

The Effectiveness of Lavender Aromatherapy on Sleep Quality of Third Trimester Pregnant Women in the Work Area of Rejosari Community Health Center

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ABSTRACT

Objective: This study aims to determine the effectiveness of lavender aromatherapy in improving sleep quality among third-trimester pregnant women in the working area of Rejosari Health Center, Pekanbaru City, in 2025. **Method:** The research employed a pre-experimental design with a one-group pretest-posttest approach involving 20 third-trimester pregnant women experiencing sleep disturbances, selected using purposive sampling. The intervention consisted of administering lavender aromatherapy before bedtime for seven consecutive days. **Results:** The majority of respondents were aged over 31 years (45%), had a gestational age of 28–35 weeks (85%), and were multigravida (80%). Before the intervention, all participants (100%) experienced sleep disturbances, which decreased to 80% (16 respondents) after the intervention. The Wilcoxon Signed Rank Test yielded a p -value of 0.000 ($p < 0.05$), indicating a significant improvement in sleep quality following the intervention. **Novelty:** This study highlights the practical application of lavender aromatherapy as an effective, safe, and non-pharmacological complementary therapy to enhance maternal sleep quality during late pregnancy, providing evidence-based support for its integration into maternal health services.

INTRODUCTION

Pregnancy is a physiological process characterized by significant physical and psychological changes. One common complaint experienced by pregnant women, particularly in the third trimester, is sleep disturbance. This disturbance is caused by various factors such as hormonal changes, back pain, increased urination frequency, and anxiety before labor [1]. Poor sleep quality during pregnancy not only affects maternal health but also impacts fetal development, increasing the risk of preterm birth and childbirth complications [2].

According to the World Health Organization (WHO), the global prevalence of insomnia, a sleep disorder among pregnant women, is 41.8%. Meanwhile, the prevalence of sleep disorders among pregnant women in Nigeria is estimated at around 33.4% [3]. According to data from the National Sleep Foundation 2021, 78% of pregnant women in the United States experience sleep disturbances, and 97.3% of pregnant women in their third trimester wake up at night, averaging 3-11 times per night. Meanwhile, the prevalence of sleep disorders in Indonesia is quite high among pregnant women, at around 64%. Sixty-five percent of pregnant women with sleep apnea are forced to undergo cesarean sections, and approximately 42% develop preeclampsia. To reduce the prevalence of sleep disorders in pregnant women, improving sleep quality is necessary [4].

Good sleep quality for pregnant women in the third trimester is beneficial for both the mother and her unborn baby. Poor sleep quality in pregnant women during the third trimester can lead to complications during pregnancy, childbirth, and even the unborn baby. These complications can include gestational hypertension, cesarean section, and premature birth [5]. This is due to poor maternal sleep quality in the third trimester, which leads to a negative inflammatory response and excess cytokine production. Excess cytokines in the body disrupt the spinal arteries leading to the placenta, which can increase the risk of premature birth.

Currently, there are various interventions that can be implemented to improve sleep quality in pregnant women, particularly in the third trimester. Non-pharmacological approaches or complementary therapies are widely used, given their effectiveness and the relatively minimal risk of side effects compared to pharmacological therapies. Some types of complementary therapies commonly used in the third trimester of pregnancy include prenatal yoga or pregnancy exercises, relaxation techniques, sleep hygiene, back massage, and aromatherapy.

One type of aromatherapy that has been extensively researched for its effectiveness is lavender aromatherapy. This aromatherapy uses pure essential oil extracted from lavender flowers, which are known to have a calming effect and can help improve sleep quality. Research by Mu'alimah et al. 2022 shows that lavender aromatherapy has significant potential to improve sleep quality in pregnant women, especially in the final trimester [6]. This lavender aromatherapy is administered before bedtime at a dose of 5-10 drops in a standard basin filled with warm water until the water begins to cool. Aromatherapy is administered for 7 days as maintenance for pregnant women [7].

