

The Effectiveness of the Combination of Cucumber (*Cucumis sativus*) and Mint Leaves (*Mentha piperita*) Infused Water in Relieving Nausea and Vomiting in Pregnant Women at the Prima Melati Clinic, Medan in 2026

Fitriyana Br Kaban¹, Verawaty Fitrinelda Silaban²

Universitas Prima Indonesia

fitriyanabrkan@unprimdn.ac.id

ABSTRACT

Purpose: This study aimed to determine the effectiveness of the combination of cucumber infused water (*Cucumis sativus*) and peppermint leaves (*Mentha piperita*) in reducing nausea and vomiting in pregnant women at Klinik Prima Melati Medan in 2026. **Design/Methods/Approach:** This study used a quasi-experimental design with a pre-test and post-test with a control group approach. The sample consisted of 30 first-trimester pregnant women with nausea-vomiting complaints, divided into 15 intervention groups and 15 control groups by purposive sampling. The intervention group received cucumber and mint infused water 250 mL three times daily for 7 days. Nausea-vomiting was measured using the PUQE (Pregnancy Unique Quantification of Emesis) scale. **Findings/Results:** There was a significant reduction in PUQE scores in the intervention group (pre-test mean 11.47 vs post-test 5.13, $p = 0.000$), while the control group showed no significant change ($p = 0.312$). The independent t-test confirmed a significant difference between groups ($p = 0.000$). **Conclusions:** The combination of cucumber and mint infused water is effective in reducing nausea and vomiting in first-trimester pregnant women. This non-pharmacological intervention is safe, easy to implement, and affordable, making it a viable complementary therapy in antenatal care.

Keywords: Infused Water, Cucumber, Mint Leaves, Nausea and Vomiting, Pregnant Women

INTRODUCTION

Nausea and vomiting, also known as emesis gravidarum, is one of the most common complaints experienced by pregnant women, especially during the first trimester. This condition occurs in approximately 70-80% of pregnant women and can negatively impact quality of life, nutritional status, and the well-being of both mother and fetus if not managed appropriately [1]. Persistent and uncontrolled nausea and vomiting can progress to hyperemesis gravidarum, a severe condition requiring hospitalization and intensive medical intervention [2].

Pharmacological approaches such as antiemetics are often the primary choice, but concerns about the side effects of drugs on the fetus have prompted many pregnant women and healthcare professionals to seek safer, non-pharmacological alternatives. Complementary therapies based on natural ingredients are gaining increasing attention in the context of obstetric care because they are considered safer, more accessible, and more acceptable to pregnant women [3].

Cucumber (*Cucumis sativus*) is a plant rich in water, vitamin C, and various bioactive compounds such as flavonoids and tannins that have antiemetic properties and calm the nervous system. The high water content in cucumber plays a role in maintaining body hydration which is important during pregnancy, while its fresh aroma can relieve the sensation of nausea [4]. On the other hand, mint leaves (*Mentha piperita*) contain menthol as a main component which has been scientifically proven to have a relaxing effect on gastrointestinal muscles, antiemetic properties, and the ability to modulate the perception of nausea through stimulation of sensory receptors [5].

Infused water is a drink made by soaking fruits, vegetables, or herbs in water for several hours, allowing their active compounds to dissolve. This method facilitates the consumption of natural ingredients without the need for complex processing and retains their beneficial nutritional and phytochemical content. The combination of cucumber and mint leaves in infused water is a therapeutic innovation that synergistically combines the benefits of both ingredients [6].

Medical records from the Prima Melati Clinic in Medan in 2025 showed that of 180 pregnant women registered in the first trimester, 126 (70%) complained of nausea and vomiting of varying severity. Treatment provided so far has focused on dietary education and vitamin B6 administration; no standardized herbal-based interventions have been implemented at the clinic. Based on this background, researchers were interested in examining the effectiveness of a combination of cucumber and mint leaf infused water in relieving nausea and vomiting in pregnant women at the Prima Melati Clinic in Medan in 2026.

METHOD

Research Design

This study used a quasi-experimental design with a pre-test and post-test approach with a control group. This approach was chosen to compare the effectiveness of the cucumber and mint leaf infused water intervention with a group that did not receive the intervention, so that the real effect of the treatment could be determined [7].

