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The Effect of Lavender Aromatherapy in Reducing *Emesis Gravidarum* in First Trimester Pregnant Women in The Working Area of Maracang Health Center, Purwakarta Regency

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KEYWORDS
Pregnancy, *Emesis Gravidarum*, Lavender Aromatherapy

ABSTRACT
Pregnancy induces various physiological changes, including *Emesis Gravidarum* (nausea and vomiting), which predominantly affects first-trimester women and significantly reduces comfort. This research aimed to analyze the effect of lavender aromatherapy on reducing *Emesis Gravidarum* in first-trimester pregnant women in the working area of Babelan 1 Health Center, Bekasi City, in 2023. A pre-experimental, one-group pretest-posttest design was employed, with purposive sampling selecting 38 respondents. Data were collected using the PUQE-24 checklist and analyzed using the Wilcoxon and Chi-Square tests. The Wilcoxon test results indicated a significant reduction in *Emesis Gravidarum* after the lavender aromatherapy intervention (p-value = 0.000). Chi-Square analysis revealed that only parity was significantly associated with the incidence of *Emesis Gravidarum* (p-value = 0.010), while maternal age and occupation showed no significant relationship. The study concludes that lavender aromatherapy effectively reduces *Emesis Gravidarum* in first-trimester pregnant women. These findings support the integration of lavender aromatherapy as a non-pharmacological intervention in maternal healthcare services to improve the well-being of pregnant women experiencing nausea and vomiting.

INTRODUCTION

According to the World Health Organization (WHO), in 2015, 12.5% of pregnancies worldwide experienced *Emesis Gravidarum*. In the United States and Canada, approximately 400,000 and 350,000 pregnant women, respectively, experience nausea and vomiting each year. This condition is prevalent in Western countries and urban populations (Amran et al., 2021; Bahrah & Wigunarti, 2022; Febriyeni & Delfina, 2021; Kurnia, 2019). In Indonesia, 50–90% of pregnant women experience *Emesis Gravidarum*. The primary cause of maternal death in Indonesia is not nausea and vomiting, but the incidence remains significant, with 60–80% in primigravida (first-time pregnant women) and 40–60% in multigravida. One in every 1,000 pregnancies presents with severe symptoms (Akbarini et al., 2022; Puspitasari et al., 2023; Rahayu & Sugita, 2018; Romauli, 2023; Rosalinna, 2019).

If *Emesis Gravidarum* persists and is not properly treated, it can lead to severe vomiting, known as Hyper*Emesis Gravidarum*, which has detrimental effects on the health of both the

mother and fetus. This condition can slow down blood circulation, reducing the supply of oxygen and nutrients to the tissues, which could lead to tissue damage, jeopardizing the health of both mother and fetus (Sari, 2018).

Management of *Emesis Gravidarum* during pregnancy can be done through both pharmacological and non-pharmacological methods. Pharmacological treatments include Vitamin B6, antihistamines, phenothiazines, metoclopramide, ondansetron, and corticosteroids. Non-pharmacological methods include advising the mother to eat frequently in small portions, acupuncture, and aromatherapy (Yuliana, 2019).

Aromatherapy is an alternative therapy that uses essential plant extracts in the form of volatile liquid plant substances. Aromatherapy can provide various effects for the user, such as relaxation and freshness, and it can also help pregnant women manage nausea and vomiting. One such aromatherapy used to alleviate nausea and vomiting is lavender aromatherapy (Rahayu RD & Sugita, 2018).

Lavender aromatherapy works by influencing brain function through the olfactory nerves, which are stimulated by certain aromas and directly connected to the hypothalamus. The hypothalamus plays a role in regulating bodily functions and relaying messages to other parts of the body. The messages received are then translated into actions that release electrochemical compounds that induce relaxation or sedation (Setryaningsih in Rosalinna, 2019).

