

THE EFFECT OF CITRUS AURANTIUM AROMATHERAPY ON SLEEP QUALITY IN PREGNANT WOMEN WITH SLEEP DISORDERS

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ABSTRACT

Background: The number of pregnant women who experience sleep disorders in Sumber Bahagia Village, Central Lampung Regency is 31 (72.1%) pregnant women in 2023. And most often occur in the third trimester of pregnancy which is caused by various factors such as hormonal changes, emotional stress and physique problems. To overcome sleep disorders, you can use citrus aurantium aroma therapy.

Objective: Understanding the effect of Citrus Aurantium aromatherapy on the sleep quality of pregnant women with sleep disorders in Sumber Bahagia Village, Central Lampung Regency.

Method: The research type is a pre-experimental study using a One Group Pretest Posttest Design. The population consists of all pregnant women with sleep disorders. Sleep quality was measured using the PSQI (Pittsburgh Sleep Quality Index). The citrus was administered using cotton, with 2-3 drops of citrus oil to be inhaled for 10 minutes, and this was done for 7 days. The sample was determined using total sampling technique based on inclusion and exclusion criteria, resulting in 31 respondents. The research instrument is the Pittsburgh Sleep Quality Index (PSQI) questionnaire. The statistical test used was the Wilcoxon Signed Ranks test with a significance level of 0.05.

Results: age characteristics of respondents, most of them were 21-35 years old (74.2%), parity 2-3 (61.3%) and gestational age TM I (12.9%), TM II (25.8%) TM III (61.3%). The average sleep quality of pregnant women before being given citrus aurantium aromatherapy based on PSQI was 10.91 in the poor category. After being given aromatherapy, the average sleep quality score based on PSQI was 9.39. Hypothesis test results on the effect of citrus aurantium aromatherapy on sleep quality with a p value of 0.000.

Conclusion: There is an effect of citrus aurantium aromatherapy on sleep quality in pregnant women with sleep disorders in Sumber Bahagia Village, Central Lampung Regency in 2023.

Suggestion: Health workers, especially midwives, recommend that pregnant women who experience sleep disorders try using citrus aurantium aromatherapy.

Keywords : Citrus Aurantium Aromatherapy, Sleep Quality, Pregnant Women

ABSTRAK : PENGARUH AROMATERAPI CITRUS AURANTIUM TERHADAP KUALITAS TIDUR PADA IBU HAMIL DENGAN GANGGUAN TIDUR

Latar Belakang : Jumlah ibu hamil yang mengalami gangguan tidur di Desa Sumber Bahagia Kabupaten Lampung Tengah sebanyak 31 (72,1%) ibu hamil pada tahun 2023. Dan paling sering terjadi pada kehamilan trimester III yang disebabkan oleh berbagai faktor seperti perubahan hormonal, stres emosional dan masalah fisik. Untuk mengatasi gangguan tidur, Anda bisa menggunakan terapi aroma citrus aurantium.

Tujuan: Mengetahui pengaruh aromaterapi Citrus Aurantium terhadap kualitas tidur ibu hamil dengan gangguan tidur di Desa Sumber Bahagia Kabupaten Lampung Tengah.

Metode: Jenis penelitian adalah penelitian pre-eksperimental dengan menggunakan One Group Pretest Posttest Design. Populasinya terdiri dari seluruh ibu hamil dengan gangguan tidur. Kualitas tidur diukur menggunakan PSQI (Pittsburgh Sleep Quality Index). Jeruk diberikan dengan menggunakan kapas, dihirup 2-3 tetes minyak jeruk selama 10 menit, dan dilakukan selama 7 hari. Sampel ditentukan dengan teknik total sampling berdasarkan kriteria inklusi dan eksklusi sehingga diperoleh 31 responden. Instrumen penelitiannya adalah kuesioner Pittsburgh Sleep Quality Index (PSQI). Uji statistik yang digunakan adalah uji Wilcoxon Signed Ranks dengan tingkat signifikansi 0,05.

Hasil: karakteristik usia responden sebagian besar berusia 21-35 tahun (74,2%), paritas 2-3 (61,3%) dan usia kehamilan TM I (12,9%), TM II (25,8%) TM III (61,3%). Rata-rata kualitas tidur ibu hamil sebelum diberikan aromaterapi citrus aurantium berdasarkan PSQI sebesar 10,91 dengan kategori buruk. Setelah diberikan

aromaterapi, rata-rata skor kualitas tidur berdasarkan PSQI sebesar 9,39. Hasil uji hipotesis pengaruh aromaterapi jeruk aurantium terhadap kualitas tidur dengan nilai p value 0,000.

