

The Effect Of Lemon Aromatherapy On Emesis Gravidarum In Pregnant Women In The First Trimester At The Singosari Public Health Center

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ABSTRACT

One of the most common discomforts experienced in the first trimester is nausea and vomiting or emesis gravidarum. This condition generally occurs due to increased levels of the hormones human chorionic gonadotropin (hCG), estrogen, and progesterone which affect the gastrointestinal system and the vomiting center in the brain. The purpose of this study was to determine the Effect of Lemon Aroma Therapy on Emesis Gravidarum at the Singosari Malang Community Health Center. The research design was a Pre Experiment with one group pretest posttest with control group research. The population in this study were all pregnant women at the Singosari Community Health Center who were pregnant in the first trimester. The sample in this study was 20 pregnant women in the first trimester of pregnancy aged 1-12 weeks using purposive sampling. Data analysis used univariate and bivariate analysis using the Chi square test. The results of the study showed a Chi square test (p value = 0.000). The conclusion of this study shows that there is an Effect of Lemon Aroma Therapy on Emesis Gravidarum at the Singosari Malang Community Health Center. It is recommended that pregnant women gain additional knowledge about Lemon Aroma Therapy for Emesis Gravidarum by seeking information from both print and electronic media.

Keywords: Lemon aromatherapy, Emesis Gravidarum, pregnant women

INTRODUCTION

Pregnancy is a physiological process accompanied by various anatomical, physiological, and hormonal changes in a woman's body. One of the most common discomforts experienced during the first trimester is nausea and vomiting, or emesis gravidarum. This condition generally occurs due to increased levels of the hormones human chorionic gonadotropin (hCG), estrogen, and progesterone, which affect the gastrointestinal system and the vomiting center in the brain. Emesis gravidarum is experienced by approximately 60–80% of primigravidas and 40–60% of multigravidas

during early pregnancy (Fibriansari & Hayati, 2023). If not managed properly, emesis gravidarum can progress to hyperemesis gravidarum, which carries the risk of dehydration, electrolyte imbalances, weight loss, malnutrition, and impaired fetal growth (Fibriansari & Hayati, 2023; Rafiei et al., 2026).

Based on various studies, emesis gravidarum remains a common maternal health problem in the first trimester of pregnancy and impacts the quality of life of pregnant women. Nausea and vomiting can disrupt daily activities, reduce nutritional intake, reduce sleep quality, and increase stress and anxiety in pregnant women. Therefore, effective, safe, easy-to-implement treatment with minimal side effects for both mother and fetus is needed (Putri et al., 2023; Rafiei et al., 2026).

Management of emesis gravidarum can be performed pharmacologically or non-pharmacologically. Pharmacological therapy is often used to reduce symptoms of nausea and vomiting, but some pregnant women are concerned about the side effects of medication during pregnancy. This situation has led to an increase in the use of complementary and non-pharmacological therapies, one of which is aromatherapy. Aromatherapy works by stimulating the olfactory system, which sends impulses to the limbic system, thereby influencing emotions, comfort, and the body's physiological response to nausea (Rafiei et al., 2026).

One type of aromatherapy widely used to treat emesis gravidarum is lemon aromatherapy. Lemon essential oil contains the compounds limonene, citral, linalool, and β -pinene, which have a calming and refreshing effect and help reduce nausea and vomiting. Several studies have shown that lemon aromatherapy is effective in reducing the frequency and severity of emesis gravidarum in first-trimester pregnant women (Fitria et al., 2021; Siwi et al., 2022; Putri et al., 2023).

A systematic review conducted by Putri et al. (2023) showed that most studies reported a significant reduction in emesis gravidarum symptoms after administration of lemon aromatherapy. These findings are supported by a recent systematic review by Rafiei et al. (2026), which concluded that lemon aromatherapy has the potential to be an effective and safe complementary therapy in reducing nausea and vomiting during pregnancy. Furthermore, a meta-analysis of aromatherapy for nausea and vomiting during pregnancy also showed that aromatherapy has a positive effect on reducing emesis gravidarum symptoms (Journal of Herbal Medicine, 2025).

Although various studies have demonstrated the benefits of lemon aromatherapy in reducing emesis gravidarum, results still show variations in effectiveness influenced by respondent characteristics, intervention duration, frequency of use, and aromatherapy delivery method. Therefore, further research is needed to determine the effect of lemon aromatherapy on emesis gravidarum in pregnant women. This can be an alternative non-pharmacological intervention that is safe, effective, easy to implement, and can be used as a companion to antenatal care.