Based on data from the West Java Health Office between 2019 and 2022, the number of pregnant women visiting health centers increased by 24.74%. In 2023, a survey conducted at Puskesmas Babelan 1 in Bekasi found that 61.8% of pregnant women experienced *Emesis Gravidarum*, while at PMB Nur Aisyah, Amd.Keb, 20.6% of pregnant women experienced the same condition, and 17.6% at PMB Risma Siterpu, Amd.Keb. The data from this survey suggest that the highest incidence of *Emesis Gravidarum* in 2023 was found at Puskesmas Babelan 1 Bekasi, where 61.8% of pregnant women in their first trimester reported experiencing it.

Previous research has demonstrated the effectiveness of aromatherapy in reducing nausea and vomiting during pregnancy. Studies such as those by Rahayu (2018), Punca (2015), and Rosalina (2019) have shown significant reductions in *Emesis Gravidarum* symptoms following lavender aromatherapy interventions. Additionally, Zuraida (2018) reported a decrease in nausea and vomiting intensity after aromatherapy application. However, most of these studies were conducted in different geographical and cultural contexts, and few have focused specifically on the population characteristics of Purwakarta Regency.

The novelty of this research lies in its specific focus on the demographic and socio-economic characteristics of pregnant women in the working area of Puskesmas Maracang, Purwakarta Regency. This study not only examines the efficacy of lavender aromatherapy but also analyzes how factors such as maternal age, occupation, and parity influence the incidence and severity of *Emesis Gravidarum* within this unique population. Furthermore, it provides localized evidence that can be directly applied to improve maternal health services in similar rural or semi-rural Indonesian settings.

Based on the background, the researcher is concerned about the high number of first-trimester pregnant women experiencing *Emesis Gravidarum* (61.8%) who are unaware of how to manage nausea and vomiting. The research question is: “Does the application of lavender

aromatherapy have an effect in reducing *Emesis Gravidarum* in first-trimester pregnant women in the work area of Puskesmas Maracang, Purwakarta Regency?"

This study aims to determine the effect of lavender aromatherapy in reducing *Emesis Gravidarum* among first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta Regency. Specifically, the research seeks to: (a) identify the characteristics of respondents based on maternal age, occupation, and parity; (b) measure the average *Emesis Gravidarum* score before and after the administration of lavender aromatherapy; (c) analyze the effect of lavender aromatherapy on *Emesis Gravidarum*; and (d) examine the relationship between external variables (maternal age, occupation, and parity) and the occurrence of *Emesis Gravidarum*.

The findings of this study are expected to provide several benefits. For researchers, this study will enhance knowledge and experience regarding the application of lavender aromatherapy as a non-pharmacological intervention for *Emesis Gravidarum*. For health facilities such as Puskesmas and Independent Midwifery Practices (PMB), the results can serve as evidence-based input for integrating lavender aromatherapy into standard care for first-trimester pregnant women. For the community, this research offers a safe, accessible, and non-pharmacological treatment option to alleviate pregnancy-related nausea and vomiting. Lastly, for educational institutions, this study contributes to the broader understanding of complementary therapies and enriches the academic discourse on holistic maternal care.

METHOD

This study employed a pre-experimental design with a one-group pretest-posttest approach. The research was conducted in the Working Area of the Maracang Community Health Center, Purwakarta Regency, from September to December 2024. The study population consisted of all first-trimester pregnant women experiencing *Emesis Gravidarum* in the Maracang Health Center's working area. The sampling technique used was purposive sampling, with a total sample size of 38 respondents who met the inclusion criteria: first-trimester pregnant women experiencing *Emesis Gravidarum* without comorbidities, having a normal fetal heart rate (FHR) of 120-160 beats per minute, and willingness to participate as respondents. Exclusion criteria included not residing in the working area of the Maracang Health Center and not experiencing *Emesis Gravidarum* complaints.

Data collection was carried out through secondary data from health center records and primary data using respondent characteristic questionnaires and the PUQE-24 checklist sheet. The research process consisted of three stages: the initial stage (preparation and pretest), the intervention stage (administration of lavender aromatherapy for 7 consecutive days), and the final stage (posttest). The research instruments used had undergone validity and reliability testing.

The collected data were processed through the stages of editing, coding, processing, and cleaning. Data analysis included univariate analysis to describe respondent characteristics and the average *Emesis Gravidarum* score, as well as bivariate analysis using the Wilcoxon test to examine the effect of the intervention and the Chi-Square test to analyze the relationship between external variables and the incidence of *Emesis Gravidarum*. The entire research process adhered to ethical research principles, including ethical approval and informed consent.

