

THE EFFECT OF LAVENDER AROMATHERAPY ON REDUCING THE FREQUENCY OF EMESIS GRAVIDARUM IN FIRST TRIMESTER PREGNANT WOMEN

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ABSTRAK PENGARUH AROMATERAPI LAVENDER TERHADAP PENURUNAN FREKUENSI EMESIS GRAVIDARUM PADA IBU HAMIL TRIMESTER PERTAMA

Latar Belakang: Mual dan muntah (*emesis gravidarum*) merupakan salah satu tanda awal dan gejala kehamilan yang umum terjadi pada ibu hamil pada awal kehamilan trimester pertama. *Emesis gravidarum* pada ibu hamil dapat menimbulkan berbagai dampak, salah satunya adalah penurunan nafsu makan yang mengakibatkan janin akan kekurangan nutrisi dan cairan yang dibutuhkan oleh tubuh, hal tersebut dapat menyebabkan berat badan lahir rendah dan terganggunya proses tumbuh kembang.

Tujuan: Tujuan penelitian untuk mengetahui pengaruh pemberian aromaterapi lavender dalam mengurangi frekuensi *emesis gravidarum* pada ibu hamil trimester pertama di Wilayah Kerja Puskesmas Pakuan Aji Lampung Timur Tahun 2023.

Metode: Jenis penelitian kuantitatif dengan rancangan *pre-experimental* dengan desain *one group pretest-posttest*. Penelitian ini dilakukan di Wilayah Kerja Puskesmas Pakuan Aji Lampung Timur, dengan 30 sampel menggunakan *accidental sampling*. Pengumpulan data menggunakan skor *PUQE-24* dan analisis data menggunakan *paired sample T-test*.

Hasil: Nilai rata-rata *emesis gravidarum* sebelum diberikan aromaterapi lavender 11,87 (SD 1,137) dan sesudah pemberian aromaterapi lavender 6,73 (SD 0,980). Sesudah pemberian aromaterapi lavender, responden mengalami penurunan mual muntah dari sedang menjadi ringan. Nilai beda rata-rata sebelum dan sesudah diberikan aromaterapi lavender 5,133 (SD 1,167).

Kesimpulan: Nilai *pvalue* $0,000 < 0,05$ artinya ada pengaruh pemberian aromaterapi lavender dalam mengurangi frekuensi *emesis gravidarum* pada ibu hamil trimester pertama di Wilayah Kerja Puskesmas Pakuan Aji Lampung Timur Tahun 2023.

Saran: Dengan hasil penelitian ini diharapkan dapat memberikan edukasi dan sosialisasi kepada ibu hamil dalam mengatasi *emesis gravidarum* dengan teknik pengobatan non-farmakologi yaitu dengan aromaterapi lavender

Kata kunci: *Emesis Gravidarum*, Aromaterapi Lavender, Kehamilan Trimester Pertama

ABSTRACT

Background: Nausea and vomiting (*emesis gravidarum*), is one of the early signs and symptoms of pregnancy that commonly occurs in pregnant women in the early first trimester of pregnancy. *Emesis gravidarum* in pregnant women can cause various effects, one of which is a decrease in appetite which results. The impact on the fetus is that the fetus will lack the nutrients and fluids needed by the body, this can cause low birth weight, disrupt the process of growth and development.

Purpose: The aim of the study was to determine the effect administration of lavender aromatherapy in reducing the frequency of *emesis gravidarum* in first trimester pregnant women in the Working Area of the Pakuan Aji Community Health Center, East Lampung in 2023.

Methods: This type of quantitative research use *pre-experimental* with the one group *pretest-posttest* design. This research was conducted in the Working Area of the Pakuan Aji Public Health Center, East Lampung, with 30 respondents using *accidental sampling*. Data collection using the *PUQE-24* score and data analysis using *paired sample t-test*.

Results: The mean score of *emesis gravidarum* before being given aromatherapy was 11.87 (SD 1.137) and after was 6.73 (SD 0.980). There was a difference from moderate to mild *emesis gravidarum*. The mean difference before and after administration of lavender aromatherapy was 5.133 (SD 1.167).

Conclusion: The *p-value* of $0.000 < 0.05$ means that there was an effect administration of lavender aromatherapy in reducing the frequency of *emesis gravidarum* in first trimester of pregnant women in the Working Area of the Pakuan Aji Public Health Center, East Lampung in 2023.

