

Effect of Banana Consumption to Reduce Hyperemesis Gravidarum in Pregnant Women

Indah Puspitasari, Anggit Yonika Dewi, Ummi Kulsum

Faculty of Health Sciences, Muhammadiyah University of Kudus, Indonesia

Received: June 19, 2025; Accepted: July 10, 2025; Available online: July 16, 2025

ABSTRACT

Background: Hyperemesis gravidarum (HG) is a severe form of nausea and vomiting during pregnancy that can lead to dehydration, weight loss, and nutritional deficiencies, posing risks to both maternal and fetal health. Exploring the potential of banana consumption as a natural, accessible intervention may offer a simple dietary strategy to alleviate HG symptoms and improve maternal well-being. This study aimed to determine whether banana consumption contributes to a decrease in the number of cases of nausea and vomiting experienced by pregnant women.

Subjects and Method: This was a quasi experiment conducted at the Mitra Siaga Hospital, Tegal, Central Java, Indonesia, in April-May 2024. A number of 30 pregnant women with hyperemesis gravidarum was selected using purposive sampling. Hyperemesis gravidarum was measured using Pregnancy Unique Quantification of Emesis and Nausea (PUQE) questionnaire. Difference score of hyperemesis gravidarum before and after intervention was examined using t test.

Results: The results of the Wilcoxon test before and after consuming bananas with Confidence Interval 95% showed p-value = 0.000, with a significance level of p-value $0.000 < 0.05$, which indicates that banana consumption is effective in reducing complaints of nausea and vomiting in hyperemesis gravidarum mothers at Mitra Siaga Hospital, Tegal. The results of the linear regression test of the effect of banana consumption on hyperemesis gravidarum t value = 20.110 > t table and the significance level of p-value $0.000 < 0.05$, which indicates that banana consumption has a positive and significant effect on reducing complaints of nausea and vomiting in mothers with hyperemesis gravidarum at Mitra Siaga Hospital, Tegal.

Conclusion: Banana consumption can reduce vomiting in pregnant women.

Keywords: banana fruit, nausea, vomiting, pregnant women.

Correspondence:

Indah Puspitasari. Faculty of Health Sciences, Muhammadiyah University of Kudus, Indonesia Kudus, Jawa Indonesia. Email : indahpuspitasari@umkudus.ac.id.

Cite this as:

Puspitasari I, Dewi AY, Kulsum U (2025). Effect of Banana Consumption to Reduce Hyperemesis Gravidarum in Pregnant Women. J Epidemiol Public Health. 10(3): 374-383. <https://doi.org/10.26911/jepublichealth.-2025.10.03.08>.



© Indah Puspitasari. Published by Master's Program of Public Health, Universitas Sebelas Maret, Surakarta. This open-access article is distributed under the terms of the [Creative Commons Attribution 4.0 International \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/). Re-use is permitted for any purpose, provided attribution is given to the author and the source is cited.

BACKGROUND

Around 70-80% of pregnant women experience morning sickness, or emesis gravidarum, which often occurs at five to twelve weeks of pregnancy. Nausea and vomiting in pregnancy are usually mild and can be

managed according to the conditions of each individual. If the condition is not treated, it can lead to pregnancy complications, namely hyperemesis gravidarum, caused by changes in the endocrine system that occur during pregnancy, especially those caused by

Human Chorionic Gonadotropin (HCG), Progesterone, Estrogen, and Serotonin. Emesis gravidarum also changes the body's metabolism, causing a decrease in appetite, which causes the mother to lack nutrition, and can progress to hyperemesis gravidarum, which increases the risk of miscarriage and fetal disorders (Herawati et al., 2022).

