

The Influence of Peppermint Aromatherapy Inhalation on Morning Sickness in First Trimester Pregnant Women in Bantur Village, Malang Regency

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Article Info	ABSTRACT
Keywords: Nausea and Vomiting, Pregnancy, Aromatherapy, Peppermint	Every pregnant woman will experience a process of adjusting the body to pregnancy according to the trimester stage being experienced. The first trimester causes nausea and vomiting (emesis gravidarum) in pregnant women. Nausea and vomiting usually occur in the morning (morning sickness), but some occur at night. Changes in the mother's body system during pregnancy require both physical and psychological adaptation so that it is not uncommon for mothers to experience discomfort in these changes so that prevention and treatment are needed. This study uses a quantitative research analytical type, a Quasi-experimental research design with a one group pretest-posttest approach. This research design has carried out the first observation (pretest) so that researchers can test the changes that occur after the treatment, but in this design there is no control group (comparison). the sample size used in this study used a sample of 20 pregnant women in TM I. Sampling by purposive sampling. There is a difference before and after being given peppermint aromatherapy on reducing nausea and vomiting in pregnant women in the first trimester with a p value of 0.000. There is an effect of giving peppermint aromatherapy on reducing nausea and vomiting in pregnant women in the first trimester at the Bantur Health Center, Malang Regency.

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INTRODUCTION

Every pregnant woman will go through bodily adjustments according to the trimester she is experiencing. The first trimester often brings about nausea and vomiting (emesis gravidarum). This typically occurs in the morning (morning sickness), but in some cases, it may appear at night (Mandriwati, 2018). The systemic changes in a pregnant woman's body require both physical and psychological adaptation, which can lead to discomfort. Therefore, preventive measures and proper care are necessary (Tanjung Rejeki, 2019). Nausea and vomiting are common in the first trimester and are considered normal. However, if nausea and vomiting occur more than 10 times a day, it can disturb nutritional balance, fluid and electrolyte levels, and overall health, thereby interfering with daily life (Putri, 2020). If not treated promptly, emesis can progress into hyperemesis, potentially leading to fetal growth restriction,

intrauterine fetal death, or congenital abnormalities (Aryanti, 2020). Approximately 12% to 15% of pregnant women in developing countries experience life-threatening complications, and the incidence of hyperemesis gravidarum is estimated to be 1.5%–3% of all pregnancies (Putri, 2020).

Symptoms such as nausea and vomiting affect about 70% of pregnant women, usually during the first trimester, while around 20% experience these symptoms after 20 weeks of gestation (Suwarni, 2018). The global incidence of emesis gravidarum is approximately 12.5% of all pregnancies (WHO, 2022), and in Indonesia, around 10% of pregnant women experience it (Wima, 2018). In East Java Province, antenatal coverage (K1) reached 98.50% in 2022, with 50–90% of pregnant women experiencing emesis gravidarum and about 20–30% experiencing hyperemesis gravidarum (East Java Health Profile, 2022). In Banten Province, the incidence of emesis gravidarum ranges between 50–90%, while hyperemesis gravidarum occurs in 10–15% of pregnant women, out of a total of 182,815 pregnancies in the first trimester (Ariyanti, 2020).

Nausea and vomiting can be prevented through both pharmacological and non-pharmacological methods. Pharmacological treatment may involve vitamin B6 and antiemetics to alleviate mild or severe nausea and vomiting. However, these medications may cause side effects for the mother, pregnancy, or the baby. Thus, non-pharmacological treatments are often considered as alternative options to reduce nausea and vomiting, with fewer side effects (Saragih, 2019).

One non-pharmacological therapy to manage nausea and vomiting in pregnant women is the use of peppermint. Peppermint is a natural ingredient commonly used to relieve nausea and vomiting, including in pregnancy. Its benefits are derived from active compounds such as menthol and menthone, which have calming effects on the digestive tract. These compounds work by relaxing the smooth muscles of the gastrointestinal system, thereby reducing nausea and improving digestion. Peppermint can be used in various forms, including peppermint tea, essential oil for aromatherapy, or peppermint candies. Aromatherapy with peppermint oil helps reduce nausea through calming stimulation of the sense of smell. Meanwhile, peppermint tea promotes digestive relaxation and hydration. Although generally safe for pregnant women, peppermint use should be carefully monitored, especially in essential oil form. Overuse or direct application of undiluted essential oil to the skin can cause irritation or other side effects.

