



# Comparison of the Effectiveness of Lavender and Rose Aromatherapy in Reducing Emesis Gravidarum Symptoms among First-Trimester Pregnant Women

Sukmawati<sup>1</sup>, Dudeh Dewangsih<sup>1</sup>, Novi Kristi Heriati<sup>1</sup>, Resa Nurdewi Alawiyah<sup>1\*</sup>, Nopiyanti<sup>1</sup>, Tasmi<sup>1</sup>

<sup>1</sup> Abdi Nusantara Health Sciences College, Jakarta, Indonesia.

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Corresponding Author:

Resa Nurdewi Alawiyah

[resaalawiyah45@gmail.com](mailto:resaalawiyah45@gmail.com)

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**Abstract:** Nausea and vomiting, or emesis gravidarum, is one of the early symptoms commonly experienced by pregnant women during the first trimester and can cause stress and mood disturbances. Non-pharmacological treatment that can be done includes aromatherapy, such as lavender and rose, to help reduce the symptoms felt by pregnant women. This study aims to compare the effectiveness of lavender aromatherapy and rose aromatherapy in reducing the symptoms of emesis gravidarum in pregnant women in the first trimester in Karawang Regency. This research method used a quasi-experimental design with two intervention groups, namely the administration of lavender aromatherapy and rose aromatherapy. The sample of this study was 130 pregnant women in the first trimester with symptoms of emesis gravidarum. The results of the statistical test showed a p-value = 0.001 (<0.05) for lavender aromatherapy and p-value = 0.003 (<0.05) for rose aromatherapy, which shows that both types of aromatherapies have significant effectiveness in reducing the symptoms of emesis gravidarum. Lavender and rose aromatherapy work through the olfactory system that affects the brain's limbic system, which can help relieve negative emotions such as anxiety and stress, which often trigger or worsen symptoms of emesis gravidarum. The mechanism of action of this aromatherapy provides a relaxing effect, where rose essential oil can stimulate the brain's limbic system\*\*, which plays a role in regulating emotions and the body's response to stress.

**Keywords:** emesis gravidarum, aromatherapy, lavender, rose

## Introduction

Pregnancy is a process that begins with ovulation, conception, nidation, implantation, and embryonic development in the uterus until term (Ariendha, 2023). Each process in pregnancy is a critical condition that requires psychological and physiological adaptation to the effects of pregnancy hormones and mechanical pressure caused by the enlargement of the uterus and other tissues. Nausea and vomiting are among the earliest and most common symptoms and can cause stress (Wahyudi et al., 2022).

In addition, approximately 50% of pregnant women experience nausea and vomiting in the morning (emesis gravidarum) (Paskana et al., 2020). This is an uncomfortable period during the first trimester of pregnancy. These symptoms typically appear in the sixth week and decrease between the twelfth and sixteenth weeks of pregnancy; however, approximately 12% of pregnant women continue to experience nausea and vomiting until the end of their pregnancy. Emesis gravidarum affects 60-80% of primigravida women and 40-60% of multigravida women (Retni et al., 2020).

WHO data show that the incidence of emesis gravidarum reaches 12.5% of all pregnancies

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worldwide, with varying incidence rates ranging from 0.3% in Sweden, 0.5% in Canada, 10.8% in China, 0.9% in Norway, 2.2% in Pakistan, and 1.9% in Turkey (Afriyanti & Rahendza, 2020). In Indonesia, the number of pregnant women with emesis gravidarum was 2,203, with 534 pregnant women experiencing emesis gravidarum in early pregnancy. Thus, the average incidence of emesis gravidarum in 2019 was 67.9%, where 60-80% of these cases occurred in primigravida pregnant women, and 40-60% of cases occurred in multigravida pregnant women. In West Java, the incidence of emesis gravidarum was 10%-15% of a total of 182,815 pregnant women in 2021 (West Java Health Office, 2021). According to the 2021 Karawang Regency Health Profile data, the incidence of emesis gravidarum in pregnant women remained high at 50-90% (Karawang Regency Health Office, 2021) (Retni et al., 2020).