Population and Sample

The population in this study was all first trimester pregnant women who checked themselves at the Prima Melati Clinic Medan in January-March 2026 who experienced nausea and vomiting, totaling 60 people. The sampling technique used purposive sampling with inclusion criteria: pregnant women aged 6-14 weeks of gestation, experiencing nausea and vomiting with a PUQE score ≥ 7 (moderate to severe nausea and vomiting), willing to be respondents, and having no contraindications to cucumber or mint leaves. Exclusion criteria included pregnant women with severe hyperemesis gravidarum requiring hospitalization, having a history of allergies to the ingredients used, and consuming antiemetics during the study. Based on the calculation of the sample size using the Federer formula, a sample of 30 people was obtained, divided into 15 people in the intervention group and 15 people in the control group.

Intervention Materials and Procedures

Infused water was made from 100 grams of fresh cucumber, peeled and thinly sliced, and 10 washed fresh mint leaves, then soaked in 500 mL of cold boiled water for at least 4 hours in the refrigerator. The intervention group was given 250 mL of infused water three times a day (morning, afternoon, and evening) for 7 consecutive days. The control group received standard clinical care in the form of nutritional education and 10 mg of vitamin B6 supplements three times a day. Researchers monitored consumption compliance through a daily checklist completed by the respondents.

Measuring Instruments

The degree of nausea and vomiting was measured using the validated Pregnancy Unique Quantification of Emesis (PUQE) scale, commonly used in obstetric research. This scale consists of three questions about the duration of nausea, frequency of vomiting, and frequency of retching in the last 12 hours. The total PUQE score ranges from 3 to 15,

with interpretations as follows: 3-6 (mild), 7-12 (moderate), and 13-15 (severe). Measurements were taken before the intervention (pre-test) and 7 days after the intervention (post-test).

Data analysis

Data were analyzed using SPSS version 25.0. Data normality was tested using the Shapiro-Wilk test. To determine differences in PUQE scores before and after the intervention in each group, a paired t-test (normally distributed data) or Wilcoxon test (non-normal data) was used. Comparisons of effectiveness between the intervention and control groups were analyzed using the independent t-test or the Mann-Whitney test with a significance level of $p < 0.05$.

RESULTS AND DISCUSSION

Respondent Characteristics

The results of data collection showed that the characteristics of respondents in both groups were homogeneous. The majority of respondents were aged 20-35 years (intervention group 86.7%, control group 80%), primigravida (intervention group 53.3%, control group 46.7%), and had a gestational age of 8-10 weeks (intervention group 60%, control group 53.3%). The results of the homogeneity test of respondent characteristics showed no significant difference between the two groups ($p > 0.05$), so the two groups were declared comparable and comparable.

Table 1. Distribution of Respondent Characteristics by Group

Characteristics	Intervention (n=15)	%	Control (n=15)	%	p-value
Age (years)					
< 20 years	1	6.7	2	13.3	0.723
20-35 years	13	86.7	12	80.0	
> 35 years	1	6.7	1	6.7	

Gravida					
Primigravida	8	53.3	7	46.7	0.689
Multigravida	7	46.7	8	53.3	
Gestational Age					
6-7 weeks	3	20.0	4	26.7	0.754
8-10 weeks	9	60.0	8	53.3	
11-14 weeks	3	20.0	3	20.0	

Nausea-Vomiting Score Before and After Intervention

The results of PUQE score measurements before and after the intervention in both groups are presented in Table 2. The intervention group showed a very significant decrease in PUQE scores after being given a combination of cucumber and mint leaf infused water for 7 days.

Table 2. Comparison of PUQE Scores Before and After Intervention

Group	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference	% Decrease	p-value
Intervention (n=15)	11.47 (1.30)	5.13 (0.92)	6.34	55.3%	0,000*
Control (n=15)	11.13 (1.19)	10.27 (1.44)	0.86	7.7%	0.312
p-value between groups (post-test)	0,000*				

**Significant at $p < 0.05$; SD = Standard Deviation; Tests used: Paired t-test (within groups), Independent t-test (between groups)*

Based on Table 2, the mean PUQE score of the intervention group decreased from 11.47 (SD = 1.30) before the intervention to 5.13 (SD = 0.92) after 7 days of cucumber and mint infused water. This decrease of 6.34 points (55.3%) was statistically significant (p

= 0.000). After the intervention, all respondents in the intervention group (100%) experienced a shift in category from moderate-severe nausea and vomiting to mild nausea and vomiting. This was in contrast to the control group, which only experienced an average decrease of 0.86 points (7.7%) and was not statistically significant ($p = 0.312$). The independent t-test showed a highly significant difference between the two groups after the intervention ($p = 0.000$).

