



## **Ginger, Honey, And Lemon Aromateraphy As A Complimentary Teraphy For First Trimester Morning Sickness**

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### **ABSTRACT**

Morning sickness affects 70-85% of pregnant women during the first trimester. Lemon aromatherapy, combined with ginger's anti-inflammatory properties and the chemoreceptor-inhibiting effects of honey and pyridoxine, may help reduce nausea by modulating serotonin, dopamine, and histamine activity in the vomiting center. This study aims to assess the effectiveness of ginger, honey, and lemon aromatherapy as a complementary therapy for alleviating morning sickness symptoms. This pre-experimental study involved 60 pregnant women experiencing morning sickness, selected through incidental sampling. Data collection, conducted from May to August 2024, utilized the PUQE-24 score. Univariate analysis was used for frequency distributions, while bivariate analysis employed a paired t-test to assess pre- and post-intervention differences. An independent two-sample t-test determined differences between groups. Lemon aromatherapy, ginger, and honey significantly reduced nausea before and after the intervention (p 0.000). The use of ginger, honey, and lemon aromatherapy resulted in a significant difference in mean PUQE scores (p 0.000). Aromatherapy with ginger, honey, and lemon is useful in lowering the Intense vomiting in pregnant women throughout the first trimester.

**Keywords: Aromateraphy, Ginger, Honey, Lemon, Morning Sickness**

## INTRODUCTION

During the first trimester of pregnancy, many women have morning sickness, which causes morning sickness. Hormonal changes, particularly elevated levels of hCG and estrogen, are thought to be the cause. It is unclear why some women experience more severe symptoms than others. Morning sickness severity during the first trimester of pregnancy may vary depending on a woman's overall health, diet, and stress levels (Fauziah et al., 2022).

In certain instances, severe morning sickness can progress into a condition called hyperemesis gravidarum, marked by excessive vomiting, dehydration, and weight loss. This dangerous disorder may require medical intervention to treat symptoms and protect both mother and baby's health. Pregnant women experiencing recurrent morning sickness should visit their healthcare professional. According to estimates, 70-85% of pregnant women feel nauseated and vomit. 52.2% reported mild vomiting sickness, while 45.3% had moderate vomiting, and 2.5% had severe vomiting; this occurred at the age of pregnancy 4-9 mg. The peak of the pregnant age was 12 mg, and only 20% happened with 20 mg pregnancies (Fauziah et al., 2022) (Wong et al., 2022).

Untreated morning sickness in pregnancy can be harmful to both the fetus

and the mother. Consulting a healthcare professional is essential for ensuring the health and well-being of both the expectant mother and the baby. If left untreated, severe morning sickness can lead to the woman becoming dehydrated, losing weight, and even starving. This may have an impact on the baby's development in the womb. It is Pregnant women having these symptoms should contact with their healthcare providers. The provider will explain treatment alternatives and promote a healthy pregnancy. By managing nausea, when vomiting properly, both the mother and baby have a better likelihood of a positive outcome (Puspita et al., 2022).

Medical professionals are currently using pharmacological therapy to reduce morning sickness in pregnant women during the first trimester. Commonly used pharmacological therapies include the use of anti-nausea drugs such as metoclopramide or vitamin B6. However, by giving medication for morning sickness, not all pregnant women can consume it, especially when they are nauseous. In addition, lifestyle changes such as eating small but frequent portions, avoiding foods that trigger nausea, and adequate rest can also help reduce symptoms of vomiting in pregnant mothers. With proper care, pregnant mothers can reduce the risk of dehydration and malnutrition, as well as ensure that the

growth and development of the fetus remain optimal during pregnancy. It is important for healthcare providers to closely monitor pregnant women experiencing severe vomiting and nausea to provide appropriate treatment and prevent complications. In some cases, hospitalization may be necessary to ensure hydration and nutrition are maintained. It is also essential for pregnant women to communicate openly with their healthcare providers about any concerns or changes in symptoms to ensure the best possible outcome for both mother and baby. By taking a comprehensive approach to managing vomiting and nausea in pregnancy, healthcare providers can help pregnant women navigate this challenging time with minimal discomfort and risk (Patimah, 2020).