Emesis gravidarum not only threatens the life of the client but can also cause side effects for the fetus such as abortion, low birth weight, premature birth, and malformations in newborns. It has been found that emesis gravidarum is a significant factor in prolonging the hospital stay for newborns (Setianingrum, 2023). If hyperemesis gravidarum persists and is not properly managed, it can lead to severe nausea and vomiting, resulting in hyperemesis gravidarum, which has adverse effects on the health of the mother and fetus, such as electrolyte imbalance, dehydration, acidosis, and shock (Sari et al., 2023). Existing research estimates that nausea and vomiting occur in 50-90% of pregnancies. The high incidence of hyperemesis gravidarum not only threatens the life of the pregnant woman but can also cause side effects for the fetus, such as miscarriage, low birth weight, premature birth, and malformations in the newborn. In addition to the consequences for the mother and baby, the impact on society is also significant, as hyperemesis gravidarum is the main cause of high hospitalization rates in early pregnancy and often results in mothers taking leave from work. Therefore, appropriate treatment is needed to address nausea and vomiting if they interfere with the pregnancy process (Diana & Sumarni, 2024).

Management of emesis gravidarum to prevent nausea and vomiting and correct electrolyte loss includes pharmacological measures (vitamin B6, ondansetron, doxylamine, and dimenhydrinate), but these drugs are accompanied by several side effects such as drowsiness, headaches, and diarrhea, while non-pharmacological measures include regulating diet, avoiding certain things such as stress, caffeinated drinks, smoking or being around smokers, acupuncture, and aromatherapy (Mardiah et al., 2023).

Aromatherapy is a therapy that uses essential oils from herbs that can provide a relaxing effect when

inhaled. There are various types of aromatherapy from flowers such as lavender, rose, jasmine, etc., and there are also those from fruits such as lemon, apple, etc. Aromatherapy works by affecting the brain and the olfactory nerves, which are stimulated by certain scents, and are directly related to the hypothalamus (Afriyanti & Rahendza, 2020).

Lavender is a flower with a light purple color and a distinctive, soft scent that can help individuals relax when inhaling its aroma (Purba et al., 2022). Research conducted by Hastuty et al. (2024) described that lavender aromatherapy was effective in reducing nausea and vomiting in pregnant women in the first trimester. Lavender therapy provided a comforting effect, increased relaxation, and decreased nausea levels. Before the intervention, nausea and vomiting were reported to occur 4-5 times daily. After 7 days of aromatherapy, the intensity of nausea and vomiting was limited to morning sickness.

Rose aromatherapy can help relieve nausea and vomiting in pregnant women. Aromatherapy works by sending signals to the brain through the sense of smell, which can trigger a relaxation response and reduce nausea symptoms (Rahayu & Sari, 2022).

The hypothalamus acts as a relay and regulatory mechanism, sending messages to parts of the brain and other parts of the body. These messages are then converted into actions by releasing electrochemical compounds that induce relaxation or sedation. This aromatherapy is administered once a week, applying 3-5 drops to a cotton ball for approximately 5 minutes in the morning for 7 consecutive days (Ani & Machfudloh, 2021).

Nausea and vomiting, or emesis gravidarum, in the first trimester can indeed disrupt mood. Pregnant women experience physical changes during pregnancy, one of which is an increase in the hormone HCG during the first trimester. This can be addressed with pharmacological and non-pharmacological treatments. Non-pharmacological treatments include aromatherapy. One example of aromatherapy is lavender and rose aromatherapy, as both types of aromatherapy can relax the body. Their soft, calming scent can also reduce nausea and vomiting in first-trimester mothers and restore a happy mood.

This statement aligns with Paramitha (2024) study on the effect of lavender aromatherapy on reducing nausea and vomiting in first-trimester pregnant women at the Dukung Community Health Center in Lima Puluh Kota Regency. By measuring three times: before treatment, on the fourth day after treatment, and on the seventh day, Paramitha's research results showed that lavender aromatherapy influenced reducing nausea and

vomiting in first-trimester pregnant women with a p-value of 0.000 ( $p < 0.05$ ).