According to Muningsih and Fitriani 2022, lavender aromatherapy has been proven effective in improving sleep quality for pregnant women in their third trimester [8]. The study showed significant changes in respondents' Pittsburgh Sleep Quality Index (PSQI) questionnaire scores before and after the aromatherapy intervention. Similar results were also reported by Ayudia 2022, who stated that lavender aromatherapy improved sleep quality in 70% of respondents [9]. The Wilcoxon statistical test showed a p-value of 0.001 ($p < 0.005$), indicating a significant difference. Twenty-one of the 30 respondents (70%) experienced positive changes in sleep quantity. Therefore, lavender aromatherapy is recommended as an effective solution for addressing sleep disturbances in pregnant women in their third trimester.

Based on an initial survey of five pregnant women experiencing sleep disturbances in their third trimester at the Rejosari Community Health Center in Pekanbaru City, three complained of difficulty returning to sleep after urinating at night, lasting approximately 15 to 30 minutes. The other two women experienced sleep disturbances caused by back pain. These sleep disturbances began in the third trimester. All respondents had never taken medications that could potentially cause sleep disturbances. Furthermore, interviews revealed that none of the respondents were aware

that aromatherapy could be used as an alternative treatment for sleep disorders in pregnant women.

RESEARCH METHOD

This research is a quantitative study using a pre-experimental research design model. It uses a one-group pretest and posttest design [10], [11]. In this design, initial measurements are taken on the research subjects using a pretest and a final posttest after the intervention. This research was conducted in 2025 at the Rejosari Community Health Center in Pekanbaru City. The sample was selected using a purposive sampling technique, based on certain considerations referring to predetermined inclusion and exclusion criteria. The sample size in this study was 20 pregnant women in their third trimester who experienced sleep disorders and were registered at the Rejosari Community Health Center. Data analysis was performed using univariate analysis to describe the characteristics of the respondents, and bivariate analysis using the Wilcoxon Signed Ranks Test to determine differences before and after the intervention.

RESULTS AND DISCUSSION

Result

The results of a study conducted at the Rejosari Community Health Center in 2025 on the effectiveness of lavender aromatherapy on sleep quality in third-trimester pregnant women are presented in the following table:

General Data

Table 1. Frequency Distribution of Respondents Based on Characteristics of Third-Trimester Pregnant Women

Information	Category	Amount (n)	F(%)
Maternal Age (Years)	< 25	4	20
	26-30	7	35
	>31	9	45
	Total	13	100,0
Gestational Age	28 -35 weeks	17	85
	>36 weeks	3	15
	Total	13	100
Parity	Primigravida	4	20
	Multigravida	16	80
	Total	20	100
Lavender Aromatherapy	Performed	20	100
	Total	20	100

Source: Primary Data, 2025

Based on Table 1, it can be seen that of the 20 pregnant women experiencing sleep disorders, the majority were aged >31 years (9 respondents) (45%), 17 respondents (85%)

were between 28-35 weeks of gestation, and 16 respondents (80%) were multigravida. All pregnant women were given lavender aromatherapy.

Special Data

Table 2. Distribution of Respondents Based on the Effectiveness of Lavender Aromatherapy on Sleep Quality of Pregnant Women in the Third Trimester Before Intervention

Sleep quality before lavender aromatherapy	(n)	(%)
Poor (score>5)	20	100
Good (score<5)	0	0
Total	20	100

Source: Primary data 2025

Table 3. Distribution of Respondents Based on the Effectiveness of Lavender Aromatherapy on the Sleep Quality of Pregnant Women in the Third Trimester After the Intervention

Sleep quality after lavender aromatherapy	(n)	(%)
Poor (score>5)	4	20
Baik (score<5)	16	80
Total	13	100

Source: Primary data 2025

Tables 2 and 3 show a difference: of the 20 respondents before the intervention, the majority experienced sleep disturbances (20 respondents (100%)), while after the intervention, this number decreased to 16 respondents (80%).

