Lavender and Chamomile Aromatherapy Effectivity on Sleep Quality of the Third Semester Pregnant Women

By Mahmujianah Mahmuhianah

WORD COUNT 2677
TIME SUBMITTED 09-JAN-2023 02:07PM
PAPER ID 95326540

Abstract

One of the commonest issues found in pregnant women, mainly in the third trimester, was sleep disruption. Decreasing sleeping time could be a cause of increasing anxiety and/or physical discomfort as higher gestational age. This affected physical and emotional condition such as decreasing concentration, tiredness, and emotional imbalance. We learned about lavender and chamomile aromatherapy effectivity on sleep quality of the third semester pregnant women. This study was a quasi-experimental study. We asked participants to fill Pittsburgh sleep quality index (PSQI) questionnaire before and after intervention. Three drops of essential oil mixed with water was used to fill diffuser. It will be put in the bedroom for two weeks. We found lavender and chamomile aromatherapy was effective to improve sleep quality in our participants. Average score of PQSI after intervention using lavender aromatherapy was dropped significantly (11,3 vs 5,73; p=0,0001) as well as chamomile aromatherapy (10,53 vs 6,53; p=0,0001). These facts could be used to help pregnant women to improve sleep quality. We encourage healthcare worker to use nonpharmacological therapy as well as this technique.

Keywords: sleep quality; aromatherapy; lavender; chamomile

EFEKTIFITAS AROMATERAPI LAVENDER DAN CHAMOMILE TERHADAP KUALITAS TIDUR IBU HAMIL TRIMESTER KETIGA

Abstrak

Salah satu masalah yang sering dirasakan pada kehamilan trimester ketiga adalah gangguan tidur. Berkurangnya jumlah waktu tidur terjadi akibat bertambahnya kecemasan atau dan ketidaknyamanan fisik seiring bertambahnya usia kehamilan. Hal ini berdampak buruk terhadap kondisi ibu dan janin yang dikandungnya seperti berkurangnya konsentrasi, letih, badan pegal-pegal, mood menurun dan cenderung emosional. Kami mempelajari efektifitas pemberian aromaterapi lavender dan chamomile terhadap kualitas tidur ibu hamil trimester ketiga. Jenis penelitian merupakan quasi-experiment menggunakan rancangan dua kelompok pretest-posttest. Sampel adalah ibu hamil trimester ketiga di Puskesmas Semper Barat I sebanyak 30 orang. Sampel dibagi menjadi 2 kelompok, 15 orang menggunakan aromaterapi lavender dan 15 orang menggunakan aroma terapi chamomile. Peneliti memberikan kuesioner pre test dan posttest tentang kualitas tidur menggunakan kuesioner PSQI untuk menentukan kualitas tidur responden sebelum dan sesudah intervensi. Pemberian aromaterapi dengan cara memberikan 3 tetes esensial oil kedalam diffuser yang berisi air dan dihubungkan ke listrik sehingga mengeluarkan uap yang akan dihirup partisipan. Waktu pelaksanaan intervensi selama 2 minggu. Kami menemukan aromaterapi lavender efektif memperbaiki kualitas tidur, dibuktikan penurunan rata-rata nilai pada kuesioner Pittsburgh sleep quality index (PSQI) (11,3 vs 5,73; p=0,0001). Kami juga menyimpulkan pemberian aromaterapi chamomile menurunkan keluhan pada gangguan tidur (10,53 vs 6,53; p=0,0001). Untuk membantu ibu hamil, terutama pada trimester ketiga, kami mengharapkan Puskesmas dapat meningkatkan program-program yang mendukung kesehatan serta pengetahuan ibu salah satunya adalah gangguan tidur menggunakan terapi non farmakologi dengan aromatherapy lavender dan chamomile.

