

The Effect of Lemongrass Aromatherapy on The Frequency of Gravidarum Emesis in The Obstetrics and Gynecology Polyclinic of Dr. R. M. Djoelham Binjai Hospital in 2024

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Abstract

Emesis gravidarum, or nausea and vomiting during the first trimester of pregnancy, is a common complaint experienced by the majority of pregnant women. Approximately 70–80% of pregnant women encounter this condition, which can lead to decreased appetite, sleep disturbances, dehydration, electrolyte imbalance, and even weight loss. One promising non-pharmacological method is aromatherapy using lemongrass (*Cymbopogon citratus*), known for its calming, antispasmodic, and antimicrobial properties. The citral content in lemongrass is believed to help stabilize the digestive system and reduce nausea. This study aims to determine the effect of lemongrass aromatherapy on the frequency of emesis gravidarum in first-trimester pregnant women. The study employed a pre-experimental design with a one-group pretest-posttest approach. The sample consisted of first-trimester pregnant women experiencing nausea and vomiting. Data were collected through direct observation of the frequency of nausea and vomiting before and after the intervention. The intervention was given in the form of inhaled lemongrass aromatherapy over several days. Data analysis used the paired sample t-test. The results showed that the average frequency of emesis gravidarum before the aromatherapy intervention was 5.99 (SD 0.728), which decreased to 2.75 (SD 0.628) after the intervention. Statistical analysis using the paired sample t-test showed a p-value of 0.000 ($p < 0.05$), indicating a significant difference before and after the intervention. In conclusion, lemongrass aromatherapy is proven effective in reducing the frequency of emesis gravidarum and can be recommended as a supportive non-pharmacological therapy in holistic antenatal care.

Keywords: Lemongrass Aromatherapy, Emesis Gravidarum, Pregnant Women References

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Introduction

Emesis gravidarum, commonly known as nausea and vomiting, causes discomfort due to dizziness, bloating, and weakness, accompanied by the release of stomach contents through the mouth at a frequency of less than five times a day in pregnant women in the first trimester. If not immediately addressed, emesis gravidarum can become pathological. The impact of nausea and vomiting if not immediately treated causes more severe (intractable) nausea and vomiting symptoms. If it occurs continuously in early pregnancy (the first trimester) can cause dehydration or lack of electrolyte fluids, nutrient deficiencies, or malnutrition known as hyperemesis gravidarum[1].

The 2018 Indonesian Demographic and Health Survey (SDKI) found that 228 pregnant women per 100,000 women experienced emesis gravidarum (26%), while in 2019, the number of pregnant women experienced emesis gravidarum (359 per 100,000 women) (32%).

Nausea and vomiting in the first trimester of pregnancy are caused by changes in the endocrine system, such as increased estrogen, primarily due to high fluctuations in serum levels of hCG (Human Chorionic Gonadotrophin). Poor diet before and during the first few weeks of pregnancy, lack of sleep, and stress can exacerbate nausea and vomiting[2].

Pregnant women who experience nausea and vomiting become weak due to reduced food intake. Ingested food is excreted as vomit, depriving the body of the energy it produces from that food[3].

If emesis gravidarum persists and worsens, it can lead to the loss of carbohydrate and fat reserves used for energy. Nausea and vomiting during pregnancy can have various impacts on pregnant women, one of which is a decrease in appetite that results in changes in the balance of electrolytes, namely potassium, calcium, and sodium, thus causing changes in the body's metabolism. The impact on the fetus will cause a lack of nutrients and fluids needed by the body, this can cause babies to be born with low birth weight (LBW)[4]. Short-term impacts on children who are malnourished can cause intellectual impairment, impaired physical growth, suboptimal physical size, and metabolic disorders. Meanwhile, long-term impacts can decrease intellectual capacity which will affect productivity in adulthood, as well as increase the risk of non-communicable diseases[5].

