



The Effect of Ginger Drink on Reducing Morning Sickness in First-Trimester Pregnant Women at the Mopuya Community Health Center

Ayu Sinta Bella¹, Nila Widya Keswara^{2*}

¹⁻² Bachelor's Program in Midwifery, Institut Teknologi Sains dan Kesehatan Rumah Sakit dr. Soepraoen

*Corresponding Author: nilakeswara35@itsk-soepraoen.ac.id

Abstract. Morning sickness is a common complaint experienced by pregnant women in the first trimester due to hormonal changes during pregnancy. Although generally physiological in nature, this condition can interfere with nutritional intake, daily activities, and quality of life if not properly managed. One complementary therapy considered safe and easy to implement is the administration of ginger drinks. This study aimed to analyze the effect of ginger drink administration on reducing morning sickness in first-trimester pregnant women at the Mopuya Community Health Center. The study used a pre-experimental design with a one-group pretest-posttest design. The study sample consisted of 21 first-trimester pregnant women selected using total sampling. The severity of morning sickness was measured using the Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) instrument before and after the intervention. Data analysis was performed using univariate and bivariate methods, specifically the Wilcoxon Signed-Rank test, with a 95% confidence level. The results showed that the mean PUQE score decreased from 8.00 ± 1.18 before the intervention to 3.38 ± 1.32 after the intervention. The Wilcoxon test results indicated that the administration of ginger drink had a significant effect on reducing morning sickness ($p = 0.000$). Thus, ginger drinks can serve as an effective, safe, and easily implemented nonpharmacological complementary therapy in antenatal care to help reduce nausea and vomiting in first-trimester pregnant women and improve their comfort during pregnancy.

Keywords: Antenatal Care; Complementary Therapy; First-Trimester Pregnant Women; Ginger; Morning Sickness.

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1. Background

Pregnancy is a physiological process accompanied by various anatomical, physiological, hormonal, and psychological changes to support fetal growth and development. In the first trimester, increased levels of human chorionic gonadotropin (hCG), estrogen, and progesterone trigger various adaptations in the mother's body, one of which is nausea and vomiting during pregnancy (morning sickness). Morning sickness is a condition characterized by a feeling of nausea, with or without vomiting, which typically occurs between 4 and 16 weeks of gestation. Although often considered a physiological condition, persistent and untreated symptoms can impair nutritional status, daily activities, and quality of life, and may even increase the risk of pregnancy complications (American College of Obstetricians and Gynecologists [ACOG], 2023).

Morning sickness is one of the most common complaints in early pregnancy. Globally, approximately 70–80% of pregnant women experience nausea, while 50–60% experience nausea accompanied by vomiting during the first trimester (Fejzo et al., 2019). The World Health Organization states that most cases are mild to moderate, but approximately 0.3–3% progress to hyperemesis gravidarum—a condition of severe nausea and vomiting that requires medical management because it can lead to dehydration, electrolyte imbalances, weight loss, and metabolic disorders (WHO, 2023). This high prevalence makes morning sickness one of the maternal health issues that requires attention in antenatal care.

In Indonesia, morning sickness is also a common complaint among pregnant women in their first trimester. According to various national studies, more than 60% of pregnant women in their first trimester experience nausea and vomiting, with severity ranging from mild to severe. Although mostly physiological in nature, prolonged symptoms can reduce appetite, decrease nutrient intake, disrupt daily activities, and increase the risk of chronic energy deficiency (CED) and anemia during pregnancy (Indonesian Ministry of Health, 2024). This situation underscores that the management of morning sickness is a crucial component of efforts to maintain the health of both the mother and the fetus from the very beginning of pregnancy.

Physiologically, morning sickness results from a complex interaction between hormonal changes, gastrointestinal, neurological, and psychological factors. Elevated hCG levels, which peak at 9–12 weeks of gestation, are closely associated with stimulation of the vomiting center in the medulla oblongata. In addition, increased estrogen levels cause heightened sensitivity to odors, while progesterone slows gastric emptying and gastrointestinal motility, thereby exacerbating nausea (Fejzo et al., 2019). Psychological factors such as anxiety and stress are also known to worsen symptoms through activation of the autonomic nervous system and increased cortisol secretion (Matthews et al., 2015).

Untreated morning sickness can have various negative effects on both the mother and the fetus. A decreased appetite leads to reduced intake of energy and essential nutrients, thereby increasing the risk of dehydration, electrolyte imbalance, weight loss, ketosis, and vitamin and mineral deficiencies. In more severe cases, hyperemesis gravidarum can increase the risk of low birth weight (LBW), fetal growth restriction, preterm labor, and psychological distress in the mother, such as anxiety and depression (Bustos et al., 2017; Fejzo et al., 2019). Therefore, managing nausea and vomiting starting in the first trimester is a crucial part of maintaining a healthy pregnancy.