Kesimpulan : Terdapat pengaruh aromaterapi jeruk aurantium terhadap kualitas tidur pada ibu hamil dengan gangguan tidur di Desa Sumber Bahagia Kabupaten Lampung Tengah Tahun 2023.

Saran : Tenaga kesehatan khususnya bidan menganjurkan agar ibu hamil yang mengalami gangguan tidur mencoba menggunakan aromaterapi citrus aurantium.

Kata Kunci : Aromaterapi Citrus Aurantium, Kualitas Tidur, Ibu Hamil

INTRODUCTION

During the pregnancy process, anatomical and physiological changes occur which result in pregnant women experiencing discomfort during pregnancy, especially in the third trimester of pregnancy. This discomfort can be in the form of physical or psychological discomfort, one of which is sleep disturbance and anxiety before giving birth. Basically, anxiety in pregnant women is normal and is an aspect that generally occurs in the adaptation process. Research conducted by Dement (2017) found that 40% of pregnant women complained of sleep quality problems in the first and second trimesters, and this increased to 57% in the third trimester (Dwi Anggraini et al., 2023).

The prevalence increased from 13% in the first trimester to 66% in the third trimester. In a systematic review and meta-analysis, it was reported that the prevalence of sleep disorders during pregnancy was 80.8% in Iran. According to the National Sleep Foundation, around 78% of pregnant women report experiencing sleep problems. A study published in *Sleep Medicine Reviews* reports that around 97% of pregnant women experience changes in sleep patterns during pregnancy. A study published in the *American Journal of Obstetrics and Gynecology* shows that around 64% of pregnant women experience sleep disturbances during the third trimester of pregnancy. The research in the *Journal of Obstetric, Gynecologic, and Neonatal Nursing* indicates that approximately 75% of pregnant women report experiencing difficulties in getting restful sleep. Many studies explain that sleep disorders are a common problem experienced by pregnant women, but detailed data regarding the annual prevalence rate has not yet been published (Gupta & Rawat, 2020)

From the 12th week of pregnancy until 2 months after giving birth, mothers complain of difficulty sleeping, often experience sleep disturbances, insomnia, and poor sleep quality. Increased levels of estrogen, progesterone and cortisol are hormones that influence sleep patterns during this period. Several emotional factors, for example fear of facing new experiences and

acquiring new roles, can also cause sleep disturbances (Mohammadi et al., 2022a).

Sleep is a basic need that must be met by everyone. Getting enough sleep will have an impact on the body working optimally. Sleep is a state of change in consciousness when an individual's perception and reaction to the environment decreases. Sleep is defined by minimal physical activity, a different level of consciousness, altered physiological processes in the body, and a decreased response to external stimuli. The benefits of sleep are that it can restore or rest physically after a day of activities, reduce stress and anxiety, and can increase ability and concentration when carrying out daily activities (Alissa & Nugraha, 2015).

The causes of sleep disorders in pregnant women are caused by several factors, including uncomfortable sleeping positions, fetal movements at night, worry that the baby will be born at any time, which causes mothers to increase their awareness of signs and symptoms of labor, fear of pain and physical dangers that arise during childbirth, worry about safety, worry that the baby will be born in an abnormal condition (Kartika & Setiawati, 2022).

Sleep disorders tend to cause physical and psychological symptoms. Additionally, sleep disorders can impact a person's performance and cause mental fatigue, memory problems, poor concentration, shifts in perception, and impaired judgment. In addition, changes in sleep patterns during pregnancy lead to unfavorable consequences, e.g. fatigue, gestational hypertension, preeclampsia, gestational diabetes, preterm labor, birth weight loss, intrauterine death, increased awareness of the discomfort of labor, and cesarean section (Mohammadi et al., 2022a).

