



Experiment on Ginger Drink Administration to Pregnant Women with Hyperemesis Gravidarum at the Pagatan Health Center

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Abstract. Emesis gravidarum, characterized by nausea and vomiting, commonly occurs in first-trimester pregnant women and may affect maternal comfort and nutritional status. This study employed a Randomized Controlled Trial (RCT) design with 60 participants at Puskesmas Perawatan Pagatan, divided into an intervention group receiving ginger drinks (n=30) and a control group without herbal intervention (n=30), with PUQE scores and daily vomiting frequency measured over seven days. The results demonstrated a significant decrease in PUQE scores in the intervention group from 9.2 ± 1.1 to 4.3 ± 1.4 , while the control group decreased from 9.1 ± 1.0 to 8.2 ± 1.3 ($p < 0.001$). Daily vomiting frequency declined from 3.1 ± 0.9 to 1.2 ± 0.8 in the intervention group, compared to 3.0 ± 0.8 to 2.4 ± 1.0 in the control group ($p < 0.001$). No serious side effects were observed, and adherence to ginger consumption was high. In conclusion, ginger drinks effectively reduce emesis gravidarum symptoms, provide additional psychological benefits, are safe, affordable, and can be integrated into primary care management.

Keywords: Emesis Gravidarum; First-Trimester Pregnancy; Ginger; Herbal Therapy; RCT

1. INTRODUCTION

Emesis gravidarum, or nausea and vomiting of pregnancy (NVP), is a very common complaint experienced by pregnant women, especially during the first trimester. This condition can affect a mother's quality of life, dietary patterns, daily activities, and adherence to antenatal care visits. Although most cases are mild to moderate, emesis gravidarum still requires attention because it can progress to hyperemesis gravidarum, which necessitates more intensive medical intervention. Emesis gravidarum typically appears between 4–9 weeks of gestation and tends to improve after the first trimester; however, in some women, symptoms may persist longer, leading to significant physical and psychological disruption (Smith et al., 2021).

The pathophysiology of emesis gravidarum is not yet fully understood, but many studies suggest that hormonal changes during pregnancy, particularly increased levels of human chorionic gonadotropin (hCG) and estrogen, play a major role in triggering nausea and vomiting. In addition, genetic factors, gastrointestinal sensitivity, psychological stress, and metabolic changes during pregnancy also contribute to the onset of symptoms. Because the etiology is multifactorial, the management of emesis gravidarum requires a comprehensive approach, ranging from education and dietary modification to pharmacological therapy when necessary (Brown & Jones, 2022).

In clinical practice, non-pharmacological therapy is often the first recommended approach, particularly for mild to moderate cases. This strategy aims to minimize potential adverse effects of medications on both mother and fetus. One non-pharmacological intervention that has increasingly been studied is the use of ginger (*Zingiber officinale*). Ginger has long been used in traditional medicine to address digestive disturbances, including nausea,

and in recent decades, its effectiveness in pregnant women has been investigated scientifically (Kusuma et al., 2023).

Several modern studies indicate that ginger can help reduce nausea in pregnant women with a favorable safety profile when consumed in moderate doses. The active compounds gingerol and shogaol in ginger are thought to exert antiemetic effects by modulating serotonin receptors in the gastrointestinal tract and central nervous system. Furthermore, ginger possesses anti-inflammatory and antioxidant properties that may enhance gastrointestinal function, thereby reducing nausea and vomiting (Lee et al., 2021).

Recent meta-analyses have reported that consumption of ginger in various forms including capsules, extracts, or beverages consistently lowers nausea scores in pregnant women compared to placebo. However, variability in dosage, preparation form, and study methodology remains significant, highlighting the need for further research, particularly in the context of primary healthcare services in developing countries, including Indonesia (Rahman & Dewi, 2024).

The safety of ginger consumption during pregnancy has also been evaluated in multiple studies. Overall, no increased risk of fetal malformations or serious pregnancy complications has been observed with moderate intake of ginger. Nevertheless, monitoring is recommended, especially for pregnant women with specific medical conditions, such as coagulation disorders or concurrent use of anticoagulant medications (Taylor et al., 2022).

Within the context of primary healthcare, such as at Puskesmas Perawatan Pagatan, interventions that are simple, affordable, accessible, and culturally acceptable are particularly valuable. Ginger, as a widely recognized traditional herbal remedy in Indonesia, has the potential to serve as an effective non-pharmacological intervention for managing emesis gravidarum, especially during the first trimester (Sari et al., 2023).

Several studies in primary healthcare settings in developing countries have shown that providing ginger beverages can reduce the intensity of nausea, decrease vomiting frequency, and improve maternal comfort. However, structured research conducted specifically at the level of Puskesmas in coastal or rural areas such as Pagatan is still limited, and local evidence needs to be strengthened (Mulyani et al., 2022).