According to the research findings, numerous non-pharmacological methods can be utilized to manage morning sickness in pregnant women, including massage, acupressure, ginger eating, and aromatherapy. Ginger rhizomes contain chemical compounds such as volatile oil, non-volatile oil, and starch. Ginger's distinctiveness is attributed to its essential oil (evaporating oil). Ginger's essential oil content ranges between 2.58 and 2.72%, estimated based on dry weight. Essential oil is a yellowish, slightly viscous substance that gives ginger its

characteristic aroma. The non-volatile oil content is known as oleoresin, and it is responsible for the bitter and spicy flavor. Ginger has a high oleoresin content, which makes it quite spicy. This oleoresin is effective as an antiemetic, therefore ginger aromatherapy is believed to provide comfort in the stomach to overcome morning sickness.

Lemon aromatherapy helps reduce nausea, increase energy, and relieve exhaustion during pregnancy. Lemons contain limonene, citral, linalyl, linalool, and terpineol. The substance of lemon can balance the central nervous system and generate emotions of contentment. Increases hunger, improves blood circulation, and serves as a sedative (Agarwal et al., 2022). When important, When oils are breathed, volatile molecules bring the oil's aromatic components to the surface. Of the nose. The hair cells that serve as receptors will send electrical information to the central nervous system. This information activates the emotional and memory centers, sending feedback throughout the body are transformed into a unified response by releasing neurochemical molecules that create feelings of satisfaction, relaxation, and calm (Safajou et al., 2020). Based on the research results by Sari & Nurrasyidah (2023), lemon aromatherapy is effective in reducing morning sickness in pregnant

women during the 1st trimester, with a p-value of 0.000.

This study varies from past studies in that the researcher incorporates alternative therapies such as ginger and lemon aromatherapy, both of which have previously been investigated for their efficacy in alleviating morning sickness during pregnancy. Previous research only looked at the effectiveness of each medication individually. The mean values differ before and after therapy, although the drop is not substantial. The researchers took the initiative to combine ginger honey and lemon aromatherapy as a successful treatment for morning sickness in pregnant women in their first trimester.

The purpose of this study is to compare the intensity of morning sickness between a group receiving ginger honey and lemon aromatherapy and the control group that received no intervention at the Manisrenggo Health Center in Klaten. A preliminary study conducted at this health center with ten pregnant women experiencing morning sickness in their first trimester found that six (60%) of them were treated only with medication therapy, while four (40%) were unable to consume medication due to morning sickness. Thus, ginger-honey treatment combined with lemon aromatherapy can be utilized as an alternative complementary therapy to help pregnant women reduce morning sickness

during the first trimester. This context indicates a need for research on "the effect of the combination of ginger-honey therapy and lemon aromatherapy to reduce morning sickness in pregnant women during the first trimester at the Manisrenggo Health Center, Klaten."

## **METHOD**

The Dr. Moewardi Regional Hospital's health research ethics committee reviewed this study (No. 1,649/VII/HREC/2024) on July 4, 2024, at Manisrenggo Health Center. And before we begin collecting data for the research, All respondents received an explanation for informed consent, including those who agreed and those who did not agree to take part in the study.

This is a pre-experimental study that employed a pretest-posttest group design. The study started by analyzing the frequency of morning sickness in pregnant women, then administered ginger. Participants underwent four days of aromatherapy using honey and lemon, after which measurements or posttests were conducted. The study involved 60 pregnant women at the Manisrenggo Health Center in Klaten who reported experiencing morning sickness at least four times a day. The focus was on pregnant women selected using an incidental sampling technique. The study

took place from May to August 2024, and participants were eager to participate, resulting in a total of 60 pregnant women divided into two intervention groups.

A tool for measuring morning sickness in pregnant women is the PUQE-24 (Pregnancy-Unique Quantification of Emesis). The PUQE grading system effectively assesses the severity of nausea and vomiting in pregnancy (NVP) over a 24-hour period. The PUQE score is determined based on three factors: the number of hours feeling nauseous, the number of vomiting episodes, and the frequency of dry heaving episodes in the past 24 hours. The PUQE-24 index includes three items evaluated on a 5-point Likert scale. Scores range from 1 to 5, with 4-6 indicating mild NVP, 7-12 indicating moderate NVP, and 13-15 suggesting severe NVP.

