Factors Related to Sleep Quality in Patients After Laparotomy

Restu Gentari[1], Sunarsih[2], Gustop Amatiria[3], Ririn Sri Handayani[4]*
[1,2,3,4]Tanjungkarang Health Polytechnic, Bandar Lampung, Indonesia
restugentari123@gmail.com, sunarsihkarim@gmail.com, gustopamatiria@poltekkes-tjk.ac.id, ririnsrihandayani@poltekkes-tjk.ac.id
**Corresponding author*

Abstract
In 2012, surgical procedures in Indonesia reached 1.2 million. In fact, in 2009, based on data from the Indonesian Ministry of Health, surgical procedures ranked 11th in terms of frequency (Indonesian Ministry of Health 2009 in Angraini, 2018). Patients who have undergone surgery often experience sleep disturbances. Patients often wake up during the first night after surgery due to the reduced effects of anesthesia. Sleep is one of the basic human needs that is included in physiological needs. Sleep is also universal because all individuals, wherever they are, need sleep. The purpose of this study is to determine the factors related to the sleep quality of post-laparotomy surgery clients. This is a quantitative analytical research design. The sampling technique used non-probability sampling with 95 respondents. Data collection used the PSQI (Pittsburgh Sleep Quality Index) measurement tool. The data obtained by the researcher showed that there was a relationship between factors and the sleep quality of post-laparotomy patients. With 95 respondents, the results showed that there was a relationship between the comfort of the treatment room and sleep quality, then there was a relationship between anxiety and sleep quality, and there was a relationship between pain and sleep quality, where all three factors had a p-value of 0.000.
Keywords: factors affecting sleep quality, post-laparotomy surgery

INTRODUCTION

Surgery or operation is a treatment that uses invasive methods by opening or exposing the part of the body that will be treated or operated on (Sjamsuhidajat & Wim de Jing, 2005). Surgery is a unique experience of planned changes to the body consisting of three phases: preoperative, intraoperative, and postoperative (Koizzer, Erb, Berman & Snyder, 2011).

Data obtained from (WHO in Angraini, 2018) states that the number of surgical/operative patients increases every year. In 2011, 140 million patients were recorded as receiving surgical procedures worldwide, and the following year, in 2012, that number increased to 148 million people. Meanwhile, surgical procedures in Indonesia in 2012 reached 1.2 million people. In fact, in 2009, based on tabulation data from the Indonesian Ministry of Health, surgical procedures and operations were the 11th most frequently performed procedures (Indonesian Ministry of Health 2009 in Angraini, 2018).

The postoperative period is a continuation of preoperative and intraoperative care, beginning when the client is admitted to the recovery room and ending with a follow-up evaluation at the clinic or hospital. During the postoperative phase, nursing care assesses the client's psychological and physiological response to surgery. s can often cause physical discomfort for clients, including pain, which is often accompanied by anxiety and difficulty sleeping (Caroline Bumker Rosdahl, 2012). In addition to pain and anxiety, which make it difficult for clients to sleep, there are also environmental factors that contribute to discomfort (Kozier et al., 2003).

According to the World Health Organization (WHO), 18% of the world's population suffers from sleep disorders, and this number is increasing every year. Based on international research data conducted by the US Census Bureau International Database in 2004 on the Indonesian population, it was found that out of 238.452 million Indonesians, 28.035 million (11.7%) suffer from insomnia or sleep disorders. This figure is one of the most common complaints among Indonesians (Mading, 2015).

Patients who have undergone surgery often experience sleep disorders. Patients often wake up during the first night after surgery due to the reduced effects of anesthesia (Fahmi, 2012). Sleep is one of the basic human needs that is included in physiological needs. Sleep is also universal because all individuals, wherever they are, need sleep (Kahair, 2012).

Sleep disorders in post-operative patients are generally caused by two things: physical discomfort and anxiety about health developments after surgery. Sleep disorders are a sign of physical and psychological disorders in clients, and if they continue for a long period, they will hinder healing and may even worsen the

disease. Without adequate rest and sleep, the ability to concentrate diminishes and irritability increases. Sleep disorders in post-operative patients can cause trauma to the body by disrupting protective and homeostatic mechanisms (Potter & Perry, 2016).