Suggestions: By doing this research expected to be able to provide education and outreach to pregnant women in dealing with emesis gravidarum with non-pharmacological treatment techniques, namely lavender aromatherapy.

Keywords: Emesis Gravidarum, Lavender Aromatherapy, First Trimester of Pregnancy

INTRODUCTION

Nausea and vomiting, also known as emesis gravidarum, are one of the early signs of pregnancy for due to the long menstrual cycle, so some pregnant women only realise that they are pregnant after experiencing emesis gravidarum. Emesis gravidarum is one of the signs and symptoms of pregnancy that commonly occurs in pregnant women in the early first trimester of pregnancy. In some cases, it can continue into the second and third trimesters of pregnancy, but that rarely happens (Prawirohardjo, 2016).

Emesis gravidarum in pregnant women can cause various effects, one of which is a decrease in appetite, which results in changes in the electrolyte balance, namely potassium, calcium, and sodium, causing changes in the body's metabolism. The impact on the fetus is that the fetus will lack the nutrients and fluids needed by the body; this can cause low birth weight babies, disrupted growth and development processes, and others (Astuti, 2016).

According to the World Health Organization (WHO), in 2021, the number of cases of emesis gravidarum will reach 42.5% of the number of pregnancies in the world. In the United States and Canada, between 454,000 and 390,000 pregnant women experience nausea and vomiting each year (WHO, 2021).

In Indonesia, there are 50–90% cases of emesis gravidarum experienced by pregnant women. The main factor causing maternal death in Indonesia is indeed not nausea and vomiting (emesis gravidarum), but the incidence of nausea and vomiting is quite large, namely 60–80% in primigravidas and 40–60% in multigravidas. One hundred out of 1000 pregnancies experience more severe symptoms (Kemenkes RI, 2021).

Health Profile of Lampung Province In 2020, the high incidence of emesis gravidarum in pregnant women will be 50–90%, while hyperemesis gravidarum will reach 10–15% in Lampung Province. Of the number of pregnant women, there will be as many as 182,815 in first trimester. Based on the Health Profile of Lampung Province in 2021, the highest emesis gravidarum rate in pregnant women was 50–90%, while hyperemesis gravidarum reaches 10–15% in Lampung Province. Of the number of

pregnant women, there are as many as 186,319 (Dinkes Provinsi Lampung, 2020-2021).

Management of emesis gravidarum during pregnancy can be done pharmacologically. Pharmacological therapy itself is carried out by administering antiemetic drugs, antihistamines, steroids, fluids, and electrolytes, as well as non-pharmacological therapies such as herbal products, acupressure, and acupuncture. A literature survey reported that the most widely used complementary herbal medicines that can reduce nausea and vomiting in pregnant women are ginger, peppermint, raspberries, lemon, and lavender. In providing management for emesis gravidarum, it is better and safer to use non-pharmacology because it minimises the impact that occurs on first trimester pregnant women (Rizky 2018)

Lavender aromatherapy works by affecting the work of the brain, the olfactory nerves, which are stimulated by the presence of certain aromas, are directly related to the hypothalamus. The hypothalamus acts as a relay and regulator, bringing messages to the brain and other parts of the body. The message received is then converted into action in the form of releasing electrochemical compounds that cause relaxation or sedation. Lavender aromatherapy is an aromatherapy that is easy to find and more effective in helping reduce emesis gravidarum because its soft and non-stinging aroma can be applied properly and increases comfort for pregnant women (Rosalinna, 2019).

Lavender has several main components, namely linalool, linalylacetat, 1,8-cineole B-ocimene, terpinene-4-ol, and camphor (Prabowo, 2019). So that it can cause a feeling of comfort in pregnant women who are experiencing nausea and vomiting. Lavender aromatherapy can increase comfort and calm the mind. It has a substance that is useful as a sedative and used as aromatherapy, which can affect the neuroendocrine system, which affects the release of hormones and neurotransmitters. These conditions will increase the comfort of pregnant women who are experiencing nausea and vomiting. Lavender aromatherapy is also easier to apply and obtain (Metasari, 2022).

