



## EFFECT OF LEMON AROMATHERAPY IN PREGNANT WOMEN ON EMESIS GRAVIDARUM: A LITERATURE REVIEW

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Literature Review

### ABSTRACT

**Introduction:** Pregnancy is a physiological event for a woman and in the first months of pregnancy, there is a feeling of nausea and vomiting (gravidarum emesis). Emesis complaints occur in 60-80% of primigravida and 40-60% of multigravida. Emesis gravidarum if not treated immediately can develop into hyperemesis gravidarum and can result in reduced fluids in the body, thus endangering the health of the mother and the development of the fetus. The purpose of this study is to examine scientific articles which discuss lemon aromatherapy in pregnant women to reduce emesis gravidarum. **Methods:** The method used in this study is a literature review with data collection techniques using PubMed and Scholar based on inclusion criteria, among others, the intervention in the form of giving lemon aromatherapy, using the quasi-experiment or pre-experimental design or literature review method, using Indonesian and English, published within 10 years (2017-2022). **Keywords** in the literature review used when searching "Pregnancy" AND "Emesis Gravidarum" OR "Lemon Aromatherapy". **Results:** There were 37 journal articles found, and 9 articles that met inclusion criteria were reviewed. The results showed that based on the study conducted, can be seen that has the effect of giving lemon aromatherapy to reduce emesis gravidarum in pregnant women. This will stimulate the release of the beta-endorphin hormone to reduce the production of vomiting stimuli so that complaints of emesis gravidarum can be reduced. **Conclusions:** The provision of lemon aromatherapy given to pregnant women who experience mild to moderate emesis gravidarum can have an effect in the right way and technique. Lemon aromatherapy is given 2-3 drops, dripped onto tissue or cotton for 5-10 minutes, with 3 breaths. The application of lemon aromatherapy is expected to be applied in health and family services as a complementary therapy to reduce emesis gravidarum in pregnant women.

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### INTRODUCTION

Pregnancy is a physiological event for a woman. This process can cause changes such as physical, mental, and social. Pregnancy is usually accompanied by a feeling of discomfort, which is one of the discomforts that pregnant women often experience, especially in the first trimester (Vitrianingsih & Khadijah, 2019). The normal process of pregnancy occurs for 40 weeks, in which pregnancy is generally divided into 3 phases or better known as the trimesters. From week 1 to week 12 during the gestation period, pregnant women experience emesis gravidarum of almost 50-90%, and it is a disorder that is often found in this trimester (Tanjung et al., 2020). The first trimester is often

considered an adjustment period. In the first months of pregnancy, there is a feeling of emesis gravidarum (Dewi & Safitri, 2018). Every pregnant woman will experience a process of adjusting her body to her pregnancy according to the stage of the trimester she is currently living (Sari et al., 2019).

Emesis gravidarum and morning sickness are terms used to describe the condition of pregnant women who experience emesis gravidarum during pregnancy (Fatwa Tasya T, 2018). Emesis gravidarum. Pregnancy modifies the body's system, both hormonally, physically, and psychologically (Widyastuti et al., 2019). Nausea, vomiting, or emesis of gravidarum is a natural symptom and often occurs in the first trimester of pregnancy (Harahap

et al., 2022). Emesis gravidarum usually occurs throughout the day, in the morning, evening, and night (Maheswara et al., 2020). Emesis gravidarum can also cause decreased appetite and changes in electrolyte balance which can result in changes in the body's metabolism. Emesis gravidarum if not treated immediately will develop into hyperemesis gravidarum, namely vomiting continuously with frequency or large amounts (Fatwa Tasya T, 2018). In pregnancy, emesis gravidarum is usually mild and are conditions that can be controlled according to the conditions of each pregnant woman (Safira et al., 2022).

