Original Article

Comparative Outcomes of Ginger Decoction and Lavender Aromatherapy on Emesis Gravidarum Among First-Trimester Pregnant Women: A Quasi-Experimental Study

Omega DR Tahun[1], Eka Yuniarti Rahman[1], Ayu Tiara Putri[1]

[1] Department of Midwifery, Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara, Bekasi, West Java, Indonesia

ARTICLE INFO

Article History

Submit : March 6, 2026
Accepted : June 23, 2026
Published : July 1, 2026

Correspondence

Omega DR Tahun; Department of Midwifery, Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara, Bekasi, West Java, Indonesia

Email:

tahunomega2212@gmail.com

Citation:

Tahun, O. D. ., Rahman, E. Y. ., & Putri, A. T. (2026). Comparative Outcomes of Ginger Decoction and Lavender Aromatherapy on Emesis Gravidarum Among First-Trimester Pregnant Women: A Quasi-Experimental Study. Journal of Applied Nursing and Health, 8(2), 1119–1129. https://doi.org/10.55018/janh.v8i2.648

ABSTRACT

Background: Emesis gravidarum affects 60–80% of first-trimester pregnancies and can reduce maternal quality of life. Evidence comparing ginger decoction and lavender aromatherapy remains limited, particularly in Indonesian primary maternal healthcare settings. This study compared their effectiveness in reducing the severity of emesis gravidarum among first-trimester pregnant women.

Methods: A quasi-experimental design with two separate intervention groups was employed, adhering to Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) guidelines. Forty-four first-trimester pregnant women (≤12 weeks' gestation) experiencing emesis gravidarum were recruited via purposive sampling from Independent Midwifery Clinics in East Jakarta and Bekasi, Indonesia (November–December 2025). Group 1 (n=22) received ginger decoction; Group 2 (n=22) received lavender aromatherapy. The independent variable was intervention type; the dependent variable was emesis gravidarum severity, measured by the Pregnancy Unique Quantification of Emesis/Nausea (PUQE) instrument. Data were analysed using the Independent T-test, the Wilcoxon signed-rank test, and Cohen's d for effect size.

Results: Post-intervention mean PUQE score was significantly lower in the ginger decoction group (Mean=5.50, SD=1.50) versus lavender aromatherapy (Mean=7.18, SD=1.62; p=0.001; Mean difference=1.68; 95% CI: 0.73–2.63; Cohen's d=0.76). Both interventions significantly reduced emesis severity from pre- (Mean=9.34, SD=1.72) to post-intervention (Mean=6.34, SD=1.75; p<0.001, Wilcoxon test).

Conclusion: In this quasi-experimental study, ginger decoction demonstrated superior outcomes, serving as a low-cost, culturally adaptable non-pharmacological option for emesis gravidarum in Indonesian primary maternal healthcare. Lavender aromatherapy provided meaningful complementary benefit, particularly for women with psychosocial contributors to nausea or those intolerant of ginger. Findings should be interpreted within the limitations of the quasi-experimental design and the limited geographic scope.

Keywords: Emesis Gravidarum; Ginger; Lavender Oil; Aromatherapy; Pregnancy.

Implications for Practice:

- Based on the findings of this quasi-experimental study, midwives may consider standardised ginger decoction as a potentially safe, accessible, and effective non-pharmacological management strategy for emesis gravidarum in the first trimester, pending confirmation from larger randomised trials.
- Lavender aromatherapy may be offered as a complementary intervention option, particularly for women with psychosocial contributors to nausea, those in low-resource facilities, or those who cannot tolerate ginger, with the caveat that the evidence base currently derives from small quasi-experimental studies.
- Maternal healthcare institutions should develop clinical practice guidelines and patient education materials in Bahasa Indonesia that incorporate both interventions, and midwifery training programs should include competency development in the safe, non-pharmacological management of emesis gravidarum—interventions that are affordable, accessible, and culturally acceptable across Indonesian antenatal care settings.