Kata kunci : kualitas tidur; aromatherapy; lavender; chamomile

Received:_____ Revised: _____Accepted:

INTRODUCTION

In pregnancy, a woman experiences changes in her body which affected physically, psychologically and social life. To adapt the changes, some discomfort might occur (Romadhona & Primihastuti, 2020). One of the commonest issues found, mainly in the third trimester, was sleep disruption like decreasing sleeping time. It might be the result of increasing anxiety and physical discomfort. It could affect negatively on concentration, tiredness, decreasing and instability mood. National Sleep Foundation reported 60% og pregnant women complained tiredness and more than 75% of them experienced sleep disturbance (Aswitami et al., 2021). Teha et al showed correlation between decreasing sleep quality and pregnancy in later trimester (Teha et al., 2022).

Globally, insomnia in pregnant women reached 41,8% all around the world. Consecutively the prevalence in Asia, Africa, America and Europe was 48,2%; 57,1%; 24,1% and 25,1% (World Health Organization, 2022). In Indonesia, the number of pregnancies is categorized as high annually. In Indonesia, in 2020, 5.221.784 women were pregnant and decrease to 4.892.94 women the later year. In Jakarta itself, there were 179.452 pregnancies and increased to 189.438 pregnancies the later year (Kemenkes RI, 2016). In January to September 2022, there were 325 women who went to Semper 1 Health Center to check their pregnancy up. Potter and Perry mentioned it took more than one factor affect sleep disruption such as physical, psychological and environmental factor (Potter & Perry, 2015).

Some research studied about this topic. Lestari and Maisaro mentioned 82% pregnant women experience sleep disruption (Lestari & Maisaro, 2019). Kryger observed 40% in the first and second trimester also experienced sleep disruption and higher proportion was found in the third trimester (57%) (Kryger et al., 2017). A study of Rahmayanti showed on Idaman Banjarbaru Hospital, there were 70% of pregnant women in the third trimester had low sleep quality. Tiredness in the day time, yawning frequently and periorbital dark circles was commonly found (Rahmayanti, 2018). Wulandari and Wantini described most of pregnant women (76,2%) had difficulty on falling asleep, 73% had to wake up to go to the toilet more than three times a week, 71,4% had uncomfortable sleep hygiene more than three time a week (Wulandari & Wantini, 2020).

In the third semester, physical factor plays bigger part in causing sleep disruption. This could lead to tiredness, mental issue such as cognitive disorder, hallucination, illusion, and unstable mood and et cetera (Subandi, 2018 dalam (Mu'alimah et al., 2022). Lack of sleep quantity and quality might increase the risk to deliver by cesarean section by 4,5 times and low birth weight baby (Teha et al., 2022b). It also leads to hypertension, preeclampsia, and fetal growth delay (Hassan Zaky, 2015).

Treatment of sleep disruption should be done according to its cause. Pharmacolgy ant non pharmacology method could be used to treat this disorder. Non-pharmacology method was mostly used by pregnant women as it is non-instructive, non-invasive, simple, affordable and less adverse effect (Sari et al., 2022). Some aromatherapies which improve sleep quality includes eucalyptus, geranium, and lavender. They contain atsiri oil as its relaxing effect so that reduce anxiety and pain (Teha et al., 2022b). Linool in lavender have sedative effect (Romadhona & Primihastuti, 2020b), calming effect and relaxing (Mahnaz Keshavarz et al., 2015) (Teha et al., 2022b). Carminative effect contained in its essential oil split into smaller particles. They act as calming and relaxing substance and initiate sleep process (Fitriana, 2019) (Khasanah, 2020).

Some research studied lavender and chamomile aromatherapy effect in improving sleep quality. Maulidawati and Mu'alimah observed lavender aromatherapy and chamomile tea were significantly reduce insomnia in pregnant women (Maulidawati et al., 2022) (Mu'alimah et al., 2022b). Ropika and Linda also found they were effective to increase sleep quality on postpartum women (Ropika & Linda Meliati, 2021). In our pilot study, we interviewed 5 pregnant women in their last trimester in Semper I Health Center. All of them mentioned having sleep disruption such as waking up in midnight, shortness of breath, and back pain. They had difficulty on falling asleep, daytime dysfunction and subjectively think they had lack sleep quality.