Emesis gravidarum does not have many negative effects on pregnancy and the fetus, but if emesis gravidarum continues it turns into hyperemesis gravidarum which can increase the risk of complications in pregnancy. The incidence rate for emesis of gravidarum is also quite high (Khadijah, 2020). The incidence of emesis gravidarum in pregnancy based on the World Health Organization (WHO) in 2015 said that at least 14% of pregnant women experience emesis gravidarum. According to WHO, pregnant women with hyperemesis gravidarum account for 12.5% of all pregnancies in the world with various incidence rates, starting from 0.3% in Sweden, 0.5% in California, 0.8% in Canada, 10.8% in China, 0.9% in Norway, 2.2% in Pakistan, 1.9% in Turkey, and Indonesia from 1.5-3% (Tanjung et al., 2020). Based on the results of research in Indonesia according to the Ministry of Health of the Republic of Indonesia (KEMENKES RI) in 2015, it was found that pregnant women with emesis gravidarum reached 14.8% of all pregnancies. Complaints of emesis gravidarum occur in 60-80% of primigravidas and 40-60% of multigravidas. Meanwhile, the incidence of emesis gravidarum in East Java Province in 2015 among pregnant women in the first trimester to the second trimester was 10-15% of the total number of pregnant women, namely 182,815 people (Faridah BD, Aprizal Ponda, 2019).

Nausea and vomiting or emesis gravidarum is a physiological condition but if the situation is not immediately resolved it will become a pathological condition (Khadijah et al., 2020). Emesis gravidarum in pregnancy is a condition that occurs as a result of changes in the endocrine system that occur during pregnancy, especially increased levels of Human Chorionic Gonadotropin (HCG) in the blood triggering several complaints that make pregnant women feel uncomfortable during pregnancy, the HCG hormone in pregnancy and is a common complaint occurs almost 50-80% of pregnant women (Natalia et al., 2020). Psychologically, more than 80% affect pregnant women experience emesis gravidarum during pregnancy which has an impact on the quality of life of pregnant women (Tanjung et al., 2020).

Pregnant women must be able to adjust to emesis gravidarum, if pregnant women are unable to adjust, it will trigger bad consequences for the pregnant woman and the fetus. Pregnant women who experience emesis gravidarum need adequate nutritional intake which is useful for the mother's body and for the fetus she contains (Dewi & Safitri, 2018). Dehydration and malnutrition are the most obvious complications. If not treated properly, this situation can result in loss of fluid in the stomach, which can lead to dehydration, metabolic alkalosis, and hypokalemia (Maheswara et al., 2020).

Increased emesis gravidarum or commonly called hyperemesis gravidarum with symptoms of persistent vomiting, causing weakness, pale face, and decreased frequency of urination (Fibriansari et al., 2022). This situation can cause reduced body fluids and blood to become thick (hemoconcentration) thereby slowing blood circulation. Then, the consumption of oxygen and food to the tissues is also reduced. Lack of food and oxygen will cause tissue damage that can endanger the health of the mother and the growth of the fetus (Siti Rofi'ah, Sri Widatiningsih, 2019). According to SDKI (2018), the signs and symptoms of emesis gravidarum experienced are complaining of nausea, complaining of wanting to vomit, having no appetite, feeling sour in the mouth, being pale, swallowing frequently, increased salivation, and tachycardia.

Several categories of interventions can be done to reduce emesis gravidarum, such as positioning to prevent aspiration/vomiting, providing physical support when vomiting (for example, lowering the head or helping to bend down), advocating for more adequate rest, and using nonpharmacological techniques to reduce emesis gravidarum. Managing vomiting (eg biofeedback, hypnosis, relaxation, music therapy, acupressure, and aromatherapy) (SIKI, 2018). Management of emesis gravidarum in pregnancy consists of pharmacology and non-pharmacology or complementary medicine (Tanjung et al., 2020). Pharmacological therapy such as antihistamines, antipyretics, and corticosteroids. Apart from pharmacological treatment, non-pharmacological treatment or complementary therapy is needed by giving lemon aromatherapy (Vitrianingsih & Khadijah, 2019)