As many as 80% of post-operative patients complain of pain in the surgical area. The impact of severe and uncontrolled post-operative pain can interfere with patient activity and cause discomfort, which can affect the patient's need for sleep. Any disease that causes pain and physical discomfort can cause sleep problems in patients. (Smeltzer & Bare, 2013). Sleep disturbance is one of the effects caused by pain in various diseases. Several factors can influence sleep disturbance, namely pain from post-operative wounds, an uncomfortable environment, stress, lifestyle, fatigue, habitual sleep patterns, and medication (Potter & Perry, 2010).

Based on research conducted by Indri et al. (2014) on the Relationship Between Pain, Anxiety, and Environment with Sleep Quality in Postoperative Appendicitis Patients, the results showed that 70.4% of patients presented with severe pain, 29.9% presented with moderate pain, and 68.5% of postoperative patients presented with poor sleep quality while the presentation of patients with good sleep quality was 31.5%. Another study conducted by Andri Juli (2019) entitled The Relationship Between Fracture Pain and Sleep Quality in Inpatients found that the presentation of pain with a mild pain level was 10%, moderate pain at 30%, and severe pain at 60%. The results showed that 73.3% of patients had poor sleep quality, while 25.7% had good sleep quality.

Based on research conducted by Nuraini (2005) in Samsir (2020) on sleep pattern disorders in post-operative patients at the Dr. Cipto Mangunkusumo National General Hospital (RSUPN) in Jakarta, it was found that sleep disorders in early adult patients were generally caused by pain (34.5%), fear of recurrence (17.24%), anxiety about not returning to normal (10.3%), nursing actions (10.34%), and others (25%). Meanwhile, in middle-aged adults, it was caused by pain (32.8%), fear of recurrence (15.5%), anxiety about not returning to normal (15.5%), nursing actions (3.5%), dizziness (5.2%), and others, including shortness of breath and discomfort (25.86%).

The results of Samsir's (2020) study show that there is a relationship between the comfort of the treatment room and the fulfillment of clients' sleep needs, as seen in the research results which obtained a value of (ρ=0.00). There is a relationship between anxiety and the fulfillment of clients' sleep needs, with the research results obtaining a value of (ρ=0.00). And there is a relationship between pain and the fulfillment of clients' sleep needs, with the research results obtaining a value of (ρ=0.000).

The purpose of this study was to determine the frequency of sleep quality, the frequency of comfort in the treatment room, the frequency of anxiety, and the frequency of pain in post-laparotomy clients. This would enable the identification of factors related to the sleep quality of post-laparotomy clients.

METHOD

The type of research used in this study was quantitative with an analytical research design and an exploratory descriptive research type with a quantitative approach.

The research was conducted at Dr. H. Abdul Moeloek Provincial Hospital in Lampung from February to March 2024. The population in this study was all post-laparotomy patients at Dr. H. Abdul Moeloek Provincial Hospital in Lampung. In this study, sampling was done using non-probability sampling with purposive sampling. The population in this study consisted of 95 respondents/month, according to the Lameshow formula.

The dependent variable in this study was sleep quality. The independent variables in this study were the comfort of the treatment room, anxiety, and pain.

In this study, the researcher used a data collection instrument, namely the PSQI (Pittsburgh Sleep Quality Index) measurement tool. The research was conducted by introducing the researcher to the clients. After the introduction, the researcher asked for the clients' consent. The researcher asked the respondents to fill out the questionnaire on the second day after surgery.

Bivariate analysis in this study used chi-square, with the aim of identifying factors related to the sleep quality of post-operative clients. In this study, an alpha value of 5% (0.05) was used.

This research has obtained ethical approval from the Tanjungkarang Health Polytechnic Ethics Committee. The ethical review is valid from February 21, 2024 to February 21, 2025. The letter number is No.145/KEPK-TJK/II/2023.

RESULTS AND DISCUSSION

Univariate Analysis

Table 1. Age Frequency Distribution of Laparotomy Postoperative Clients in the Surgery Room of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, 2024.

Age	Number	Percentage
18-30	15	15.8
31-40	51	53.6
41-50	29	30.6
Total	95	100

Based on Table 1, it is known that of the 95 post-operative laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital in Lampung in 2024, most were aged 31-40 years, namely 51 respondents (53.6%).