The results of another study conducted by Zenni et al., in 2024 showed that lavender aromatherapy influenced the intensity of nausea and vomiting in pregnant women in the first trimester in the Lubuk Alung Community Health Center Working Area with a P value of 0.000 ( $P\text{-value} < 0.005$ ). The results showed that the average intensity of nausea and vomiting in pregnant women before the intervention was  $9.20 \pm 0.941$  with a minimum and maximum value of 8 and 11. The average intensity of nausea in pregnant women after the intervention decreased to  $6.87 \pm 0.743$  with a minimum and maximum value of 6 and 8 (Radhia et al., 2024). The process of lavender aromatherapy in reducing emesis gravidarum works through a mechanism of reducing the intensity of nausea and vomiting in pregnant women, which is influenced by the content of essential oils in lavender aromatherapy. In addition to lavender aromatherapy, one of the uses of rose aromatherapy is inhalation, which allows direct benefits to enter the body. The advantage of roses is that they have a strong and fragrant smell, making them widely used as aromatherapy. Some of the chemicals contained in rose essential oil include citral, citronellol, geraniol, linalol, nerol, eugenol, phenylethyl alcohol, farnesol, nonyl, and aldehyde. Roses are the most recommended aromatherapy for pregnant women because of their calming effects. The active substances linalool and geraniol in red rose essential oil, when used through inhalation, can be useful for increasing alertness, calming, anti-anxiety effects, stress management, and sleep disorders. Red roses are antidepressant, so they can promote emotional calmness (Mariana, 2021).

Based on a preliminary study conducted in five different areas at the Majalaya Community Health Center (Puskesmas), 10 pregnant women in their first trimester experienced morning sickness with an intensity of four times. Six of the pregnant women only took medication or used pharmacological therapy, such as anti-nausea vitamin B6. At the Plawad Community Health Center, six of the 10 pregnant women in their first trimester experienced morning sickness, feeling weak, having a poor appetite, and feeling nauseous when smelling spices or certain odors. Four of the pregnant women experienced nausea not only in the morning but also at night.

Furthermore, in Bengle Village, Majalaya District, out of 50 pregnant women in their first trimester, 10 experienced nausea and vomiting, 7 of whom experienced nausea and vomiting in the morning and at night. To manage their nausea and vomiting, they took medication or used pharmacological therapy, such as

anti-nausea vitamin B6. Non-pharmacological therapies include eucalyptus oil or medicated oil. A preliminary study in Kertamulya Village, Karawang, found 20 pregnant women in their first trimester experiencing morning sickness and vomiting. The majority were unaware of how to manage their symptoms. In Karangjaya Village, 15 pregnant women in their first trimester experienced similar symptoms, including morning sickness and vomiting. Some did not take anti-nausea medications, only using eucalyptus oil and drinking warm water, and were unaware of the benefits of aromatherapy to reduce nausea.

Based on the background outlined above, in the five regions, most pregnant women with emesis gravidarum reduced their nausea and vomiting symptoms pharmacologically, such as taking anti-nausea medications and vitamins. Most were unaware of non-pharmacological treatments available at home. Because non-pharmacological therapies are rarely used to treat nausea and vomiting (emesis gravidarum), the researchers were interested in conducting a study entitled "Comparison of the Effectiveness of Lavender Aromatherapy and Rose Aromatherapy for Relieving Symptoms of Emesis Gravidarum in the First Trimester in Karawang Regency in 2024."

## Method

This study employed a quasi-experimental design using a pretest-posttest with control group approach. This design allows the researcher to compare the effectiveness of two types of aromatherapy interventions in reducing emesis gravidarum among first-trimester pregnant women, even without full randomization.

The study population included all first-trimester pregnant women experiencing emesis gravidarum who visited the selected health facilities. The sample was selected using a purposive sampling technique based on inclusion criteria such as first-trimester pregnancy (0–12 weeks); experiencing nausea and vomiting (emesis gravidarum); and willingness to participate in the intervention and signing informed consent.

A total of 130 respondents were included in the study and divided equally into two intervention groups: group 1 ( $n = 65$ ): received lavender aromatherapy, and group 2 ( $n = 65$ ): received rose aromatherapy. The groups were formed to ensure that both interventions had equal numbers of participants. Each group received an aromatherapy intervention by inhaling the scent of lavender or rose using standardized duration and frequency, such as inhalation for 10–15 minutes per session, conducted 1–2 times daily, with the intervention duration following the study protocol. Before and after

the intervention, the severity of emesis gravidarum was assessed using validated instruments.

The instruments used included: questionnaires, to collect respondent characteristics and measure the severity of emesis gravidarum. observation sheets, to record respondent conditions during the intervention and ensure protocol compliance. All instruments underwent validity and reliability testing prior to use.