Maternal Mortality Rate (MMR) 99% occurs in developing countries, in 2018 reaching 230 per 100,000 live births compared to 16 per 100,000 live births in developed countries. Mothers die from complications during pregnancy and after pregnancy and more than 60,000 maternal deaths in 115 countries indicate that pregnant women already have a history of poor health which causes 28% of deaths. The highest cases of nausea and vomiting that occur and are felt by women in various parts of the world are recorded in Norway, amounting to 2.2% emesis gravidarum in Indonesia, namely 1-3% of all pregnancies. Meanwhile, the incidence of emesis gravidarum in North Sumatra Province in 2018 covered 35.6% and in 2019 covered 30.9%.

In general, mothers who experience nausea and vomiting feel uncomfortable and want to get over this period quickly. Conventional ways to overcome nausea and vomiting include consuming easily digestible foods, avoiding certain foods and drinks, drinking water if feeling nauseous, and lying down[6]. Nausea can be managed pharmacologically and non-pharmacologically. Pharmacologically, B6 and antiemetics such as Ondasetron and Domperidone can be given. Non-pharmacologically, to reduce the level of nausea in pregnant women can be done in various ways, including aromatherapy such as lemon, lavender, drinking warm lemongrass water, blended peppermint aromatherapy and ginger oil aromatherapy. It is not uncommon for pregnant women to also undergo acupuncture and acupressure to reduce the level of nausea they experience[7].

However, compared to pharmacological treatments, many also use non-pharmacological treatments through scents or fragrances derived from aromatic compounds. The aroma response produced by aromatherapy will stimulate the activity of the brain's neurochemical cells.

Pleasant aromas will stimulate the thalamus to release enphekalin which functions as a natural pain reliever and produces a feeling of calm[8]. Aromatherapy is a part of non-pharmacological treatment that uses volatile plant fluids, known as essential oils and other aromatic compounds that affect a person's psyche, emotions, and cognitive function and health. The results of Istiqomah's research explain that aromatherapy can provide a comforting effect, reducing pain, stress and anxiety . Lemongrass has a light and fresh scent like lemon as aromatherapy that provides a relaxing, anti-neurodepressive and balancing effect. The compounds that make up lemongrass oil are known to have anti-fungal, insect repellent, antiseptic, and anti-inflammatory properties. Lemongrass can prevent the growth of some bacteria and fungi and has antioxidant properties [9]

Literature Review

Many researchers have previously conducted research on the effects of lemongrass aromatherapy on reducing the frequency of emesis gravidarum. According to Rizqiah & Dinengsih (2023), nausea and vomiting, or emesis gravidarum, are common symptoms and often occur in the first trimester of pregnancy. Emesis gravidarum generally occurs in the morning, but can also occur at any time of the day and at night. Several methods can be used to overcome nausea and vomiting during pregnancy, such as taking anti-nausea medication, especially vitamin B6, as a pharmacological treatment. Furthermore, non-pharmacological treatments are often used to reduce these symptoms, such as the use of lemongrass aromatherapy[10].

Meanwhile, according to Istiqomah et al., 2022, lemongrass aromatherapy is an aromatherapy derived from red lemongrass (*Cymbopogon Nardus*). This type of lemongrass is included in the fragrant lemongrass type with the Maha Pengiri type and is a superior type due to its high oil quality. The main components of this oil are geraniol (85-90%), citronella (35-45%), geraniol acetate (3-8%), citronella acetate (2-4%), and contains small amounts of sesquiterpenes and other compounds. The compounds contained in citronella and geraniol have analgesic, sedative, antinociceptive, and anti-inflammatory properties, especially for pain associated with inflammation and are partly related to reducing stimulation of the peripheral nerves[11].

According to Anggraini et al., 2022, lemongrass has a light, fresh, lemon-like scent and is known to induce relaxation and balance. Compounds in lemongrass oil are also known to possess antifungal, insect repellent, antiseptic, and anti-inflammatory properties. Lemongrass can inhibit the growth of some bacteria and fungi and has antioxidant properties[12].