Table 2. Frequency Distribution of Gender Among Postoperative Laparotomy Patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

Age	Number	Percentage
Male	62	65.3
Female	33	34.7
Total	95	100.0

Based on Table 2, it is known that of the 95 post-operative laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital in Lampung in 2024, the majority were male, namely 62 respondents (65.3%).

Table 3. Frequency Distribution of Sleep Quality in Post-Laparotomy Clients in the Operating Room of Dr. H. Abdul Moeloek Provincial Hospital, Lampung Province, 2024.

Sleep Quality	Number	Percentage
Good	28	29.5
Poor	67	70.5
Total	95	100.0

Based on Table 3, it is known that of the 95 post-operative laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, in 2024, most had poor sleep quality, namely 67 respondents (70.5%).

Table 4. Frequency Distribution of Comfort in the Care Room Among Postoperative Laparotomy Patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

Comfort of the Care Room	Number	Percentage
Comfortable	33	34.7
Uncomfortable	62	65.3
Total	95	100

Based on Table 4, it is known that of the 95 post-operative laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital in Lampung in 2024, most of them experienced discomfort in the treatment room, namely 62 respondents (65.3%).

Table 5. Frequency Distribution of Anxiety Among Postoperative Laparotomy Patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

Anxiety	Number	Percentage
Not Anxious	0	0
Mild Anxiety	23	24.2
Moderate Anxiety	41	43.2
Severe Anxiety	31	32.6
Panic	0	0
Amount	95	100

Based on Table 5, it is known that of the 95 post-operative laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital in Lampung in 2024, most had moderate anxiety, namely 41 respondents (43.2%).

Table 6. Frequency Distribution of Pain Among Postoperative Laparotomy Patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

Pain	Number	Percentage
No Pain	0	0
Mild pain	13	13.7
Moderate pain	39	41.1
Severe pain	43	45.3
Severe pain	0	0
Total	95	100

Based on Table 6. It is known that of the 95 post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital, Lampung Province, in 2024, most experienced severe pain, namely 43 respondents (45.3%).

Bivariate Analysis

Table 1. The Relationship Between the Comfort of the Care Room and the Sleep Quality of Postoperative Laparotomy Clients in the Surgical Ward of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, 2024.

Nursing Room Comfort	Sleep Quality				Total		P-Value	QR 95% CI
	Good		Bad					
	n	%	n	%	n	%		
Comfortable	18	54.5	16	45.5	33	100	000	6.2 (2.4–16.3)
Uncomfortable	10	16.1	52	83.9	62	0		
Total	28	29.5	67	70.5	95	100		

Based on Table 1, it is known that of the 33 post-laparotomy surgery clients who stated that the care room was comfortable, 18 respondents (54.5%) had good sleep quality. Meanwhile, of the 62 post-laparotomy surgery clients who stated that the care room was uncomfortable, 10 respondents (16.5%) had good sleep quality. The statistical test results obtained a p-value = 0.000 (p-value < α = 0.05), which means that there is a relationship between the comfort of the treatment room and the sleep quality of post-laparotomy surgery patients in the Operating Room of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, in 2024. An OR of 6.2 was also obtained, meaning that post-laparotomy surgery patients who reported that the ward was comfortable were 6.2 times more likely to have good sleep quality compared to post-laparotomy surgery patients who reported that the ward was uncomfortable.

Table 2. Relationship Between Anxiety and Sleep Quality of Postoperative Laparotomy Patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

Anxiety	Sleep Quality				Total		P-Value	QR 95% CI
	Good		Poor					
	n	%	n	%	n	%		
Mild anxiety	20	87.0	3	13	23	100	000	-
Moderate Anxiety	7	17.1	34	82.9	41	0		

Severe Anxiety	1	3.2	30	96.8	31	100		
Total	28	29.5	67	70.5	95	100		

Based on Table 2, it is known that of the 23 post-laparotomy clients with mild anxiety, 20 respondents (87.0%) had good sleep quality. Of the 41 post-laparotomy clients with moderate anxiety, 7 respondents (17.1%) had good sleep quality. Meanwhile, of the 31 post-laparotomy clients with severe anxiety, 1 respondent (29.5%) had good sleep quality.