The collected data were processed using SPSS version 29.0. The analysis included: Descriptive statistics (frequency, percentage, mean, SD) to describe respondent characteristics. Normality tests to determine appropriate statistical analyses; and comparative tests (paired and independent), such as paired t-test, independent t-test, or Wilcoxon/Mann-Whitney, depending on data distribution. Analysis was performed to evaluate differences before and after the intervention in each group and to compare the effectiveness between lavender and rose aromatherapy.

## Results and Discussion

### *Univariate Analysis Respondent Characteristics*

**Table 1.** Frequency Distribution of Respondent Characteristics of First Trimester Pregnant Women in Karawang Regency in 2024

Characteristics	F	%
Mother's Age		
≤ 20 years	35	16.6
20-35 years	65	68.2
>35 years	30	15.2
Total	130	100.0
Parity		
Primigravida	75	44.0
Multigravida	55	56.0
Total	130	100.0
Education		
Elementary School	22	27.5
Middle School	50	30.5
High School	47	34.2
College	11	7.8
Total	130	100.0
Occupation		
Working	35	32.5
Not working	95	67.5
Total	130	100

Based on the data in Table 1, for the maternal age variable, the highest value was found in the 20–35 age group (68.2%) and the lowest in the >35 age group (15.2%). In terms of parity variables, multigravida was

the highest (56.0%), while primigravida accounted for 44.0%. In terms of education, most respondents had a high school diploma (34.2%), with college education being the lowest (7.8%). Finally, in terms of occupational variables, housewives (IIRT) or unemployed women were the dominant group (67.5%), while employed mothers accounted for 32.5%

### *Frequency Distribution of Emesis Gravidarum Before and After Lavender and Rose Aromatherapy Treatment Among Pregnant Women in the First Trimester in Karawang Regency*

Analysis of five different research areas in Karawang Regency revealed varying levels of emesis gravidarum in pregnant women. Before the lavender aromatherapy intervention, most pregnant women experienced mild emesis (25%) and moderate emesis (35%). Meanwhile, 40.0% experienced severe emesis. After the intervention, there was a significant decrease in the frequency of moderate and severe emesis. In the lavender group, the number of pregnant women experiencing mild nausea and vomiting decreased from 25% to 47.2%, while severe emesis decreased from 40.0% to 4.4%. This suggests that lavender therapy has the potential to help reduce the severity of emesis gravidarum in the first trimester. Meanwhile, in the rose aromatherapy group, before the rose aromatherapy intervention, the majority of pregnant women experienced mild emesis (27.8%) and moderate emesis (38.1%). Meanwhile, 34.1% experienced severe emesis. After the intervention, there was a significant decrease in the frequency of moderate and severe emesis. In the rose group, the number of pregnant women experiencing mild nausea and vomiting decreased from 27.8% to 42.4%, while severe emesis decreased from 34.1% to 8.2%.

**Table 2.** Frequency Distribution of Emesis Gravidarum Before and After Lavender and Rose Aromatherapy Treatment Among Pregnant Women in the First Trimester in Karawang Regency

Groups	Frequency of emesis gravidarum (score PUQE)	Pre-test		Post-test	
		F	%	F	%
Aromaterapi Lavender (N=65)	Mild Emesis (4-6)	10	25.0	38	47.2
	Moderate Emesis (7-12)	25	35.0	24	48.3
	Severe Emesis (13-15)	30	40.0	3	4.4
	Total	65	100.0	65	100.0
Aromaterapi Bunga Mawar (N=65)	Mild Emesis (4-6)	12	27.8	25	42.4
	Moderate Emesis (7-12)	27	38.1	31	50.6
	Severe Emesis (13-15)	26	34.1	6	8.2
	Total	65	100.0	65	100.0

*Bivariate Analysis*

*Effect of Lavender and Rose Aromatherapy on Reducing the Level of Emesis Gravidarum in First Trimester Pregnant Women in Karawang Regency in 2024*

Based on research data from the lavender aromatherapy group, it was found that before the intervention, the average frequency score for emesis gravidarum in Karawang Regency was 34.40, and after the intervention, it was 19.71, with a mean difference of 14.69 and a standard deviation (SD) of 23.758 before and

16.153 after the intervention. The minimum score was 1.00 and the maximum score was 3.00 before the intervention, and the minimum score was 1.00 and the maximum score was 2.00 after the intervention. These results indicate a wide variation in emesis gravidarum symptoms before the intervention. The independent t-test showed a p-value of 0.001, which is less than 0.05, indicating a significant difference between the scores before and after the intervention.