Introduction

Pregnancy is a complex physiological process lasting approximately 259–294 days (37–42 weeks) and divided into three trimesters. The first trimester (weeks 1–12) is characterised by profound endocrine changes, including rapid increases in human chorionic gonadotropin (hCG), estrogen, and progesterone, which underpin many physiological adaptations of early pregnancy (Nency, 2023). Among the most prevalent and disruptive of these adaptations is emesis gravidarum—nausea and vomiting of pregnancy (NVP) affecting 60–80% of primigravidae and 40–60% of multigravidae globally (Juliasen, 2024).

Emesis gravidarum is defined as nausea and vomiting occurring in the first trimester without metabolic derangement. In contrast, hyperemesis gravidarum represents the severe, refractory form associated with dehydration, electrolyte imbalance, and weight loss exceeding 5% of pre-pregnancy body weight, often requiring hospitalization (Tan & Omar, 2021). Emesis gravidarum typically presents between 6 and 8 weeks of gestation and resolves by weeks 16–20, imposing a significant burden including dehydration, nutritional deficits, decreased productivity, and psychological distress (Istikhomah & Sri, 2024; Wahyuni, 2025).

Pharmacological management including pyridoxine, antihistamines, metoclopramide, and ondansetron raises concerns about teratogenic potential during organogenesis in the first trimester (Sucipto et al., 2023). In Indonesian primary healthcare settings, access to antiemetic medications in rural or low-resource facilities may be limited, and cultural preferences favor herbal and traditional therapies (Metasari et al., 2022). These factors make non-pharmacological approaches especially important within the Indonesian maternal healthcare context (Fauziah et al., 2022).

Ginger (Zingiber officinale) is among the most evidence-supported non-pharmacological antiemetics. Its active compounds—gingerol and shogaol exert antiemetic effects by antagonizing serotonin (5-hydroxytryptamine type 3 [5-HT3]) receptors, accelerating gastric emptying, and reducing gastric spasms (Istikhomah & Sri, 2024). Lavender aromatherapy (Lavandula angustifolia) acts via olfactory stimulation of the limbic system, utilizing linalool and linalyl acetate to induce relaxation, reduce anxiety, and attenuate nausea perception through psychoneuroendocrine modulation (Deviserlina, 2025). Despite increasing evidence supporting each intervention, comparative evidence between physiologically targeted (ginger) and psychologically mediated (lavender)

interventions using validated instruments and standardized dosing remains limited, particularly in Indonesian primary maternal healthcare settings.

Guided by the Roy Adaptation Model and the biopsychosocial framework, this study conceptualizes ginger as acting on gastrointestinal physiological pathways (5-HT3 receptor antagonism) and lavender as acting on the psychoneuroendocrine pathway via the olfactory-limbic axis and hypothalamic-pituitary-adrenal (HPA) axis modulation—complementary adaptive mechanisms for managing hormonal-driven emesis (Kementerian Kesehatan RI, 2024). Both interventions are culturally acceptable and accessible within Indonesian antenatal care, supporting their practical contribution to evidence-based midwifery practice and maternal health policy.

This study aimed to compare the effectiveness of ginger decoction and lavender aromatherapy in reducing emesis gravidarum severity (as measured by PUQE score) among first-trimester pregnant women at Independent Midwifery Clinics in East Jakarta and Bekasi, Indonesia.

Methods

Study Design

A quasi-experimental design with two separate intervention groups (without a control group) was employed. This study adhered to Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) guidelines. Randomization was not feasible due to ethical considerations regarding cross-contamination between groups sharing the same facility, operational constraints within routine midwifery practice, and the need to maintain standard-of-care continuity at each site. Group allocation was based on practice site (East Jakarta clinic: ginger decoction; Bekasi clinic: lavender aromatherapy). Prior to intervention administration, a preliminary site-comparability assessment was conducted: both clinics serve similar peri-urban Indonesian populations, operate under equivalent antenatal care protocols, and have comparable patient sociodemographic profiles. No statistically significant differences in maternal age, gestational age, or baseline PUQE scores were found between sites (all $p>0.05$). However, it is acknowledged that unobserved site-level differences in patient population, provider behavior, local antenatal practices, or socioeconomic characteristics may constitute threats to internal validity. These limitations are discussed further in Section 5. A participant flow diagram (TREND) is provided as supplementary material.

