



A Picot Presentation

**REDUCING RISK OF
PRE-TERM LABOR
BY IMPROVING
SLEEP QUALITY**

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Introduction



1- History and
Evolution

2- Clinical
Significance

3- PICOT
Question

4- Literature
Review

5- Making
Sense of it All

6-
Recommended
Changes

7-
Implementing
the Changes

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9- Closing
Statement

HISTORY OF LAVENDER ESSENTIAL OILS



Around 80% of the world's population is estimated to use traditional (herbal) medicine (World Health Organization, 2022)

- 3000 and 2000 BC Chinese and Indian medicine records of use of essential oils (EO)

- 500 to 400 BC Greeks reported use of EO

- Lavender is being used pharmaceutically today

Lavender contains- camphor, terpinen-4-ol, linalool, linalyl acetate, beta-ocimene and 1,8-cineole

- Linalool and Linalyl depress the CNS

- Linalool – sedative effects

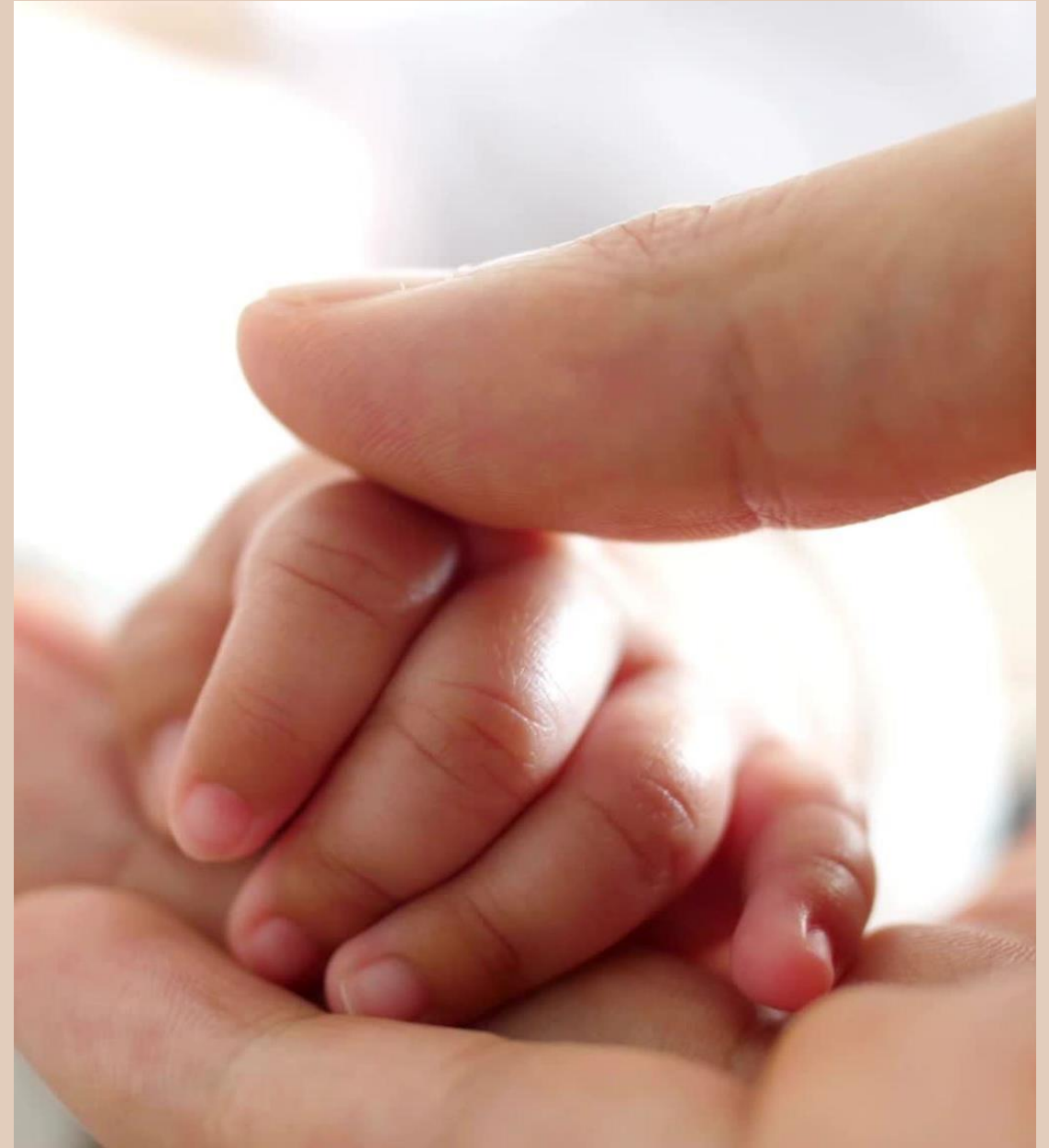
- Linalyl acetate – narcotic actions



PRE-TERM RISKS

- Pre-term birth is before 37 weeks gestation.
- Per the Center of Disease Control, in 2022, 1 in 10 infants born in the US were preterm.
- Pre-term birth is associated with poorer outcomes in the following areas when compared with babies who reached full term:
 - Global-cognitive
 - Language and communication
 - Visuospatial
 - Motor function

(Burstein et al., 2024)



CLINICAL SIGNIFICANCES



- What is it that nurses can do to assist with improved sleep, decrease risk of pre-term labor, and interventions and effects of them
- Non-pharmacological use of aromatherapy for improved sleep quality and duration
- Aromatherapy has no negative effects on baby or mother
- Reduction of stress hormones due to adequate sleep and reduction of preterm births
- Less resources used for preterm births