**Table 3.** Effect of Lavender and Rose Aromatherapy on Reducing the Level of Emesis Gravidarum in First Trimester Pregnant Women in Karawang Regency in 2024

Frequency of emesis gravidarum	Mean	Mean Difference	SD	Min	Max	p-value
Pretest Lavender	34.40	-	23.758	1.00	3.00	
Posttest Lavender	19.71	14.69	16.153	1.00	2.00	0.001
Pretest Rose	35.55	-	25.139	1.00	3.00	
Posttest Rose	24.93	10.57	20.256	1.00	2.00	0.003

Meanwhile, research data from the rose aromatherapy group showed that before the intervention, the average frequency score for emesis gravidarum in Karawang Regency was 35.5, and after the intervention, it was 24.93. The mean difference was 10.57 and the standard deviation (SD) was 25.139 before and 20.256 after the intervention. The minimum score was 1.00 and the maximum score was 3.00 before, and the minimum score was 1.00 and the maximum score was 2.00 after. These results indicate a significant variation in emesis gravidarum symptoms of the intervention. An independent t-test yielded a p-value of 0.031, which is less than 0.05, indicating a significant difference between the scores before and after the intervention.

*Comparison of the Effects of Lavender Aromatherapy and Rose Aromatherapy on Reducing the Level of Emesis Gravidarum in First Trimester Pregnant Women in Karawang Regency in 2024*

Based on the results of the study, the average frequency of emesis gravidarum in the control group before and after the administration of lavender aromatherapy. The average frequency of emesis gravidarum was 34.40 ± 1.2, while after the administration of lavender aromatherapy it decreased to 19.71 ± 1.1. This change was statistically significant, with a p value = 0.001. This shows that the administration of lavender aromatherapy is effective in reducing the frequency of emesis gravidarum in pregnant women in the first trimester. Meanwhile, based on the results of the study, there is a significant difference between the average frequency in the rose aromatherapy group, the average frequency of emesis gravidarum before treatment was 35.55 ± 1.2 and decreased to 24.93 ± 1.1 after treatment. This change was significant, with a p value = 0.003. This indicates that rose aromatherapy is effective in reducing the frequency of emesis gravidarum in pregnant women in the first trimester.

**Table 4.** Comparison of the Effects of Lavender Aromatherapy and Rose Aromatherapy on Reducing the Level of Emesis Gravidarum in First Trimester Pregnant Women in Karawang Regency in 2024

Groups	Treatment	Mean (SD)	<i>p</i>	Mean Difference (CI 95%)
Lavender Aromatherapy	Before	34.40 ± 1.2	0.001	14.69 (1.0-0.4)
	After	19.71 ± 1.1		
Rose Aromatherapy	Before	35.55 ± 1.2	0.003	10.57 (2.0-5.9)
	After	24.93 ± 1.1		

Therefore, it can be concluded that there is no significant difference in the effectiveness of reducing emesis gravidarum in pregnant women in the first trimester after lavender aromatherapy and rose aromatherapy. Lavender aromatherapy is more effective because it has a large meaning difference of 14.69 compared to rose aromatherapy (10.57). It can be concluded that lavender aromatherapy has a more significant effect in reducing the level of emesis gravidarum in pregnant women in the first trimester in Karawang Regency in 2024.

*The Effect of Lavender Aromatherapy on Reducing the Level of Emesis Gravidarum in First Trimester Pregnant Women in Karawang Regency in 2024*

Analysis of five different research areas in Karawang Regency revealed varying levels of emesis gravidarum in pregnant women. Before the lavender aromatherapy intervention, most pregnant women experienced mild emesis (25%) and moderate emesis (35%). Meanwhile, 40.0% experienced severe emesis. After the intervention, there was a significant decrease in the frequency of moderate and severe emesis. In the lavender group, the number of pregnant women experiencing mild nausea and vomiting increased from 25% to 47.2%, while severe emesis decreased from 40.0% to 4.4%. This suggests that lavender therapy has the potential to help reduce the severity of emesis gravidarum in first-trimester pregnant women.