During the survey at the Pakuan Aji Public Health Centre, East Lampung, the number of pregnancies was 198, with 68 mothers in the first

trimester, 68 women in the second trimester, and 62 women in the third trimester. Of the number of pregnancies in the first trimester, the incidence of pregnancy complications, namely emesis gravidarum was 52 mothers (67.9%). When conducting interviews with 10 pregnant women at first trimester who experienced emesis gravidarum, 7 pregnant women (70%) treated emesis gravidarum by drinking warm water and warm tea, and 3 pregnant women (30%) overcame emesis gravidarum by taking medication. When interviewed, all pregnant women who experienced emesis gravidarum said they had never used non-pharmacological therapy or lavender aromatherapy to reduce emesis gravidarum. Based on this problem, the researcher was interested in conducting research with the title "The Effect of Giving Lavender Aromatherapy on Reducing the Frequency of Emesis Gravidarum in First Trimester Pregnant Women in the Work Area of the Pakuan Aji Public Health Centre, East Lampung, in 2023".

RESEARCH METHODS

This type of research is quantitative research used pre-experimental with a one-group pretest-posttest design. This research was conducted in the working area of the Pakuan Aji Public Health Centre, East Lampung, July 2023. The population in this study was 68 pregnant women entering the first

trimester, with 30 pregnant women entering the first trimester with nausea and vomiting (emesis gravidarum) used accidental sampling. Data analysis using univariate and bivariate with paired sample t-test.

RESEARCH RESULTS

Normality Test

Table 1
Normality Test

<i>Test score</i>	<i>Shapiro-wilk value</i>
<i>Emesis gravidarum (before)</i>	0,070
<i>Emesis gravidarum (after)</i>	0,059

Based on the table above, it can be seen that the Shapiro Wilk value was >0.05. It can be concluded that the data for the two groups in this study were normally distributed.

Univariate Analysis

It can be seen that the mean of emesis gravidarum before administration of lavender aromatherapy to first-trimester pregnant women was 11.87 (SD 1.137; SE 0.208), minimum value was 10, and maximum value was 13.

Table 2
Frequency of Emesis Gravidarum Before Administration of Lavender Aromatherapy to First Trimester Pregnant Women in the Working Area of Pakuan Aji Public Health Centre

Variable	N	Mean	SD	SE	Min	Max
Emesis gravidarum	30	11,87	1,137	0,208	10	13

Table 3
Frequency of Emesis Gravidarum After Administration of Lavender Aromatherapy to First Trimester Pregnant Women in the Working Area of Pakuan Aji Public Health Centre

Variable	N	Mean	SD	SE	Min	Max
Emesis gravidarum	30	6,73	0,980	0,179	5	9

It can be seen that the mean of emesis gravidarum after administration of lavender aromatherapy to first-trimester pregnant women in the working area of the Pakuan Aji Public Health Centre in East Lampung in 2023 was 6.73 (SD 0.980; SE 0.179), minimum value was 5, and maximum value was 9.

The mean of nausea and vomiting before administration of lavender aromatherapy was 11.87 and after administration of lavender aromatherapy was 6.73; the mean difference before and after administration of lavender aromatherapy was 5.133 (SD 1.167; SE 0.213). P-value of 0.000 < 0.05, there is an effect of administration of lavender aromatherapy on reducing the frequency of emesis gravidarum in first trimester pregnant women in the working area of the Pakuan Aji Public Health Centre, East Lampung, in 2023.

Bivariate Analysis

Table 4
The Effect of Administration of Lavender Aromatherapy on Reducing the Frequency of Emesis Gravidarum in First Trimester Pregnant Women in the Working Area of Pakuan Aji Public Health Centre

Variable	Mean	Mean Difference	SD	SE	CI 95%	p-value
Before	11,87					
After	6,73	5,133	1,167	0,213	4,698-5,569	0,000

DISCUSSIONS

The result shown that the mean of emesis gravidarum before administration of lavender aromatherapy to first-trimester pregnant women was 11.87 (SD 1.137; SE 0.208), minimum value was 10, and maximum value was 13. Emesis gravidarum is defined as a tendency to vomit something or a sensation that appears in the oesophagus or epigastric area without being followed by vomiting, while vomiting is defined as the expulsion of stomach contents through the mouth and is generally accompanied by a strong urge that occurs during pregnancy (Pratiwi, 2022).