Screenings for
insomnia

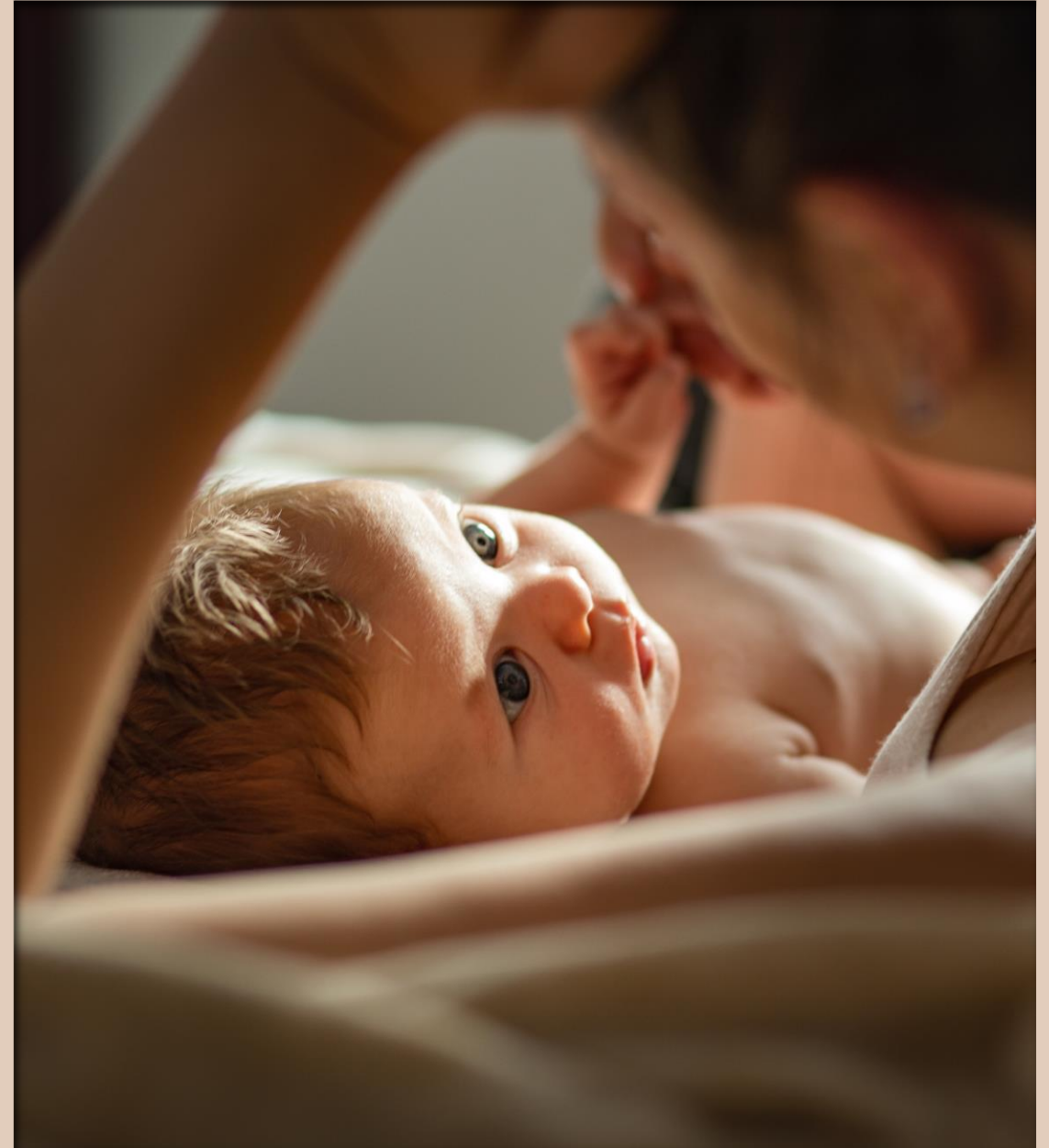
Use of
Aromatherapy for
improved sleep

Lowered stress
hormones

Resource savings

PICOT Question:

In pregnant women suffering from prolonged insomnia, does the use of aroma therapy improve sleep hygiene and reduce the risk of pre-term labor?



The background is a solid dusty rose color. It features stylized black branches with grey-green leaves and yellow lemons with white seeds. A parrot with green, blue, and yellow feathers is perched on a branch on the left side. In the center, there is a dark blue, cloud-like shape with a white double border.

EVIDENCE-BASED SOURCES



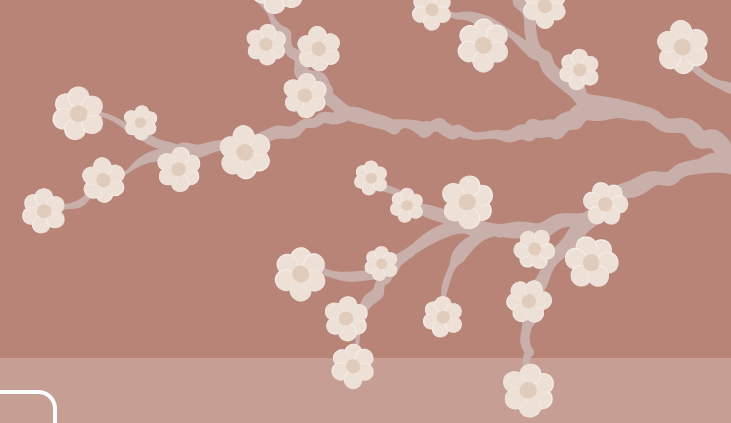
Association Between Maternal Sleep Duration and Quality, and the Risk of Preterm Birth: A Systematic Review and Meta-Analysis of Observational Studies

Aim:

- Systematically further review the current literature regarding the impact of maternal sleep duration and quality on the risk of preterm birth.

Sample:

- Nine cohort studies and one case-controlled study
- Pregnant (all populations and in English)
- Sleep duration and quality were measured
- Preterm birth (<37 week) was the outcome of interest
- Observational design
- Data calculations reported
- Searched- up to Sept. 30, 2018



Methods

- ❖ Search yielded 3,512 studies, 3,266 after duplicate removal, 33 (eligible), 10 analyzed
- ❖ Forest Plots- association between preterm birth and sleep duration in seven studies involving 1,248 preterm birth cases and 5,267 participants
- ❖ Forest Plots – association between sleep quality and preterm birth in five studies involving 156 preterm births cases and 1230 participants

Findings

- ❖ Women with the shortest sleep duration were 1.23 times more likely to have a preterm birth
- ❖ Women with poor sleep quality were 1.54 times more likely to have a preterm birth
- ❖ Mechanisms underlying the increased risk of preterm birth:
 - Sleep deprivation increases inflammatory and infection risks
 - Activation of the stress system
 - Estrogen and progesterone contribute to poor sleep quality
 - Disturbed sleep may disrupt placental blood flow

CONCLUSION

These findings may help researchers to identify women at risk of pre-term birth early during pregnancy to provide targeted interventions.



