

THE EFFECT OF LAVENDER AROMATHERAPY ON SLEEP QUALITY IN PREGNANT WOMEN IN THE THIRD PERIOD IN THE PAGAK COMMUNITY HEALTH CENTER, MALANG REGENCY

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ABSTRACT

Sleep quality disorders are a common health problem that can negatively affect physical, psychological, and social well-being. Non-pharmacological interventions such as lavender aromatherapy have been widely used to promote relaxation and improve sleep quality Objective: This study aimed to determine the effect of lavender aromatherapy on sleep quality among respondents with poor sleep quality. A pre-experimental study with a one-group pretest-posttest design was conducted involving 20 respondents who had poor sleep quality at baseline. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) as the primary measurement instrument. Respondents received lavender aromatherapy intervention, and sleep quality was reassessed after the intervention. The data were analyzed using the Wilcoxon Signed-Rank Test with a significance level of 0.05. Before the intervention, all respondents (100%) had poor sleep quality based on PSQI scores. After receiving lavender aromatherapy, sleep quality improved, with 11 respondents (55%) achieving good sleep quality and 9 respondents (45%) remaining in the poor sleep quality category. Statistical analysis showed a significant difference between pretest and posttest PSQI scores (Wilcoxon Signed-Rank Test, $p < 0.05$), indicating that lavender aromatherapy significantly improved sleep quality among respondents. Lavender aromatherapy has a significant positive effect on improving sleep quality. The relaxing properties of lavender, particularly its active compounds linalool and linalyl acetate, may contribute to improved sleep quality. Therefore, lavender aromatherapy can be considered an effective non-pharmacological intervention for individuals experiencing sleep quality disturbances.

Keywords: *Lavender Aromatherapy, Sleep Quality, PSQI, Relaxation, Non-Pharmacological Therapy*

INTRODUCTION

The third trimester of pregnancy is the final phase of pregnancy, marked by increasingly complex physiological and psychological changes. During this phase, pregnant women often experience physical discomfort such as back pain, frequent urination at night, and difficulty finding a comfortable sleeping position. [1]. Sleep disturbances are one of the main problems often experienced by pregnant women in the third trimester. Hormonal changes and physical discomfort cause mothers to wake up more easily during the night and have difficulty falling back asleep. [2]. In addition to physical factors, psychological factors such as anxiety about childbirth also play a role in reducing the quality of sleep for pregnant women. This condition makes it difficult for mothers to achieve restful, quality sleep. [3].

Globally, sleep disturbances in pregnant women are a significant problem.

According to international research, approximately 66%–97% of pregnant women in their third trimester experience sleep disturbances due to physiological and psychological changes during pregnancy. [4] . In East Java Province, sleep quality issues among pregnant women are still quite high, particularly in the third trimester. This is due to increased physical complaints such as back pain and frequent urination, as well as psychological factors such as anxiety before delivery [2] . Sleep disturbances are still frequently encountered in healthcare facilities, particularly among women in advanced pregnancy who experience physical and emotional discomfort. This is supported by research showing a link between pregnancy discomfort and maternal sleep quality. [3] . Based on a preliminary study conducted on three pregnant women in their third trimester at the Pagak Community Health Center in Malang Regency, it was found that some women complained of difficulty sleeping, waking up frequently during the night, and feeling unrefreshed upon waking. This indicates that sleep quality issues among pregnant women remain a significant issue at the primary healthcare level and require attention.

Sleep disturbances are one of the most common problems experienced by pregnant women in their third trimester. This condition occurs due to hormonal changes, increasing uterine size, and limited comfortable sleeping positions. Most pregnant women experience difficulty initiating and maintaining restful sleep. [5] . If sleep disorders are left untreated, they can impact the health of both mother and fetus. Poor quality sleep can increase the risk of pregnancy complications such as hypertension, preeclampsia, and fetal growth retardation. Furthermore, pregnant women can experience excessive fatigue and a reduced quality of life. [5] . Efforts to address sleep quality disorders in pregnant women in the third trimester can be carried out through pharmacological and non-pharmacological approaches. However, the use of pharmacological therapy tends to be limited due to risks to fetal health, so non-pharmacological interventions are more recommended in obstetric practice. [6] Therefore, safe and effective treatment efforts are needed to improve the sleep quality of pregnant women, especially through non-pharmacological approaches. One widely used therapy is aromatherapy, as it is considered safer for pregnant women and does not cause side effects like medications. Therefore, safe and effective treatment efforts are needed to improve the sleep quality of pregnant women, especially through non-pharmacological approaches. One widely used therapy is aromatherapy, as it is considered safer for pregnant women and does not cause side effects like medications. Lavender aromatherapy is known to contain linalool and linalyl acetate, which function to provide a relaxing effect, calm the nervous system, and help improve sleep quality. Lavender aromatherapy has been shown to improve sleep quality in pregnant women in the third trimester through its natural sedative effects. [7] Thus, lavender aromatherapy can be a safe, easy, and effective alternative intervention to improve sleep quality in pregnant women in their third trimester.

