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DIFFERENCES IN THE FREQUENCY OF NAUSEA VOMITING IN FIRST-TRIMESTER PREGNANT WOMEN WHO CONSUME WARM GINGER AND HONEY GINGER IN THE WORKING AREA OF THE MANDALAWANGI HEALTH CENTER IN 2023

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Abstract

Until now the high maternal mortality rate in Indonesia is still a priority issue in the health sector. In pregnancy, nausea and vomiting can adversely affect pregnant women because it can lead to dehydration, electrolyte imbalances and can result in death. Alternative treatments to overcome nausea and vomiting can provide therapy from natural ingredients, namely ginger and honey. This study aims to determine the difference in the frequency of nausea and vomiting after administration of ginger and honey in first trimester pregnant women in Mangkualam village in the work area of Cimanggu Health Center in Pandeglang District in 2023. The research design used was quasi experimental with pre and post test group design. The sample in this study amounted to 20 respondents with the sampling technique in the study using total sampling technique that is taking a sample as a whole that meets the inclusion and exclusion criteria. In this study, the instrument in this study used Index Nausea Vomiting and Retching (INVR) to measure the scale of nausea and vomiting and ginger and honey to reduce nausea and vomiting. The results showed that there were significant differences between pregnant women before and after consuming ginger and honey with the results (p value <0.05). Ginger and honey can be used as an alternative medicine for pregnant women who experience nausea and vomiting from natural ingredients.

Keywords: Nausea, Vomiting, Ginger and Honey

Introduction

One of the indicators in determining the level of a nation's health is the maternal and infant mortality rate, as it has a significant impact on the success of health development (Saleha, 2011). Mortality and morbidity in pregnant and childbirth women are significant issues for developing countries. In poor countries, approximately 20-50% of deaths among women of childbearing age are related to pregnancy. According to statistical data released by the World Health Organization (WHO), a UN agency dealing with health issues, the maternal mortality rate during pregnancy and childbirth worldwide reaches 500/100,000 population each year (WHO, 2019).

During pregnancy, nausea and vomiting are actually physiological phenomena in the first trimester. This occurs because pregnancy induces hormonal changes in women, such as an increase in estrogen and progesterone hormones, as well as the secretion of human chorionic gonadotropin (hCG) by the placenta. Nausea typically occurs in the morning but can also occur at any time, including nighttime. These symptoms usually manifest around 6 weeks after the last day of the previous menstrual period and last for approximately 10 weeks (Manuaba, 2018).

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Generally, women can adapt to this condition, but in pathological conditions, severe symptoms of nausea and vomiting can persist for up to 4 months. Daily activities are disrupted, and the general condition worsens. This condition is known as hyperemesis gravidarum. The severity of the disease is determined by the complaints of symptoms and physiological changes. Hyperemesis gravidarum that does not receive proper treatment can also lead to maternal death (Prawihardjo, 2019).

Mochtar (2018) describes nausea and vomiting as the most common medical disorders during pregnancy, occurring in 60–80% of primigravida and 40–60% of multigravida. Prawirohardjo (2018) states that in one out of a thousand pregnancies, these symptoms become more severe. Meanwhile, Mochtar (2018) asserts that the frequency of hyperemesis gravidarum occurrence is 2 per 1000 pregnancies.

Hyperemesis gravidarum, a complication in young pregnant women, when persistent, can lead to dehydration, hypochloremic alkalosis, and electrolyte imbalance. This condition can also result in the depletion of carbohydrate and fat reserves for energy needs. Incomplete fat oxidation leads to ketosis with the accumulation of acetoacetic acid, hydroxybutyric acid, and acetone in the blood. Insufficient food intake and fluid loss due to vomiting contribute to dehydration, reducing extracellular fluid and plasma. Sodium and chloride levels in both blood and urine decrease. Additionally, dehydration causes hemoconcentration, leading to reduced blood flow to tissues. Potassium deficiency, resulting from vomiting and increased renal excretion, leads to increased vomiting frequency and can potentially damage the liver (Runiari, 2019).

Dehydration and insufficient intake result in varying degrees of weight loss depending on the duration and severity of the illness. Inadequate digestion and absorption of carbohydrates and other nutrients cause the body to burn fat to maintain heat, and in the absence of carbohydrates, fats are used to produce energy. As a consequence, some byproducts of fat metabolism are present in the blood and urine (ketones may be present or in excess in urine) (Runiari, 2019).