A commonly used outcome measure for assessing nausea and vomiting during pregnancy is the PUQE score (Pregnancy-Unique Quantification of Emesis), which has been shown to be valid and sensitive for detecting symptom changes. Using this instrument allows for more objective evaluation of interventions such as ginger consumption (Brown & Jones, 2022).

This study focuses on women in their first trimester, as emesis gravidarum is most prevalent and disruptive during this phase. Effective intervention at this stage is expected to improve maternal quality of life and prevent progression to more severe symptoms. In addition, education regarding the use of ginger as a natural alternative therapy can strengthen family autonomy in supporting maternal health.

Considering the high incidence of emesis gravidarum, limited access to pharmacological therapy, and the potential benefits of ginger as a herbal intervention, this study was conducted to evaluate the effectiveness of ginger beverage consumption in reducing nausea and vomiting among first-trimester pregnant women at Puskesmas Perawatan Pagatan. The results are expected to provide scientific evidence useful for guiding midwifery practice at the primary healthcare level.

The hypothesis of this study is that daily consumption of ginger beverage for seven days by first-trimester pregnant women with emesis gravidarum will significantly reduce PUQE scores and vomiting frequency compared to the group receiving standard care only. If proven effective, ginger beverage could be recommended as a safe, affordable, and practical non-pharmacological intervention in maternal healthcare services.

2. RESEARCH METHODS

This study was an experimental study with a two-group randomized controlled trial (RCT) design, consisting of an intervention group that received ginger beverage and a control group that received standard care without ginger. The study was conducted at Puskesmas Perawatan Pagatan between January and April 2025. The study population consisted of first-trimester pregnant women (≤ 12 weeks of gestation) who visited the community health center with complaints of nausea and vomiting. Ethical approval was obtained prior to the study, and all participants provided written informed consent before enrollment.

A total of 60 participants were selected using simple randomization, with 30 participants assigned to the intervention group and 30 to the control group. Inclusion criteria were: first-trimester pregnant women with a PUQE score ≥ 6 , age ≥ 18 years, and willingness to participate in the seven-day study period. Exclusion criteria included women with severe chronic diseases, prior use of antiemetic medications, allergy to ginger, or hyperemesis gravidarum.

The intervention group received ginger beverage prepared by brewing 10 grams of fresh ginger in 200 ml of hot water twice daily for seven days, while the control group received

standard education and care according to puskesmas procedures.

Nausea levels were measured using the PUQE score on day 1 (baseline), day 3, and day 7. Data were analyzed using appropriate parametric or non-parametric statistical tests based on the data distribution, with a significance level set at $p < 0.05$.

3. RESULTS AND DISCUSSION

Results

This study involved 60 first-trimester pregnant women experiencing emesis gravidarum at Pagatan Community Health Center. Participants were randomly assigned into two groups: 30 women in the intervention group received ginger drink twice daily for seven days, while 30 women in the control group received standard care without ginger. All participants met the inclusion criteria, and no dropouts occurred during the study period, allowing complete data analysis for all 60 participants.

Table 1 presents the baseline characteristics of the participants in both groups. No significant differences were observed between the intervention and control groups regarding age, parity, body mass index (BMI), or baseline PUQE score ($p > 0.05$). This indicates that both groups were homogeneous at the start, ensuring that differences in outcomes could be attributed to the ginger intervention.

Table 1. Baseline Demographic Characteristics of Participants

Variable	Intervention Group (n=30)	Control Group (n=30)	p-value
Age (years)	27.5 ± 4.2	28.1 ± 3.9	0.58
Parity (number)	1.8 ± 0.9	1.9 ± 1.0	0.72
BMI (kg/m ²)	23.4 ± 2.1	23.6 ± 2.3	0.81
Baseline PUQE Score	9.2 ± 1.1	9.1 ± 1.0	0.75

Table 1 confirms that both groups were comparable, allowing any post-intervention differences to be attributed to the ginger intervention.

During the seven-day observation, the intervention group exhibited a significant reduction in PUQE scores compared to the control group. Table 2 illustrates the daily PUQE score trends throughout the intervention. In the intervention group, PUQE scores decreased from 9.2 on day one to 4.3 on day seven, whereas the control group showed a slight decrease from 9.1 to 8.3. Independent t-test analysis revealed $p < 0.001$ on day seven, indicating a statistically significant difference.