Aromatherapy is a therapeutic action using essential oils which is useful for improving the physical and psychological state of the mother so that she becomes better, by smelling the aroma of essential oils. (Maternity *et al.*, 2016). The lemon essential oil comes from the extraction of lemon peel (Citrus Lemon) is a type of aromatherapy that is safe for pregnancy and childbirth, as well as one of the most widely used herbal oils. (Vitrianingsih & Khadijah, 2019). Besides being safe, lemon aromatherapy is an alternative for pregnant women

(WIDIANTO et al., 2022) who experience emesis gravidarum which does not cause side effects during pregnancy (Wati et al., 2021a)

This has been proven in research (Safajou et al., 2020), there were two groups in the study, namely the intervention and control groups. The research was conducted for four days. There was a significant effect on the intensity of emesis gravidarum over time in the intervention group compared to the control group, on the second, third, and fourth days. With a score of  $p < 0.001$ . In subsequent research conducted (Nurulicha & Aisyah, 2019), The study population in the first trimester of pregnant women, with a comparison between the post-test and pretest results, obtained a  $p$ -value = 0.000, which means that there is an effect of giving lemon aromatherapy to first-trimester pregnant women with emesis gravidarum.

Based on the description above, the authors are interested in knowing more about lemon aromatherapy in pregnant women to reduce the emesis of gravidarum. This study's purpose was to review the effectiveness of lemon aromatherapy in pregnant women to reduce the emesis gravidarum.

## MATERIALS AND METHODS

The design of this study used a literature review regarding the effect of lemon aromatherapy on pregnant women on reducing emesis gravidarum using the PRISMA checklist. The data used in this study uses secondary data obtained through previous researchers starting from 2017-2022.

The data source uses an electronic database conducted through PubMed and Scholar. Keywords in the literature review used when searching "Pregnancy" AND "Emesis Gravidarum" OR "Lemon Aromatherapy". The population in this literature review is pregnant women and this research intervention takes lemon aromatherapy to treat emesis gravidarum problems.

## RESULTS

The literature search yielded 37 articles related to keywords. However, after the final selection, 9 relevant articles met the inclusion criteria to be included in the analysis of the research article. These study results were described in the following tables.

Table 1. Summary of lemon aromatherapy to reduce emesis gravidarum in pregnant women

No.	Author, Title	Population	Purpose	Methods	Result
1.	(Safajou et al., 2020). The Effect of Combined Inhalation Aromatherapy with Lemon and Peppermint on Nausea and Vomiting of Pregnancy: A Double-Blind, Randomized Clinical Trial	90 pregnant women suffering from nausea and vomiting from pregnancy	This study aimed to determine the effects of combined inhalation aromatherapy with lemon and peppermint on nausea and vomiting during pregnancy	Randomized clinical trial	The research was carried out for four days. There was a significant time effect on the intensity of nausea and vomiting over time in the intervention group compared to the control group, on the second,

The inclusion criteria of the study are articles must be in full-text, English and Indonesian language, intervention study design, intervention with lemon aromatherapy, pregnant women population with emesis gravidarum, and the outcome of the effect of lemon aromatherapy on decreasing emesis gravidarum. The study designs that will be used in the research used are randomized control trials, pre-experimental, and quasi-experiments.