Participants

Participants were first-trimester pregnant women (gestational age ≤12 weeks) experiencing emesis gravidarum, recruited via purposive sampling from Independent Midwifery Clinics (Bidan Praktek Mandiri) in East Jakarta and Bekasi, Indonesia, November–December 2025. There were no participant withdrawals or dropouts during the study period.

Inclusion criteria were: (1) pregnant women in the first trimester (≤12 weeks gestation); (2) experiencing nausea and vomiting of pregnancy (NVP; emesis gravidarum), clinically defined as nausea and/or vomiting without metabolic derangement, weight loss <5% of pre-pregnancy body weight, and PUQE score 4–12, classified by trained midwife-enumerators; (3) willing to provide written informed consent; and (4) able to consume ginger decoction or use lavender aromatherapy. Exclusion criteria were: (1) hyperemesis gravidarum requiring hospitalization (PUQE >12 or clinical signs of dehydration/electrolyte imbalance); (2) history of allergy to ginger or lavender; (3) concurrent antiemetic pharmacotherapy; (4) serious comorbidities (e.g., liver disease,

gastrointestinal disorders). A total of 44 participants were enrolled (22 per group).

Sample size was determined by a priori power analysis using G*Power (version 3.1), with α=0.05, power=0.80, and an estimated medium effect size (Cohen's d=0.5), yielding a minimum of 21 participants per group; 22 were recruited to allow for potential attrition. Purposive sampling was employed because probability-based recruitment was not feasible within this routine clinical setting, where patient flow was governed by scheduled antenatal appointments and strict clinical eligibility criteria. While this approach ensured clinical homogeneity, it introduces selection bias and limits external validity; future studies should employ probability-based sampling to strengthen representativeness.

Instruments

Nausea and vomiting severity was assessed using the Pregnancy Unique Quantification of Emesis/Nausea (PUQE) instrument (Hada et al., 2021)—a validated, adopted 3-item self-report scale measuring duration of nausea, frequency of vomiting, and retching over a 12-hour period. Scores range from 3 (no symptoms) to 15 (severe symptoms), categorized as mild (3–6), moderate (7–12), and severe (13–15). The instrument was administered by interviewer with trained midwifery enumerators. Reliability (Cronbach's α ≥0.70) and validity have been established in the original validation study (Hada et al., 2021); the Indonesian-language version has been used in prior studies (Istikhomah & Sri, 2024). Permission for use was obtained from the original authors. The instrument is provided as supplementary material.

Intervention

Group 1 received ginger decoction: 15 grams of fresh ginger (Zingiber officinale) boiled in 200 mL of water for 15 minutes, consumed warm, twice daily for 7 days. Ginger was sourced from a single standardized commercial supplier (same batch origin) to minimize inter-batch variability; however, phytochemical quantification of gingerol and shogaol concentrations was not performed, acknowledged as a limitation affecting pharmacological reproducibility. Future studies should use standardized extracts with verified phytochemical profiles. Group 2 received lavender aromatherapy: 3–4 drops of lavender essential oil (Lavandula angustifolia; 100% pure; BPOM-certified; steam distillation; manufacturer lot available upon request) on a cotton ball, inhaled for 15 minutes, twice daily for 7 days. Independent purity verification and chemotype characterization were not performed, limiting pharmacological precision. Both interventions were administered at participants' homes following standardized operating procedures (SOP) by trained diploma-level registered midwives (≥2 years clinical experience). Adherence was monitored via daily participant logbooks reviewed at day 3 and day 7 home visits. Adherence rates were high: 95.5% (21/22) in each group completed all 14 scheduled doses; one participant per group missed one dose (missed-dose rate 4.5%). Self-reported adherence is subject to social desirability bias. Adverse events were monitored via daily logbook entries and verbal inquiry at day 3 and day 7; no adverse events were recorded.