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(Wang & Jin, 2020)

The Effect of Cognitive-Behavioral Counseling With or Without *Citrus Aurantium* Essential Oil on Sleep Quality in Pregnant Women: A Randomized Control Trial

Quantitative Study

Aim

Determine the effect of cognitive-behavioral counseling with or without *Citrus aurantium* essential oil on sleep quality (primary outcome) and anxiety and quality of life (secondary outcome)

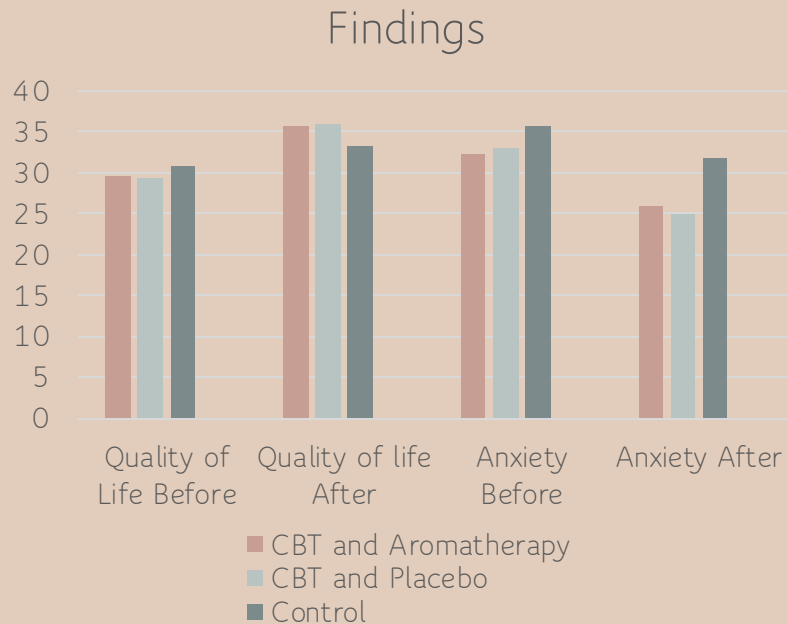
Participants

75 pregnant women with gestational age of 20-24 weeks in Tabriz, Iran from July 2020 to February 2021

Methods

Eight sessions of *Citrus aurantium* essential oil 15-20 minutes before bedtime, placebo, and routine prenatal care

The Effect of Cognitive-Behavioral Counseling With or Without *Citrus Aurantium* Essential Oil on Sleep Quality in Pregnant Women: A Randomized Control Trial



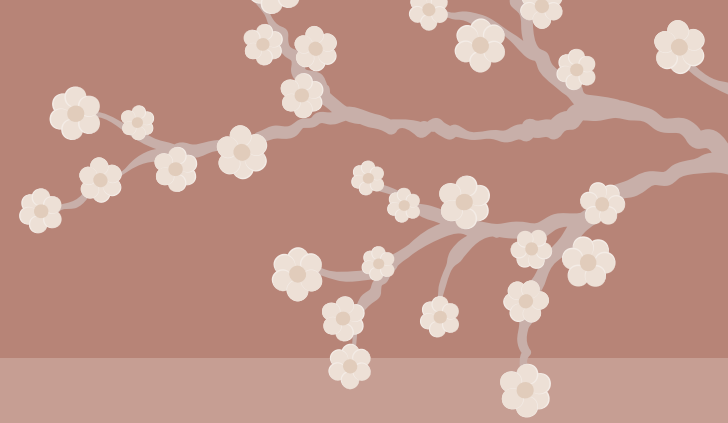
Outcome Measurement

- Pregnancy-Specific Quality of Life Questionnaire
- Pregnancy-Specific Anxiety Scale
- Pittsburgh Sleep Quality Index

Conclusion

- Cognitive-behavioral counseling with or without aromatherapy can reduce anxiety and improve quality of life during pregnancy.
- *Citrus aurantium* essential oil had no effect on the quality of sleep of pregnant women and its subdomains.

EFFECT OF LAVENDER CREAM WITH OR WITHOUT FOOT-BATH ON SLEEP QUALITY AND FATIGUE IN PREGNANCY AND POSTPARTUM: A RANDOMIZED CONTROLLED TRIAL



- Quantitative Study

Aim:

- Evaluate the effect of lavender cream with or without footbath on sleep quality and fatigue in pregnancy and postpartum.

Sample:

- ❖ 141 women in Tabriz, Iran who were 25 to 28 weeks gestation randomly assigned into three groups (47 in each group)
- ❖ One group receiving lavender and footbath, next just the lavender, and lastly was the placebo.
- ❖ Lavender only group: 2g of lavender cream topically on their legs 1.5 hours before bedtime
- ❖ Lavender and footbath group: 40C to 42C tap water soak for 30 minutes after applying 2g of cream for 10-20 minutes.