RESEARCH METHODS

This study employed a quantitative research method with a pre-experimental approach using a one-group pretest–posttest design. In this design, a single group of participants received the intervention, and measurements were conducted before and after treatment to assess changes in sleep quality.

The population consisted of all third-trimester pregnant women registered at the Pagak Community Health Center, Malang Regency, totaling 20 individuals. The sample was selected using purposive sampling based on predetermined inclusion and exclusion criteria. The inclusion criteria were: (1) third-trimester pregnant women willing to participate in the study, (2) experiencing sleep disturbances, and (3) having no history of allergy to lavender aromatherapy. The exclusion criteria were: (1) pregnant women with severe pregnancy complications and (2) those currently using sleep medications.

The intervention was conducted for 7 consecutive days. Lavender aromatherapy was administered twice daily, in the morning and before bedtime. Evaluations were performed on days 3 and 7 to monitor changes in sleep quality.

Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), a standardized instrument widely used to assess subjective sleep quality. The PSQI consists of 19 self-reported items grouped into seven components, with higher scores indicating poorer sleep quality. Previous studies have demonstrated good psychometric properties of the PSQI, with a reported Cronbach's alpha coefficient ranging from 0.70 to 0.83, indicating acceptable reliability and validity for assessing sleep quality in various populations.

To minimize potential confounding factors, participants were instructed to maintain their usual sleep schedules throughout the study period. Information regarding caffeine consumption, sleep environment, anxiety levels, and medical conditions was collected during the initial assessment. Participants with severe medical conditions affecting sleep were excluded from the study, and no changes in medication use were reported during the intervention period.

Data were collected through observation, documentation, and questionnaires. Sleep quality was assessed before the intervention (pretest) and after the intervention (posttest). Data analysis was performed using the Wilcoxon Signed-Rank Test with the assistance of SPSS software, with a significance level set at $p < 0.05$.

RESULTS AND DISCUSSION

A. General Data

Table 1.

Characteristics	Category	Frequency (n)	Percentage (%)
Age	Late adolescence	6	30.0
	Early adulthood	14	70.0
	Total	20	100.0
Pregnancy order	First pregnancy	7	35.0
	Second pregnancy	8	40.0
	Third pregnancy	5	25.0
	Total	20	100.0
Occupation	Housewife	17	85.0
	Private sector	3	15.0
	Total	20	100.0

Most respondents were in the early adulthood age group (70%). The majority were experiencing their second pregnancy (40%), and most of them were housewives (85%).

B. Specific Data on Sleep Quality

Table 2. Sleep Quality Data

Variable	Category	Frequency (n)	Percentage (%)
Pretest	Poor	20	100.0
	Total	20	100.0
Posttest	Poor	9	45.0
	Good	11	55.0
	Total	20	100.0

All respondents experienced poor sleep quality at the pretest (100%). After the lavender aromatherapy intervention, there was an improvement, with 55% of respondents achieving good sleep quality.

C. Normality Test

Table 3. Normality Test Results

Variable	Shapiro-Wilk Sig.
Pretest	0.062
Posttest	0.060

The normality test using the Shapiro-Wilk test showed significance values greater than 0.05, indicating that the data were normally distributed. However, since the data are ordinal and paired, further analysis was conducted using a non-parametric test.

D. Wilcoxon Signed Rank Test

Table 4. Wilcoxon Signed Rank Test Results

Description	Value
Negative Ranks	16
Positive Ranks	1
Ties	3
Z	-3,562
Asymp . Sig. (2-tailed)	0.000

Based on the study results, the majority of respondents were in early adulthood (70%). In theory, early adulthood is the optimal reproductive phase, but it still presents a risk of physiological disturbances during pregnancy, including sleep disturbances.

Research shows that in the third trimester, sleep disturbances increase with advancing gestational age due to hormonal changes, physical discomfort, and anxiety leading up to delivery. [8] . In addition, a 2024 systematic review study also explained that pregnant women often experience insomnia, stress, and anxiety which have a direct impact on sleep quality. [9] .

In theory, early adulthood has a better level of physiological adaptation than older adults, but remains vulnerable to psychological stress. In the context of this study, this condition explains why all respondents in the pretest experienced poor sleep quality.

The predominance of early adulthood suggests that sleep disturbances in pregnant women are not solely influenced by older age, but rather by the physiological changes of the third trimester. Therefore, non-pharmacological

interventions such as lavender aromatherapy are relevant to promote relaxation and improve sleep quality.