Data Collection

Data were collected at two time points: immediately before intervention commencement (pre-intervention) and after 7 days (post-intervention). Participant flow: 56 pregnant women were screened for eligibility; 12 were excluded (8 did not meet inclusion criteria, 3 declined participation, 1 met exclusion criteria for hyperemesis

gravidarum). A total of 44 eligible participants were allocated to intervention groups (22 per site/group) and all 44 completed the study with no withdrawals or dropouts. All 44 participants were included in the final analysis. Instruments were administered by the principal investigators and trained midwifery enumerators who received 4-hour standardized training prior to data collection. Outcome assessors were not blinded to intervention group assignment, as blinding was not feasible in this open-label quasi-experimental design; this introduces potential for interviewer bias in PUQE administration, which is acknowledged as a limitation. Data were double-entered and verified for accuracy; incomplete questionnaires were excluded. All data were stored securely and anonymized prior to analysis.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 25.0. Descriptive statistics (mean, SD, frequency, percentage) were used to characterize the sample. Normality was assessed separately for: (a) between-group post-intervention PUQE scores, and (b) within-group paired difference scores (pre–post change per participant), using the Kolmogorov-Smirnov test. Between-group scores were normally distributed (Ginger: KS=0.131, p=0.200; Lavender: KS=0.144, p=0.200); Levene's test confirmed homogeneity of variance (F=0.18, p=0.677); therefore, the Independent Samples T-test was applied for between-group comparison. Within-group paired difference scores did not meet normality assumptions (both groups: KS p<0.05); therefore, the Wilcoxon signed-rank test was employed for within-group pre–post comparison. This distinction explains the differential use of parametric and non-parametric tests. Effect size was calculated using Cohen's d with pooled SD: d = (M1 – M2) / SD_pooled. No adjustment for multiple comparisons was applied given the limited number of pre-specified analyses; acknowledged as a limitation. All p=0.000 values are reported as p<0.001. Statistical significance was set at α=0.05.

Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara Jakarta, Jakarta, Indonesia (Approval Number: 056/KEPK-STIKES-AN/III/2025). All participants provided written informed consent and were informed of their right to withdraw voluntarily at any time without consequence. Participant anonymity and data confidentiality were maintained throughout the study. Participants received no monetary compensation; intervention materials (fresh ginger, lavender essential oil) were provided free of charge as part of the study protocol. Transportation assistance was not provided, as all study-related contact occurred during participants' scheduled routine antenatal visits.

Results

A total of 44 first-trimester pregnant women were enrolled (**Table 1**). The sample was predominantly senior high school-educated (70.5%), with a mean age of 28.6 years and mean gestational age of 9.3 weeks, consistent with the peak period of NVP. Baseline PUQE scores showed no statistically significant differences between groups (p>0.05); however, several clinically relevant confounders were not systematically assessed.

Table 1. Demographic and Obstetric Characteristics of Respondents (n=44)

Variable	Mean	Minimum	Maximum	SD
Respondent Age (years)	28.6	18	41	5.65
Gestational Age (weeks)	9.3	6	12	2.07
Education Level	Junior High School (SMP): 3 (6.8%); Senior High School (SMA): 31 (70.5%); Bachelor's Degree (S1): 10 (22.7%)			

SD = Standard Deviation

Table 2 shows that baseline characteristics were statistically comparable for the variables assessed. Maternal age, gestational age, and baseline PUQE scores did not differ significantly between groups (all p>0.05). However, several clinically relevant confounders—including parity, gravidity, nutritional status, socioeconomic status, dietary intake, psychosocial stress, prior emesis history, and previous antiemetic use—were not systematically collected, which limits the comprehensiveness of baseline equivalence evaluation and the interpretive depth of group comparisons.