The exact cause of hyperemesis gravidarum is not yet known. Some predisposing factors commonly observed include primigravida, molar pregnancy, diabetes, and multiple pregnancies due to an increase in HCG levels. Organic factors, such as the entry of chorionic villi into maternal circulation and metabolic changes, psychological factors like marital discord, job loss, fear of pregnancy and childbirth, fear of assuming responsibility, and other endocrine factors, may contribute to its occurrence (Manjoer, 2019).

Broadly speaking, the management of nausea and vomiting during pregnancy can be categorized into pharmacological and non-pharmacological therapies. Some pharmacological therapies include the use of vitamin B6, doxylamine, antiemetics such as prochlorperazine, antihistamines, anticholinergics, metoclopramide, corticosteroids, and intravenous therapy. Non-pharmacological therapies include dietary changes, emotional support, acupuncture, acupressure, and herbal remedies such as ginger (Wiraharja, 2018).

Ginger is a medicinal plant with a pseudo-stem structure. Besides reducing nausea and vomiting, ginger has other benefits such as alleviating migraines, motion sickness, post-chemotherapy nausea, osteoarthritis, rheumatoid arthritis, post-stroke urinary tract disorders, weight loss, shortening labor duration, anti-inflammatory effects, and as an anti-coagulant (Wiraharja, 2017).

The substances contained in ginger include gingerol, shogaol, zingerone, zingiberol, and paradol. The antiemetic mechanism of ginger is still not fully understood, but some evidence suggests that ginger inhibits serotonin receptors, exerting antiemetic effects directly on the gastrointestinal system and the central nervous system. The influence of ginger can be felt immediately after consumption (Wiraharja, 2011).

Based on the observation data at the Mandalawangi Health Center, it is known that the number of visits by first-trimester pregnant women in 2022 was 379 people. Out of this number, 87.59% experienced nausea and vomiting, totaling 332 people. Interview results with 10 first-trimester

pregnant women experiencing nausea and vomiting revealed that 5 of them claimed to have taken antiemetic medication but still felt nauseous after the effects of the medication wore off. Additionally, 3 women stated that the antiemetic medication they took did not help at all, while 2 others found relief through rest and overcoming the symptoms by drinking warm water without taking any medication, even though they had been prescribed medication.

Based on the above background, the author is interested in conducting research on practical efforts to alleviate nausea and vomiting symptoms in pregnant women by utilizing ginger and honey as symptom relievers. The approach involves processing ginger and honey into a beverage that is easy to prepare and can be consumed safely by pregnant women.

Research Methods

The design used in this research is a quantitative research design, with a Quasi-Experimental design with control, using Pre and Post-Test with control. This means that the researcher intervened in one group with warm ginger and a control group with honey ginger. The impact of the treatment is assessed by comparing the post-test values with the pre-test values (Dharma, 2018). The population in this study consists of all first-trimester pregnant women experiencing nausea and vomiting in the Mandalawangi Primary Health Center's working area, totaling 20 individuals. Due to the population size being less than 100, the sampling technique used in this research is total sampling, where all members of the population are included as samples in the study (Nursalam, 2018). Therefore, the total number of samples in this study is 20 respondents.

This research will be conducted in the Mandalawangi Health Center's work area in December 2023. The research instruments used in this study are interviews, observations, and the Index Nausea Vomiting and Retching (INVR) questionnaire, which is used to record the nausea and vomiting scale of pregnant women in the first trimester who experience nausea and vomiting before and after the intervention.

The data to be used in this research consists of secondary data and primary data. The secondary data in this study are from pregnant women in the first trimester who experienced nausea and vomiting in Mangkualam Village, obtained from the register book at Mandalawangi Health Center. Data processing is carried out manually using various methods such as editing, coding, entering, and cleaning. Additionally, data analysis techniques include univariate and bivariate analysis methods.