The data collection strategy for this research involved conducting a pre-test using the PUQE-24 to assess pregnant women experiencing morning sickness. Respondents were then assigned to the group receiving the combined intervention of aromatherapy with ginger, honey, and lemon through a random lottery method. The intervention was implemented based on the collected results to minimize bias and ensure that all participants received consistent treatment. Each participant was given the appropriate dosage of ginger and

honey: 1 gram of crushed ginger and 15 ml (1 tablespoon) of honey, mixed with 200 ml of warm water, to be taken twice daily. For lemon aromatherapy, participants were instructed to use four drops of diluted lemon essential oil, apply it to a tissue, and inhale deeply 2-3 times for 5 minutes, repeated four times daily. This intervention was carried out for a minimum of four consecutive days, with an evaluation on the fourth day. The control group did not receive any intervention, and their morning sickness levels were measured directly using the PUQE instrument.

To minimize bias and ensure consistent treatment, participants were provided with a specific dosage of ginger and honey: 1 gram of crushed ginger and 15 ml (1 tablespoon) of honey, mixed with 200 ml of warm water, to be consumed twice daily. In the lemon aromatherapy intervention, participants applied four drops of diluted lemon essential oil to a tissue and inhaled deeply 2-3 times for 5 minutes, repeating the process four times daily. This was carried out for at least four consecutive days, with an evaluation on the fourth day. The control group, meanwhile, received no intervention, and their morning sickness levels were directly assessed using the PUQE instrument.

During data analysis, a normality test was conducted by comparing the skewness

value to the standard error. A skewness result less than 2 indicated that the data followed a normal distribution. To assess the effects of the intervention, a Paired T-test was used alongside ginger, honey, and lemon aromatherapy, as the data was typically distributed after the therapy. Additionally, to compare the intervention and control groups, an independent two-sample T-test was utilized since the data also followed a normal distribution.

**RESULTS AND DISCUSSIONS**

**Result**

The findings of the univariate analysis of the study subjects revealed 60 research topics based on features, frequency, and proportion.

**Table 1. Characteristics of respondents**

Background Characteristic Respondent	Criteria	Combination of ginger honey and lemon aromatherapy		Control	
		F	%	F	%
Age	20-35 years old	26	43.33	30	50
	> 35 years old	4	6.67	0	0
Education Level	Elementary-Middle school	3	5	11	18.3
	High School-College	27	45	19	31.67
Working status	Working	9	15	15	25
	Not Working	21	35	15	25
Parity	Primi	11	18.33	12	20
	Multi	18	30	17	28.33
	Grande	1	1.67	1	1.67

Source: (Primary Data, 2024)

Table 1 shows that the two groups have no differences in terms of age, education, occupation, or parity. This demonstrates that the features of respondents in both groups are evenly distributed and do not create bias into the research outcomes.

**Table 2. Results of Normality Test for Pre and Post Intervention Data of Ginger Honey and Lemon Aromatherapy Combination**

	N	Skewness Statistik	Std. Error
Pre- test	30	-0.171	0.427
Post-test	30	0.211	0.427
Valid N	60		

Source: (Primary Data, 2024)

The data distribution is normal, as indicated by a skewness value of  $\leq 2$  compared to the standard error of the PUQE (morning sickness intensity) before and after the intervention of ginger, honey, and lemon aromatherapy. As a result, the Paired T-Test was used in the statistical analysis.

**Table 3. Results of the Paired T-Test on the Difference in Morning sickness (PUQE-24 Score) Before and After the Combination Intervention of Ginger Honey and Lemon Aromatherapy**

Variabel	N	Mean	ΔMean	SD	Median	p
Pre-Test Morning sickness	30	11.80		1.24	12.00	
Post-Test Morning sickness	30	4.50	7.30	1.28	4.00	0.000

Source: (Primary Data, 2024)

Table 3 shows that there is a significant change in the level of morning sickness in pregnant women before and after the combination intervention of ginger, honey, and lemon aromatherapy (p = 0.000). The mean degree of morning sickness prior to the intervention was 11.80 (moderate morning sickness approaching severe), but it decreased to 4.50 following the intervention with a combination of ginger, honey, and lemon aromatherapy. The level of morning sickness has dropped by 7.30.