METHODS

- ❖ Sleep quality was assessed at the 4th and 8th week after intervention and 6th week postpartum. Multidimensional assessment of fatigue scale was used at the 6th week after intervention and 6th week postpartum. Repeated measures of ANOVA and ANCOVA were used.
- ❖ The participants in the study had a Pittsburgh Sleep Quality Index (PSQI) score of 5 or higher when starting the interventions.
- ❖ Fatigue was assessed using the 16-item multidimensional assessment (MAF)

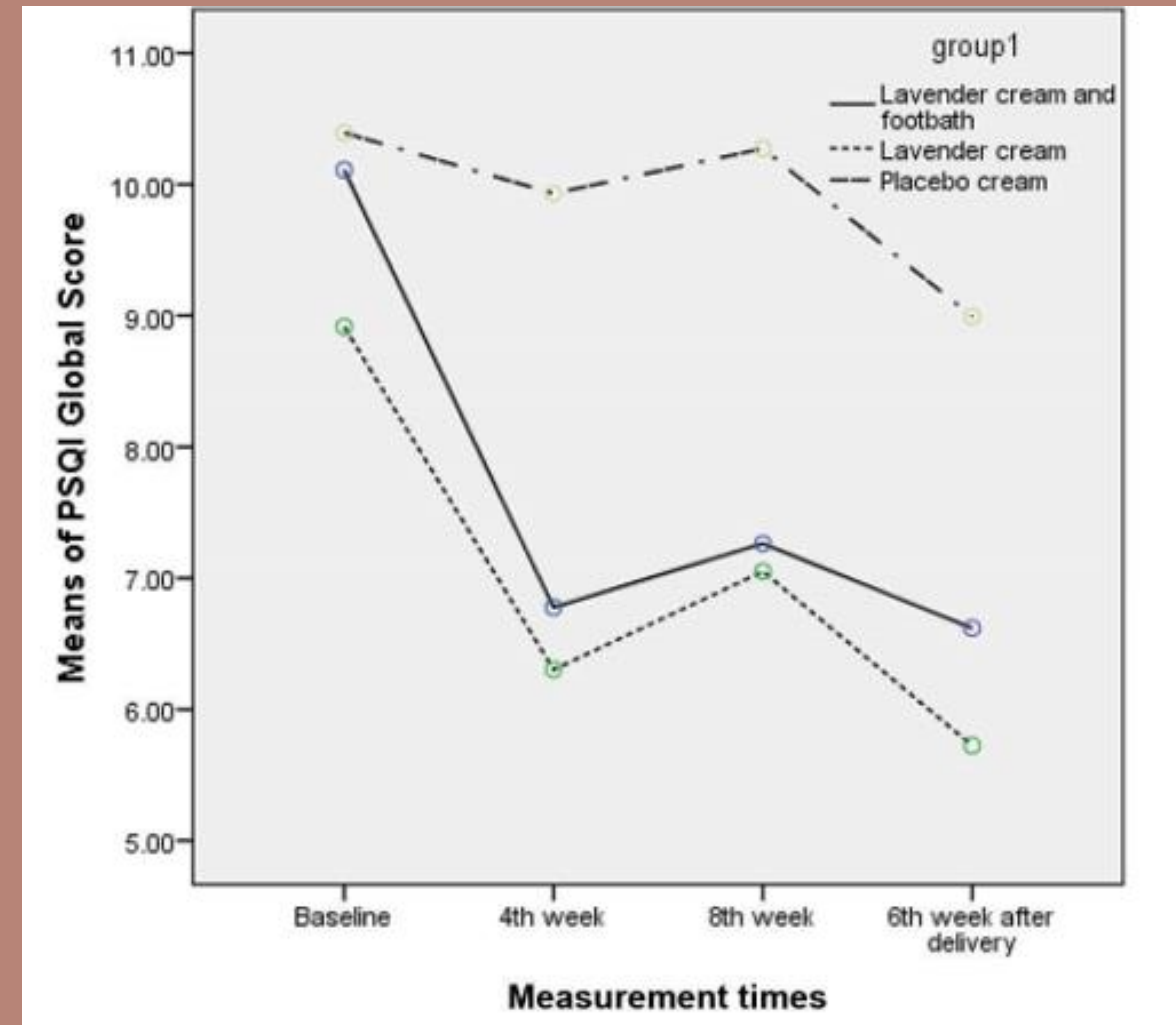


(Effati-Daryani et al., 2018)

FINDINGS



This chart shows a significant decrease in fatigue during the 4th and 8th week assessment after starting the trial during their pregnancy and by 6th week postpartum the mothers showed another significant decrease in fatigue.