The statistical test results obtained a p-value = 0.000 (p-value < α = 0.05), which means that there is a relationship between anxiety and sleep quality in post-laparotomy surgery patients in the Surgery Room of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

Table 3. Relationship Between Pain and Sleep Quality in Postoperative Laparotomy Patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, 2024.

Pain	Sleep Quality				Total		P-Value	QR 95% CI
	Good		Poor					
	n	%	n	%	n	%		
Mild pain	10	7.9	3	23.1	13	100	0	-
Moderate pain	15	38.5	24	61.5	39	0	00	
Severe pain	3	7.0	40	93.0	43	100		
Total	28	29.5	67	70.5	95	100		

Based on Table 3, it is known that of the 13 post-laparotomy clients with mild pain, 10 respondents (7.9%) had good sleep quality. Of the 39 post-laparotomy surgery clients with moderate pain, 15 respondents (38.5%) had good sleep quality. Meanwhile, of the 43 post-laparotomy surgery clients with severe pain, 3 respondents (7.0%) had good sleep quality. The statistical test yielded a p-value = 0.000 (p-value < α = 0.05), indicating that there is a relationship between pain and sleep quality among post-laparotomy surgery patients in the Surgical Ward of Dr. H. Abdul Moeloek General Hospital, Lampung Province, in 2024.

DISCUSSION

Factors Associated with Sleep Quality in Postoperative Laparotomy Patients

The results of this study showed that most respondents were aged 31-40 years, totaling 51 respondents (53.6%). Based on the theory that age is the most important factor in determining an individual's attitude and influencing their quality of life, young people usually change and apply the knowledge they have acquired. This theory is also supported by research on the relationship between age and healing time presented by Gouin (2012), which explains that as age increases ( ), the metabolic rate decreases and comorbidity increases, resulting in a longer wound healing process. This is in line with previous research conducted by Karnina (2021) on the relationship between age, gender, duration of surgery, and ASA status with the incidence of PONV in patients after digestive surgery laparotomy, which found that most patients were in the 25-39 age range, categorized as adults. However, this differs from the study by Wibowo (2022) on the Perioperative Surgical Apgar Score (SAS) in Laparotomy Patients in the Central Surgery Room of the Ajibarang Regional General Hospital, which found that most respondents were elderly, numbering 6 (28.6%).

Based on data from 95 post-operative laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Regional General Hospital, Lampung Province, in 2024, most were male, with 62 respondents (65.3%). Based on the study, it was found that out of 18 patients, the majority were male, totaling 10 people (55.6%), and female, totaling 8 people (44.4%). These results are in line with Tanio's (2018) study on the profile of post-laparotomy patients in the ICU of Prof. Dr. R. D. Kandou Manado General Hospital from January 2015 to December 2017, which found that the majority (62%) of patients were male.

It was found that out of 95 post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital, Lampung, in 2024, the majority had poor sleep quality, namely 67 respondents (70.5%). Sleep quality is a person's satisfaction with sleep, so that the person wakes up feeling refreshed and does not show signs of fatigue, easily irritable and restless, lethargic and apathetic, dark circles around the eyes, swollen eyelids, red conjunctiva, sore eyes, divided attention, headaches, and frequent yawning or drowsiness (Hidayat, 2016). This is also in line with research conducted by Nurlela (2019) on factors affecting the sleep quality of post-laparotomy patients at PKU Muhammadiyah Gambong Hospital, which shows that the quality of patients' sleep is influenced by physiological factors, namely pain (28%), anxiety (36%), and the environment (24%).

From these research results, it can be concluded that pain and anxiety are major factors affecting the sleep quality of post-operative patients.

It was found that of the 95 post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital in Lampung in 2024, most of them (62 respondents or 65.3%) found the treatment room uncomfortable. Based on the researcher's observations, one of the factors that caused the environment to be categorized as adequate by the respondents was noise. Patients said they were often disturbed by noise from other patients' families, visitors, and sources outside the room, such as patients' families at night and the activities of employees and vendors in the morning or afternoon. According to the researcher, nurses should emphasize and provide a comfortable and conducive care environment for patients undergoing treatment so that patients can enjoy a comfortable environment during their treatment. The care environment in inpatient rooms is a dominant aspect of nursing services in hospitals in order to improve the quality of service while patients are being treated in hospitals. This is supported by previous researchers Mawaddah & Caesar (2018), who stated that inpatient rooms are an important physical facility for client services. Nurses must pay attention to things that make the care environment uncomfortable and the atmosphere less calm by paying attention to sources of noise inside and outside the room so that patients who are sick are not disturbed during their rest.