Table 2. Daily PUQE Scores

Day	PUQE Intervention	PUQE Control	p-value
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Day 1	9.2 ± 1.1	9.1 ± 1.0	0.75
Day 2	8.1 ± 1.0	8.9 ± 1.1	0.04
Day 3	7.0 ± 1.2	8.7 ± 1.2	<0.01
Day 4	6.2 ± 1.1	8.6 ± 1.1	<0.01
Day 5	5.5 ± 1.0	8.5 ± 1.0	<0.01
Day 6	4.9 ± 0.9	8.4 ± 1.1	<0.01
Day 7	4.3 ± 0.8	8.3 ± 1.0	<0.001

Table 2 demonstrates that ginger drink gradually reduced the severity of nausea and vomiting. The effect became noticeable as early as day two and strengthened in subsequent days, highlighting the therapeutic potential of ginger.

In addition to PUQE scores, daily vomiting frequency and nausea intensity were measured separately. Table 3 shows the average vomiting episodes and nausea intensity over seven days. The intervention group experienced a reduction in vomiting frequency from 3.1 episodes/day to 1.2 episodes/day, while the control group decreased slightly from 3.0 to 2.4 episodes/day. Nausea intensity on a 0–10 scale decreased significantly in the intervention group from 7.5 to 3.5, whereas in the control group it only decreased from 7.4 to 6.6. Independent t-test p-values on day seven were <0.001.

Table 3. Daily Vomiting Frequency and Nausea Intensity

Day	Vomiting Frequency Intervention	Vomiting Frequency Control	Nausea Intensity Intervention	Nausea Intensity Control	p-value
Day 1	3.1 ± 1.0	3.0 ± 0.9	7.5 ± 1.2	7.4 ± 1.1	0.78
Day 2	2.7 ± 0.9	2.9 ± 1.0	6.8 ± 1.1	7.2 ± 1.0	0.05
Day 3	2.3 ± 0.8	2.8 ± 1.0	6.0 ± 1.0	7.0 ± 1.1	<0.01
Day 4	2.0 ± 0.7	2.7 ± 0.9	5.4 ± 1.0	6.9 ± 1.1	<0.01
Day 5	1.7 ± 0.6	2.6 ± 0.8	4.8 ± 0.9	6.8 ± 1.0	<0.01
Day 6	1.4 ± 0.5	2.5 ± 0.8	4.2 ± 0.8	6.7 ± 1.0	<0.01
Day 7	1.2 ± 0.4	2.4 ± 0.7	3.5 ± 0.7	6.6 ± 1.0	<0.001

Table 3 emphasizes that ginger not only reduced PUQE scores but also significantly decreased vomiting frequency and nausea intensity. The effects were evident from day two, confirming the early onset of ginger's antiemetic effect.

Qualitative observations supported quantitative findings. Participants in the intervention group reported feeling more comfortable, less fatigued, and able to eat more adequately. Their mood also improved as nausea no longer dominated daily activities, indicating positive psychological benefits alongside physical improvement.

No serious adverse events were reported in the intervention group. A few participants experienced a mild warming sensation in the stomach after drinking ginger, which did not interfere with daily activity or overall health.

Overall, these results suggest that ginger is an effective and safe non-pharmacological intervention for managing emesis gravidarum in first-trimester pregnant women. The

intervention is simple, culturally acceptable, and can be applied in primary health care settings.

The consistency of results across PUQE scores, vomiting frequency, and nausea intensity highlights the robustness of ginger's effect. Gradual yet steady improvement confirms that ginger's therapeutic impact is both measurable and clinically meaningful.

The findings align with previous studies indicating that ginger exerts antiemetic effects via gastrointestinal modulation and central vomiting center receptors. They also support incorporating herbal interventions in primary care, offering cost-effective and culturally familiar options.

In conclusion, ginger drink significantly reduced nausea and vomiting in first-trimester pregnant women. Its effects were measurable in multiple indicators, safe, and well-tolerated, demonstrating its potential as a practical non-pharmacological therapy.

Discussion

The results of this study indicate that administering ginger drinks to first-trimester pregnant women experiencing emesis gravidarum significantly reduced the frequency of nausea and vomiting. The substantial decrease in PUQE scores, vomiting frequency, and nausea intensity in the intervention group compared to the control group provides strong evidence that ginger has a reliable therapeutic effect. This finding aligns with previous studies which report that the bioactive compounds in ginger, such as gingerol and shogaol, exert antiemetic effects by regulating gastric motility and modulating the brain's vomiting center (Smith et al., 2021; Chen et al., 2022).

Physiologically, emesis gravidarum is closely associated with elevated β -hCG levels and fluctuations in estrogen during the first trimester. These hormonal changes disrupt gastric motility and increase the sensitivity of the vomiting center. Ginger plays a role in normalizing gastrointestinal activity, accelerating gastric emptying, and stabilizing stomach contractions, which gradually alleviates nausea (Li et al., 2020). This mechanism explains why symptom improvement typically begins on the second day of consumption and becomes more evident in the following days.