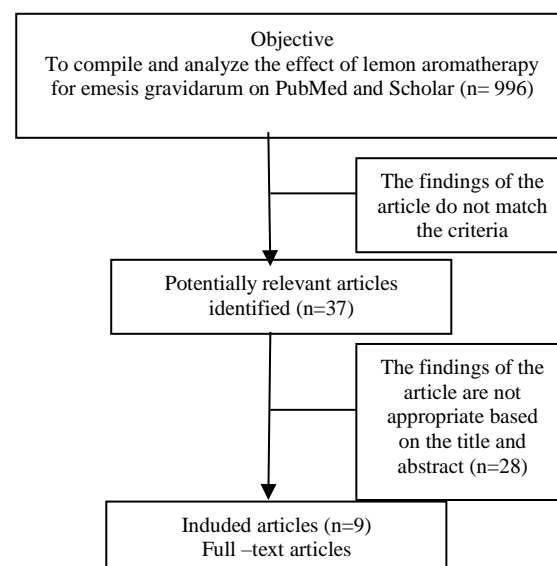


Figure 1. The Flow of literature search

In the initial search stage, there were 996 articles, with results (Pubmed = 761, and Scholar = 235). Articles that did not fit based on the inclusion criteria were 626 articles and 28 articles that did not match the title and abstract. So that there are 9 articles selected for review.

No.	Author, Title	Population	Purpose	Methods	Result
					third, and fourth days. With a score of $p < 0.001$
2.	(Kustriyanti & Putri, 2019). The Effect of Ginger and Lemon Aromatherapy on Nausea and Vomiting among Pregnant Women	90 pregnant women who experience NVP	This study aimed to determine the effect of ginger and lemon aromatherapy on nausea and vomiting among pregnant women.	Randomized controlled trial design.	PUQE total scores before and after intervention in the ginger, lemon, and placebo groups were $7.67 \pm 2.304$ vs. $6.85 \pm 1.575$ , $p = 0.000$ ; $7.16 \pm 1.598$ vs. $5.50 \pm 1.448$ , $P = 0.000$ and $6.70 \pm 1.787$ vs. $5.50 \pm 1.803$ , $P$ value $0.002$ respectively. Ginger and lemon essential oil is equally effective in reducing nausea and vomiting among pregnant women
3.	(Nurulicha, 2020). Effect of Lemon Inhalation on Reducing Emesis Gravidarum in First Trimester Pregnant Women at PMB Lestari Cileungsi, Bogor Regency in 2019	22 First-trimester pregnant women	This research aims to prove the effect of giving lemon aromatherapy inhalation to reducing emesis gravidarum in pregnant women in trimester I at PMB Lestari in 2019.	Quasy-experimental.	There is a decrease and there is an effect after giving lemon aromatherapy inhalation to emesis gravidarum in pregnant women in the first trimester with a significance value of $p = 0.000$
4.	(Wati et al., 2021b). Effects of Lemon Aromatherapy Emesis Gravidarum in First-Trimester Pregnant Women	30 First trimester pregnant women	Knowing the effect of giving lemon aromatherapy on the intensity of emesis gravidarum in first-trimester pregnant women at Paramitra Medika Clinic and RB 1 in 2020.	Quasy-experimental	The results showed an average pretest value of 7.97 and a posttest of 5.7 with an average decrease in the emesis gravidarum scale of 2.3, statistical tests obtained $t$ value of emesis gravidarum = 6.643 and $p = 0.000$
5.	(Sudirman & Agustin, 2021). Lemon Aromatherapy Reduces emesis gravidarum in First-Trimester Pregnant Women	36 pregnant women in the first trimester	Proving the effect of lemon aromatherapy in reducing emesis gravidarum in first-trimester pregnant women.	Pre experimental with One Group Pre-Post Test Design	The results showed that lemon aromatherapy affected reducing emesis gravidarum in first-trimester pregnant women, with a score of $p = 0.0001$ ( $P < \alpha 0.05$ ) then $H_1$ was accepted and $H_0$ was rejected.
6.	(Maesaroh & Putri, 2019). Lemon Aromatherapy Inhalation Reduces Frequency of emesis gravidarum in Pregnant Women	30 pregnant women in the first trimester	Proving the effect of inhalation of lemon aromatherapy on emesis gravidarum in first-trimester pregnant women	Pre-experimental and one-group pretest-posttest	The research showed that the frequency of emesis gravidarum before the intervention was 17.37 times, while after the intervention it decreased to 12.43 times. There is an effect of inhalation of lemon aroma therapy on emesis gravidarum in first-trimester pregnant women ( $p$ -value 0.000).
7.	(Vitrianingsih & Khadjiah, 2019).	20 first-trimester pregnant women	Knowing the effectiveness of lemon aromatherapy to treat emesis gravidarum.	Quasy-experimental	There is an effect of giving lemon aromatherapy to reducing emesis