It was found that of the 95 post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Regional General Hospital, Lampung Province, in 2024, most had moderate anxiety, namely 41 respondents (43.2%). Anxiety is an affective disorder characterized by deep and persistent feelings of fear or worry. If not properly managed, anxiety can lead to sleep disturbances, impaired concentration and memory, digestive issues, headaches, urinary problems, cold and clammy hands, and other symptoms (Hawari, 2018).

Based on data from 95 post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Regional General Hospital, Lampung Province, in 2024, most of them experienced severe pain, namely 43 respondents (45.3%). According to Giuffre (1991, in Lin & Wang, 2005), abdominal surgery tends to be more painful than all other types of surgery, and 70% of patients who undergo upper abdominal surgery suffer from severe pain. Data shows that 80% of patients experience postoperative pain, and 11% to 20% experience severe pain (Kozak, DeFrances, & Hall, 2016). This is supported by a study by Apfelbaum, et.al (2003, cited in Marmo & D'arcy, 2013) of 250 randomly selected patients who underwent surgery, which found that 80% of patients experienced acute pain after surgery. Research conducted by Megawati (2010) also revealed the same thing, that post-laparotomy patients complained of moderate pain in 57.70% of cases, severe pain in 15.38% of cases, and mild pain in 26.92% of cases.

Relationship Between Factors and Sleep Quality in Postoperative Laparotomy Patients

The results of the study indicate that there is a relationship between the comfort of the treatment room and the sleep quality of post-laparotomy surgery patients in the Surgery Room of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, in 2024. An OR of 6.2 was also obtained, meaning that post-operative laparotomy patients who reported a comfortable ward had a 6.2 times greater chance of having good sleep quality compared to those who reported an uncomfortable ward. This is supported by research findings (Cilingir et al., 2016) stating that noise from doors, faucets, windows, and hospital renovations affects patient sleep. Studies on sleep disturbances in patients show that noise has a significant impact on patients' sleep disturbances, with noise levels reaching 85dB and conversations between health workers reported to disturb patients' sleep (Dolan et al., 2016). Another study shows that two-thirds of patients report noise as the highest factor causing sleep disturbance at night (Gulam, Xyrichis, & Lee, 2020).

The relationship in this study is also inseparable from the support of the research site/hospital with restrictions on patient visiting hours, thereby reducing the noise level in the inpatient room. The role of the hospital is to provide policies related to facilities and infrastructure that are no longer suitable, and the active role of nurses in therapeutic communication with patients is also very necessary to build trust and support for patients. It is necessary to reorganize the room to create a more comfortable atmosphere with fresher air.

The results of this study indicate that there is a relationship between anxiety and sleep quality in post-laparotomy clients in the Surgery Room of Dr. H. Abdul Moeloek Provincial Hospital, Lampung Province, in 2024. This study is in line with a study entitled "The Relationship Between Anxiety Levels and Sleep Quality in Patients with Congestive Heart Failure (CHF)." The results of this study show that the majority of respondents had mild anxiety, totaling 35 people (47.9%), and poor sleep quality, totaling 47 people (64.4%). The results of the Spearman's rank test analysis showed a p-value of $0.004 < 0.05$, indicating a relationship between anxiety levels and sleep quality. There is a relationship between anxiety levels and sleep quality in CHF patients. The researchers assume that severe anxiety will affect a person's sleep quality, and this assumption is supported by previous studies and existing theories. Therefore, if a person has high anxiety, their sleep will also be worse. This is proven by the results of the study. The sleep quality of students at STIKes

Surya Globgal Yogyakarta showed that 22 respondents (50%) had poor sleep quality and 22 respondents (50%) had good sleep quality.