RESULTS AND DISCUSSIONS

Univariate Analysis

Univariate analysis aims to examine the characteristics of the respondents and the average *Emesis Gravidarum* score in first-trimester pregnant women before and after the intervention. Among the 38 first-trimester pregnant women who experienced *Emesis Gravidarum* in the working area of Puskesmas Maracang, Purwakarta Regency, nearly all respondents (92.1%) were aged 20-35 years, the majority (57.9%) were unemployed, and most (57.9%) had a primigravida pregnancy.

The average *Emesis Gravidarum* score before the lavender aromatherapy intervention was 8.61, and after the intervention, the average score decreased to 4.24, with a score difference of 4.37.

Bivariate Analysis

Bivariate analysis was conducted to determine the effect of *Emesis Gravidarum* before and after the lavender aromatherapy intervention and to assess the relationship with external variables (age, occupation, and parity). Based on the normality test using Shapiro-Wilk, the p-value was <0.05, indicating that the data distribution is not normal. Therefore, the Wilcoxon test was used for bivariate analysis. The p-value obtained was 0.000 (<0.05), meaning that Ha is accepted, indicating a significant effect of lavender aromatherapy in reducing *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta Regency.

For maternal age, among 38 respondents, those in the at-risk age group (<20 years and >35 years) had 1 respondent (33.3%) with moderate nausea and vomiting, 1 respondent (33.3%) with mild nausea and vomiting, and 1 respondent (33.3%) with no nausea or vomiting. In the non-risk age group (20-35 years), a small portion of respondents (8.6%) experienced moderate nausea and vomiting, the majority (60.0%) experienced mild nausea and vomiting, and nearly a third (31.4%) had no nausea or vomiting. The Chi-Square test yielded a p-value of 0.377 (>0.05), indicating that Ho is accepted, meaning there is no significant relationship between maternal age and *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta.

The results also showed that among the 38 respondents' occupations, 2 respondents (12.5%) who worked experienced moderate nausea and vomiting, 10 respondents (62.5%) experienced mild nausea and vomiting, and 4 respondents (25.0%) had no nausea or vomiting. Among the 38 respondents who were unemployed, 2 respondents (9.1%) experienced moderate nausea and vomiting, 12 respondents (54.5%) experienced mild nausea and vomiting, and 8 respondents (36.4%) had no nausea or vomiting. The Chi-Square test yielded a p-value of 0.747 (>0.05), indicating that Ho is accepted, meaning there is no significant relationship between occupation and *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta.

For parity, the results showed that among primigravida respondents, 4 (18.2%) experienced moderate nausea and vomiting, 15 (68.2%) experienced mild nausea and vomiting, and 3 (13.6%) had no nausea or vomiting. In the multigravida group, none of the respondents (0.0%) experienced moderate nausea and vomiting, 7 respondents (43.8%) experienced mild nausea and vomiting, and 9 respondents (56.3%) had no nausea or vomiting. The Chi-Square test yielded a p-value of 0.010 (<0.05), indicating that Ho is rejected, meaning there is a significant relationship between parity and *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta.

Univariate Analysis

The results of the univariate analysis in this study reveal the characteristics of the respondents as follows. Based on Table 5.1, the analysis shows that nearly all first-trimester pregnant women who experienced *Emesis Gravidarum* were aged 20-35 years, with 35 respondents (92.1%). This indicates that most respondents fall within the healthy and safe reproductive age range, which is considered non-risky. Women in this age group can generally undergo pregnancy, childbirth, and postpartum optimally, ensuring both mother and baby's health (Rose & Neil, 2009 in Rosalinna, 2019).

Nausea and vomiting are commonly observed in women under 20 years of age due to insufficient physical, mental, and social maturity. This can cause physical discomfort, emotional confusion, and challenges in child-rearing. In contrast, nausea and vomiting in women over 35 years are often caused by psychological factors, such as being unprepared for or not wanting the pregnancy, leading to stress (Rudiyanti & Rosmadewi, 2019).