No.	Author, Title	Population	Purpose	Methods	Result
	Effectiveness of Lemon Aromatherapy to Treat Emesis Gravidarum				gravidarum in pregnant women (p-value = 0.017).
8.	(Dewi & Safitri, 2018). The Effect of Lemon Aromatherapy on Emesis Gravidarum in the Independent Practice of Midwife Wanti Mardiwati, Cimahi City	Pregnant women in the first trimester (one) who experienced emesis gravidarum	to determine the effect of giving lemon aromatherapy on emesis gravidarum.	Quasy-experimental	There is an effect of giving lemon aromatherapy to emesis gravidarum (p-Value = 0.005).
9.	(Carolin et al., 2020). The Effect of Citrus Lemon Aromatherapy on Emesis Gravidarum Patient	30 pregnant mothers in their first trimester experiencing nausea	This research aimed to know the effect of citrus lemon aromatherapy on patients with emesis gravidarum in BPM Titik Apriliana of South Lampung	Quasy-experimental	In addition, the statistical result obtained was p=0.000. It can be concluded that the provision of citrus lemon aromatherapy can affect patients with emesis gravidarum

The result show of the 9 articles, the research used 2 articles with the Randomized Control Trial design and 7 articles with Quasy Experimental Studies design. The population and sample of the 9 articles are pregnant women patients with emesis gravidarum. Respondents in pregnant women who experience emesis gravidarum with a

## DISCUSSION

Respondents in this literature review were pregnant women who experienced emesis gravidarum. In a study conducted by (Carolin et al., 2020) there were 30 pregnant women with the majority age who experienced emesis gravidarum, namely (<20, 20-35, >35) years. The respondents in the study by (Maternity et al., 2016) were 15 pregnant women who experienced emesis gravidarum, with an age range (of <20-25, 26-30, and >30) years. In contrast to research (Kustriyanti & Putri, 2019), they used respondents with an average age of 26.50.

The majority of pregnant women experience emesis gravidarum, namely (<20, 20-35, >35) years. This is in line with the theory of (Tanjung et al., 2020) that there are at-risk pregnant women aged <20 years and >35 years of age where pregnant women experience a disturbance in the process of pregnancy because they are less than 20 years of age physically and mentally prepared. in dealing with immature pregnancy. Meanwhile, at the age of more than 35 years, the physical condition of pregnant women experiences a setback and psychologically it will cause excessive anxiety.

In line with (Wahyuningsih, 2019) emesis gravidarum occurs in pregnant women during the 6th to 11th week of pregnancy and usually disappears when entering the 2nd trimester. Same as in the (Vitrianingsih & Khadijah, 2019) research pregnant women <20 years and 35 years of age is an age that is considered safe and mature in undergoing the process of pregnancy to delivery. At the age of > 20 years, the physical condition, especially in the

majority aged <20 and> 35 years, who get interventions aromatherapy lemon.

There are significant changes related to the decrease in complaints of emesis gravidarum by intervening in the granting of lemon aromatherapy with an average result of p-value 0,000 which means there is an influence of the intervention carried out.

reproductive organs and psychology, is immature to undergo this process. Whereas at the age of <35 years is a condition that has a high risk of congenital abnormalities and complications during pregnancy, childbirth, and the puerperium.

Emesis gravidarum is felt by many pregnant women at a young or old age. Age can affect emesis gravidarum experienced by pregnant women. Because pregnant women with old age can adapt well to their pregnancy. Meanwhile, pregnancy at a young age has not been able to adapt properly and has not been able to overcome emesis gravidarum. A mother's age has a close influence on the development of reproductive organs. This relates to the physical state of the organs in receiving the present and supporting the development of the fetus.

