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IMPROVING SLEEP QUALITY THROUGH LAVENDER AROMATHERAPY IN PATIENTS ADMITTED TO THE INTENSIVE CARE UNIT

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ABSTRACT

Sleep is a fundamental human need, and a vital aspect that requires special attention in ICU patients, as proper sleep contributes significantly to the recovery process. Various pharmacological and non-pharmacological therapies have been developed to help improve human sleep quality, one of which is the use of lavender aromatherapy. This study aims to analyze the effect of lavender aromatherapy on improving sleep quality in patients admitted to the ICU. This is a pre-experimental study with a one-group pre-test and post-test design. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI). Lavender aromatherapy was administered using a diffuser. The total population in this study were 91 ICU patiens and sample involved 40 ICU patients from RSPAD Gatot Soebroto. Sample size using Lemeshow formula for estimating the proportion of a population. Data were analyzed with paired T-test. The results showed that the average sleep quality before the intervention was 5.6 with poor sleep quality, and after intervention the average was 4.1 with good sleep quality. This research of the hypothesis test showed a significant improvement in sleep quality (p-value = 0.000). It can be concluded that lavender aromatherapy is effective in improving the sleep quality of patients.

Keywords: intensive care unit, lavender aromatherapy, sleep quality

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INTRODUCTION

Sleep is a basic daily activity and a fundamental human need. It plays a crucial role in maintaining physical, cognitive, and emotional well-being. During sleep, the body undergoes recovery and regeneration to restore energy to its optimal state. Therefore, adequate and quality sleep is essential, especially for critically ill patients such as those in the Intensive Care Unit (ICU) (Abraham et al., 2017; Naik et al., 2018; Pratama, 2019).

Typically, ICU patients suffer from one or more organ system failures. Research shows that patients on mechanical ventilation often report poor sleep. ICU patients frequently experience difficulties falling asleep and are often awakened during the night. In Indonesia, around 34–45% of ICU patients report sleep disturbances due to insufficient rest time. As previously mentioned, adequate and quality sleep is critical for ICU patients' recovery (Musriati, 2017; Naik et al., 2018). Addressing sleep disturbances is therefore vital to ensure optimal recovery in ICU patients.

Non-pharmacological interventions such as aromatherapy can help improve sleep. Aromatherapy works by promoting relaxation and comfort. Lavender essential oil, one of the most commonly used aromatherapies, is known for its calming and relaxing effects. Sagala et al. (2022) conducted a randomized controlled trial on breast cancer patients and found that those given Lavender aromatherapy experienced better sleep quality compared to the control group. A study in older adults also demonstrated similar results on aromatheraphy administration (Prima & Oktarini, 2021). These findings support the effectiveness of lavender aromatherapy in enhancing sleep quality. This study was conducted to analyze the impact of lavender aromatherapy on sleep quality among ICU patients.

METHOD

This study is a pre-experimental study, with the design used in this study is *one group pre-test and post-test*. Respondents in this study were ICU patients at Gatot Soebroto Army Hospital. The population in this study were ICU patiens from January to June 2023 on average 91 people and number of respondents in this study was 40 people with sample size using Lemeshow formula for estimating the proportion of a population. The inclusion criteria for respondents are the patient is in a state of composmentis consciusness, can communicate, and in the intermediate room, and the exclusion criteria included patients with severe pain, decreased consciusness, and patients using ventilators. This study received ethical approval reference number 309/KEP-UY/EA.10/XI/2023.

Respondents in this study were measured for sleep quality before (pre-test) and after (post-test) lavender aromatherapy intervention. This sleep quality measurement uses the PSQI Pittsburgh Sleep Quality Index). This questionnaire consists of 7 components of sleep quality measurement, namely (1) subjective sleep quality; (2) sleep latency; (3) sleep duration; (4) sleep efficiency; (5) sleep disturbance; (6) use of sleep medication; and (7) daytime disfunction. The PSQI questionnaire consists of a combination of Likert scale questions and open-ended questions. These open-ended questions will then be scored using the guidelines provided. Respondents are asked to indicate how often they have experienced sleep difficulties over the past month and rate their overall sleep quality. Each question is scored between 0-3, with higher scores indicating more acute sleep disturbances. If the overall score is >5, the respondent's sleep quality is categorized as poor. However, if the overall PSQI score is≤ 5 then the respondent's sleep quality is categorized as good (Khazaie et al., 2023).

The steps for giving lavender aromatherapy are as follows (1) arrange the respondent's position as comfortably as possible; (2) fill 100 ml of water into the diffuser; (3) drip 10 drops of lavender essential oil into the diffuser; (4) turn on the diffuser by connecting the cable to the socket; (5) adjust the speed of steam release in the diffuser; (6) give directions to the respondent to inhale aromatherapy and positive affirmations to the respondent; (7) carry out this therapy for 60 minutes; (8) after 60 minutes, clean the tool and arrange the respondent's position to be comfortable. This lavender aromatherapy is done for 60 minutes a day, within 2 consecutive days.