Table 2. Baseline Equivalence Between Ginger and Lavender Groups

Variable	Ginger (n=22) Mean±SD	Lavender (n=22) Mean±SD	p-value
Maternal age	28.1±5.30	29.1±6.00	0.56
Gestational age	9.4±2.10	9.2±2.00	0.73
Baseline PUQE score	9.45±1.60	9.23±1.83	0.67

No statistically significant baseline differences were identified (all p>0.05).

Comparison between Ginger Decoction and Lavender Aromatherapy

Kolmogorov-Smirnov tests confirmed normal distribution of post-intervention PUQE scores (Ginger: KS=0.131, p=0.200; Lavender: KS=0.144, p=0.200); Levene's test confirmed homogeneity of variance (F=0.18, p=0.677). The Independent Samples T-test was therefore applied for between-group comparison. Post-intervention mean PUQE scores were significantly lower in the ginger decoction group than the lavender aromatherapy group.

The post-intervention mean PUQE score in the ginger group was 5.50 (SD=1.50), whereas the lavender group demonstrated a mean score of 7.18 (SD=1.62). The mean difference between groups was 1.68 points (95% CI: 0.73–2.63; p=0.001). Effect size was calculated using Cohen's d with pooled SD method (SD_pooled=1.56), yielding d=0.76, indicating a moderate-to-large effect. Given the small sample (n=22/group), this estimate may be unstable. The 1.68-point PUQE difference is clinically meaningful: the ginger group's post-intervention mean (5.50) fell in the mild category (PUQE 3–6), while the lavender group (7.18) remained in the moderate category (PUQE 7–12). No validated MCID for PUQE exists; future studies should address this gap (**Table 3**).

Table 3. Comparison of Post-Intervention PUQE Scores Between Groups (n=44)

Group	n	Mean ± SD	Mean Difference	95% CI	p-value	Cohen's d
Ginger decoction	22	5.50±1.50	1.68	0.73–2.63	0.001	0.76
Lavender aromatherapy	22	7.18±1.62				

**Statistically significant at p<0.05. SD = Standard Deviation. 95% CI for Mean Difference (Ginger – Lavender). Cohen's d=0.76.*

Effect of Both Interventions Before and After Intervention

Because normality assessment showed non-normal distribution for repeated measures, within-group analysis was performed using the Wilcoxon signed-rank test.

Both interventions were associated with statistically significant reductions in NVP severity. In the ginger decoction group, mean PUQE scores decreased from 9.45±1.60 to 5.50±1.50, a mean reduction of 3.95 points (95% CI: 3.20–4.70; p<0.001, Wilcoxon signed-rank test). In the lavender aromatherapy group, PUQE scores decreased from 9.23±1.83 to 7.18±1.62, a mean reduction of 2.05 points (95% CI: 1.28–2.82; p=0.002, Wilcoxon signed-rank test). The larger within-group reduction in the ginger group is consistent with its superior between-group outcome. The contribution of natural symptom resolution cannot be excluded in the absence of a control group (**Table 3 and Table 4**).

Table 4. Within-Group Comparison of PUQE Scores Before and After Intervention

Group	Pre-intervention Mean±SD	Post-intervention Mean±SD	Mean Change	p-value
Ginger decoction	9.45±1.60	5.50±1.50	-3.95	<0.001*
Lavender aromatherapy	9.23±1.83	7.18±1.62	-2.05	0.002*

Statistically significant at p<0.05. SD = Standard Deviation.