Age is frequently linked to mental preparedness for motherhood, a quality often lacking in younger mothers. At age 35 and above, reproductive organs and physiological functions decline compared to women aged 20-35 years, making pregnancies in these age groups riskier (Rudiyanti N, 2019). Therefore, pregnancies before the age of 20 and after 35 are not recommended.

The study's analysis of maternal age in relation to *Emesis Gravidarum* in the working area of Puskesmas Maracang, Purwakarta, concludes that the majority of *Emesis Gravidarum* cases occur in women aged 20-35 years, the safe reproductive age. While fewer cases occurred in women aged under 20 or over 35, it is important to note that *Emesis Gravidarum* can also occur in the 20-35 age range, which is considered safe.

The results indicate that the majority of respondents who did not work experienced *Emesis Gravidarum* more frequently, with 22 respondents (57.9%), compared to 16 respondents (42.1%) who were employed. Occupation is an activity done to earn a livelihood, and when mothers are employed and their time is consumed by work, it can lead to neglect of their health. This can negatively impact pregnancy, such as a lack of attention to the pregnancy and accepting *Emesis Gravidarum* as normal. Conversely, stay-at-home mothers tend to have more time to monitor their pregnancy and seek information, such as recognizing the signs of *Emesis Gravidarum* (Elsa & Pertiwi, 2016).

The findings also show that most primigravida (first-time pregnant women) experience *Emesis Gravidarum*, with 22 respondents (57.9%), compared to 16 respondents (42.1%) in multigravida pregnancies. Primigravida pregnancies are more likely to experience *Emesis Gravidarum* due to hormonal changes. In first-time pregnancies, hormone levels rise more significantly than in multigravida pregnancies, where women are more accustomed to the hormonal changes due to previous pregnancy and birth experiences (Suryaningrum KC, 2017).

Based on Table 5.2, the study found that the average *Emesis Gravidarum* score in first-trimester pregnant women before lavender aromatherapy was 8.61. After the lavender aromatherapy intervention, the score decreased to 4.24, indicating a significant reduction in *Emesis Gravidarum* in the working area of Puskesmas Maracang, Purwakarta. This finding is supported by Zuraida's study (2018), which reported a decrease in nausea and vomiting intensity, with a pre-intervention score of 11.42, dropping to 8.14 post-intervention. The difference in the average intensity of nausea and vomiting between pre- and post-intervention was 3.28, with a p-value of 0.001, indicating a significant reduction after the lavender aromatherapy intervention.

Bivariate Analysis

Based on Table 5.4, to assess the effect of lavender aromatherapy on the level of *Emesis Gravidarum*, the researcher used the Wilcoxon statistical test, as the data distribution was non-normal. The results showed that the average pre-intervention score was 8.61, and the post-intervention average score was 4.24, with a difference of 4.37. The p-value obtained was 0.000, which is less than 0.05, confirming that the hypothesis is accepted.

The categories of nausea and vomiting experienced by the respondents varied, ranging from mild to moderate. This is supported by the theory of Niebyl and Briggs (2017), which suggests that nausea and vomiting are influenced by psychological factors, such as unwanted pregnancy, anger, guilt, anxiety, and fear, which can worsen the severity of nausea and vomiting. After receiving lavender aromatherapy, the respondents reported feeling calm and comfortable. They also mentioned being able to smell food aromas that previously caused nausea and the urge to vomit. Several respondents indicated a significant reduction in the frequency of nausea and vomiting throughout the day. These findings indicate that lavender aromatherapy effectively reduced the frequency of nausea and vomiting among the respondents.

Lavender aromatherapy helps provide comfort, reduce anxiety and stress, and decrease the intensity of nausea and vomiting in first-trimester pregnant women. Psychological factors such as stress can exacerbate nausea and vomiting during pregnancy. The mechanism by which lavender aromatherapy works to alleviate stress and anxiety is through the inhalation of essential compounds, such as linalool, which stimulate parts of the brain that regulate emotional responses. When inhaled, volatile molecules from the essential oils travel through the nose and interact with sensory receptors, sending electrochemical signals to the limbic system, which regulates emotions and memories.