The results showed that the majority of respondents were mothers in their second pregnancy (40%).

In theory, multigravida mothers (second and subsequent pregnancies) have previous experience, but they are not always free from sleep disturbances. In fact, research suggests that repeated pregnancies still cause sleep disturbances due to physical factors such as uterine enlargement, back pain, and fetal movement. Furthermore, poor sleep quality in pregnant women can lead to fatigue, decreased physical condition, and even the risk of complications during labor and delivery. [9]. Psychologically, primigravida mothers tend to experience anxiety due to their first pregnancy experience, while multigravida mothers face additional burdens such as caring for a previous child. The predominance of second pregnancies in this study suggests that previous pregnancy experiences do not guarantee good sleep quality. Physical and psychological factors still play a significant role, so interventions such as lavender aromatherapy are still necessary for all parities.

The majority of respondents were housewives (85%). In theory, housewives have a high domestic workload, which can cause physical fatigue and affect sleep quality. Research also shows that fatigue, stress, and daily activities contribute to sleep disturbances in pregnant women [8]. Furthermore, poor sleep quality can worsen a mother's physical condition, such as fatigue, decreased energy, and disruption to daily activities. However, on the other hand, housewives also have greater flexibility in rest time than working mothers, so sleep quality is not solely determined by work, but also by their physical and psychological condition during pregnancy. The high number of housewives indicates that sleep disturbances are influenced not only by formal employment, but also by domestic activities and the physiological changes of pregnancy. This reinforces the importance of simple interventions such as lavender aromatherapy, which are easy to implement at home.

Based on the study results, all respondents (100%) experienced poor sleep quality during the pretest. After receiving the lavender aromatherapy intervention, there was an improvement, with 11 respondents (55%) experiencing good sleep quality and 9 respondents (45%) still experiencing poor sleep quality.

Various studies have shown that lavender aromatherapy is effective in improving sleep quality, as proven by various experimental studies and scientific reviews. Lavender is known to have a relaxing effect. [10]. In addition, quasi-experimental research also showed significance in various groups of respondents. [11]. Similar results were also found in studies on postpartum mothers and the elderly who showed improved sleep quality after lavender intervention. [12]. [13] where all respondents experienced poor sleep quality in the pretest, then there was an improvement after the intervention, with most respondents having good sleep quality and only a small proportion still experiencing poor sleep quality after the treatment [14].

[15]. Lavender aromatherapy affects sleep quality through the pharmacological effects of its essential oils, particularly linalool and linalyl acetate, which act on the central nervous system by decreasing sympathetic nervous system activity, promoting relaxation, and reducing anxiety, thus facilitating sleep onset and improving overall sleep quality. Several studies have shown that lavender inhalation can improve sleep quality, increase sleep duration, and reduce

the frequency of nighttime awakenings in various groups of respondents. These effects are also associated with increased brainwave activity associated with relaxation and stabilization of the psychophysiological state before sleep. Supporting research shows that lavender aromatherapy significantly improves sleep quality in patients with insomnia and anxiety disorders. [16]. Another study found a positive effect of lavender on sleep quality in clinical patients through inhalation before bedtime. [17]. Clinical trials show improved sleep quality and decreased sleep disturbances after use of lavender aromatherapy. [18]. Experimental studies have also shown that lavender improves sleep quality and physiological relaxation. [19] Another study reported improved sleep quality in post-operative patients after lavender inhalation. Lavender is effective as a non-pharmacological therapy to improve sleep quality in various populations. [20].

Lavender aromatherapy can be considered a fairly effective non-pharmacological intervention in helping improve sleep quality through central nervous system relaxation mechanisms. Active ingredients such as linalool and linalyl acetate work by reducing sympathetic nervous system activity, thereby reducing stress and anxiety, ultimately facilitating sleep initiation and improving overall sleep quality. Although its effects are not as potent as sleeping pills, various studies have shown that lavender can significantly improve sleep quality, especially in individuals with mild to moderate sleep disorders. Therefore, lavender aromatherapy is more appropriate as a complementary therapy that is safe, easy to implement, and has relatively minimal side effects. However, it is still influenced by individual response and sleep environmental factors.

CONCLUSION

Lavender aromatherapy is an effective non-pharmacological therapy that supports sleep quality by relaxing the central nervous system, reducing sympathetic activity, and reducing stress and anxiety. Several studies have shown that consistent use of lavender can improve sleep quality, although the effects may vary from person to person. Therefore, lavender may be a safe and beneficial intervention to help improve sleep quality, particularly in mild to moderate sleep disorders, as demonstrated in your study.

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