**Table 4. The results of the normality test for the post-test data of the Ginger Honey and Lemon Aromatherapy Combination Group and the Control Group**

	N	Skewness Statistik	Std. Error
Post- test kombinasi	30	0.211	0.427
Post-test Kontrol	30	0.220	0.427
Valid N	60		

Source: (Primary Data, 2024)

Table 4 shows that the data is normally distributed, with a skewness value  $\leq 2$  when compared to the standard error. Therefore, the independent 2-sample T-test was utilized.

**Table 5. The results of the Independent T-Test for the difference in morning sickness (PUQE-24 scores) after the intervention of a combination of ginger honey and lemon aromatherapy compared to the control group**

Variabel	N	Mean	ΔMean	SD	Median	P
Post-Test combination	30	4.50		1.28	4.00	
Control	30	8.67	4.17	1.09	8.50	0.000

Source: (Primary Data, 2024)

Table 5 shows that pregnant women who received the combined treatment of ginger-honey and lemon aromatherapy experienced a significant reduction in morning sickness compared to those without any intervention (p = 0.000). The intervention group reported an average morning sickness intensity of 4.50 (moderate), whereas the control group, with no treatment, had a mean score of 8.67 (severe morning sickness). The difference in average intensity between the two groups was 4.17.

Based on the result, the study found a substantial difference in morning sickness scores before and after using a combination of ginger, honey, and lemon aromatherapy. These results are similar to prior studies on lemon aromatherapy, nausea, and vomiting. The findings of this investigation are consistent with (Setiyaningsih & Isro'aini, 2023) that administration of ginger honey drink is effective. Reduces morning sickness in pregnant women. The combination of ginger and honey gives benefits for

lowering the severity of morning sickness. Based on the description. The honey contains pyridoxine (B6), which is useful for Preventing morning sickness. Ginger includes essential oils that are anti-inflammatory. Agents, making it beneficial in naturally reducing morning sickness without the usage of Chemicals are also referred to as nonpharmacological therapies. The combination of Ginger and Honey can be utilized as a non-pharmacological treatment to relieve morning sickness. Pregnant woman throughout their first trimester.

Honey and ginger can help reduce morning sickness during pregnancy. Several research findings indicate that ginger is also useful in treating morning sickness in pregnant women throughout the first trimester, as well as in multiparous mothers (Widowati et al., 2020)(Sari & Anri, 2021). Ginger includes essential oils such as gingerol, and honey contains pyridoxine, both of which function as chemoreceptors, inhibiting serotonin, dopamine, histamine, and neurokinin, which are important for triggering the vomiting center. Ginger has no negative effects during pregnancy, while honey, which is rich in nutrients and enzymes, provides the nutritional demands of expecting moms (Puspita et al., 2022). Honey, like ginger, can help lessen morning sickness during pregnancy

because it includes vitamin B6 (Pyridoxine), which helps pregnant women feel less sick. Honey contains 0.024 mg (2%) of pyridoxine. Honey also contains antioxidants, such as chrysin, pinobanksin, vitamin C, catalase, and pinocembrin (Bonsignore et al., 2024).

Lemon aromatherapy contains nerol and linalyl acetate, which have antidepressant, antibacterial, and antispasmodic properties, increase sexual desire, and function as a moderate sedative. Inhaling aromatic chemicals causes biomolecules to be released, activating receptor cells in the nose and sending signals straight to the brain's olfactory region, which is tightly linked to other systems that regulate memory, emotions, hormones, sex, and heart rate. Soon, the impulse causes the release of soothing hormones, which creates a sensation of peace and influences bodily and mental changes, reducing morning sickness. Lemon aromatherapy contains a crucial component that inhibits and prevents prostaglandin activity, reducing pain, especially morning sickness (Kresna Wati et al., 2021).