MATERIAL AND METHODS

This study was quasi experiment research. There were two groups, one was intervened with lavender and the other one with chamomile aromatherapy. We observed on improvement of sleep quality before and after invention. This study was held on Semper I Health Centre, North Jakarta in November 2022-January 2023.

We gathered 30 participants by purposive sampling method. Inclusive criteria were the third trimester pregnant women who were willing to participate to study, neither having lavender nor chamomile allergy, and had not history of consuming sedative allergy. Exclusion criteria were having history of neurological or cognitive or intellectual or mental disorder. There were two groups of participants, intervened with lavender and chamomile aromatherapy. Devices we used were diffuser and essential oil. Tree drops of essential oil were mixed with water (± 60 ml) poured to diffuser and it was turned on approximately 20 minutes before bedtime (Lestari & Maisaro, 2019).

They are obliged to fill PQSI questionnaire before and after intervention. The questionnaire evaluated subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication, and daytime dysfunction. It contained 9 questions and each of them indicated particular aspects. Scoring of the answers is based on 0-3 scale, whereby 3 reflects the negative extreme on Likert Scale. We categorized sleep quality into two categories good, when global sum of less than 5, and poor, when global sum of 5 or greater.

RESULT

Out of pregnant women who came to Semper I Health Center, we selected participant who had sleep disturbance and agreed to the protocol of our study. We gathered 30 participants, most of them were having low risk pregnancy based on mother's age (80%), multipara (80%) and were highly educated (63,3%).

Table 1. Demography characteristics of the study participants.

Characteristic	**Frequency (%),** *(n = 30)*
Age	
High Risk (< 20 years old or > 35years old)	6 (20)
Low risk (20-35 years old)	24 (80)
Parity	
Primipara	6 (20)
Multipara	24 (80)
Education	
Low (junior high school or less)	11 (36,7)
High (senior high school or more)	19 (63,3)

Lavender Aromatherapy Group

We analyzed PQSI score at baseline and after intervention. All of them (n=15) had poor quality of sleep at baseline. Average PQSI score at baseline was 11,13 ± 2,70 (6-15). After intervention,

average PQSI score was 5,73 ± 2,31 (3-11). Even though after intervention, the score didn't reach 'good' quality of sleep based on PQSI standard, which had to be under 5, sleep quality was improved.

Tabel .3 Frequency Distribution Of Sleep Quality of The Study Participant Accepting Lavender Intervention

Time	**Sleep Quality**	**N (%),** (n = 15)
Baseline	Poor	15 (100)
	Good	0
After intervention	Poor	7 (46,7)
	Good	8 (53,3)

We performed dependent T-test to study difference score between before and after intervention. It showed they were significantly difference (11,13 vs 5,73; p value = 0,0001).

Chamomile Aromatherapy Group

In lavender group, we also found all of them (n=15) had poor sleep quality at baseline with average score 10,53 ± 2,1 (8-14). After intervention, we found PQSI score was improved to 6,53 ± 2,92 (3-12).

Tabel .3 Frequency Distribution Of Sleep Quality of The Study Participant Accepting Chamomile Intervention

Time	**Sleep Quality**	**N (%),** (n = 15)
Baseline	Poor	15 (100)
	Good	0
After intervention	Poor	8 (53,3)
	Good	7 (46,7)

Decrease of average PQSI score before and after intervention was 4,00. By performing t-test dependent, it is found to be significantly different (10,53 vs 6,53; p value=0,0001)

DISCUSSION

Participant's Background

Most (80%) of participants were having low risk pregnancy based on mother's age. This was in line to Maulidawati (81,25%) and Wulandairi&Wantini's study (84,1%) that also found mostly were in 20-35 years old (Maulidawati et al., 2022) (Wulandari & Wantini, 2020). This range was considered as ideal age of childbearing since it's lower risk than age <20 or >35 years old (Wulandari & Wantini, 2020). Insomnia tend to occurred in high pregnancy. (Manuaba, 2017). Earlier study described women more than 35 years old were put in greater risk of obstetric risk, perinatal morbidity and mortality (Cunningham, 2015).