Emesis gravidarum can be reduced by administration of lavender aromatherapy. The mechanism for reducing anxiety and stress by inhaling lavender aromatherapy is through the smell of the active volatile compounds and linalool contained in lavender aromatherapy, which stimulates the parts of the brain whose stimulate the formation of effects caused by aromatherapy. When aromatherapy is inhaled, the volatile molecules of the oil are carried by the air to the 'roof' of the nose, where delicate cilia emerge from the receptor cells. When the molecules attach to the hairs, an electrochemical message will be transmitted through the ball and olfactory system into the limbic system. This will stimulate memory and emotional responses (Zuraida and Sari, 2018).

Research conducted by Pratiwi (2018) at Eria Bunda Pekanbaru Mother and Child Hospital, study showed that there was a significant decrease in the reduction of nausea and vomiting in the intervention group after administration of aromatherapy (p-value <0.05). The results of this study recommend that aromatherapy be used as a nursing intervention to reduce nausea and vomiting in patients treated with emesis gravidarum (Jaelani, 2017).

According to the assumptions of researchers, the problem of nausea and vomiting in pregnancy is something that often occurs, even 85% of pregnant women must experience nausea and vomiting problems. Therefore, nausea and vomiting in pregnancy must be handled properly and correctly to reduce the incidence of malnutrition in pregnancy and increase the growth and development of the

fetus. For this reason, the researchers intended to provide lavender aromatherapy to reduce the problem of nausea and vomiting in pregnancy. Lavender aromatherapy works by affecting the work of the brain's olfactory nerves, which are stimulated by the presence of certain aromas and are directly related to the hypothalamus..

The results of the research that has been carried out are reinforcing factors or aggravating the occurrence of emesis gravidarum in working mothers due to the condition of pregnancy in working women. It is not recommended if the physical workload is quite heavy, as well as if the effects of stress due to workload are also not recommended. Pregnancy is a physiological event, with hormones playing a role in the development of the baby and the mother. The hormones that play a role are oestrogen and progesterone. The release of this hormone is regulated by the hypothalamus in the human brain. If the burden on the mother's mind during pregnancy is heavy enough, it will affect the balance of these hormone expenditures. Whereas at the age of the mother, emesis gravidarum occurs at the age of under 20 years and above 35 years due to psychological factors. The results of this study indicate that none of the respondents are under 20 years old, but in this case, the respondent who is experiencing her first pregnancy will experience nausea and vomiting, so in this case, the mother lacks experience in dealing with this problem.

Whereas in parity mothers, emesis can cause concern for primigravidas and multigravidas. Concerns experienced by primigravidas indicate a lack of knowledge, information, and communication between women and carers, whereas multigravidas already have experience, information, and knowledge about the symptoms of emesis gravidarum, so they are able to overcome the symptoms.

The mean score of emesis gravidarum after administration of lavender aromatherapy to first trimester pregnant women in the working area of the Pakuan Aji Public Health Centre, East Lampung, in 2023 was 6.73 (SD 0.980; SE 0.179), minimum value was 5, and maximum value was 9. Research conducted by Zuraida and Sari found that lavender

aromatherapy was effective in reducing nausea and vomiting in first trimester pregnant women. Lavender aromatherapy can provide a comfortable effect, increase body relaxation, and reduce anxiety levels. Before the intervention, it was known that the intensity of nausea and vomiting was 4-5 times a day. After 7 days of administration of aromatherapy, the intensity of nausea and vomiting was only limited to morning sickness.

Sugita's research (2018), found that there was a significant difference between before and after administration of ginger aromatherapy (p -value 0.000). Lavender aromatherapy was more effective against nausea and vomiting (8.50) compared to the ginger aromatherapy group (6.50), so it can be concluded that lavender aromatherapy was more effective than ginger aromatherapy.

According to the assumptions of researchers, lavender aromatherapy works by affecting the work of the brain, the olfactory nerves, which are stimulated by the presence of certain aromas, are directly related to the hypothalamus. The hypothalamus is the part of the brain that controls the glandular system, regulates hormones, and influences growth and other bodily activities such as heart rate, respiratory function, digestion, body temperature, and hunger. In addition, when scented oils are inhaled, nerve cells are stimulated, which affects the performance of the limbic system. The limbic system is related to areas of the brain related to memory function, blood circulation, and the glandular system.