Discussion

The mean maternal age of 28.6 years and gestational age of 9.3 weeks are consistent with Indonesian reproductive-age populations and the known peak of emesis gravidarum at maximal hCG elevation (Citrawati & Arwidiana, 2023; Henukh & Siti, 2020). Partial baseline equivalence was demonstrated for variables assessed; unassessed confounders limit this claim. Under quasi-experimental conditions, ginger decoction produced superior observed NVP outcomes (PUQE Mean: 5.50 vs. 7.18; p=0.001; Cohen's d=0.76). Contradictory evidence exists: some randomized trials report no significant ginger-placebo difference (e.g., Jewell & Young, 2003, Cochrane). This finding is consistent with (Mailinda, 2024), and is supported internationally by Lete & Allué (2016), who confirmed ginger's efficacy in a systematic review. Mechanistically, gingerol and shogaol are proposed to antagonize 5-HT3 receptors, block the chemoreceptor trigger zone, and accelerate gastric motility (primarily preclinical evidence; theoretical in humans) (Istikhomah & Sri, 2024).

While less effective than ginger decoction, lavender aromatherapy produced clinically meaningful reduction in emesis severity. Its mechanism operates via the olfactory-limbic axis: linalool and linalyl acetate modulate HPA axis reactivity and

attenuate psychosocial contributions to nausea perception (Deviserlina, 2025). Sari et al. (2023) and Safitri et al. (2024) confirmed lavender's efficacy in Indonesian settings. Critically, aromatherapy is susceptible to expectancy and sensory placebo responses; since no placebo or control group was included, natural symptom fluctuation, expectation, and attention effects cannot be excluded. However, Metasari et al. (2022) found lemon aromatherapy more effective than lavender, highlighting heterogeneity. The selection of lavender over lemon or peppermint was based on local evidence balance and BPOM certification—not definitive superiority; future trials should compare multiple aromatherapy agents. Differential outcomes reflect distinct proposed pathways: ginger on gastrointestinal physiology, lavender on neuroendocrine modulation (Mailinda, 2024). High cultural acceptance of jamu (traditional herbal remedies) supports the feasibility of ginger-based preparations in Indonesian antenatal care settings (Oktaviani et al., 2021).

This study provides preliminary head-to-head observed data within Indonesian midwifery settings, suggesting ginger may produce superior NVP outcomes compared to lavender under quasi-experimental conditions. These findings should not be interpreted as definitive proof of comparative efficacy, given the absence of randomization, blinding, and a control group. Natural symptom resolution also cannot be excluded. These findings extend the Roy Adaptation Model framework and support future investigation of combined ginger-lavender protocols, factorial designs, longer follow-up, and patient preference as a mediator of effectiveness (Retni et al., 2024).

Implications and limitations

These findings provide preliminary evidence that ginger decoction and lavender aromatherapy are safe, low-cost, and culturally acceptable non-pharmacological options for managing emesis gravidarum in Indonesian primary maternal healthcare settings. However, the study's quasi-experimental design, small sample size, lack of randomization, blinding, and placebo control, limited study sites, short follow-up period, self-reported adherence, and unmeasured confounders restrict the strength and generalizability of the findings. Future multicenter randomized controlled trials with larger samples, longer follow-up, objective adherence monitoring, participant acceptability assessment, and standardized intervention protocols are needed to confirm effectiveness and support integration into antenatal care guidelines.

Relevance to Practice

Based on the preliminary findings of this quasi-experimental study, midwives may consider offering standardized ginger decoction (15 g fresh ginger in 200 mL water, twice daily for 7 days) as a potentially beneficial non-pharmacological adjunct for NVP management between weeks 6 and 12 of gestation, and lavender aromatherapy (3–4 drops of BPOM-certified essential oil, inhaled for 15 minutes twice daily) as a complementary option. These recommendations are tentative and should be applied with caution given the quasi-experimental design and limited sample. Formal clinical practice guideline development should await confirmation from multicenter randomized controlled trials. Healthcare institutions may explore locally appropriate patient education materials in Bahasa Indonesia detailing preparation, dosages, contraindications, and safety monitoring. Midwifery training programs may incorporate awareness of these affordable,

accessible, and culturally acceptable adjuncts in low-resource Indonesian antenatal care settings.