Research Results

1. Normality Test of Nausea Vomiting Before Intervention

Table 1. Normality Test Results of Nausea Vomiting Before Intervention

Nausea Vomiting	Statistic	Df	Sig.
Before the Intervention	0,736	20	0,456
After the Intervention	0,572	20	0,281

Table 1 shows that the significance value of nausea and vomiting data before the intervention is 0.456 ($p > 0.05$), and the significance value of nausea and vomiting data after the intervention is 0.281 ($p > 0.05$). Therefore, based on the Shapiro-Wilk normality test for both sets of data, it is stated that they are normally distributed.

2. Univariate Analysis

Table 2. Frequency distribution of nausea vomiting in pregnant women in the first trimester before giving warm ginger drink and ginger honey

Scale: Nausea Vomiting (INVR : 0 -32)	Before the Intervention	
	N	%
Mild (1-8)	13	65,0
Medium (9-16)	7	35,0
Heavy (17-24)	0	0,0
Very Heavy (25-32)	0	0,0
Total	**20**	**100,0**

Based on Table 2, it can be observed that before the intervention of warm ginger and honey, out of 20 first-trimester pregnant mothers experiencing nausea and vomiting in the working area of Mandalawangi Health Center, a total of 13 pregnant mothers (29.5%) experienced mild nausea and vomiting, while 7 pregnant mothers (13.64%) experienced moderate nausea and vomiting.

Table 3. Frequency distribution of nausea vomiting in pregnant women in the first trimester after giving warm ginger drinks and honey ginger

Scale: Nausea Vomiting (INVR: 0 -32)	After the Intervention	
	N	%
Mild (1-8)	7	15,9
Medium (9-16)	4	9,1
Heavy (17-24)	0	0,0
Very heavy (25-32)	0	0,0
Total	**20**	**100,0**

Based on the results in Table 3 after the intervention of warm ginger and honey, 9 pregnant women became normal or free from nausea and vomiting. Thus, the number of pregnant women without complaints became 33 individuals (75.00%), with only 7 pregnant women (15.9%) still experiencing mild nausea and vomiting, and 4 pregnant women (9.1%) still suffering from moderate nausea and vomiting. The frequency distribution of nausea and vomiting in first-trimester pregnant women after the consumption of warm ginger and honey beverages.

3. Bivariate Analysis

Table 4. The Average Effect of Giving Warm Ginger and Honey Ginger Drinks on First Trimester Pregnant Women in the Working Area of the Mandalawangi Health Center in 2023

Group	*Pre-Test*		*Post-Test*		*t-test*	*Sig. (2-tailed)*
	Mean	*SD*	*Mean*	*SD*		
Ginger Honey	9,98	0,80	10,56	0,84	- 15,191	0,000
Warm Ginger	10,16	0,62	11,01	0,77	- 12,464	0,000

Based on Table 4, the comparison of nausea and vomiting before receiving ginger honey intervention is 1.614 with a standard deviation of 0.7538. Meanwhile, after receiving honey

intervention, the average nausea and vomiting is 1.341 with a standard deviation of 0.6450. The difference in mean values between before and after intervention is 0.263 with a standard deviation of 0.1088.

The statistical test results show a p-value of 0.000. At an alpha level of 0.05, since p < alpha, it can be concluded that there is a very significant influence of ginger honey intervention on nausea and vomiting in pregnant women in the first trimester in the Mandalawangi Public Health Center, Pandeglang Regency, Banten Province in 2023.

Discussion

1. Univariate Analysis Discussion

a. Frequency distribution of nausea vomiting in pregnant women in the first trimester before giving warm ginger drinks and ginger honey Light

Based on Table 2, it can be seen that before the intervention of warm ginger and honey, out of 20 first-trimester pregnant women experiencing nausea and vomiting in the Mandalawangi Health Center's working area, 13 pregnant women (29.5%) had mild nausea and vomiting, while 7 pregnant women (13.64%) had moderate nausea and vomiting.

Emesis gravidarum is a common symptom that often occurs in the first trimester of pregnancy. These symptoms typically occur approximately six weeks after the last menstrual period and last for about ten weeks (Wiknjosastro, 2019). Emesis gravidarum during pregnancy is characterized by discomfort and the expulsion of stomach contents experienced by pregnant women in the early stages of pregnancy (Tiran, 2019). The management of emesis gravidarum is divided into pharmacological and non-pharmacological approaches. Pharmacological management includes the administration of vitamins (B-complex vitamins, mediamer N6 as a vitamin and antiemetic) and mild sedative treatment. Non-pharmacological management to address emesis gravidarum includes methods such as providing hot tea and ginger (Setiawan, 2020).