CONCLUSION



The use of lavender with footbath and lavender alone improved sleep quality in the second half of pregnancy and newly postpartum women



The Impact Of Aromatherapy With Citrus Aurantium Essential Oil On Sleep Quality In Pregnant Women With Sleep Disorders: A Randomized Controlled Clinical Trial

Quantitative Study



Image from Microsoft stock images, no other information available

- **Aim:** The aim of this study was to improve sleep quality in pregnant women with sleep disorders using citrus aurantium aroma therapy.
- **Participants:** The sample size was originally 32 women in the control and intervention group each, 76 total. But the sample ended with 68 women five left the intervention group and three the control group all for various reasons. They were all pooled from Jiroft health centers and had to meet the inclusion criteria.
- **Methods:** The intervention group received facemasks with five drops of Citrus aurantium essential oil. The control group had sweet almond oil drops instead. The masks had to be worn twice a day for 20 minutes.

(Mohammadi et al., 2022)

The Impact Of Aromatherapy With Citrus Aurantium Essential Oil On Sleep Quality In Pregnant Women With Sleep Disorders: A Randomized Controlled Clinical Trial



- **Outcome Measurement:**

The tests they used to assess the impact the intervention had on the patients was the Pittsburgh Sleep Quality Index (PSQI).

- **Conclusion:**

Citrus Aurantium aroma therapy helps improve sleep quality in pregnant women with sleep disorders.

- **Findings:**

There was significant improvement in sleep quality in the intervention group versus the control group one month into the study. The intervention group had a PSQI score improvement of 5.51 and the control group had an improvement of only 0.36 ($p < 0.001$).

The Effectiveness Of Lavender Aromatherapy And Chamomile Tea Brew On Sleep Quality Of Pregnant Mothers Trimester 3

At PMB (Independent Practice Midwife) Of

Midwife Jeanne, S. S.Sit, M.Kes

(Maulidawati et al, 2022)

A Quantitative Study



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The Effectiveness Of Lavender Aromatherapy And Chamomile Tea Brew On Sleep Quality Of Pregnant Mothers Trimester 3

Aim: To know the effects of lavender and chamomile aromatherapy on sleep quality for women in their third trimester of pregnancy.

Participants: 16 pregnant women with complaints of sleep disorders and a current gestation between 28-38 weeks. Research was at PMB (Independent Practice Midwife) of Midwife Jeanne, S. S.Sit, M.Kes.Bdn in July 2022.

Methods: Quasi Experimental Design – one group pre and post-test with no control group. The two interventions were: 1) 15-20 drops of essential lavender oil diluted in 50mL of water. This solution was put in an infuser in a closed room. It sprayed every 10 minutes starting 20 minutes before the participant goes to bed. 2) 1 gram of chamomile leaves brewed between 5-10 minutes in 200mL of freshly boiled water with the contents covered.

Outcome Measurement: Pre and post-test (PSQI questionnaire).