Morning sickness can be managed through both pharmacological and non-pharmacological therapies. Non-pharmacological approaches are recommended as first-line therapy because they are relatively safe, easy to implement, cost-effective, and have minimal side effects. One widely used complementary therapy is ginger (*Zingiber officinale*) tea. Ginger contains bioactive compounds—gingerol, shogaol, and zingerone—that exert antiemetic effects by inhibiting serotonin (5-HT₃) receptors in the gastrointestinal tract and central nervous system, thereby reducing the frequency of nausea and vomiting without causing teratogenic effects on the fetus (Viljoen et al., 2019).

Various studies support the effectiveness of ginger in alleviating morning sickness. A systematic review and meta-analysis by Viljoen et al. (2019) showed that ginger consumption significantly reduced the intensity of nausea and the frequency of vomiting in first-trimester pregnant women compared to a placebo. A study by Thomson et al. (2020) also reported that administering 1–1.5 grams of ginger per day for several days effectively reduced nausea scores without increasing side effects in either the mother or the fetus. In Indonesia, various studies published in accredited national journals have shown that administering ginger drinks helps reduce the intensity of morning sickness, increases appetite, and improves the mother's comfort during the first trimester.

The Mopuya Community Health Center, as a primary health care facility, provides antenatal care to pregnant women in their first trimester, including management of nausea and vomiting. However, the use of complementary therapy in the form of ginger drinks as part of midwifery care has not yet been scientifically evaluated in this region. Yet, ginger is readily available, low-cost, well-accepted by the community, and has the potential to be an effective non-pharmacological intervention for reducing morning sickness.

Based on the above, this study aims to analyze the effect of ginger drink administration on reducing morning sickness in first-trimester pregnant women at the Mopuya Community Health Center. The study results are expected to provide a scientific basis for the development of evidence-based complementary midwifery care, improve the quality of antenatal care, enhance maternal comfort during the first trimester of pregnancy, and support improved maternal and fetal health.

2. Theoretical Review

Morning sickness is a complaint of nausea, with or without vomiting, that commonly occurs during the first trimester of pregnancy due to increased levels of human chorionic gonadotropin (hCG), estrogen, and progesterone. This complaint is experienced by approximately 70–80% of pregnant women and is generally physiological in nature. However, if severe, it can lead to dehydration, electrolyte imbalances, poor nutritional status, and an increased risk of pregnancy complications (Fejzo et al., 2019; ACOG, 2023).

One of the most widely used nonpharmacological therapies to alleviate morning sickness is ginger (*Zingiber officinale*). Ginger contains active compounds—gingerol and shogaol—that block serotonin (5-HT3) receptors, thereby suppressing nausea and vomiting and helping to accelerate gastric emptying. This therapy is considered safe, easily accessible, inexpensive, and has minimal side effects for both the mother and the fetus (Viljoen et al., 2019).

Various studies have shown that ginger consumption effectively reduces the intensity of nausea and the frequency of vomiting in pregnant women during the first trimester. A meta-analysis by Viljoen et al. (2019) and a systematic review by Thomson et al. (2020) reported that ginger supplementation is significantly more effective than a placebo in reducing morning sickness symptoms without increasing the risk of side effects. Therefore, ginger drinks can serve as an evidence-based complementary intervention in antenatal care to improve the comfort of pregnant women in the first trimester.

3. Research Methods

This study used a pre-experimental design with a one-group pretest–posttest design to analyze the effect of ginger drink administration on reducing morning sickness in first-trimester pregnant women at the Mopuya Community Health Center. The study was conducted in 2026 on 21 first-trimester pregnant women who met the inclusion criteria. Total sampling was used, meaning that all respondents who met the criteria were included in the study sample.

The independent variable was the administration of ginger drinks, while the dependent variable was the intensity of morning sickness, measured before and after the intervention using the Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) scale, a numerical scale ranging from 0 to 10. Scores were then categorized as mild (0–5), moderate (6–8), and severe (9–10). Respondent characteristic data included age, education, occupation, gestational age, and parity. Data were collected through structured interviews and observation sheets before and after the intervention.

Data analysis was performed using univariate methods to describe respondent characteristics and the distribution of morning sickness severity. Normality was tested using the Shapiro–Wilk test. The effectiveness of ginger drink administration was analyzed using the Wilcoxon signed-rank test if the data were not normally distributed or a paired t-test if the data were normally distributed. All tests were conducted at a 95% confidence level with a significance threshold of $p < 0.05$. The study was conducted in accordance with the ethical principles of health research through the provision of informed consent, maintaining the confidentiality of respondents’ identities, and applying the principles of beneficence, non-maleficence, and justice.

