts with previous findings from (Cannavacciuolo et al., 2021; Levis-Elmelech et al., 2022) study, which showed that experience can contribute to more accurate decision-making in triage assessments.

Comparison of results with previous findings shows conformity with (Hardianto et al., 2023) research supporting the relationship between nurse response time and accuracy of triage assessments. However, these results contradict a study conducted by (Lea et al., 2022), which found no significant association between nurses' knowledge and the accuracy of triage assessments.

These findings can be explained by considering the role of training and education in strengthening nurses' knowledge as well as the importance of efficient assessment in responding to patient needs. The implications of these findings could potentially lead to the development of more focused training programs and to improvements to triage assessment protocols.

As a future research direction, it is advisable to investigate other factors that might affect the accuracy of triage assessments, such as work environment factors and stress levels. Ultimately, this study makes a valuable contribution in understanding the factors associated with the accuracy of triage assessments in emergency rooms and provides a basis for efforts to improve the quality of emergency health services at Sele Be Solu Hospital in Sorong City and possibly elsewhere.

CONCLUSION

The primary findings underscore the pivotal roles of nurse response time and nurse knowledge level in significantly influencing the accuracy of triage assessments within the emergency room. These findings carry vital implications, forming a robust basis for enhancing the efficiency and quality of emergency health services. Swift responses in triage, coupled with proficient nurse knowledge, have the potential to optimize patient prioritization decisions and elevate care standards within the emergency room setting. Acknowledging its limitations, notably the restricted sample size confined to one hospital and a specific geographic area, the study's generalizability may be limited due to potential contextual variations elsewhere. Nevertheless, the study enriches our comprehension of factors impacting triage accuracy, thereby providing a valuable contribution to this field. Future research directions could encompass broader data collection from diverse hospitals and regions to generate more universally applicable findings. Moreover, further investigation into additional factors, such as psychosocial aspects of nursing and inter-team dynamics, may also unveil their potential influence on triage accuracy.

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