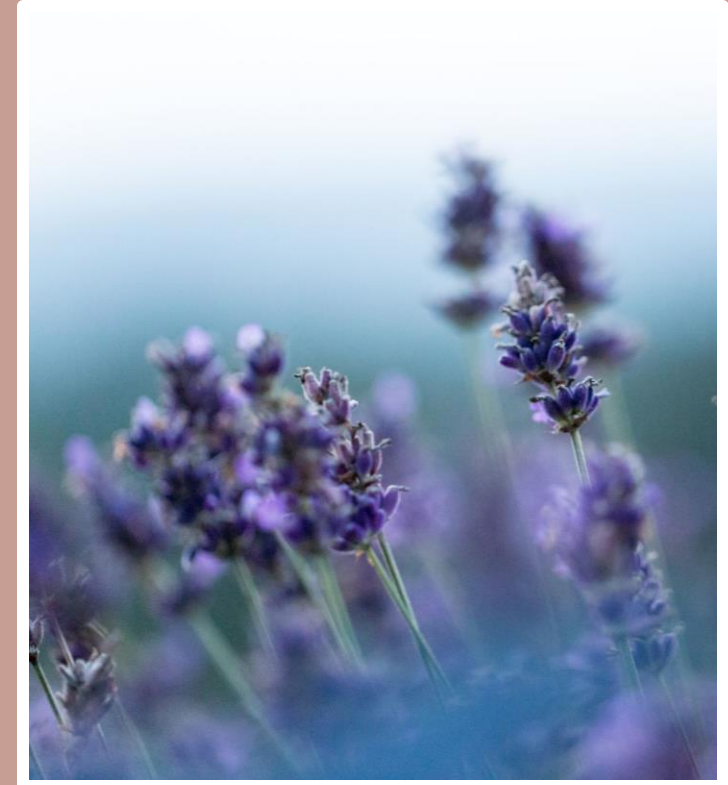


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The Effectiveness Of Lavender Aromatherapy And Chamomile Tea Brew On Sleep Quality Of Pregnant Mothers Trimester 3



- Findings: 68.8% of the women reported improved sleep after the intervention and only 31.2% reported still having poor sleep quality ($p>0.05$).
- Conclusion: Using lavender aromatherapy improves sleep quality in pregnant women in their third trimester.

SYNTHESIS



- The common findings in the research is that aromatherapy can improve sleep which in turn improves sleep quality for pregnant woman decreasing the risk of preterm-labor.
- There was disagreement between two studies using Citrus aurantium essential oil. One study found that it was effective the other one did not (Mohammadi et al., 2022; Rahmani et al., 2023).
- In two articles with lavender, both studies saw improvement in sleep hygiene (Effati-Daryani et al., 2018; Maulidawati et al., 2022).
- Weighing the benefits verses the risks in these studies outcomes:
 - Low cost
 - Insignificant risk factors for mother or preborn baby
- Related outcomes: Aromatherapy is used for many conditions to improve patient outcomes.

Image from Microsoft stock images, no other information available

Awareness: It addresses the need for changing the risk factor for preterm labor caused by poor sleep quality and duration in women.

Desire: The desire for the change needed in the staff, providers to identify women at risk for insomnia and preterm birth.

Knowledge: Educating the staff on concerns of insomnia will incorporate the knowledge for change.

Ability: For the ability to implement skills, we have the knowledge in our staff and the tools to carry these skills out for our patients during this period.

Reinforcement: To help reinforce our goals we will monitor the change over time and assess the number of preterm births in the patient population using aromatherapy. We will also add the screenings to EPIC to monitor the number of screenings to be done every prenatal checkup. Reassess the EPIC questioners (MAF and PSQI) quarterly to see how the clients are perceiving the questions and adjust accordingly.



CHANGE MODEL: ADKAR

RECOMMENDATIONS



- Educate staff and OBGYN's in the importance of this change
- Incorporate into plan of care (normal routine education)
- Brochures on how to use lavender cream effectively and specifically

RECOMMENDATIONS

- Testing: Multidimensional Assessment of Fatigue Scale, PSQI
- Self-report of less than 7 hours asleep is seen as needing aromatherapy or anyone that has a score on the PSQI of 5 or higher.
- Assess using the two scales with each prenatal check up beginning at the 2nd trimester.
- Educated moms about sleep hygiene and how it is not “normal” to have insomnia during the 2nd and 3rd trimester until birth.
- Educated on the benefits of aromatherapy using a brochure with instructions on how to use the lavender cream nightly.



CONCLUSION



- Herbal medicine is widely used around the world for various treatments.
- Insomnia increases the likelihood of a mother giving birth pre-term.
- Pre-term birth creates developmental risks.
- Our research included citrus aurantium and lavender aromatherapy.
- The Pittsburgh Sleep Quality Index is a reliable tool to evaluate sleep patterns. This questionnaire should be used at all pre-natal appointments to screen for insomnia.
- Adding aromatherapy to routine pre-natal care, especially women who are suffering from insomnia, is an effective way to prevent pre-term labor.
- The ADKAR change model may be considered when implementing aromatherapy treatments.

Aromatherapy is a holistic, safe, and effective intervention to reduce the incidence of insomnia in pregnant women, which decreases the risk of pre-term labor and improves health outcomes for mother and baby.



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