Research Methodology

The type of research used in this study is quantitative with an experimental approach. The research design used in this experimental study is a pre-experimental design in the form of a one-group pretest–posttest design. This design aims to identify causal relationships by involving one group. This research will be conducted at the Obstetrics and Gynecology Polyclinic of Dr. R.M. Djoelham Binjai Regional Hospital. The population in this study is all 192 pregnant women in their first trimester who came to the Obstetrics and Gynecology Polyclinic of Dr. R. M. Djoelham Binjai Regional Hospital with complaints of nausea and vomiting during October 2024 to January 2025 with a sample of 67 people.

Results

4.1 Univariate Analysis

Respondents in this study were first-trimester pregnant women experiencing emesis gravidarum. The total sample size was 67. Respondent characteristics were assessed based on age, parity, occupation, and education.

Table 1. Frequency Distribution of Respondent Characteristics by Age Pregnant Women in the Obstetrics and Gynecology Clinic of Dr. R. M. Djoelham Binjai Regional Hospital in 2024 (n=67)

Age	Frequency (f)	Percentage (%)
1.< 20 year	10	14,9
2.20-35 year	47	70,1
3.> 35 year	10	14,9
Total	67	100

Source: Primary Research Data at Dr. R.M Djoelham Binjai Regional Hospital, 2025

Based on table 1, it can be seen that of the 67 respondents, the majority of pregnant women were aged 20-35 years, namely 47 respondents (70.1%), and the minority of pregnant women were aged < 20 years and > 35 years, namely 10 respondents each (14.9%).

Table 2. Frequency Distribution of Respondent Characteristics Based on Education of Pregnant Women in the Obstetrics and Gynecology Polyclinic of Dr. R. M. Djoelham Binjai Regional Hospital in 2024 (n=67)

Education	Frequency (f)	Percentage (%)
1. Elementary School	5	7,5
2. Junior High School	11	16,4
3. High School	32	47,8
4. College	19	28,4
Total	67	100

Source: Primary Research Data at Dr. R.M Djoelham Binjai Regional Hospital, 2025

Based on table 2, it can be seen that of the 67 respondents, the majority of pregnant women had a high school education, namely 32 respondents (47.8%), and the minority had an elementary school education, namely 5 respondents (7.5%)

Table 3. Frequency Distribution of Respondent Characteristics Based on Occupation of Pregnant Women in the Obstetrics and Gynecology Clinic Dr. R. M. Djoelham Binjai Regional General Hospital, 2024 (n=67)

Work	Frequency (f)	Percentage (%)
1. Housewife	41	61,2
2. Self-employed	14	20,9
3. Trader	7	10,4
4. Civil Servant	5	7,5
Total	67	100

Source: Primary Research Data at Dr. R.M Djoelham Binjai Regional Hospital, 2025

Based on table 3, it can be seen that of the 67 respondents, the majority of pregnant women work as housewives as many as 41 respondents (61.2%) and a minority work as civil servants as many as 5 respondents (7.5%).

Table 4. Frequency Distribution of Respondent Characteristics Based on Maternal Parity in the Obstetrics and Gynecology Polyclinic of Dr. R. M. Djoelham Binjai Regional Hospital in 2024 (n=67)

Parity	Frequency (f)	Percentage (%)
1.Primigravida	36	53,7
2.Multigravida	31	46,3
Total	67	100

Source: Primary Research Data at Dr. R.M Djoelham Binjai Regional Hospital, 2025

Based on table 4, it can be seen that of the 67 respondents, the majority of pregnant women were pregnant for the first time (primigravida) as many as 36 respondents (53.7%) and the minority had been pregnant several times (multipara) as many as 31 respondents (46.3%).