Irmayasari's study (2019) revealed a relationship between hCG hormone levels and the frequency of emesis gravidarum in pregnant women. This is because, in respondents with a higher frequency of emesis gravidarum, the hCG hormone levels were also high, and vice versa. If the frequency of emesis is rare or absent, the hCG hormone levels are low. No respondents experienced a discrepancy in the research results, meaning that if emesis is frequent, hCG hormone levels are low.

b. Frequency distribution of nausea vomiting in pregnant women in the first trimester after giving warm ginger drinks and honey ginger

Based on the results of Table 3 after the intervention of warm ginger and honey, a total of 9 pregnant women became normal or free from nausea and vomiting. As a result, the number of pregnant women without complaints increased to 33 individuals (75.00%), with only 7 pregnant women (15.9%) experiencing mild nausea and vomiting, and 4 pregnant women (9.1%) still experiencing moderate nausea and vomiting. The frequency distribution of nausea and vomiting in pregnant women in the first trimester after the administration of warm ginger and honey beverages was observed.

This aligns with the benefits of ginger drink, which can relax and weaken the muscles of the digestive tract, reducing nausea and vomiting (Glare et al., 2011, and Perwitasari et al., 2018). In accordance with the study conducted by Putri et al. (2017), before the intervention, respondents on average experienced nausea and vomiting 13 times a day. After the intervention with warm ginger drink, the average frequency of nausea and vomiting decreased to 3.18 times a day. Normality

testing using the Shapiro-Wilk test was conducted on the research data, and the results indicated a normal distribution, allowing for the continuation of the paired t-test.

The findings of this research are consistent with the study by Saswita et al. (2011), stating that the average reduction in nausea and vomiting before intervention was 3.87, and after intervention, it was 2.78, with a p-value of 0.014. It can be concluded that ginger is effective in reducing nausea and vomiting during the first trimester of pregnancy.

c. Comparison of consumption of honey ginger and warm ginger to the frequency of emesis gravidarum

Based on Table 4, the comparison of nausea and vomiting before ginger honey intervention is 1.614 with a standard deviation of 0.7538. Meanwhile, after receiving the honey intervention, the average nausea and vomiting is 1.341 with a standard deviation of 0.6450. The difference in mean values before and after the intervention is 0.263 with a standard deviation of 0.1088.

The statistical test resulted in a p-value of 0.000. With an alpha of 0.05, where p < alpha, it can be concluded that there is a highly significant effect of ginger honey intervention on nausea and vomiting in the first trimester pregnant women in the Mandalawangi Health Center's working area in Pandeglang Regency, Banten Province in 2023.

Ginger is one of the most commonly used spices in food worldwide and has a diversity of medicinal uses. It is cultivated in the humid and warm tropical climates of India, China, Sri Lanka, Southeast Asia, Nigeria, and Jamaica. The rhizome is the plant part used and is available in trade either peeled or unpeeled. The use of ginger as medicine in Europe has ancient roots and can be traced back to the Greek and Roman periods. This plant has also been documented in Ayurveda and other religious texts dating back to 2000 BC when ginger was known to aid digestion as well as for rheumatism and inflammation (Michael et al., 2019).

The main part of ginger that is utilized is its rhizome. Ginger rhizome is widely used as a spice in cooking and as an herbal remedy for various ailments. The rhizome of ginger contains several chemical components that are beneficial for health. The primary compound found in fresh ginger is a phenolic ketone homolog known as gingerol. The content of gingerol is higher in red ginger compared to other types of ginger. Gingerol has been proven to have anti-inflammatory or pain-relieving activities (Hernani & Winarti, 2019).

One of the pharmacological functions of ginger is its antiemetic (anti-vomiting) property. Ginger is a substance capable of expelling gas from the stomach, which alleviates bloating. Additionally, ginger is a potent aromatic stimulant that can control vomiting by enhancing intestinal peristalsis. About six compounds in ginger have been shown to have effective antiemetic properties. The action of these compounds is more directed towards the stomach wall rather than the central nervous system. The nutrients contained in ginger include potassium (3.4%), magnesium (3.0%), copper (3.0%), manganese (3.0%), and vitamin B6 (pyridoxine) (2.5%) (Fitria, 2020).