Lemon aromatherapy offers various benefits for its users, including creating a calming sensation, and a refreshing feeling, and it can also help reduce nausea in pregnant women. Each type of essential oil provides specific pharmacological

effects, including antibacterial, antiviral, diuretic, vasodilator, and sedative properties, and can enhance adrenal activity. When inhaling essential oils, the molecules enter the nose and interact with receptors on the cilia that are connected to the olfactory bulb at the end of the nasal passage (Koyama & Heinbockel, 2020). The tip of this olfactory channel is directly connected to the brain. The scent is converted by the cilia into electrical signals, which travel to the brain via the olfactory system. These signals are then transmitted to the limbic system, a part of the brain responsible for emotions, memory, and learning processes. All scents that reach the limbic system chemically affect our feelings. When the impulses from aromatherapy reach the limbic system, they play a role in inhibiting serotonin (which causes nausea), so symptoms of morning sickness can be reduced because lemon has the ability to block serotonin (Safajou et al., 2020).

Aromatherapy works to alleviate morning sickness by stimulating the release of neurotransmitters, such as enkephalin and endorphins, which provide analgesic effects and promote feelings of comfort and relaxation. This study demonstrates that inhaling honey, ginger, and lemon aromatherapy can decrease the frequency of morning sickness in pregnant women. However, it is essential for

respondents to have a strong commitment and patience when using these natural plants, as the effects may not be immediately noticeable; achieving results requires time and the correct application methods. This research also aligns with the results of the study (Sari et al., 2022) which indicate that the combination of lemon aromatherapy and ginger drink consumption positively impacts the reduction of morning sickness. This effectiveness is attributed to the participants' adherence to the researcher's guidelines, which included inhaling lemon aromatherapy at the onset of nausea using three drops for five minutes and regularly consuming a ginger tea infusion made from 25 grams of ginger per 250 ml of water (Sulistiyowati & Wulandari, 2021). When the aromatherapy impulses reach the limbic system, they inhibit serotonin, which triggers the sensation of nausea, thus alleviating morning sickness symptoms. Both lemon and ginger have properties that effectively block serotonin, which is responsible for morning sickness (Prastika & Pitriani, 2021).

Research conducted by (Tamar et al., 2020) This combines both interventions provided, namely lemon aromatherapy inhalation and ginger honey. The researchers provided lemon and ginger aromatherapy to the respondents. They then taught the respondents about inhaling

aromatherapy and drinking ginger extract. According to researchers' analysis, combination interventions can physiologically reduce morning sickness. Lemon and ginger aromatherapy contains herbal oils that are considered a safe non-pharmacological remedy during pregnancy to alleviate or reduce the morning sickness that physiologically occur in the first trimester (Fibriansari & Hayati, 2023).

A study of lemon aromatherapy was used in conjunction with acupuncture, demonstrating that the combination of acupressure therapy and lemon aromatherapy effectively alleviated nausea in pregnant women (Magfirah et al., 2020). Several non-pharmacological therapies have been implemented to address morning sickness in pregnant women, with most showing positive effects in alleviating these symptoms. This study highlights the advantages of using ginger, as it is widely available and affordable. However, many people remain unaware of ginger's effectiveness in reducing morning sickness in pregnant women, with minimal side effects. Additionally, lemon aromatherapy is highly effective in inhibiting serotonin, which contributes to nausea, thereby helping to lessen the symptoms of morning sickness.

## CONCLUSION

The ginger, honey, and lemon aromatherapy combination helps to reduce morning sickness in pregnant women, as demonstrated by differences in bivariate testing before and after administration ( $p < 0.000$ ). The scores in the experiment group are significantly different from those in the control group ( $p < 0.000$ ). The mean value of nausea severity has significantly decreased as compared to the group that received no intervention. The advice is to employ a combination of ginger and honey treatment, as well as lemon aromatherapy, to treat pregnant women who are experiencing morning sickness during the first trimester. This study provides a platform for further investigations. The requirement for better quality methodologies and a larger sample size to increase research evidence.

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