The nausea and vomiting experienced by each respondent in this study varied, including mild and moderate nausea and vomiting. This is supported by the theory of Niebyl (2003), which states that nausea and vomiting are influenced by psychological factors, including unwanted pregnancy, feelings of anger, guilt, anxiety, and fear, which can exacerbate the severity of nausea and vomiting. After receiving lavender aromatherapy, respondents reported feeling calm and comfortable. They also reported being able to smell cooking aromas that previously caused nausea and vomiting. Several respondents reported a significant reduction in the frequency of nausea and vomiting experienced in the morning, afternoon, and evening. The study results showed that after receiving lavender aromatherapy, some respondents experienced a decrease in nausea and vomiting, from moderate to

mild, and from mild to no nausea and vomiting. This indicates that lavender aromatherapy can reduce the frequency of nausea and vomiting experienced by respondents.

Lavender aromatherapy can reduce nausea and vomiting in pregnant women experiencing emesis gravidarum. This is because lavender is primarily composed of camphor, terpinen-4-ol, 1,8-cineole B-cimene, linalool, and linalylacetate. Linalool, a calming component of lavender, is used in aromatherapy. This component affects the neuroendocrine system, which in turn influences the release of hormones and neurotransmitters. This helps pregnant women experiencing nausea and vomiting feel calmer. Because lavender aromatherapy affects neurons in the hypothalamus, it can reduce pregnancy-related nausea and vomiting by alleviating unpleasant symptoms (Mardiah et al., 2023).

According to Meinika & Andriani (2022), aromatherapy is a therapeutic practice using essential oils that is beneficial for improving a person's physical and psychological well-being. Some essential oils have unique pharmacological effects such as antibacterial, antiviral, diuretic, vasodilator, sedative, and adrenaline-stimulating properties. Molecules in these essential oils, when inhaled through the nasal cavity, can stimulate the limbic system in the brain. The limbic system in the brain is an area that influences emotions and memory and is directly linked to the adrenal glands, pituitary gland, hypothalamus, and parts of the body that regulate heart rate, blood pressure, stress, balance, and breathing (Kaushal et al., 2024).

The results of this study align with Siregar (2025) study, "Lavender Aromatherapy as a Treatment for Nausea and Vomiting in Pregnant Women," in which the experimental group experienced a decrease in the average nausea and vomiting score from 12.60 before treatment to 5.05 after treatment. After the study, the control group experienced a decrease in the average nausea and vomiting score of 10.45, but the intervention group experienced a decrease of 5.05, with a p-value of 0.000. After aromatherapy, there was a significant difference between the nausea and vomiting scores of the experimental and control groups, as indicated by a p-value <α (0.05). According to the study findings, pregnant women who received lavender aromatherapy

experienced less nausea and vomiting (Hernawati et al., 2024).

Lavender also has benefits because it contains essential oils and baby oil. Lavender aromatherapy during early pregnancy can reduce nausea and the gag reflex, which are common in pregnant women. Lavender contains a chemical called linalool, which has a calming and soothing effect (Kirk-Smith, 2003).

According to researchers, the reduction in the rate of emesis gravidarum in pregnant women in the first trimester with lavender aromatherapy is due to lavender's warming properties, not only alleviating nausea but also reducing the bloating experienced during nausea and vomiting.

*The Effect of Rose Aromatherapy on Reducing the Rate of Emesis Gravidarum in Pregnant Women in the First Trimester in Karawang Regency in 2024*

Analysis of five different research areas in Karawang Regency revealed varying levels of emesis gravidarum in pregnant women. In the rose aromatherapy group, before the rose aromatherapy intervention, most pregnant women experienced mild emesis (27.8%) and moderate emesis (38.1%). Meanwhile, 34.1% experienced severe emesis. After the intervention, there was a significant decrease in the frequency of moderate and severe emesis. In the rose group, the number of pregnant women experiencing mild nausea and vomiting increased from 27.8% to 42.4%, while severe emesis decreased from 34.1% to 8.2%.