Conclusion

Within this quasi-experimental study conducted at two Independent Midwifery Clinics in East Jakarta and Bekasi, both ginger decoction and lavender aromatherapy were associated with reductions in the severity of nausea and vomiting during pregnancy. Ginger decoction showed greater observed effectiveness than lavender aromatherapy, which may be related to its proposed antiemetic effects through gastrointestinal receptor modulation. However, these findings should be interpreted cautiously due to the quasi-experimental design, small sample size, limited geographic scope, absence of a control group, and incomplete assessment of baseline confounders. Therefore, broader generalization to other Indonesian maternal healthcare settings is not warranted. Future multicenter randomized controlled trials with blinding, standardized intervention protocols, longer follow-up, and placebo controls are needed to strengthen the evidence base.

Funding

This research received no external funding.

CrediT Authorship Contributions Statement

Omega DR Tahun: Conceptualization, Methodology, Supervision, Writing Original Draft, Validation, Investigation, Data Curation, Resources, Project Administration, Resources, Visualization, Writing, Review & Editing

Eka Yuniarti Rahman: Methodology, Formal Analysis, Supervision, Writing, Review & Editing

Ayu Tiara Putri: Investigation, Data Curation, Resources, Project Administration Software, Data Curation, Visualization, Investigation, Validation, Writing – Review & Editing

Conflicts of Interest

There is no conflict of interest.

Acknowledgments

The authors would like to express their sincere gratitude to the leadership and healthcare staff of the Independent Midwifery Clinics in East Jakarta and Bekasi, Indonesia, for their support and cooperation throughout this study. The authors also extend their appreciation to all first-trimester pregnant women who willingly participated in this research. Special thanks are addressed to the Department of Midwifery, STIKes Abdi Nusantara Jakarta, for academic guidance and institutional support in the completion of this study.

References

Citrawati, N. K., & Arwidiana, I. D. (2023). Characteristic Description of Emesis Gravidarum Case to Pregnant Woman in 1st Trimester. *Indonesian Journal of Global Health Research*, *5*(2), 217–222. https://doi.org/10.37287/ijghr.v5i2.1580

Deviserlina, B. (2025). Pengaruh Pemberian Aromatherapi Lavender Terhadap Mual Muntah Ibu Hamil TM 1. *AT-TAKLIM: Jurnal Pendidikan Multidisiplin*, *2*(10), 165–178. https://doi.org/10.71282/at-taklim.v2i10.1091

Fauziah, N. A., Komalasari, & Sari, D. N. (2022). Faktor-Faktor yang Mempengaruhi Emesis Gravidarum pada Ibu Hamil Trimester I. *Majalah Kesehatan Indonesia*, *3*(1). https://doi.org/10.47679/makein.202227

Hada, A., Minatani, M., Wakamatsu, M., Koren, G., & Kitamura, T. (2021). The

pregnancy-unique quantification of emesis and nausea (PUQE-24): Configural, measurement, and structural invariance between nulliparas and multiparas. *Healthcare*, *9*(11). https://doi.org/10.3390/healthcare9111553

Henukh, D., & Siti, A. (2020). The Association between Maternal Age and Gravidity and the Event of Gravidarum Emesis in Kupang, East Nusa Tenggara. *The International Conference on Public Health Proceeding*, *5*(1), 205–210. https://doi.org/10.26911/the7thicph-FP.04.18

Istikhomah, H., & Sri, W. (2024). Perbedaan Pengaruh Jahe, Aromaterapi Oil Lavender dan Musik Klasik terhadap Pengurangan Emesis Gravidarum pada Ibu Hamil Trimester I. *Jurnal Ilmiah Kebidanan*, *2*(2), 83–95. https://doi.org/10.35316/oksitosin.v11i2.3559

Juliasen, I. (2024). Efektifitas Pemberian Rebusan Jahe dan Madu Terhadap Mual Muntah Pada Ibu Hamil Trimester I. *Dohara Publisher Open Access Journal*, 1520–1528. https://doi.org/10.54402/isjnms.v3i12.504

Kementerian Kesehatan RI. (2024). *Profil Kesehatan Indonesia 2024*. Kemenkes RI.