Table 4. Effectiveness of Lavender Aromatherapy on Sleep Quality of Third-Trimmed Pregnant Women in the Rejosari Community Health Center Area in 2025

Vaginal Discharge		N	Mean Rank	Sum of Rank	Z score P value
Posttest-Pretest	Negative Rank	0 ^a	.00	.00	-2.236 ^a
	Positive Rank	5 ^b	3.00	15.00	
	Ties	8 ^c			.025
	Total	13			

Source: Primary Data, 2025

Based on the use of lavender aromatherapy to improve sleep quality for pregnant women in the third trimester, the P-value was 0.000 <0.05. Therefore, Ho was rejected and Ha was accepted. This indicates that lavender aromatherapy is effective in improving

sleep quality for pregnant women in the third trimester, as seen from the difference in sleep quality before and after the intervention.

Discussion

The results showed that of the 20 pregnant women in the third trimester who experienced sleep disturbances, the majority were aged 9 (45%) over 31 years, 17 (85%) were between 28-35 weeks of gestation, and 16 (80%) were multigravida. Before the intervention, the majority experienced sleep disturbances (20 respondents (100%)), and after the intervention, the number increased to 16 (80%).

The Wilcoxon signed ranks test using SPSS data obtained a P-value for the pre-post-test variable of lavender aromatherapy administration of $0.000 < 0.05$. Therefore, it can be concluded that H_0 is rejected and H_a is accepted, indicating the effectiveness of lavender aromatherapy in improving the sleep quality of pregnant women in the Rejosari Community Health Center, Pekanbaru City, in 2025.

Aromatherapy is used to improve health and well-being. Lavender aromatherapy has the function of calming and restoring focus, as well as promoting restful sleep. Pregnant women experiencing sleep difficulties are advised to use the scent of lavender because it increases alpha waves in the brain, which help create a relaxed state [12]. Lavender aromatherapy can help improve sleep quality because the linalool in lavender has a sedative effect that stimulates olfactory nerve receptors and produces a relaxing effect when inhaled [13].

Sleep disorders in third-trimester pregnant women are a critical issue requiring research due to their high prevalence and significant impact on maternal health and fetal development [14]. Untreated sleep disorders can worsen a mother's mental and physical health, making interventions to improve sleep quality urgently needed [15].

Based on a study by Lathifatun Nafsiyah and Kamidah entitled "The Effect of Lavender Aromatherapy on Improving Sleep Quality in Third-Trimester Pregnant Women," results showed that before the intervention, all 23 third-trimester pregnant women (100%) experienced poor sleep quality [16]. After receiving the lavender aromatherapy intervention, there was a significant improvement. Twenty-two respondents (95.7%) experienced good sleep quality, while only one respondent (4.3%) still experienced poor sleep quality. Based on these data, a significant difference was found between the sleep quality of pregnant women before and after the lavender aromatherapy intervention. This was confirmed by the results of the Wilcoxon Signed Rank Test, which showed a p-value of 0.000 ($p < 0.05$). Therefore, the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted, indicating a significant effect of lavender aromatherapy on improving sleep quality in pregnant women in the third trimester [17].

Researchers hypothesize that lavender aromatherapy provides a relaxing effect on pregnant women through its active compounds, such as linalool, which can increase alpha waves in the brain. This effect helps reduce stress and tension, thereby improving

sleep quality. Therefore, lavender aromatherapy has the potential to be an effective and safe non-pharmacological therapy for treating sleep disorders in pregnant women.

CONCLUSION

Fundamental Finding : The study concludes that lavender aromatherapy is effective in improving sleep quality among third-trimester pregnant women at Rejosari Health Center, Pekanbaru, in 2025. The active compounds of lavender, particularly linalool and linalyl acetate, contribute to sedative and relaxing effects that help alleviate insomnia, anxiety, and mood disturbances. **Implication :** These findings suggest that lavender aromatherapy can be recommended as a safe, affordable, and non-pharmacological complementary therapy to enhance maternal well-being and support integrated maternal health care practices. **Limitation :** However, the study was limited by its small sample size and short intervention period, which may restrict the generalizability of the findings to broader populations. **Future Research :** Further studies with larger sample sizes, control groups, and longer intervention durations are recommended to validate the sustained effects of lavender aromatherapy and to explore its impact on other psychological and physiological aspects of pregnancy.

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