4. Results and Discussion

Table 1. Demographic Data.

	Var	n	F (%)
Ages	<20 years old	4	19.0
	20–35 years old	17	81.0
	>35 years old	0	0
Education	No education	0	0
	Elementary school	0	0
	Junior high school	1	4.8
	High school	20	95.2
	College	0	0
Employment	Housewife	21	100.0
	Private employee	0	0
	Teacher/lecturer	0	0
	Civil Servant	0	0

parity	First-time pregnant woman	10	47.6
	Multigravida	11	52.4
Total		21	100

(source: primary data, 2026)

Based on the demographic data presented in Table 1, this study involved a total of 21 pregnant women in their first trimester. The age distribution showed that the majority of respondents were in the healthy reproductive age group (20–35 years), comprising 17 women (81.0%), while the remainder were in the high-risk age group (<20 years), comprising 4 women (19.0%). In terms of educational level, the majority of respondents were high school (SMA) graduates, totaling 20 women (95.2%), while only 1 woman (4.8%) had completed junior high school (SMP). Regarding employment status, all respondents (100.0%) in this study were housewives. Meanwhile, based on parity characteristics, the proportion of primigravida (first pregnancy) and multigravida (second or subsequent pregnancies) mothers was relatively balanced, at 10 women (47.6%) and 11 women (52.4%), respectively.

Table 2. Numerical Data.

Var	N	min	max	Mean	SD
PUQE score before	21	6.00	10.00	8.00	1.18
PUQE score after	21	2.00	6.00	3.38	1.32

(source: primary data, 2026)

Table 2 summarizes the objective PUQE scores measuring the severity of nausea and vomiting before (pre-test) and after (post-test) the ginger drink intervention. Before the intervention, the mean PUQE score for respondents was 8.00 (SD = 1.18), with a minimum score of 6.00 and a maximum score of 10.00. This score represents a moderate level of morning sickness. After the structured ginger drink intervention, there was a highly significant decrease in the PUQE score. The mean PUQE score dropped drastically to 3.38 (SD = 1.32), with the lowest score reached by a participant hitting the minimum of 2.00 and the highest post-intervention score remaining at 6.00. Overall, this intervention successfully reduced the intensity of nausea and vomiting by a mean difference of 4.62 points.

Table 3. Statistical Analysis (Numerical Data).

Independent variable	n	P-Value
PUQE score before	21	0.020*
PUQE score after	21	0.010*
<i>Shapiro-Wilk</i>		
Independent var	N	P-value
PUQE score before	21	0.000*
PUQE score after		
<i>Wilcoxon</i>		

*significant

(source: primary data, 2025)

Before testing the hypothesis, the Shapiro-Wilk test was used to assess the normality of the data because the sample size $N < 50$. The test results showed that the P-value for the data before the intervention was 0.020 ($p < 0.05$) and the P-value after the intervention was 0.010 ($p < 0.05$). Since both P-values were less than 0.05, it can be concluded that the data are not normally distributed. Based on this, a comparative hypothesis test was conducted using a paired nonparametric test, namely the Wilcoxon Signed-Rank Test. Based on Table 3, the results of the Wilcoxon test analysis showed a P-value of 0.000 ($p < 0.05$). These statistical findings empirically prove that there is a highly significant effect of ginger drink administration on reducing the incidence of emesis or morning sickness among first-trimester pregnant women in the study area.

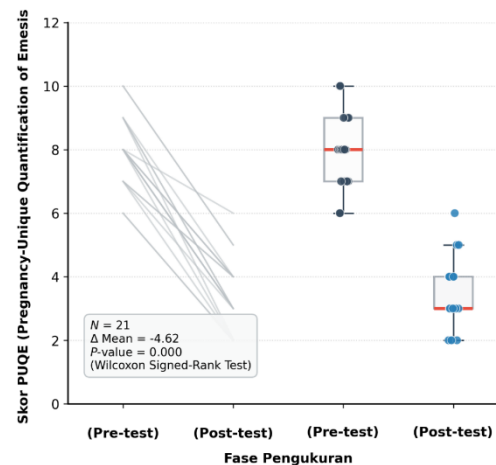


Figure 1. Box Plots of Change in PUQE Scores.

Paired box plots and trend lines showing individual changes in PUQE scores before and after the warm ginger drink intervention ($N = 21$). The vertical gray lines connect the pre-test and post-test scores of the same participants to illustrate the direction of symptom reduction on an individual basis. The thick red horizontal line inside the box represents the group median. A comparative analysis using the Wilcoxon Signed-Rank Test showed a highly significant decrease in emesis scores from an initial baseline average of 8.00 ($SD = 1.18$) to 3.38 ($SD = 1.32$) post-intervention ($p = 0.000$).