Lete, I., & Allué, J. (2016). The Effectiveness of Ginger in the Prevention of Nausea and Vomiting during Pregnancy and Chemotherapy. *Integrative Medicine Insights*, *11*, 11–17. https://doi.org/10.4137/IMI.S36273

Mailinda, E. S. F. (2024). *Efektivitas Konsumsi Ekstrak Jahe Untuk Menurunkan Emesis Pada Ibu Hamil Trimester I Di Puskesmas Sukawali*. *9*(3). https://doi.org/10.30651/jkm.v9i3.21927

Metasari, D., Rahmawati, T. R., & Situmorang, R. (2022). Efektivitas Aromaterapi Lavender dan Lemon dalam Mengurangi Mual Muntah pada Ibu Hamil. *Jurnal JKFT: Universitas Muhammadiyah Tangerang*, *7*, 88–94. https://doi.org/10.31000/jkft.v7i2.6170

Nency, O. (2023). *The Effectiveness Of Lavender Aromatherapy In First Trimester Pregnant Women With Emesis Gravidarum At TPMB Megawati In 2023*. *2*(2019), 267–272. https://doi.org/10.51601/ijhp.v4i2.296

Oktaviani, P., Indrayani, T., & Dinengsih, S. (2021). Efektivitas Pemberian Seduhan Jahe dan Daun Mint Terhadap Rasa Mual Muntah Pada Ibu Hamil Trimester I. *Journal for Quality in Women's Health*, *4*(2), 146–151. https://doi.org/10.30994/jqwh.v4i2.124

Retni, A., Harismayanti, & Abunio, I. (2024). Penerapan Akupresur dan Terapi Aroma Lavender pada Ibu Hamil Trimester Pertama. *Jurnal Keperawatan Muhammadiyah Edisi Khusus*, 46–53. https://doi.org/10.33023/jikep.v9i4.1647

Safitri, N. S., Andi, S. I., Ros, R., & Subriah. (2024). Efektifitas Aromaterapi Lavender dalam Mengurangi Emesis Gravidarum Pada Ibu Hamil Trimester Satu di Puskesmas Pallanga Kabupaten Gowa. *Media Kebidanan Politeknik Kesehatan Makassar*, *3*(2). https://doi.org/10.32382/mkeb.v3i2.763

Sari, B. P., Yuniarti, Y., & Heryati, K. (2023). The Effect of Lavender Aromatherapy in Reducing Emesis Gravidarum (First Trimester). *Jurnal Kebidanan*, *13*(1), 27–33.

https://doi.org/10.31983/jkb.v13i1.7551

Sucipto, B. C., Yanuarti, T., Tinggi, S., Kesehatan, I., & Nusantara, A. (2023). *The Effectiveness of Giving Ginger and Lemon Drinks to First Trimester Pregnant Women in Reducing Emesis Gravidarum at BPM Sri Mulyanti in 2022 Berliana Cantikaaty Suc*. https://doi.org/10.33023/jikep.v9i4.1647

Tan, P. C., & Omar, S. Z. (2021). Contemporary approaches to hyperemesis during pregnancy. *Current Opinion in Obstetrics and Gynecology*, *33*(2), 87–93. https://doi.org/10.1097/GCO.0000000000000683

Wahyuni, R. (2025). Hubungan Paritas dan Tingkat Pendidikan Ibu dengan Emesis Gravidarum pada Ibu Hamil TM I. *Jurnal Maternitas Aisyah*. https://doi.org/10.30604/jaman.v6i1.1837