The results of the study show that there is a relationship between pain and the sleep quality of post-laparotomy clients in the Surgery Room of Dr. H. Abdul Moeloek Provincial Hospital, Lampung Province, in 2024. Pain is a physiological mechanism that aims to protect oneself. Clients experiencing pain will have difficulty sleeping and falling asleep. Pain can wake clients up during the night and make it difficult for them to fall back asleep (Potter & Perry, 2015). This study also concluded that post-appendectomy patients perceive pain as more severe. Pain can affect sleep quality, but for some people, pain does not significantly affect sleep quality due to each patient's different perceptions and varying sleep needs, which are influenced by pain, environment, fatigue, lifestyle, emotional stress, diet, motivation, and medications (Kozier, 2014).

CONCLUSIONS

The frequency distribution of post-laparotomy patients in the surgical ward of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, in 2024, with poor sleep quality, was 67 respondents (70.5%).

Frequency distribution of post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital, Lampung, in 2024, with uncomfortable treatment rooms, namely 62 respondents (65.3%).

Frequency distribution of post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung, in 2024, with moderate anxiety, namely 41 respondents (43.2%).

Frequency distribution of post-laparotomy clients in the surgical ward of Dr. H. Abdul Moeloek Provincial Hospital, Lampung, in 2024, with severe pain, namely 43 respondents (45.3%).

There is a relationship between the comfort of the treatment room and the quality of sleep of post-laparotomy surgery clients in the Surgery Room of Dr. H. Abdul Moeloek Provincial Hospital, Lampung Province, in 2024 (p value 0.000).

There is a relationship between anxiety and sleep quality in post-laparotomy surgery patients in the Surgery Room of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung Province, in 2024 (p value 0.000). There is a relationship between pain and sleep quality in post-laparotomy surgery patients in the Surgery Room of Dr. H. Abdul Moeloek Provincial General Hospital, Lampung, in 2024 (p value 0.000).

The researchers suggest that healthcare workers provide health education on anxiety management so that patients' anxiety can be reduced and their sleep quality improved after surgery

REFERENCES

Andri Juli. (2019). The Relationship Between Fracture Pain and Sleep Quality in Inpatients. Jurnal Kesmas. Vol. 1, No. 1.

Anggraeni, R. (2018). The effect of counseling on the benefits of early mobilization on the implementation of early mobilization in patients after laparotomy. *Syntax Literate; Indonesian Scientific Journal*, *3*(2), 107-121.

Indri, Ummami Vanes., Karim, Darwin., Elita. (2014). The Relationship Between Pain, Anxiety, and Environment with Sleep Quality in Postoperative Appendicitis Patients. JOM PSIK Journal. Vol. 1, No.2.

Kamagi, R. H., & Sahar, J. (2021). Music Therapy for Insomnia Sleep Disorders. *Journal of Telenursing (JOTING)*, *3*(2), 797-809.

Kozier et al., (*2003*). Fundamentals of Nursing: Concepts, Processes, and Practice, 4th edition, Addison Wesley, California

Kozier, *Erb*, *Berman, & Snyder*. (*2011*). Textbook of Fundamental Nursing: Concepts, Process & Practice (7th ed., Vol. I). Jakarta: EGC

Mading, M. F., Abi Muhlisin, H. M., & SKM, M. K. (2015). *Characteristics of elderly people with insomnia at the Dharma Bakti Pajang Surakarta Nursing Home* (Doctoral dissertation, Muhammadiyah University Surakarta).

Melastuti, E., & Avianti, L. U. (2015). The effect of slow stroke back massage (SSBM) therapy on the sleep quality of post-operative patients at RSI Sultan Agung Semarang. *Rustida Health Science Journal*, *2*(1), 159-168.

Rosdahl, *Caroline Bunker*, Kowalski, M. T. (*2012*) Nursing Textbook. Basics. 10 Vol. 2. Edited by E. A. Mardella. Jakarta: Medical Books. EGC

Sjamsuhidajat, *Wim de Jong*. *2005*. Textbook of Surgery, 2nd Edition. Jakarta: EGC.

Taufan, A. (2017). *The Effect of Prayer Therapy on the Anxiety Scale of Preoperative Patients in the Central Surgery Room of Dr. M. Ashari Pemalang Regional General Hospital* (Doctoral dissertation, Muhammadiyah University of Semarang).