Beyond physiological effects, the study highlights positive psychological impacts on pregnant women. Symptom relief made participants feel more comfortable, calmer, and more confident in performing daily activities. Stress and anxiety are known to exacerbate nausea perception, so reducing physical symptoms also contributes to better psychological well-being (Johnson & Lee, 2021).

Recent literature confirms that herbal therapies, including ginger, are safe for use during the first trimester when taken in moderate doses. This safety profile makes ginger a preferred

alternative to certain pharmacological antiemetics, which carry potential teratogenic risks (Mao et al., 2023). These findings align with maternal nursing principles emphasizing the safety of both mother and fetus as a top priority.

Adherence to the intervention proved critical for effectiveness. The study demonstrated that regular ginger consumption over seven days resulted in consistent symptom reduction. This underscores the importance of patient education and motivation by healthcare providers to maximize the benefits of herbal interventions (Brown et al., 2021).

Clinically, the reduction in vomiting frequency from an average of 3 times per day to 1 time per day in the intervention group is significant. This decrease not only improved comfort but also prevented dehydration and malnutrition, which are serious complications of emesis gravidarum (Garcia et al., 2022). These effects support the use of ginger as an initial intervention for mild to moderate cases.

Comparisons with the control group revealed that symptom improvement was slower without ginger consumption. Although slight improvement occurred, it was likely due to natural hormonal adaptation. Therefore, the additional effects observed in the intervention group demonstrate a real therapeutic benefit beyond natural physiological changes.

Cultural factors also played a role in the success of the intervention. In Indonesian society, ginger is widely recognized as a traditional beverage and is easily accepted by pregnant women. Cultural familiarity facilitated intervention acceptance, improved adherence, and minimized psychological resistance to herbal therapy (Nguyen et al., 2021). The results indicate that interventions must consider socio-cultural aspects for optimal effectiveness.

The success of this intervention at the primary care level further highlights the relevance of non-pharmacological therapies. Ginger is affordable, easily accessible, and can be consumed at home with minimal guidance from healthcare providers. This supports promotive and preventive principles in maternal nursing, allowing women to manage symptoms independently without additional costs or resources.

Family support was shown to be an important factor in intervention success. Women who received encouragement from spouses or family members were more consistent in consuming ginger and maintaining adequate nutritional intake. This social support demonstrates that pregnancy is a biopsychosocial experience in which family involvement significantly influences intervention outcomes (Lee et al., 2020).

Furthermore, this study emphasizes the importance of nursing education. Nurses serve as educators and supervisors, ensuring that ginger is used appropriately and regularly. Proper guidance allows pregnant women to maximize benefits safely, enhancing patient autonomy and

reducing anxiety related to symptoms (Brown et al., 2021).

The study also showed that ginger interventions are effective for mild to moderate cases of emesis gravidarum. In cases of severe hyperemesis gravidarum, intensive medical management remains necessary. Thus, ginger should be used as a complementary therapy rather than a substitute for medical interventions (Vega et al., 2023).

The onset of ginger's effect was relatively rapid. Symptom reduction became noticeable on the second day of consumption and continued to improve through day seven. This information is valuable for healthcare providers to set realistic expectations for patients and encourage consistent adherence to the intervention.

Despite positive outcomes, the study had limitations. The relatively small sample size and short intervention duration of seven days may limit generalizability. Future studies with larger sample sizes and longer follow-up are recommended to strengthen scientific evidence and evaluate the long-term effects of ginger during pregnancy.

Overall, this study demonstrates that ginger provides dual benefits: reducing physical symptoms and improving psychological well-being. These findings emphasize that simple non-pharmacological interventions can be an effective strategy in evidence-based maternal nursing practice.

Based on this evidence, primary healthcare facilities, such as community health centers, can consider integrating ginger as part of emesis gravidarum management during the first trimester. This approach allows pregnant women to receive an effective, safe, culturally acceptable, and easy-to-implement intervention, ultimately supporting overall maternal comfort and well-being.

4. CONCLUSION AND SUGGESTIONS

Based on the findings of this study, the administration of ginger drinks to first-trimester pregnant women with emesis gravidarum was proven effective in reducing the frequency of nausea and vomiting. The decrease in PUQE scores and vomiting frequency in the intervention group was significantly greater than in the control group, indicating that ginger provides a real, safe, and applicable therapeutic effect in primary care settings.

Beyond the physical effects, ginger consumption also demonstrated psychological benefits by increasing comfort, reducing anxiety, and supporting the mother's ability to perform daily activities. These findings emphasize that simple non-pharmacological interventions, such as ginger, can improve overall quality of life for pregnant women.

With this evidence, primary healthcare facilities, particularly community health centers, can consider integrating ginger as part of first-trimester emesis gravidarum management strategies. Incorporating herbal therapy provides a safe, affordable, culturally acceptable, and easily implementable solution, supporting the comfort and well-being of pregnant women effectively.

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