Poor sleep quality in pregnant women can have several negative impacts, including obesity, pregnancy-induced hypertension/preeclampsia, gestational diabetes, and intrauterine growth restriction. Research conducted by Wardani, Agustina, and Damayanti (2018) at RSUD Idaman Banjarbaru found that 70% of third-trimester pregnant women had poor sleep quality. This can lead to higher levels of pain and discomfort during

labor, a higher rate of premature births, a greater likelihood of cesarean section deliveries, and an increased risk of postpartum depression (Kartika & Setiawati, 2022). Many efforts have been made to address sleep disturbances in pregnant women, including pharmacological approaches such as hypnotic sedative medications and non-pharmacological methods like education and acupuncture. However, in this study, the researchers will explore a less commonly used form of aromatherapy, specifically Citrus Aurantium aromatherapy, to address sleep disorders. The choice of using aromatherapy is due to the increasing demand for natural and safe alternatives for pregnant women, and Citrus Aurantium aromatherapy is relatively rare in this context. Citrus Aurantium aromatherapy is selected because it is not frequently used to address sleep problems during pregnancy. In the effort to address sleep difficulties in pregnant women, many seek alternative treatments that are more natural and safe, such as aromatherapy. Lemon aromatherapy is known to have calming effects and can assist in improving sleep. Lemon aromatherapy is produced from the extract of lemon peels (Citrus Lemon) and is commonly used in aromatherapy. It is considered safe for pregnancy and childbirth. Lemon aromatherapy contains properties that can kill meningococcus and typhoid bacteria, has anti-fungal effects, effectively neutralizes unpleasant odors, and produces anti-anxiety, anti-depression, and anti-stress effects while promoting mental focus. Lemon aromatherapy is known to have relaxation and soothing effects on the nervous system, which can help improve sleep quality. Lemon essential oil is one of the most widely used herbal oils and is considered safe during pregnancy (Vitrianiingsih & Khadijah, 2019). Research on the effects of lemon on sleep is an emerging area of study within aromatherapy. Lemon is recognized as having relaxing and calming effects, making it believed to be beneficial in improving sleep quality (Agarwal et al., 2022).

The results of a pre-survey conducted in Sumber Bahagia Village, Central Lampung Regency, showed that there were 43 pregnant women and based on the results of interviews with 43 pregnant women, the results showed that 31 (72.1%) mothers complained about sleep disturbances, especially at night with various complaints such as position. uncomfortable sleep, fetal movement and anxiety waiting for the baby to be born.

Based on the phenomenon related to the many complaints of sleep disorders in pregnant women and the benefits of citrus aurantium aromatherapy on sleep quality, as well as the lack of research that has carried out aromatherapy, especially in Sumber Bahagia Village, the author is interested in conducting research with the title: The Effect of Giving Citrus Aromatherapy aurantium on Sleep Quality in Pregnant Women with Sleep Disorders in Sumber Bahagia Village, Central Lampung Regency.

RESEARCH METHODS

This type of pre-experimental research uses a One Group Pretest Posttest Design. The population is all pregnant women with sleep disorders. The sample was determined using a total sampling technique based on inclusion and exclusion criteria of 31 respondents. The research instrument was the Pittsburgh Sleep Quality Index (PSQI) questionnaire. The statistical test used is the Wilcoxon Signed Ranks test with a significance level of 0.05.

RESEARCH RESULTS

Respondent Characteristics

Based on table 1, it can be seen that the age characteristics of the respondents were mostly 21-35 years old as many as 23 mothers (74.2%), parity was mostly 2-3 as many as 19 mothers (61.3%) and gestational age was mostly TM III as many as 19 mothers (61.3%).

Table 1
Characteristics of Pregnant Women Who Experience Sleep Disorders Based on Age, Parity and Gestational Age in Sumber Bahagia Village, Central Lampung Regency, 2023

Respondent Characteristics	Frequency (n)	Percentage (%)
Age		
< 20 years old	0	0%
21-35 ears old	23	74,2%
> 35 years old	8	25,8%
Parity		
1	7	22,6%
2-3	19	61.3%

> 3	5	16.1%
Gestational Age		
TM I	4	12.9%
TM II	8	25.8%
TM III	19	61.3%

Univariate Analysis

Pretest measurement results

Table 2

The Average Sleep Quality of Pregnant Women with Sleep Disorders Before Being Given Citrus Aurantium Aromatherapy in Sumber Bahagia Village, Central Lampung Regency in the year 2023

Variable	N	Mean	Median	SD	Min	Max
Pretest measurement results	31	10,90	11	2,055	7	16

The average sleep quality of pregnant women with sleep disorders before being given Citrus Aurantium aromatherapy in Sumber Bahagia Village, Central Lampung Regency in the year 2023, with an average PSQI score of 10.90, categorized as poor. The highest score is 16, the lowest score is 7, and the standard deviation is 2.055.