These results align with research by Rahayu RD (2018), where a p-value of 0.000 was found, indicating a significant difference post-intervention. Similar findings were reported by Punca (2015), with a p-value of 0.000, indicating the effectiveness of lavender aromatherapy in reducing nausea and vomiting in pregnant women. This study is also in agreement with Rosalina (2019), who found a significant effect of lavender aromatherapy on reducing nausea and vomiting in first-trimester pregnant women with a p-value of <0.001. Furthermore, a study by Zuraida et al. (2017) on the effectiveness of peppermint essential oil and lavender aromatherapy also showed a reduction in nausea and vomiting intensity, with a p-value of 0.001. The key similarity in this study is the use of lavender aromatherapy, although the study settings, population, and time frames varied.

Based on Table 5.5, the results showed that most respondents were in the non-risk age category (92.1%), meaning they were between 20-35 years of age, considered the healthy reproductive age. However, 7.9% of respondents were in the at-risk age category, under 20 years and over 35 years. Specifically, 3 respondents were under 20 years old, and 2 respondents were 40 and 41 years old. Age is often linked to the readiness of women to become mothers, as younger women typically lack mental and emotional maturity. Women over 35 experience declines in reproductive organs and physiological functions compared to women in the 20-35 age range, which can lead to complications during pregnancy (Rudiyanti N, 2019).

The Chi-Square test results showed a p-value of 0.377, indicating no significant relationship between maternal age and the incidence of *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Babelan 1, Bekasi. This result aligns with previous studies by Rinata and Ardilla (2017), which concluded that age is not a dominant factor in the occurrence of *Emesis Gravidarum*. Similarly, research by Suryaningrum KC and

Titisari et al. (2017) found no significant relationship between maternal age and *Emesis Gravidarum*, with a p-value of 0.225.

Regarding employment status, the study found that 42.1% of respondents worked, while 57.9% did not. Employment can affect pregnancy health, as work-related stress, lack of time for self-care, and exposure to triggers like strong smells can worsen nausea and vomiting. In contrast, stay-at-home mothers have more time to monitor their health and pregnancy, which may reduce the severity of *Emesis Gravidarum* (Elsa & Pertiwi, 2016). This study also found that stay-at-home mothers tend to experience more nausea and vomiting, possibly due to stress and emotional distress (Tiran, 2009 in Sarwinanti, 2019).

Using the Chi-Square test, a p-value of 0.747 was obtained, indicating no significant relationship between employment and *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Babelan 1, Bekasi. This result contradicts Rudiyanti N's (2019) findings, where a p-value of 0.001 indicated a significant relationship between employment and *Emesis Gravidarum*.

In terms of parity, the study showed that 57.9% of respondents were primigravida (first-time pregnancies) and 42.1% were multigravida. Primigravida pregnancies often experience more severe *Emesis Gravidarum* due to hormonal changes, as first-time pregnancies involve a more significant hormonal shift. Multigravida women are more adapted to these hormonal changes due to their previous pregnancy and childbirth experiences (Suryaningrum KC, 2017).

The Chi-Square test results for parity showed a p-value of 0.010, which is less than 0.05, indicating a significant relationship between parity and *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta. This finding is consistent with research by Marianti Y et al. (2016), which also showed a significant relationship between parity and the occurrence of *Emesis Gravidarum*, with a p-value of 0.028.

CONCLUSION

In conclusion, this study demonstrates that lavender aromatherapy significantly reduces *Emesis Gravidarum* in first-trimester pregnant women in the working area of Puskesmas Maracang, Purwakarta Regency, as evidenced by the decrease in average PUQE-24 scores from 8.61 to 4.24 following intervention, with parity being the only external variable significantly associated with *Emesis Gravidarum* incidence while maternal age and occupation showed no significant relationship. Based on these findings, it is recommended that healthcare providers at Puskesmas Maracang integrate lavender aromatherapy into standard care for first-trimester pregnant women experiencing nausea and vomiting, while also developing educational programs to train mothers in proper self-administration techniques; future researchers should consider conducting randomized controlled trials with larger sample sizes and longer follow-up periods to validate these findings across different populations.

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