Aromatherapy is a therapeutic practice that uses essential oils to improve physical and psychological well-being. When essential oils are inhaled, their molecules enter the nasal cavity and stimulate the limbic system an area that affects emotions and memory and is directly connected to the adrenal glands, pituitary gland, hypothalamus, and other parts of the body that regulate heart rate, blood pressure, stress, hormonal balance, and respiration (Hasanah Hasibuan, 2021). Aromatherapy can provide various effects to those who inhale it, including calmness, freshness, and even relief from pregnancy-related nausea.

RESEARCH METHOD

This study employed a quantitative analytic research type, using a pre-experimental design with a one-group pretest and posttest approach. This quasi-experimental design involves an initial observation (pretest), allowing researchers to examine changes that occur after the intervention; however, this design does not include a control (comparison) group. The population consisted of an average of 48 pregnant women visiting the Puskesmas each month. For experimental research, the minimum sample size is between 10 and 30 participants. Therefore, this study used a sample of 20 pregnant women in their first trimester. Sampling was conducted using purposive sampling. Inclusion criteria (used to identify appropriate participants) in this study were: a) Willing to participate as respondents; b) Pregnant women who visited the Bantur Health Center (Puskesmas Bantur); c) Pregnant women in their first trimester. Exclusion criteria (used to exclude participants from the sample due to specific characteristics that could interfere with the research process) included: a) Pregnant women experiencing severe nausea and vomiting.

RESULT AND DISCUSSION

Result

Table 1. Respondents' Demographic Characteristics

Characteristics	Frequency	Percentage (%)
Age		
19-22	9	24%
23-28	11	76%
Total	20	100%
Education		
Elementary School	1	2,5%
Junior High School	9	31,5%
Senior High School	8	42%
Higher Education	2	24%
Total	20	100%
Gestational Age		
4 Weeks	2	5%
5 Weeks	7	29%
6 Weeks	6	42%
7 Weeks	5	24%
Total	20	100%

The research results above indicate that the majority of respondents who experienced nausea and vomiting were in the age group of 23–28 years, totaling 29 individuals (76%). In terms of education level, most respondents had completed senior high school, accounting for 16 individuals (42%). Regarding gestational age, the majority of respondents were at 6 weeks of pregnancy, totaling 16 individuals (42%).

Univariate Analysis

Univariate analysis is used to explain or describe the characteristics of each variable studied.

Table 2. Nausea and vomiting in first-trimester pregnant women before the intervention

Nausea and Vomiting	Mean	SD	Min	Max	N
Before Intervention	8,90	1,944	8	12	20

Based on Table 2 above, it is known that the mean score of nausea and vomiting before peppermint aromatherapy intervention was 8.90, with a standard deviation of 1.944, a minimum value of 8, and a maximum value of 12.

Table 3. Nausea and vomiting in first-trimester pregnant women after the intervention

Nausea and Vomiting	Mean	SD	Min	Max	N
After Intervention	6,55	1,538	11	9	20

Based on Table 3 above, it is known that the mean score of nausea and vomiting after being given peppermint aromatherapy was 6.55, with a standard deviation of 1.538, a minimum value of 4, and a maximum value of 9.

Table 4. The Effect of Peppermint Aromatherapy on Nausea and Vomiting in Pregnant Women

Group	N	Beda Mean	SD	t-test	P- Value
Nausea and vomiting before and after receiving peppermint aromatherapy	20	2,350	1,089	9.647	0,000

Based on Table 4, the results of the statistical test showed a p-value of 0.000 (p-value < $\alpha = 0.05$), which indicates that peppermint aromatherapy had a significant effect on nausea and vomiting in first-trimester pregnant women at Bantur Public Health Center, Malang Regency.