The results shown that a decrease in nausea and vomiting after administration of lavender aromatherapy. Respondents said that after this therapy, it increases the feeling of relaxation in the body, reduces nausea and vomiting, and increases appetite, so that the need for nutrients in the body in pregnant women increases and reduces the risk of malnutrition in early pregnancy. According to researchers, lavender aromatherapy can provide a comfortable effect and reduce levels of anxiety and stress, and this condition can reduce the intensity of emesis gravidarum in first trimester pregnant women, where psychological problems are a condition that exacerbates nausea and vomiting in pregnant women.

The results of research conducted after administration of lavender aromatherapy to overcome the problem of emesis gravidarum in pregnant women can be influenced by several characteristics of the respondents, such as education, occupation, and age of the mother, where these characteristics have a relationship with a decrease of emesis gravidarum. In mothers under 30 years of age, the problem of nausea and vomiting still

often occurs because mothers have just had children and the hCG hormone is still high, while in mothers' education, education can affect the reduction of emesis gravidarum because mothers only do this technique during the research and outside of mother's research did not do so that emesis gravidarum is still on a high scale, whereas in working mothers, the problem of nausea and vomiting still occurs frequently because mothers often leave the house and consume food that is not good for pregnant women.

According to the assumptions of researchers, a healthy work environment and a light physical and psychological workload will reduce the incidence of excessive or abnormal emesis. A healthy work environment can be created with the cooperation of all employees or people in the environment and supported by clear policies and regulations from the managerial institution or office. In addition, the workload, both physically and psychologically, is also a common concern. Currently, there are government regulations governing women's work in situations of pregnancy, childbirth, and breastfeeding. If this is applied properly in the work environment, it is very beneficial for pregnant women.

The mean of nausea and vomiting before administration of lavender aromatherapy was 11.87 and after administration of lavender aromatherapy was 6.73; the mean difference before and after administration of lavender aromatherapy was 5.133 (SD 1.167; SE 0.213). P -value of $0.000 < 0.05$, there is an effect of administration of lavender aromatherapy on reducing the frequency of emesis gravidarum in first trimester pregnant women in the working area of the Pakuan Aji Public Health Centre, East Lampung, in 2023.

Management of emesis gravidarum during pregnancy can be done pharmacologically. Pharmacological therapy itself is carried out by administering antiemetic drugs, antihistamines, steroids, fluids, and electrolytes, as well as non-pharmacological therapies such as herbal products, acupressure, and acupuncture. A literature survey reported that the most widely used complementary herbal medicines that can reduce nausea and vomiting in pregnant women are ginger, peppermint, raspberries, lemon, and lavender. In providing management for emesis gravidarum, it is better and safer to use non-pharmacology because it minimises the impact that occurs on first trimester pregnant women (Rizky, 2018).

Research by Astriana et al. (2015) conducted on pregnant women at South Lampung in 2015 showed that lemon aromatherapy decrease a nausea, so that for pregnant women who experience

nausea, they can apply herbal treatment with aromatherapy.

A similar study was conducted by Rosalina (2019) regarding the effect of administration of lavender aromatherapy to reduce nausea and vomiting in first trimester pregnant women in the Jambu Kulon Public Health Centre, showed that there was an effect of lavender aromatherapy on reducing nausea and vomiting in first trimester pregnant women (p-value 0.000).

Research by Hernawati (2022) showed that there was a significant decrease in nausea and vomiting in the intervention group after administration of lavender aromatherapy. Lavender aromatherapy can be used to reduce nausea and vomiting in pregnant women as an effective non-pharmacological therapy.

This study showed that there is a difference in reducing nausea and vomiting in pregnant women after administration of lavender aromatherapy. Lavender aromatherapy can increase comfort and calm the mind, has substances that are useful as sedatives, which can affect the neuroendocrine system, which influences the release of hormones and neurotransmitters. The difference in reducing nausea and vomiting can also be influenced by the habit of the mother in consuming foods that can cause or increase acid in the stomach, which can trigger excessive nausea and vomiting.

According to the researchers' assumption, administration of lavender aromatherapy to pregnant women with nausea and vomiting can help reduce the frequency of emesis gravidarum in pregnancy. According to Jaelani (2017), the main component in lavender can increase the feeling of comfort and suppress the hCG hormone, so that it can reduce nausea and vomiting. Linalool is a component of lavender that has a sedative effect and is commonly used as a therapeutic aroma that affects the body's neuroendocrine system, which affects the release of hormones and neurotransmitters. This situation will increase the feeling of comfort for pregnant women who experience nausea and vomiting.