Discussion

The findings of this study clearly demonstrate that the ginger drink intervention has a highly significant therapeutic effect on reducing the intensity of morning sickness, or nausea and vomiting of pregnancy (NVP), in first-trimester pregnant women. The decrease in the mean PUQE score from the baseline value of 8.00 (moderate emesis category) to 3.38 (mild emesis category) indicates that ginger can serve as a safe and effective first-line non-pharmacological modality for pregnant women. This clinical efficacy is supported by the bioactive compounds in ginger (*Zingiber officinale*), which act directly on both the central and peripheral nervous systems of the human digestive system.

Pharmacologically, ginger's primary mechanism for relieving nausea and vomiting is mediated by its active phenolic compounds, namely gingerol and shogaol. According to Smith et al. (2023), gingerol and shogaol act as competitive antagonists at serotonin 5-HT₃ receptors distributed throughout the gastrointestinal tract and in the Chemoreceptor Trigger Zone (CTZ) in the brain. When 5-HT₃ receptors are blocked, the afferent signals that trigger the nausea and vomiting reflex toward the vomiting center in the medulla oblongata are partially interrupted (Jones & Davis, 2024). In addition to blocking serotonin nerve pathways, ginger's bioactive components also have a strong local carminative effect. This effect helps improve gastric motility, promotes faster gastric emptying, and suppresses dysrhythmic gastric contractions that often occur due to surges in pregnancy hormones (White & Thompson, 2023).

The success in reducing emesis in this study is also linked to the nature of the intervention—a warm beverage. Administering ginger as a warm liquid beverage facilitates the absorption of active compounds by the gastric mucosa without overburdening the digestive system, which is particularly sensitive during this period (Putri & Lestari, 2024). The use of ginger as a complementary therapy is considered far superior to synthetic antiemetic medications such as metoclopramide or ondansetron. Pregnant women often avoid chemical pharmacological drugs during the first trimester due to deep concerns about side effects such as sedation, dizziness, and the potential teratogenic risk during the fetal organogenesis phase (Pratiwi & Wijaya, 2025). Therefore, pregnant women's psychological acceptance of ginger drinks is very high due to their natural properties and familiarity within local culture.

In terms of demographic characteristics, all respondents (100.0%) in this study were housewives. This status provided a distinct clinical advantage for the success of the intervention, as the women had sufficient flexibility to rest at home and consume herbal drinks regularly without the stress of a physically demanding work environment (Sari & Ramadhan, 2024). However, the main challenge was found among the group of primigravida

mothers, who accounted for 47.6% of the total sample. Women experiencing their first pregnancy generally lack prior experience in psychophysiological adaptation to the surge in Human Chorionic Gonadotropin (hCG) and fluctuating progesterone levels in the early first trimester (Kurniawan & Utami, 2025). This lack of preparedness exacerbates the perceived discomfort of nausea. The use of ginger drinks has been clinically proven to improve pregnant women's comfort levels and self-care agency in independently managing gestational complaints (Rahmawati et al., 2023).

Although this pre-experimental study has the limitation of lacking a separate control group to rule out placebo effects (Sitompul & Nugroho, 2024), the consistent and significant reduction in PUQE scores indicates that this intervention is practical. The use of the standardized PUQE questionnaire provides a valid subjective-objective assessment of the frequency of nausea, duration of vomiting, and episodes of choking over the past 24 hours (Ahmad & Sulisty, 2025). Overall, this study confirms that the development of a midwifery care program for first-trimester pregnant women that integrates ginger drink therapy as a complementary therapy is highly recommended for widespread implementation in primary health care facilities to improve mothers' quality of life and ensure adequate maternal nutritional intake early in pregnancy.

5. Conclusions and Recommendations

This study shows that the administration of ginger drink has a significant effect on reducing morning sickness in first-trimester pregnant women at the Mopuya Community Health Center. Analysis results show a decrease in the average Pregnancy-Unique Quantification of Emesis and Nausea (PUQE) score from the moderate category before the intervention to the mild category after the administration of ginger drinks, with the Wilcoxon test indicating a statistically significant difference ($p=0.000$). These findings suggest that ginger drinks can be used as a safe, readily available complementary therapy with the potential to support antenatal care in reducing nausea and vomiting during early pregnancy.

This study has limitations because it used a pre-experimental design without a control group, had a relatively small sample size, and was conducted at only one health care facility; therefore, the results must be interpreted with caution and cannot yet be widely generalized. Consequently, health care providers, particularly midwives, may consider utilizing ginger drink as a nonpharmacological intervention in the management of morning sickness according to the pregnant woman's condition. Future research is recommended to use a randomized controlled trial or quasi-experimental design with a control group, involve a larger sample size, and evaluate the dosage, frequency, and duration of ginger administration to obtain stronger scientific evidence.

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