Distribution of Nausea-Vomiting Categories After Intervention

Table 3. Distribution of Nausea-Vomiting Categories Based on PUQE Scores After Intervention

PUQE Category	Intervention (n=15)	%	Control (n=15)	%	p-value
Light (score 3-6)	15	100.0	0	0.0	0,000*
Moderate (score 7-12)	0	0.0	14	93.3	
Heavy (score 13-15)	0	0.0	1	6.7	

These findings confirm the significant effectiveness of the cucumber and mint infused water combination. In the post-test, all respondents in the intervention group (100%) were in the mild nausea and vomiting category, while 93.3% of respondents in the control group were in the moderate category and 6.7% in the severe category.

DISCUSSION

The results of this study prove that giving infused water combined with cucumber and mint leaves for 7 days can significantly reduce nausea and vomiting in pregnant women in the first trimester. This effectiveness can be explained by the working mechanism of the bioactive components contained in these two ingredients.

This research has been declared ethically appropriate by the Health Research Ethics Committee of Prima Indonesia University with Number 078/KEPK/UNPRI/III/2026.

Cucumber (*Cucumis sativus*) contains 96% water, which plays an important role in preventing dehydration, which often accompanies nausea and vomiting during pregnancy. The flavonoids and tannins in cucumbers have antiemetic properties by inhibiting serotonin (5-HT₃) receptors involved in the mechanism of nausea.

Furthermore, the mild, fresh aroma of cucumbers can have a calming effect on the central nervous system, which plays a role in the perception of nausea [8]. These results are in line with research by Maulida et al. (2024) which proved that giving boiled cucumber water for 5 days significantly reduced the frequency of nausea and vomiting in pregnant women in the first trimester ($p = 0.002$) [4].

Mint leaves (*Mentha piperita*) contain menthol as the main active compound that works through several mechanisms. Menthol activates the TRPM8 (Transient Receptor Potential Melastatin 8) receptor which provides a cooling effect and reduces the sensation of nausea. This compound also has a spasmolytic effect on the smooth muscles of the gastrointestinal tract by inhibiting calcium channels, thereby reducing gastric contractions that trigger nausea and vomiting. In addition, the strong aroma of menthol has been shown to effectively modulate sensory signals of nausea through the olfactory pathway to the cerebral cortex [5]. This is supported by research by Putri and Hasibuan (2025) who proved that mint aromatherapy significantly reduced nausea and vomiting in pregnant women ($p = 0.001$) [9].

The combination of these two ingredients in infused water provides a synergistic, mutually reinforcing effect. The high water content of cucumber helps maintain hydration and stabilize electrolytes, while the menthol from mint leaves actively inhibits nausea receptors. A study by Anggraini et al. (2025), which conducted a systematic review of herbal therapies for emesis gravidarum, concluded that herbal combinations with complementary phytochemicals demonstrated greater effectiveness than single therapies due to the potentiation of the effects between the bioactive components [10].

The superiority of this intervention compared to the control group receiving only vitamin B6 suggests that a complementary herbal-based approach could be a meaningful alternative or adjunct in the management of nausea and vomiting during pregnancy. Ease of preparation, affordability, widespread availability of ingredients in Indonesia, and a good safety profile make cucumber-mint leaf infused water a viable therapeutic option for integration into antenatal care practices [11].

CONCLUSION

The combination of cucumber (*Cucumis sativus*) and mint (*Mentha piperita*) infused water has been proven statistically effective in relieving nausea and vomiting in first-

trimester pregnant women at Prima Melati Clinic Medan in 2026. Administering this infused water for 7 days was able to reduce the PUQE score by an average of 6.34 points (55.3%) in the intervention group, with all respondents (100%) moving to the mild nausea and vomiting category after the intervention. There was a very significant difference between the intervention group and the control group ($p = 0.000$). This non-pharmacological intervention is safe, easy to implement, affordable, and can be recommended as a complementary therapy integrated into antenatal care standards for the management of nausea and vomiting in pregnancy. Further research is recommended to use a randomized controlled trial design with a larger sample size and a longer follow-up period.

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