Table 5. Frequency Distribution of Emesis Gravidarum Before Lemongrass Aromatherapy in Pregnant Women in the Obstetrics and Gynecology Clinic of Dr. R. M. Djoelham Binjai Regional Hospital in 2024 (n=67)

Frequency of Emesis Gravidarum	Before Administering Lemongrass Aromatherapy	
	Frequency (f)	Percentage (%)
1.Do not experience nausea and vomiting	0	0
2.Light	7	10,4
3.Medium	45	67,2
4.Heavy	15	22,4
Total	67	100

Source: Primary Research Data at Dr. R.M Djoelham Binjai Regional Hospital, 2025

Based on the results of Table 5, it can be seen that of the 67 respondents, before being given lemongrass aromatherapy, most of the respondents experienced moderate emesis gravidarum frequency, as many as 45 people (67.2%), while respondents with severe emesis gravidarum category were 15 people (22.4%), and respondents with mild emesis gravidarum category were 7 people (10.4%).

Table 6. Frequency Distribution of Emesis Gravidarum After Lemongrass Aromatherapy in Pregnant Women in the Obstetrics and Gynecology Clinic of Dr. R. M. Djoelham Binjai Regional Hospital in 2024 (n=67)

Frequency of Emesis Gravidarum	After Administering Lemongrass Aromatherapy	
	Frequency (f)	Percentage (%)
1.Do not experience nausea and vomiting	10	14,9
2.Light	42	62,7
3.Medium	15	22,4
4.Heavy	0	0
Total	67	100

Source: Primary Research Data at Dr. R.M Djoelham Binjai Regional Hospital, 2025

Based on the results in Table 6, it can be seen that 67 respondents reported a change in the frequency of emesis gravidarum in pregnant women after receiving lemongrass aromatherapy. The majority of respondents (62.7%) fell into the mild emesis gravidarum category. Meanwhile, 10 respondents (14.9%) did not experience emesis gravidarum, 15 respondents (22.4%) experienced moderate emesis gravidarum, and 0 respondents (0%) experienced severe emesis gravidarum.

4.2 Analysis Bivariate

Table 7. Analysis of the Effect of Lemongrass Aromatherapy on the Frequency of Emesis Gravidarum in First Trimester Pregnant Women in the Obstetrics and Gynecology Clinic, Dr. R.M. Djoelham Binjai Regional Hospital 2024 (n=67)

Emesis Gravidarum	Mean	SD	P
Before (X1)	5,99	0,728	0,000
After (X2)	2,75	0,682	

Source: T-Test statistical test

Based on Table 7, data on differences in emesis gravidarum categories before and after being given lemongrass aromatherapy in the Obstetrics and Gynecology Polyclinic of Dr. R.M. Djoelham Binjai Regional Hospital, where the average emesis gravidarum before being given lemongrass aromatherapy was 5.99 and after being given lemongrass aromatherapy, the average decreased to 2.75.

Based on the results of statistical tests using the T-test, the mean value of emesis gravidarum before being given lemongrass aromatherapy was 5.99 and after being given lemongrass aromatherapy, the average decreased to 2.75 and a p-value = 0.000 where p-value

$<\alpha$ (0.05), then H_0 is rejected and H_a is accepted, so there is a significant effect of lemongrass aromatherapy on the frequency of emesis gravidarum in the Obstetrics and Gynecology Polyclinic of Dr. R.M. Djoelham Binjai Regional Hospital in 2024

Conclusion

Based on the results of a study conducted on 67 pregnant women in the first trimester who experienced emesis gravidarum, it can be concluded that:

1. The average frequency of emesis gravidarum before receiving lemongrass aromatherapy was 5.99 times per day.
2. The average frequency of emesis gravidarum after receiving lemongrass aromatherapy was 2.75 times per day.
3. The results of the T-Test showed that lemongrass aromatherapy significantly reduced the frequency of emesis gravidarum in pregnant women ($p = 0.000$).

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