Based on this description, the researcher is interested in conducting research on "The Effect of Lemon Aromatherapy on Emesis Gravidarum in Pregnant Women in the First Trimester at the Singosari Community Health Center".

METHOD

The research design was a pre-experimental study with one group pretest-posttest with a control group. The population in this study was all pregnant women at the Singosari Community Health Center who were pregnant in the first trimester. The sample in this study consisted of 20 pregnant women in the first trimester of pregnancy, aged 1-12 weeks, using purposive sampling. Data analysis used univariate and bivariate analysis using the chi-square test.

The intervention involved using lemon aromatherapy to treat nausea and vomiting in pregnant women. The method of use involves the mother inhaling lemon aromatherapy placed on a cotton ball approximately 2 cm from the nose for approximately 5 minutes, repeating if nausea and vomiting persist.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Respondent Characteristics

Information	n	%
Mother's age		
<20 years	11	55
20 – 35 years	9	45
>35 years	0	0
Maternal parity		
Primipara	5	25

Multipara	15	75
Grandemultipara	0	0
Gestational Age		
< 10 weeks	11	55
>10 weeks	9	45
Total	20	100

Based on Table 1, it is known that all respondents in this study were 20 pregnant women in TM 1. The characteristics of the respondents analyzed included maternal age, parity, and gestational age.

In terms of age, the majority of respondents (55%) were under 20 years old. This means the mothers in this study are in the reproductive age group at risk. This is important because maternal age influences knowledge, abilities, and readiness for parenthood, including health.

Based on parity, the majority of mothers were multiparous (15 women) (75%), and the remaining 5 (33.3%) were primiparous. Mothers with more than one child, or multiparous, tend to be tired from caring for their children at home, often neglecting the symptoms of emesis gravidarum.

Based on gestational age, most mothers are less than 10 weeks pregnant. Women under 10 weeks pregnant tend to experience more intense emesis gravidarum as their bodies adjust to pregnancy.

The Effect of Lemon Aromatherapy on Emesis Gravidarum in Pregnant Women in the First Trimester

Table 2. Effect of Lemon Aromatherapy on Emesis Gravidarum

		Posttest Frequency of nausea				Total	P-value
		1 x	2 x	3 x	4 x		
Nausea Frequency Pretest	2 x	6	4	0	0	10	
	3 x	1	5	1	1	8	
	4 x	0	2	0	0	2	

Total	6	11	2	1	20	0.004
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Based on the results of the pretest-posttest analysis of the provision of lemon aromatherapy for emesis gravidarum in pregnant women in the first trimester, before being given lemon aromatherapy, there were 10 mothers with a frequency of nausea and vomiting twice a day, after being given lemon aromatherapy, the number changed to once a day for 6 people, and remained twice a day for 4 people.

There were 8 mothers with a frequency of nausea and vomiting 3 times a day before the intervention, after the intervention the number changed to 1x a day for 1 person, 2x a day for 5 people, 3x a day for 1 person, and the frequency of nausea and vomiting increased to 4x for 1 person.

Mothers with a frequency of nausea and vomiting 4x a day before the intervention, numbering 2 people, changed to 2x a day, numbering 2 people.

The results of the chi square analysis showed a $p\text{-value} = 0.004 < 0.05$, which means that there is an effect of lemon aromatherapy on emesis gravidarum in pregnant women in the first trimester at the Singosari Community Health Center.

The study results showed that the majority of respondents were under 20 years of age, amounting to 11 people (55%). This age group falls into the reproductive risk category because biologically and psychologically, mothers are still at a developmental stage that is not yet optimal for pregnancy. Pregnant adolescents tend to have immature physiological adaptations to hormonal changes during pregnancy, making them more susceptible to nausea and vomiting in the first trimester (Dewi & Handayani, 2022). Furthermore, younger age is also associated with a lack of experience in dealing with changes during pregnancy, which can increase the perception of discomfort due to emesis gravidarum (Rahmawati et al., 2024).

Based on parity characteristics, the majority of respondents (15 respondents) were multiparous. Multiparous mothers have had previous pregnancy experience and are generally better able to recognize the signs and symptoms of pregnancy. However, the responsibility of caring for children and family can cause physical and psychological exhaustion, contributing to increased discomfort during pregnancy, including nausea and vomiting (Sari et al., 2023). Research by Kusuma and Pratiwi (2022) states that

fatigue and high household activity levels in multiparous mothers can exacerbate emesis gravidarum because they affect the body's metabolic balance and stress response.