Posttest measurement results

The average sleep quality of pregnant women with sleep disorders after being given Citrus Aurantium aromatherapy in Sumber Bahagia Village, Central Lampung Regency in the year 2023, with an average PSQI score of 9.39, categorized as poor. The highest score is 15, the lowest score is 5, and the standard deviation is 2.418.

Table 3

The Average Sleep Quality of Pregnant Women with Sleep Disorders After Being Given Citrus Aurantium Aromatherapy in Sumber Bahagia Village, Central Lampung Regency in the year 2023

Variable	N	Mean	Median	SD	Min	Max
Posttest measurement results	31	9,39	10	2,418	5	15

Data Normality Test

Table 4

Normality of Pretest and Post Test Distribution

Score value	test	Shapiro Wilk scores
Pretest scores (before intervention)		0,001
Post test scores (after intervention)		0,002

The results of the normality test using the *Shapiro-Wilk* test with a significance level of 0.001 for the pretest and 0.002 for the posttest is both smaller than 0.05. This indicates that the data from both the pretest and posttest are not normally distributed. Therefore, the influence test to be conducted cannot use a t-test but will use a non-parametric test for two paired groups, specifically the *Wilcoxon Signed Ranks Test*.

Bivariate Analysis

The result of the *Wilcoxon Signed Ranks Test* above yielded a p value: $0,000 < \alpha: 0,05$. Therefore, it can be concluded that there is an effect of *Citrus Aurantium* aromatherapy on the sleep quality of pregnant women with sleep disorders in Sumber Bahagia Village, Central Lampung Regency, in the year 2023.

Table 5
The Effect of Citrus Aurantium Aromatherapy on Sleep Quality in Pregnant Women with Sleep Disorders in Sumber Bahagia Village, Central Lampung Regency

Sleep Quality	N	Mean	Median	SD	<i>P value</i>
Before	31	10,90	11	2,055	0,000
After	31	9,39	10	2,418	

DISCUSSION

Based on the table of Wilcoxon Signed Ranks Test results above, the p value is: $0.000 < \alpha: 0.05$. Therefore, it can be concluded that there is an effect of citrus aurantium aromatherapy on sleep quality in pregnant women with sleep disorders in Sumber Bahagia Village, Central Lampung Regency in 2023. These results show that the majority of respondents experienced an increase in sleep quality, so it can be concluded that giving citrus aurantium aromatherapy has an influence on improving sleep quality in pregnant women with sleep disorders.

These results are in accordance with the theory which states that citrus aromatherapy can help reduce sleep disorders through several different mechanisms, namely increasing relaxation: The aroma of citrus essential oils such as orange, lemon, or grapefruit oil can help relax the body and mind, making it easier to sleep. The scent of citrus can also help reduce anxiety and stress levels which can disrupt sleep.

The scent of citrus essential oil can also help reduce pain or discomfort that may cause difficulty sleeping. Some citrus essential oils have anti-inflammatory and analgesic properties that can help reduce pain and discomfort. The scent of citrus can also improve mood and make someone feel happier and relaxed. This can help reduce depression and mood disorders which can affect sleep quality (Kartika & Setiawati, 2022).

The working mechanism of citrus aurantium aromatherapy stimulates the nervous system: The scent of citrus essential oil can stimulate the nervous system and increase brain activity which can help improve sleep quality. Essential oil vapor molecules from the sense of smell pass through the olfactory nerve to the limbic system. The limbic system is the part of the brain that functions for learning, memory and emotional processes, because the limbic system stimulates these processes. This picture is a form of psychological and physiological response through which neurotransmitters such as serotonin, endorphin and norepinephrine are released from the hypothalamus. Neurotransmitters can decrease the effects of endocrine nerves and system function. Aromatherapy can be trusted to lower blood pressure, hormone secretion, reduce levels of pain,

depression and anxiety. Aromatherapy is effective for relieving stress and several stress-related symptoms such as anxiety, insomnia, and depression. Providing essential oil aromatherapy can cause relaxation at night and can help overcome sleep disorders such as insomnia.