In our study, both low and high-risk pregnancies experienced insomnia. Psychological factor influenced pregnancy and come from internal and external aspect. Internal aspect included background and hormonal change during pregnancy.

Insomnia occurred in both primigravida and multigravida. In most cases, primigravida women couldn't adapt well to estrogen and chorionic gonadotropin hormone volatility, thus risk to emesis gravidarum were higher. Contradicted to that, multigravida women had experienced in pregnancy and childbearing. Psychological factor seemed to hold important role related to insomnia. Fear of childbearing and becoming mother causes internal conflict and disturbed sleep quality.

Participants in our study were highly educated (n=19 participants;63.3%). Education level played big role in problem solving and critical thinking. Access to information, behavioral change to healthy lifestyle was easier to get by higher educated people. In pregnant women, it reflects on adherence to antenatal care (Walyani & Siwi, 2015) (Umboh et al., 2014).

Lavender aromatherapy intervention

All of the participants in this group were having poor sleep quality with PQSI score 11,13 ± 2,70 (6-15). Majority of participants had to get up to use the bathroom, had backpain and physical uncomforted. In line to Jordan's study that stated physiological change due to pregnancy include enlargement uterus and increasing progesterone hormone. The hormone had relaxing effect, concludes urinary tract smooth muscles (Jordan et al., 2018a) He also described muscle spasm, nocturia, and dyspnea (Jordan et al., 2018b).

This study results were as similar as Maulidawati's study. Improvement of sleep quality was proved as decreasing PQSI score (11,13 to 5,73) and increasing frequency of good sleeper (0 to 53,3%). Maulidawati found after lavender aromatherapy and chamomile tea interventions, 68,8% participant (n=11) had improvement on sleep quality (Maulidawati et al., 2022). It was also matched to Mualimah study that confirmed beneficial effect of lavender aromatherapy in the third trimester pregnant women in Kediri (Mu'alimah et al., 2022b). Ropika and Linda also describes it was efficient to improve sleep quality in postpartum mother (Ropika & Linda Meliati, 2021).

Aromatherapy contained linalool which has sedative effect (Romadhona & Primihastuti, 2020b). It stimulated cilia receptor of olfactory nerves in olfactory epithelia relayed to olfactory bulbus. It is connected to limbic system which accepts information from sensory organ. Limbic system is a ring-shaped structure under cerebri cortex. Important parts of limbic system related to aroma are amygdala and hippocampus. Amygdala as center of emotion process and hippocampus that are related to memory then deliver them to hypothalamus where olfactory sensory would process later called nucleus raphe. When nucleus raphe was stimulated, it would release serotonin, one of neurotransmitter that control sleep (Ramadhan & Zettira, 2017) (Jordan et al, 2018). Lavender aromatherapy arose alpha and beta wave activity in Electroencephalogram (EEG). This meant reduction on reticular activating system activity and sleep process occurred (Ropika & Linda Meliati, 2021).

Chamomile aromatherapy intervention

At baseline, PQSI score in chamomile group was 10,53 ± 2,1 (8-14). This concludes the participants experienced poor sleep quality. After intervention, PQSI score was reduced to 6,53 ± 2,92 (3-12) and 46,7% participants improved their sleep quality. These results were similar to Maulidawati study (Maulidawati et al., 2022) that prove improvement in sleep quality in the third trimester pregnant women after consuming chamomile tea and using lavender aromatherapy during sleeping. A research by Chang and Chen also found chamomile tea was beneficial to improve sleep quality and reduce stress, as PSQS score decreasing, in postpartum mother (Chang & Chen, 2016). Other studies found chamomile aromatherapy could reduce prevalence of insomnia in student and elderly (Khasanah, 2020) (Fitriana et al., 2019).