Rose aromatherapy has a positive effect on the central nervous system. The sytrinol and 2-phenyl ethyl alcohol in roses act as anti-anxiety agents. Using rose oil during labor can reduce anxiety by up to 71%, resulting in only 14% of mothers requiring local anesthesia. The anxiety level was 3.60 with a standard deviation of 1.350 before receiving rose aromatherapy intervention, and 2.00 with a standard deviation of 1.054 after the intervention. This indicates that anxiety levels were lower both before and after receiving rose aromatherapy. The statistical analysis showed a p-value of 0.001 with an  $\alpha$  of 0.005, where p is less than  $\alpha$ . This indicates the effect of rose aromatherapy intervention on maternal anxiety levels during labor at the Walantaka Community Health Center, Serang, in 2020.

The volatile molecules in rose aromatherapy essential oil transport its aromatic components, including geraniol and linalool, to the tip of the nose, where cilia emerge from receptor cells. Electrochemical signals are sent from the chemicals that bind to these hairs to the limbic system via the olfactory tract. This triggers memories and emotional reactions. As a regulator, the hypothalamus sends messages to the brain, which are then translated into reactions in the

form of electrochemical compounds. These reactions contribute to feelings of relaxation and comfort and support smooth blood flow. This is in line with research conducted by Hosseini et al. (2024), which showed that rose aromatherapy is safe for pregnant women when administered through inhalation in appropriate doses, with no significant side effects on the fetus or mother.

The results showed that of 20 pre-C-S delivery mothers, before receiving rose aroma therapy, the level of anxiety of the mothers facing C-S delivery was almost half, 9 (45%) in the severe category, and a small portion, 4 (20%) in the moderate category. After the intervention, the anxiety level of the majority was not anxious, 15 (75%) and a small portion, 2 (10%). The results of the Wilcoxon Signed Rank Test statistical test obtained a p-value of 0.000. The p-value of the study showed a p-value  $<\alpha$  (0.05), which means there is a very significant difference in values. Based on the anxiety levels before and after the administration of rose aroma therapy, most anxiety levels decreased, so it can be concluded that there is an effect of giving rose aroma therapy on reducing maternal anxiety levels facing C-S delivery.

According to the researchers' assumptions, rose aromatherapy has a significant relaxing effect, thus helping pregnant women feel more comfortable (Romlah et al., 2023). It is safe to use during pregnancy with minimal risk if the dosage is correct. It is easy to apply through inhalation using a diffuser or small cotton pad.

*Comparison of the Effects of Lavender Aromatherapy and Rose Aromatherapy on Reducing Emesis Gravidarum in First Trimester Pregnant Women in Karawang Regency in 2024*

The study results showed that the average frequency of emeiisiis graviidarum in the control group before and after lavender aromatherapy was  $34.40 \pm 1.2$ , while after lavender aromatherapy, it decreased to  $19.71 \pm 1.1$ . This change was statistically significant, with a p-value of 0.001. This indicates that lavender aromatherapy is effective in reducing the frequency of emesis graviadrum in first-trimester pregnant women. Meanwhile, the average frequency of emeiisiis graviidarum before treatment was  $35.55 \pm 1.2$  and decreased to  $24.93 \pm 1.1$  after treatment. This change was statistically significant, with a p-value of 0.003. This indicates that rose aromatherapy is effective in reducing the frequency of emesis gravidarum in pregnant women in the first trimester.

Therefore, it can be concluded that there is no significant difference in the effectiveness of reducing emesis gravidarum in pregnant women in the first trimester after lavender aromatherapy and rose aromatherapy. Lavender aromatherapy is more effective because it has a larger meaning difference of 14.69 compared to rose aromatherapy (10.57). It can be

concluded that lavender aromatherapy has a more significant effect in reducing the level of emesis gravidarum in pregnant women in the first trimester in Karawang Regency in 2024.

Lavender aromatherapy works by affecting not only the physical but also the emotional levels. Lavender oil, consisting of linalool, linalyl acetate, and 1,8-cineole, can reduce muscle tension and provide relaxation, thereby helping someone experiencing muscle spasms. Aromatherapy oils entering the nasal cavity through direct inhalation will work faster, because the essential oil molecules are volatile, and the hypothalamus processes and converts the aroma into an action by releasing neurochemical substances in the form of endorphins and serotonin, so that it has a direct effect on the olfactory organs and is perceived by the brain to provide a reaction that induces physiological changes in the body, mind, and emotions, producing a calming effect on the body.