Based on gestational age, most respondents were less than 10 weeks pregnant. This is consistent with the theory that the peak incidence of emesis gravidarum generally occurs between 6 and 12 weeks of gestation due to increased levels of the hormones human chorionic gonadotropin (hCG), estrogen, and progesterone, which peak in the first trimester (Yuliani et al., 2023). These hormonal changes affect gastric motility and the sensitivity of the vomiting center in the brain, making mothers more susceptible to nausea and vomiting (Hidayah et al., 2024).

The results of the study showed that before receiving lemon aromatherapy, most mothers experienced nausea and vomiting 2–3 times per day. After receiving lemon aromatherapy, the frequency of nausea and vomiting decreased in most respondents. Mothers who previously experienced nausea and vomiting twice a day mostly decreased to once a day, while mothers who experienced nausea and vomiting three times a day mostly decreased to twice a day. Even all mothers who experienced nausea and vomiting four times a day experienced a decrease to twice a day after the intervention.

The reduction in the frequency of emesis gravidarum indicates that lemon aromatherapy has a positive effect on controlling nausea and vomiting in pregnant women in the first trimester. Lemon contains active compounds such as limonene, citral, linalool, and β -pinene, which produce a fresh and calming aroma. When the scent of lemon is inhaled, the aromatic molecules stimulate olfactory receptors and send impulses to the limbic system, which plays a role in regulating emotions, comfort, and the body's physiological response to nausea (Nugroho et al., 2025).

Physiologically, lemon aromatherapy works by stimulating the olfactory nerves, which are then transmitted to the hypothalamus and central nervous system. This stimulation can increase the release of neurotransmitters such as serotonin and endorphins, which have a relaxing effect and reduce the sensitivity of the vomiting center, thus reducing the frequency of nausea and vomiting (Fitriani et al., 2024). Furthermore, the lemon scent also provides a refreshing sensation that helps reduce discomfort in the digestive tract, thus making mothers feel more comfortable during pregnancy (Lestari & Utami, 2022).

The Chi-square test results showed a p-value of 0.004 ($p < 0.05$), indicating a significant effect of lemon aromatherapy on emesis gravidarum in first-trimester pregnant women at the Singosari Community Health Center. These results indicate that lemon aromatherapy is effective as a non-pharmacological therapy to reduce the frequency of nausea and vomiting in pregnant women.

The findings of this study align with those of Widiastuti et al. (2023), who found that administering lemon aromatherapy for 5 days significantly reduced nausea and vomiting scores in pregnant women in the first trimester. Another study by Amalia and Kartika (2024) also reported that pregnant women who received lemon aromatherapy experienced a reduced frequency of emesis gravidarum compared to before the intervention. Similar results were found by Salsabila et al. (2025), who stated that lemon aromatherapy is an effective, safe, affordable, and easy-to-implement complementary therapy in antenatal care.

Although one respondent experienced an increase in nausea and vomiting after the intervention, this could be influenced by other factors such as individual sensitivity to certain aromas, psychological conditions, diet, fatigue, and hormonal changes that vary among pregnant women (Pranata et al., 2024). This suggests that the effectiveness of aromatherapy can be influenced by individual characteristics, so the response may not always be the same across all respondents.

Overall, the results of this study support the theory that lemon aromatherapy can be used as an alternative non-pharmacological therapy to manage emesis gravidarum in the first trimester of pregnancy. Lemon aromatherapy is relatively safe, readily available, inexpensive, and can be performed independently by pregnant women at home. Therefore, lemon aromatherapy can be recommended as a complementary intervention in antenatal care to help reduce symptoms of emesis gravidarum and improve maternal comfort during pregnancy.

CONCLUSION AND SUGGESTIONS

Based on the research results, most pregnant women in the first trimester experienced a decrease in the frequency of emesis gravidarum after being given lemon aromatherapy. The results of the Chi-square test showed a p-value of 0.004 (< 0.05), so it can be concluded that lemon aromatherapy has an effect on reducing emesis gravidarum in

pregnant women in the first trimester at the Singosari Community Health Center. Suggestions for pregnant women Lemon aromatherapy can be used as an alternative non-pharmacological therapy to help reduce nausea and vomiting during pregnancy. And for future researchers It is hoped that they can conduct research with a larger sample size and use a control group to obtain more accurate results.

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