Chamomile tea, according to Patwal, was safe to consume in moderate amount by pregnant women (Patwal, 2022). Chamomile tea has relaxing effect. As a result, it could be used to reduce insomnia and anxiety (Thisserand, 2022). There were only a few researches studied the safety and effectivity of chamomile tea. Food and Drug Administration (FDA) considered chamomile tea as safe beverage and could be consumed by pregnant women.

Matricaria chamomilla or Chamomile plant is a member of *Asteraceae/Compositae,* or known as daisies family. This plant has been widely known used as herbal drug and produce essential oil. Chamomile contains *terpenoid, flavonoid*, and *apigenin* which has antioxidant, anti-inflammation, antispasmodic, carminative and relaxing effect. People use these effects as natural drug to cure stomach problem, and menstruation pain (Vincent, 2017 dalam (D. P. Sari et al., 2022).

Chamomile contained essential oil such as *trytophan, alpha-bisalcohol, chamozulene, polyines, flavonoid, glycine.* They would be dispersed by humidifier and entered respiratory tract. Cilia receptor would accept the molecules and transmitted to olfactory bulb by changing them into electrical impulses and would be relayed to limbic system (Fitriana et al., 2019). Limbic system was associated to emotional mood, mood and learning system. In this matter, chamomile affected RAS and cortical system by regulating GABA, a primary inhibitor neurotransmitter and one of main regulator of sleep activity. (Sharma, 2011) (Fitriana et al., 2019) (Guyton & Hall, 2019).

CONCLUSION

We concluded both lavender and chamomile aromatherapy were proved to significantly reduce PQSI score which meant improvement in sleep quality. We encourage healthcare worker, aside from pharmacological therapy, we could use this method to decrease insomnia symptom in pregnant women, mainly in the third trimester.

ACKNOWLEDGEMENT

We would like to appreciate board of director and staff of Semper 1 Health Center that permitted and supported us in organizing this study.

Lavender and Chamomile Aromatherapy Effectivity on Sleep Quality of the Third Semester Pregnant Women

ORIGINALITY REPORT

3%
SIMILARITY INDEX

PRIMARY SOURCES

1	onlinelibrary.wiley.com Internet	18 words — 1%
2	Pebrianti, Irfan Idris, Sharvianty Arifuddin. "The difference of enzymatic antioxidant serum content of catalase on placental blood of low born body weight babies and normal born weight babies", Enfermería Clínica, 2020 Crossref	12 words — < 1%
3	clinicaltrials.gov Internet	12 words — < 1%
4	innovpub.org Internet	10 words — < 1%
5	Def Primal, Tetra Anestasia Putri, Wira Meiriza. "Asupan Karbohidrat Harian terhadap Risiko Kejadian Diabetes Melitus Gestasi (GDM) melalui Glyco-Hemoglobin Ibu Hamil", Jurnal Keperawatan Silampari, 2021 Crossref	8 words — < 1%
6	Luvi Anasari, Triatmi Andri Yanuarini, Lumastari Ajeng Wijayanti. "TERAPI NON FARMAKOLOGI YANG BERPENGARUH TERHADAP KUALITAS TIDUR IBU HAMIL LITERATURE REVIEW", Jurnal Ilmu Kesehatan, 2022 Crossref	6 words — < 1%

7 M. Wenk, D.M. Pöpping, G. Chapman, H. Grenda, T. Ledowski. "Long-term quality of sleep after remifentanil-based anaesthesia: a randomized controlled trial", British Journal of Anaesthesia, 2013 — 6 words — < 1%
Crossref

8 Setianingsih Setianingsih, Afiya Nurrahma Deanti, Nur Wulan Agustina. "Pengaruh Zumba Gold Dan Rendam Kaki Dengan Air Hangat Terhadap Kualitas Tidur Lansia Di Dukuh Pandes Desa Pandes Kecamatan Wedi Kabupaten Klaten", Jurnal Keperawatan Respati Yogyakarta, 2019 — 6 words — < 1%
Crossref

EXCLUDE QUOTES	OFF	EXCLUDE SOURCES	OFF
EXCLUDE BIBLIOGRAPHY	OFF	EXCLUDE MATCHES	OFF