RESULT

This study involved 40 ICU patients as respondents. The majority were male and belonged to the late elderly age group. Most of the patients were admitted to the ICU following surgical procedures. The demographic characteristics of the respondents are presented in Table 1.

Table 1. Demographics Characteristic of Respondents (n=40)

No	Variables	Frequency (n)	Percentage (%)
1.	Gender		
	Male	25	62.5
	Female	15	37.5
2.	Age		
	Late tennagers	1	2.5
	Early adulthood	7	17.5
	Late adulthood	4	10.0
	Early elderly	9	22.5
	Late elderly	19	47.5
3.	Medical diagnosis		
	Chronic Kidney Disease (CKD)	5	12.5
	Diabetes Mellitus (DM)	3	7.5
	Hypertension	3	7.5
	Post-Surgery	20	50.0
	STEMI	5	12.5
	Tuberculosis	4	10.0
Total		40	100

The statistical analysis of sleep quality before and after the intervention is presented in Table 2. Prior to receiving lavender aromatherapy, 62.5% of respondents were categorized as having poor sleep quality. Following the intervention, 100% of respondents demonstrated good sleep quality.

Table 2. Frequency of Sleep Quality Among ICU Patients Before and After Receiving Lavender Aromatherapy (n=40)

Variable	Before		After	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Sleep Quality				
Good	15	37.5	40	100
Poor	25	62.5	0	0
Total	40	100	40	100

The results of the statistical analysis using the T-test indicate that lavender aromatherapy has a significant effect on sleep quality in ICU patients at Gatot Soebroto Army Hospital, with a Sig. (2-tailed) value of 0.000, which is less than the significance level of 0.05. The detailed results of the T-test are presented in Table 3.

Table 3. Effect of Lavender Aromatherapy on Sleep Quality Improvement (n=40)

	Mean	SD	T-Test	P Value
Before Intervention	5.6500	1.36907		
After Intervention	4.1000	1,25678	10.515	0.000
Before intervention-after intervention	1.5500	0.93233		

DISCUSSION

More male patients are admitted to the ICU than female patients. This is influenced by the hormone esterogen which is believed to have *immunoprotective* properties (the ability to protect the immune system thereby increasing the immune response). Meanwhile, androgen hormones have been shown to suppress the immune system (Lat et al., 2021). The majority of ICU patients at Gatot Soebroto Army Hospital are patients who fall into the category of the late elderly (56-65 years). With age comes an increase in comorbidities and the risk of multimorbidity. Multimorbidity is a condition where two or more chronic conditions occur together. This causes the majority of ICU patients to be the late elderly (Brunker et al., 2023).

Postoperative patients are the most common patients in this study, which is 50%. Postoperative patients will often be transferred to the ICU for prevention, early recognition, and rapid treatment of life-threatening complications that occur in the postoperative period. However, there is no evidence of improved survival from postoperative ICU admission. In fact, postoperative patients transferred to the ICU have a higher mortality rate than postoperative patients transferred to a standard room. These results were obtained after adjusting for potential confounding factors (Park & Suh, 2018). Most of the ICU patients at Gatot Soebroto Army Hospital (62.5%) had poor sleep quality. Poor sleep quality can be due to several factors, namely physical discomfort, awakening for medical procedures, pain, feelings of anxiety, and depression about their body condition. In addition, environmental factors can also disturb the sleep of ICU patients, such as noise and lighting (Ahn et al., 2023).

This study shows that there is an effect of lavender aromatherapy on improving the quality of sleep of ICU patients at Gatot Soebroto Army Hospital. Lavender aromatherapy has the main content of *linalool* and *linalyl acetate oil*. These two ingredients make lavender have a sedative effect, which can reduce anxiety, stress, improve well-being, and support mental alertness. When the scent of lavender is inhaled by the sense of smell, it will be received by the olfactory nerve. These receptors will then send information to the limbic system in the brain. The hypothalamus, which is part of the limbic system, will provide information to other parts of the body to secrete the hormones melatonin and serotonin. This hormone melatonin functions to regulate the body's sleep-wake cycle. This increase in melatonin can cause drowsiness. Meanwhile, the hormone serotonin acts as a *neurotransmitter* that affects *mood* and anxiety. The increase in these two hormones as a result of the effects of lavender aromatherapy can improve sleep quality for ICU patients at Gatot Soebroto Army Hospital (Ayuningtyas & Burhanto, 2021; Erpina & Mochartini, 2024; Maharianingsih et al., 2020; Motulo et al., 2023; Said et al., 2022) .

CONCLUSION

This study demonstrates that lavender aromatherapy positively affects the sleep quality of ICU patients at Gatot Soebroto Army Hospital. Before the intervention, the majority of patients experienced poor sleep quality, whereas after the intervention, all respondents showed good sleep quality.

RECOMMENDATION

It is recommended to provide lavender aromatherapy as a complementary therapy in patient rooms to improve sleep quality. This method is simple, effective, and easy to apply, making it accessible for patients. Its efficacy in enhancing sleep quality has been demonstrated. Therefore, lavender aromatherapy can be considered as an alternative therapy to help improve sleep quality in patients admitted to the ICU.

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