Discussion

The average characteristics of respondents experiencing nausea and vomiting were mostly in the 23–28-year age group, with 11 women (76%). In terms of education, the majority had completed senior high school (SMA), totaling 8 people (42%). Regarding gestational age, most respondents were at 5 weeks of pregnancy, totaling 7 people (42%). Before peppermint was administered, the average frequency of nausea and vomiting was 11 times (28.9%), which decreased to 2 times (52.6%) after peppermint was given. The mean and standard deviation of nausea and vomiting before peppermint aromatherapy were 10.7 ± 1.83 , with a minimum value of 8 and a maximum of 14. After peppermint therapy, the mean

was 2.4 ± 0.5 , with a minimum of 2 and a maximum of 3. Based on the Wilcoxon test, the *p*-value was 0.000, which is less than the significance threshold of $p < 0.05$. Therefore, it can be concluded that there is a significant difference before and after peppermint aromatherapy was administered.

Emesis gravidarum is a common symptom in the first trimester of pregnancy. Nausea usually occurs in the morning, though it may happen at any time of day or at night. These symptoms typically appear around six weeks after the last menstrual period and last for about ten weeks (Winkjosastro, 2016).

In pregnant women, there is an increase in kynurenic and xanthurenic acids in the urine, which are excreted when the conversion of tryptophan to niacin is inhibited. This can also occur due to vitamin B6 deficiency. High estrogen levels in pregnant women inhibit the activity of the enzyme kynureninase, which is a catalyst in the conversion of tryptophan to niacin; a deficiency in niacin may also trigger nausea and vomiting. Ginger contains two important digestive enzymes: protease, which breaks down protein, and lipase, which breaks down fat. These enzymes help the body digest and absorb food and inhibit serotonin a neurotransmitter that causes stomach contractions and leads to nausea.

Peppermint helps reduce complaints of nausea and vomiting, as well as headaches, and may increase appetite. In addition, the essential oils in peppermint emit a distinctive aroma. The olfactory response to this aroma stimulates neurochemical cells in the brain and helps stabilize the nervous system, creating a calming effect for pregnant women in their first trimester experiencing nausea and vomiting. The decrease in average nausea and vomiting frequency is attributed to the ability of aromatherapy to reduce nausea during pregnancy due to its fresh scent. It also helps improve and maintain health, boost energy and enthusiasm, refresh the mind, provide calmness, and stimulate the healing process.

When essential oil is inhaled, its molecules enter the nasal cavity and stimulate the limbic system of the brain. The limbic system influences emotions and memory and is directly connected to the adrenal glands, pituitary gland, hypothalamus, and other areas that regulate heart rate, blood pressure, stress, memory, hormonal balance, and respiration. Therefore, peppermint aromatherapy is beneficial in reducing nausea and vomiting (Moelyono, 2015).

According to researchers, nausea and vomiting are often overlooked because they are perceived as a normal consequence of early pregnancy, without acknowledging the significant impact they may have on women and their families. For some women, the symptoms persist throughout the day and may not occur upon waking. Nausea and vomiting during pregnancy are usually caused by changes in the endocrine system, especially due to fluctuating levels of hCG. This hormone is most elevated during the first 12–16 weeks of gestation, the period in which nausea and vomiting are most common.

The mechanism of action of peppermint aromatherapy in reducing nausea and vomiting involves interactions between the active compounds in peppermint and the central nervous and digestive systems. Peppermint contains menthol and menthone, which have calming and antispasmodic effects. When inhaled, peppermint's aromatic molecules stimulate olfactory receptors in the nose, which send signals to the brain's limbic system—particularly to areas such as the hypothalamus and amygdala that regulate emotions and nausea responses. This

stimulation induces a calming effect that helps reduce the sensation of nausea.

Additionally, peppermint aroma may influence the nausea center in the medulla oblongata, reducing the vomiting reflex. Menthol's antispasmodic properties also help relax the smooth muscles in the digestive tract, easing nausea often triggered by excessive stomach movement or acid reflux. This combination of neurological and gastrointestinal effects makes peppermint aromatherapy effective in alleviating nausea and vomiting, especially in pregnant women experiencing morning sickness.

Peppermint aromatherapy is commonly administered through diffusers, direct inhalation from bottles, or by placing drops of essential oil on fabric. Although it is generally safe, its use should remain within reasonable limits and not be excessive. It is also recommended to consult a medical professional before beginning this therapy.