In citrus aurantium aromatherapy, it contains Linalyl Acetate which is an ester compound. This ester is formed from a combination of organic acids and alcohol. Ester is useful for making emotions more normal so that the body's condition is more balanced. Another benefit is that it can be a sedative, especially for the central nervous system, which can reduce pain, tension and tension in someone who smokes it. Serotonin secretion is useful for causing a relaxing effect as a result of inhibiting cell excitation. The feeling of relaxation produced by citrus aurantium aromatherapy is due to the return of normal circulation. Serotonin causes euphoria, relaxation or sedation. The olfactory nerve (olfactory nerve) is the only open channel leading to the brain. Through these nerves, the aroma will flow to parts of the brain so that it can trigger hidden memories and influence the emotional behavior of the person concerned. This can happen because the aroma touches the emotional center directly and then serves to balance the emotional condition. For this reason, citrus aurantium by inhalation can reduce anxiety by increasing serotonin. Reduced anxiety will make research subjects sleep better (Kartika & Setiawati, 2022).

One of the possible mechanisms involved is the influence of the aroma from Citrus essential oil on the autonomic nervous system. The autonomic nervous system regulates unconscious bodily functions such as heart rate, respiration, and digestion. Research has shown that the aroma from Citrus Aurantium essential oil can stimulate the activity of the parasympathetic nervous system, which is a part of the autonomic nervous system responsible for relaxing the body and reducing anxiety. Active compounds like linalool, limonene, and linalyl acetate found in Citrus essential oils have sedative properties and can relax muscles. These compounds can also influence the production of neurotransmitters like serotonin and dopamine, which can help stabilize mood and enhance comfort,

thereby aiding sleep. The aroma from Citrus essential oils also stimulates the production of melatonin, a natural hormone that plays a role in regulating the sleep-wake cycle. Melatonin production increases during the night and decreases in the morning. Some studies suggest that the aroma from Citrus essential oils can increase melatonin production and help regulate the body's circadian rhythm (Mohammadi et al., 2022).

The results of this study are in accordance with the results of previous research by (Abbaspoor et al., 2022) entitled "The Effect of Citrus Aurantium Aroma on the Sleep Quality in Postmenopausal Women: A Randomized Controlled Trial" of 80 mothers with the mean score of sleep quality in the intervention group was significantly lower than the control group (5.75 ± 1.33 vs 13 ± 1.59 , $P < 0.001$) so it was concluded that the aroma of citrus aurantium essence could significantly improve sleep quality with a p value of 0.001. Mohammadi et al., (2022) research entitled "The Impact of Aromatherapy with Citrus Aurantium Essential Oil on Sleep Quality in Pregnant Women with Sleep Disorders: A Randomized Controlled Clinical Trial" on 68 pregnant women with a value of ($P < 0.001$), these results show that aromatherapy with citrus aurantium essential oil can improve sleep quality in pregnant women with sleep disorders. Kartika & Setiawati's (2022) research entitled "The Effect of Giving Citrus Lemon Aromatherapy on Insomnia in Pregnant Women in the Third Trimester in the Muara Enim Community Health Center Working Area, Muara Enim Regency" on 40 pregnant women with test results showing that there is an effect of giving citrus lemon aromatherapy on insomnia in pregnant women Trimester III (p value 0.000).

The effect of citrus aurantium aromatherapy, according to researchers' assumptions, could be related to citrus aurantium aromatherapy which is calming so that it can reduce the psychological tension of the mother so that it can improve the quality of sleep of pregnant women. Apart from that, the aroma of lemon is much liked by mothers so that its relaxing effect becomes stronger on the quality of the mother's sleep.

This research data also found that there were 7 mothers whose sleep quality did not improve, which could be caused by other factors that caused the mother's sleep quality to not improve, such as discomfort due to the pregnancy process or household problems which caused the mother's psychology to be disturbed and had an impact on sleep quality.

Based on the results obtained, giving aromatherapy to improve sleep quality can be

recommended for pregnant women who experience sleep disorders because it does not cause side effects and is relatively easy to apply to pregnant women on a daily basis.

CONCLUSION

There is a significant influence of Citrus Aurantium aromatherapy on sleep quality in pregnant women with sleep disorders in Sumber Bahagia Village, Central Lampung Regency (P Value 0,000 < a: 0,005).

SUGGESTION

Healthcare workers, especially midwives, can provide counseling regarding efforts to maintain sleep quality using complementary therapy such as Citrus Aurantium aromatherapy for pregnant women as an alternative option compared to pharmacological drug therapy, which can have side effects on both the mother and the fetus.

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