This study showed that there was a relationship between the characteristics and the administration of lavender aromatherapy where the mother's education influences this technique, that is, the mother's education says she still does not understand and has never done this technique to reduce emesis gravidarum. This is reinforced by the lack of information for mothers about treatment to overcome the problem of emesis gravidarum.

According to the researchers' assumptions, age, education, occupation, gestational age, and parity affect the severity of nausea and vomiting in pregnancy, and mothers with low education do not

understand how to deal with nausea and vomiting during pregnancy. They often assume that nausea and vomiting are normal for pregnant women to experience in their first trimester, so many pregnant women still lack information about this problem. Excessive nausea and vomiting in pregnancy can cause nutritional deficiencies in pregnant women, where the food and nutrients that enter have not been absorbed by the body but have been excreted again by the body.

Emesis gravidarum occurs at ages under 20 and above 35 due to psychological factors. Psychological problems may predict that some women will experience nausea and vomiting in pregnancy. Pregnancy that is not planned, uncomfortable, unwanted, financial burden, will cause emotional pain, ambivalence, and conflict. So it can be concluded that pregnancy at the age of 20–35 is the best age to prevent abnormal emesis gravidarum. However, if pregnancy occurs between the ages of 20 and 35, it is expected that pregnant women have sufficient knowledge so they can understand how to deal with emesis and a stable psychological condition with family support and assistance from health workers so that the psychological changes of the mother are not extreme and hormone expenditure can be balanced, which ultimately does not trigger excessive emesis.

This study showed that there was a relationship work and emesis gravidarum because a trip to work that may be rushed in the morning without sufficient time for breakfast can cause nausea and vomiting. Depending on the nature of a woman's work, smells, chemicals, or the environment can add to a woman's nausea and cause vomit. Smoking has been shown to worsen symptoms of nausea and vomiting, but it is unclear whether this is due to olfactory effects or nutritional effects, or whether assumptions can be made about an association between habitual practice and psychoemotional distress.

Most primigravidas have not been able to adapt to the hormones estrogen and gonadotropin chorionic, so emesis gravidarum is more common. Whereas in multigravidas able to adapt to the hormones estrogen and chorionic gonadotropin because they already have experience with pregnancy and childbirth. Primigravidas show a lack of knowledge, information, and poor communication between women and their carers, which also affects women's perceptions of the symptoms of nausea and vomiting. Whereas in multigravida already have experience, information, and knowledge about the symptoms of emesis gravidarum, so they are able to overcome the symptoms.

The gestational age factor can affect the occurrence of emesis gravidarum, but at gestational age, it does not affect how badly the mother experiences emesis gravidarum problems. The increase in emesis gravidarum in pregnant women is due to an increase in the hCG hormone and an increase in hormones in the body.

This study showed that there is a difference in the decrease in emesis gravidarum among pregnant women. Because the respondents who experience a decrease in the scale are more likely to have several contributing factors, namely mothers who are able to control the problem of emesis gravidarum by consuming foods that do not aggravate emesis gravidarum or food stinging. Another factor that causes differences in decline was the level of knowledge about dealing with the problem of emesis gravidarum.

CONCLUSION

The results of this study based on the characteristics of the age of the most pregnant women, namely the age of 22–30 years, were 20 respondents (66.6%), junior high school, as many as 13 respondents (43.3%), housewives as many as 15 respondents (50.0%), gestational age 10 weeks as many as 5 respondents (16.7%), primigravida as many as 24 respondents (80.0%). The mean score of emesis gravidarum before administration of lavender aromatherapy to first trimester pregnant women was 11.87 (SD 1.137). The mean score of emesis gravidarum after administration of lavender aromatherapy to first trimester pregnant women was 6.73 (SD 0.980). There was an effect of administration of lavender aromatherapy on reducing the frequency of emesis gravidarum in first trimester pregnant women in the working area of the Pakuan Aji Public Health Centre, East Lampung, in 2023.

SUGGESTION

It is suggested that future researchers can complete further research by thoroughly observing the confounding factors that affect the frequency of emesis gravidarum in the first trimester of pregnancy.

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