CONCLUSION

It was found that the average frequency of nausea and vomiting before the administration of peppermint aromatherapy was 8.90, with a minimum value of 8 and a maximum of 12. After receiving peppermint aromatherapy, the average frequency of nausea and vomiting decreased to 6.55, with a minimum value of 9 and a maximum of 11. These results indicate that peppermint aromatherapy has a significant effect on reducing the frequency of nausea and vomiting in first-trimester pregnant women in the working area of Bantur Health Center, Malang Regency. Based on these findings, several recommendations can be made: (1) For researchers, it is expected that they continue to develop knowledge in applying research methods that are relevant to current phenomena in society; (2) For institutions, this research can serve as an additional reference for knowledge and information that may support future related studies; (3) For the research site, the findings can be used as a reference to improve midwifery care service programs, especially for pregnant women experiencing nausea and vomiting; and (4) For respondents, it is hoped that this study increases awareness of the importance of preventing nausea and vomiting during pregnancy to support the comfort and health of both the mother and the fetus.

REFERENCES

- Amilia, R. (2019). Efektifitas Aromaterapi Pepermint Inhalasi Terhadap Mual Dan Muntah Ibu Hamil Trimester I Di Puskesmas Yogyakarta (Doctoral dissertation, Universitas Aisyiyah Yogyakarta).
- Andriani, A. W., & Purwati, Y. (2017). Pengaruh aromaterapi peppermint terhadap kejadian mual dan muntah pada ibu hamil trimester I di Puskesmas Mlati II Sleman Yogyakarta (Doctoral dissertation, Universitas Aisyiyah Yogyakarta).
- Ariyanti, L., & Sari, R. F. (2020). Pengaruh Pemberian Ekstrak Jahe Dengan Kejadian Mual Dan Muntah Pada Ibu Hamil Trimester I Di Wilayah Kerja Puskesmas Sukarame Bandar Lampung. *Malahayati Nursing Journal*, 2(2), 326-335.
- Cholifah, S., & Nuriyanah, T. E. (2019). Aromaterapi Lemon Menurunkan Mual Muntah pada Ibu Hamil Trimester I. *Jurnal Kebidanan Midwiferia*, 4(1), 36-43.

- Haryanti, R. P., & Barokawati, W. Z. (2020). Hubungan Dukungan Suami Terhadap Kehamilan Dan Paritas (Primigravida) Dengan Kejadian Hyperemesis Di Wilayah Kerja Puskesmas Banjarsari Kota Metro. *Jurnal Ilmu Keperawatan Indonesia*, 1(1).
- Hasanah Hasibuan (2021) Pengaruh Aromaterapi Pepermint Terhadap Penurunan Mual Muntah Pada Ibu Hamil Trimester I
- Halawa, D. F. (2023). Pengaruh Pemberian Aromaterapi Peppermint terhadap Keluhan Mual Muntah pada Ibu Hamil Trimester I di Wilayah Kerja Puskesmas Pondok Tinggi. *Journal on Education*, 6(1), 3730-3745.
- Kartikasari, R. I., Ummah, F., & Taqiiyah, L.B. (2017). Aromaterapi Pappermint untuk Menurunkan Mual dan Muntah pada Ibu Hamil. *Stikes Muhammadiyah Lamongan. Program Studi Kebidanan Stikes Muhammadiyah Lamongan*, 9(02), 4-5.
- Khadijah (2020) Perbedaan Efektivitas Pemberian Aromaterapi Lemon Dan Aromaterapi Peppermint Terhadap Ibu Hamil Dengan Mual Muntah Trimester I Di BPM Nina Marlina Bogor, Jawa Barat, Tahun 2020
- Laksmi, Purwita W, Mansjoer A, Alwi I, Setiati S, et al. (2018). *penyakit-penyakit pada kehamilan : peran seorang internis*. Jakarta : Interna Publishing Latifah, L., & Setiawati, N. (2017). Efektifitas Self Management Module dalam Mengatasi Morning Sickness. *Jurnal Keperawatan Padjadjaran*, 5(1).
- Lestari (2022) Perbedaan Penurunan Nyeri Persalinan Antara Deep Back Massage Dengan Aromaterapi Lavender Dan Kompres Hangat Dengan Musik Klasik Di Rsud Panembahan Senopati
- Lubis, R., Evita, S., & Siregar, Y. (2019). Pemberian Aromaterapi Minyak Peppermint Secara Inhalasi Berpengaruh Terhadap Penurunan Mual Muntah Pada Ibu Hamil Di PMB Linda Silalahi Pancur Batu Tahun 2019. *COLOSTRUM: Jurnal Kebidanan*, 1(1), 1-10.
- Maesaroh, S., & Putri, M. (2019). Inhalasi Aromaterapi Lemon Menurunkan Frekuensi Mual Muntah pada Ibu Hamil. *Jurnal Kesehatan Metro Sai Wawai*, 12(1), 30-35.
- Manuaba, I. B. G., & Kebidanan, I. (2016). *Penyakit Kandungan dan Keluarga Berencana*. Jakarta: EGC.
- Oktavia, M. (2020). *Studi Kasus Pemberian Aromaterapi Lemon Terhadap Ibu Hamil Trimester I Dengan Emesis Gravidarum (Doctoral dissertation, Poltekkes Tanjungkarang)*.
- Oktaviarini (2022) Pemberian Aromaterapi Lemon Dan Peppermint Terhadap Penurunan Intensitas Mual Dan Muntah Pada Ibu Hamil Trimester Pertama: Literature Review
- Putri, M. (2020). Hubungan Paritas dengan Kejadian Hiperemesis Gravidarum pada Ibu Hamil di RSUD Indrasari Rengat. *Jurnal Bidan Komunitas*, 3(1), 30-35.
- Putri, Y., & Situmorang, R. B. (2020). Efektifitas Pemberian Aromaterapi Lemon Terhadap Penurunan Frekuensi Emesis Gravidarum Pada Ibu Hamil Trimester I Di Bpm Indra Iswari, Sst, Skm, Mm Kota Bengkulu. *Journal Of Midwifery*, 8(1), 44-50.
- Raina Lola (2022) The Effect Of Peppermint Aromatherapy Onnausea, Vomiting In First Trimester Pregnant Womenat Bangetayu Health Center