The findings of this research align with a study conducted by Saswita et al. (2021), which stated that the average reduction in nausea and vomiting before intervention was 3.87 and after intervention was 2.78 with a p-value of 0.014. It can be concluded that ginger is effective in reducing nausea and vomiting during the first trimester of pregnancy.

2. Bivariate Analysis Discussion

The results of the analysis of the influence of warm ginger and honey ginger on the nausea and vomiting scale in pregnant women in the first trimester indicate that the comparison of the nausea and vomiting scale before honey ginger administration is 1.614, while after warm ginger administration, the average (mean) nausea and vomiting is 1.341. From this analysis, it is found that there is a

reduction in the average nausea and vomiting after the administration of ginger and honey by 0.263. The statistical test results show a p-value of 0.000; at an alpha of 0.05, p < alpha is obtained. Therefore, it can be concluded that there is an influence of ginger and honey administration on nausea and vomiting in pregnant women in the first trimester who experience nausea and vomiting in Nembol Village, Mandalawangi Health Center Work Area, Pandeglang Regency, Banten Province in 2023.

The first advantage of ginger is the content of essential oils that have a soothing effect and block the vomiting reflex, while gingerol can improve blood circulation, and nerves function well. As a result, tension can be relieved, the head feels fresh, and nausea and vomiting are reduced (Christina, Winarti, Hermani, 2019).

The mechanism of ginger has a direct effect on the digestive tract by increasing stomach movement, absorbing toxins and acids. Ginger is believed to provide a comfortable feeling in the stomach, thus overcoming nausea and vomiting due to the content of essential oils such as Zingiberene, Zingiberol, Bisabolene, Curcumin, Gingerol, Flandrene, vitamin A, and bitter resin. These substances can block serotonin, a neurotransmitter in the central nervous system, and enterochromaffin cells in the digestive tract by inhibiting the induction of HCG into the stomach.

The research by Sefti Dwi Kayanti (2019) indicates a relationship between the consumption of boiled elephant ginger and honey in reducing nausea and vomiting, with a post-test value of no nausea and vomiting in 27 respondents (79.4%). This was observed in the first trimester pregnant women in the working area of Moyu Hulu Health Center, Sumbawa Regency, West Nusa Tenggara, in the year 2019. The study shares similarities with the research by Galuh Pradian Yanuaringsih et al. (2019), demonstrating the effectiveness of ginger decoction in alleviating nausea and vomiting. The post-test results in the intervention group showed no nausea and vomiting in 10 respondents (66%), mild nausea and vomiting in 5 respondents (33.3%), and mild symptoms in 7 respondents (46.6%), while 3 respondents (20%) experienced moderate symptoms. In the control group, there was a change in values, possibly due to the majority of mothers being employed and multigravida compared to the intervention group.

Researchers assume that the average nausea and vomiting in pregnant women before consuming ginger and honey is 1.614, categorizing it as mild to moderate nausea and vomiting. However, after being given ginger and honey, there is a significant difference. Besides being easily accessible and more enjoyable for the local residents, ginger and honey also contain antiemetic properties and iron, making them beneficial for pregnant women. Researchers recommend pregnant women to consume ginger and honey if they prefer not to take medication. It is advisable for pregnant women in the first trimester to avoid unnecessary medication, as drugs can have adverse effects on the fetus's development in the mother's womb.

Conclusion

Based on the research findings obtained by researchers on pregnant women in the first trimester experiencing nausea and vomiting after the intervention of ginger and honey administration in the Nembol Village, the working area of Mandalawangi Health Center, Pandeglang Regency in 2023, several conclusions can be drawn as follows:

1. The average nausea and vomiting scale before receiving ginger and honey was 1.614, while after receiving warm ginger and honey, there was a reduction in the average score to 1.341. Consequently, the number of first-trimester pregnant women experiencing mild to moderate nausea and vomiting changed to normal/no complaints, amounting to 18 individuals.
2. There is a significant difference before and after the administration of warm ginger and honey to first-trimester pregnant women experiencing nausea and vomiting in the Nembol village area, the working area of Mandalawangi Community Health Center, Pandeglang Regency in 2023.

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