Lemon aromatherapy is a therapeutic action using essential oils derived from the extraction of lemon peel (Citrus Lemon), has the benefit of improving the physical and psychological condition of the mother so that it becomes better, smelling the aroma of essential oils can provide comfort, and refresh peace, and overcoming nausea in pregnant women. Lemon aromatherapy is given to pregnant women who experience mild to moderate emesis gravidarum (Maternity et al., 2016). Aromatherapy Lemon is the most widely used herbal oil and is a safe medicine in pregnancy. In general, the most widely applied lemon aromatherapy is by inhalation technique or by inhalation (Nurulicha, 2020).

The application of lemon aromatherapy can have a good effect if the respondent or pregnant woman uses the correct technique when

administering lemon aromatherapy. Non-pharmacological methods such as giving lemon aromatherapy or herbal oil are safe alternative ways in pregnancy, compared to pharmacological methods such as drugs. Giving lemon aromatherapy in general, the most widely applied is using inhalation techniques or using inhalation. Pregnant women must also be consistent and obedient during the intervention of giving lemon aromatherapy. In giving this lemon aromatherapy can be given in the morning, afternoon, evening, and also at night according to the time of complaint felt by pregnant women. Meanwhile, the purpose of giving lemon aromatherapy is to relax and reduce emesis gravidarum felt by pregnant women.

In another theory carried out (Kustriyanti & Putri, 2019), the decrease in emesis gravidarum was significantly reduced when given lemon aromatherapy for 1 week, before being given an intervention with an average of 10.20 while after being given an intervention it was 4.80. All articles explain emesis gravidarum experienced by pregnant women with mild and moderate emesis gravidarum. Nausea and vomiting occur due to many factors, such as being too young or too old, hormonal or psychosocial, and primigravida because they have not been able to adapt to the hormones that occur during pregnancy. It is known that most of the respondents experienced a decrease in emesis gravidarum after being given lemon aromatherapy because lemon aromatherapy has a fresh aroma, can improve and maintain health and soothe. In addition to non-pharmacological actions such as lemon aromatherapy, pregnant women are also supported by a good diet, how to change their lifestyle, get enough rest, and avoid excess stress.

According to (Vitrianiingsih & Khadijah, 2019), lemon aromatherapy is the most widely used herbal oil and is a safe medicine for pregnancy. The main ingredient is limonene. Lemon aromatherapy, has a comfortable effect and has the benefit of improving physical and psychological conditions so that it becomes better (Maesaroh & Putri, 2019). This finding is in line with (Carolin et al., 2020) study, the aromatherapy used is Lemon essential oil which comes from the extraction of lemon peel (Citrus Lemon), applied by taking 2-3 drops then dripped onto tissue/cotton, and inhaled for 5-10 minute. Lemon aromatherapy is a safe and effective medical alternative to treat pregnant women with mild to moderate emesis gravidarum.

The choice of lemon aromatherapy intervention is a safe, easy, and effective non-pharmacological intervention to reduce emesis gravidarum. The choice of lemon aromatherapy is not only because of the compounds it contains but also because the aroma of lemon has a fresh aroma, so it will be easier for pregnant women to accept because it is a simpler method by inhalation to minimize the occurrence of side effects.

Aromatherapy through the nose is the most effective way because the nose has direct contact with the parts of the brain that stimulate the formation of effects caused by aromatherapy.

## CONCLUSIONS

Lemon aromatherapy has the effect of reducing emesis gravidarum experienced by pregnant women. Lemon aromatherapy is given 2-3 drops, dripped onto tissue or cotton for 5-10 minutes, with 3 breaths. The provision of lemon aromatherapy given to pregnant women who experience mild to moderate emesis gravidarum can have an effect in the right way and technique. The application of lemon aromatherapy is expected to be applied in health and family services as a complementary therapy to reduce emesis gravidarum in pregnant women.

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