- Rihiantoro, T., Oktavia, C., & Udani, G. (2018). Pengaruh Pemberian Aromaterapi Peppermint Inhalasi terhadap Mual Muntah pada Pasien Post Operasi dengan Anestesi Umum. *Jurnal Ilmiah Keperawatan Sai Betik*, 14(1), 1-10.
- Rusliyana, K. D. (2021). "Pengaruh Aromaterapi Peppermint Terhadap Intensitas Emesis Gravidarum Pada Ibu Hamil Trimester I di Praktik Mandiri Bidan Nikmatin Kabupaten Malang (Doctoral dissertation, ITSK RS dr. Soepraoen).
- Safaah, S., Purnawan, I., & Sari, Y. (2019). Perbedaan Efektivitas Aromaterapi Lavender Dan Aromaterapi Peppermint Terhadap Nyeri Pada Pasien Post Sectio Caesarea Di Rsud Ajibarang. *Journal of Bionursing*, 1(1), 47-65.
- Solehati, T., & Kosasih, C. E. (2015). Konsep dan aplikasi relaksasi dalam keperawatan maternitas. Bandung: PT. Refika Aditama.
- Sugiyono. (2018). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: Alfabeta.
- Sulistyawati, A. (2012). Asuhan kebidanan pada masa kehamilan. Jakarta: Salemba Medika, 76-77.
- Tanjung Rejeki (2019) Pengaruh Yoga Prenatal Terhadap Nyeri Punggung Pada Ibu Hamil Trimester Ii Dan Iii Di Lia Azzahra Mom & Baby Spa Tegal.
- Veri, N., Ramadhani, N. S., & Alchalidi, A. (2020). Efektivitas Peppermint Dan Pomelo Dalam Menurunkan Intensitas Mual Dan Muntah Pada Ibu Hamil. *Jurnal Kebidanan Malahayati*, 6(4), 435-441.
- Vitrianingsih, V., & Khadijah, S. (2019). Efektivitas Aroma Terapi Lemon untuk Menangani Emesis Gravidarum. *Jurnal Keperawatan*, 11(4), 277- 284.
- Wardiyah, A. Rilyani.(2016). Sistem Reproduksi, Jakarta: Salemba Medika.