The benefits of rose aromatherapy can foster a sense of calm (relaxation) in the body, mind, and spirit, and can ward off feelings of anxiety and restlessness. Roses (*Rosa damascena*) have long been known to have therapeutic benefits, particularly as an antidepressant, relaxant, and nausea reliever. Active compounds such as citronellol and geraniol in rose essential oil have a calming effect and can help reduce nausea. Rose aromatherapy works through the olfactory system, influencing the brain's limbic system, helping to alleviate negative emotions such as anxiety and stress, which often trigger or exacerbate emesis gravidarum.

This research is supported by Setianingrum (2023) study, which, based on the results of the Wilcoxon statistical test for each control and intervention group, found a p-value of 0.004 ( $p < 0.05$ ) in the control group and a p-value of 0.000 ( $p < 0.05$ ) in the intervention group. Meanwhile, based on the results of the Mann Whitney statistical test, the p value was 0.045 ( $p \text{ value} < 0.05$ ), which means that there is an effect of lavender aromatherapy in reducing nausea and vomiting in pregnant women with emesis gravidarum in the first trimester at PMB Musdalifah.

One of the benefits of lavender essential oil for pregnant women is its ability to reduce nausea and vomiting by providing a relaxing or calming effect for its users (Safajou et al., 2025). The way aromatherapy ingredients work, including lavender, is through the body's circulatory system and olfactory system. When lavender essential oil is inhaled, volatile molecules from the oil are carried by air currents to the "roof" of the nose where soft cilia emerge from receptor cells. When the molecules attach to these hairs, an electrochemical message is transmitted through the olfactory bulb and

tract into the limbic system. This will stimulate memory and emotional responses.

The hypothalamus acts as a relay and regulator, generating messages that must be conveyed to parts of the brain and other parts of the body through the circulatory system. The received message is then converted into action by releasing electrochemical compounds that induce euphoria, relaxation, and sedation. The limbic system is primarily involved in emotional expression (Setianingrum, 2023). Lavender can improve blood circulation and improve nerve function. This can reduce tension, refresh the head, and even minimize nausea and vomiting. Lavender essential oil can be used as a powerful aromatic stimulant. This can help control nausea and vomiting by significantly increasing intestinal peristalsis (Retni et al., 2020).

It can be concluded that lavender aromatherapy is more effective in reducing the level of emesis gravidarum in pregnant women in the first trimester in Karawang Regency in 2024. According to the researchers' assumptions, this difference in results is likely influenced by the frequency of emesis gravidarum. This is because nausea during pregnancy can lead to vomiting. Therefore, mothers can relax and inhale using lavender and rose aromatherapy, which will improve nausea and vomiting or emesis gravidarum.

## Conclusion

In the analysis of respondent characteristics from the five treatment areas, most mothers were aged 20-35 years (68.2%). Regarding parity, multigravida had the highest prevalence (56.0%). Regarding education, most respondents had a high school diploma (34.2%), and in terms of occupation, housewives (111) or unemployed (67.5%), while the working group had a high school diploma (32.5%). In the lavender aromatherapy group in five different study areas in Karawang Regency, pregnant women were found to have varying levels of emesis gravidarum. Before receiving lavender aromatherapy intervention, most pregnant women experienced mild emesis (25%) and moderate emesis (35%). Meanwhile, 40.0% of pregnant women experienced severe emesis. After the intervention, there was a significant decrease in the frequency of moderate and severe emesis. In the rose aromatherapy group in five different research areas in Karawang Regency, before receiving the rose aromatherapy intervention, most pregnant women experienced mild emesis (27.8%) and moderate emesis (38.1%). Meanwhile, 34.1% of pregnant women experienced severe emesis. After the intervention, there was a significant decrease in the frequency of moderate and severe emesis. In the rose

group, the number of pregnant women experiencing mild nausea and vomiting increased from 27.8% to 42.4%, while severe emesis decreased from 34.1% to 8.2%. In the results of the comparison of the effectiveness of lavender and rose aromatherapy on pregnant women in the first trimester with emesis gravidarum in the lavender aromatherapy group, a p-value of 0.001 was obtained, and in the rose aromatherapy group a p-value of 0.003 was obtained, this shows that both aromatherapy are useful for alleviating symptoms of nausea and vomiting in mothers in the first trimester, but in the results of the data analysis, lavender aromatherapy demonstrated greater effectiveness.

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