According to the World Health Organization (WHO), hyperemesis gravidarum reaches 12.5% of all pregnancies in the world. The incidence varies from 0.3% in Sweden, 0.5% in California, 0.8% in Canada, 10.8% in China, 0.9% in Norway, 2.2% in Pakistan, and 1.9% in Türkiye. In the United States, the prevalence of hyperemesis gravidarum ranges from 0.5 to 2% (Fitriya et al., 2023). Data from the Indonesian Demographic Health Survey (SDKI) in 2018 showed that 1,864 pregnant women (5.31%) in Indonesia experienced hyperemesis gravidarum, an increase from 1,904 (5.42%) in 21,581 pregnant women in the previous year. According to WHO, this is 14% of all pregnancies (Nurpadilah, 2024).

The gastrointestinal system undergoes many physiological changes during pregnancy, one of which is an increase in estrogen and HCG, which causes vomiting and nausea (Aspiani, 2017). During the first trimester, pregnant women can experience vomiting and nausea known as emesis gravidarum. Most people vomit in the morning, or morning sickness, but some people vomit at night too (Mutia and Harahap, 2024).

Vomiting causes shock, dehydration and electrolyte imbalance, Mollaryweiss syndrome, which can cause gastrointestinal bleeding, can cause tears in the mucous membranes of the stomach and esophagus (Puspitasari and Indrianingrum., 2021; Saodah et al., 2024). The fetus is also affected by hyperemesis gravidarum. such as abortion, low birth weight (LBW), premature birth, and birth defects. Pregnant

women with hyperemesis gravidarum are more susceptible to the occurrence of fetal growth retardation (IUGR or Intrauterine Growth Retardation). The nutritional needs of pregnant women are not met if left untreated. This can interfere with the health and activities of pregnant women. However, nutrition is very important during pregnancy. Especially to maintain maternal health and fetal growth (Susanti et al., 2019). Although the etiology is unclear, several mechanisms have been proposed as risk factors for hyperemesis gravidarum, including multiple pregnancies, hormonal or endocrine disorders, gastrointestinal infections, higher birth weight, and underweight, while smoking appears to be negatively associated (Orimoloye et al., 2023).

Those who experience nausea and vomiting are usually uncomfortable and want to stop it immediately. Both pharmacological and non-pharmacological methods can be used to overcome nausea and vomiting in pregnant women, but some pregnant women do not like or cannot accept drug therapy, so non-pharmacological therapy is needed to overcome nausea and vomiting. One way to deal with nausea during pregnancy is to sit for a while to calm down, drink warm water, consume dry and light foods in the morning, eat small but frequent meals, and increase consumption of fruits and vegetables (Herawati et al., 2022; Rachmadiani et al., 2023).

Vitamin B6 is a coenzyme responsible for various protein metabolism pathways, including lipid, carbohydrate, and amino acid metabolism. Vitamin B6 deficiency will cause low serotonin levels, which causes the five sensory nerves to become more sensitive, which can cause the mother to vomit and feel nauseous. In addition to pharmacological treatment, complaints of maternal hyperemesis gravidarum can also be overcome non-pharmacologically. One

example is consuming bananas, which contain lots of flavonoids and vitamin B6, which can reduce vomiting experienced by mothers during pregnancy (Khairani and Putri, 2022).

Bananas contain a lot of folate and water-soluble vitamin B6, which are necessary for the formation of nucleic acids and hemoglobin in red blood cells. In addition, bananas have the ability to neutralize stomach acid, improve digestion, and reduce nausea associated with vomiting (Rachmadianti et al., 2023). Bananas contain the most potassium, with 435 mg of potassium per 100 grams and 18 mg of sodium per fruit with an average weight of 140 grams per fruit (Nurleny and Kossasy, 2024). Bananas have high nutritional content and lots of energy, contain 136 calories per 100 grams, and are rich in minerals such as calcium, calcium, potassium, magnesium, iron, and phosphorus. In addition, bananas contain provitamin A, vitamin B, and C (Mahmud and Kasim, 2020). Bananas are another alternative food that can also reduce the frequency of nausea and vomiting experienced by pregnant women in the first trimester. Bananas contain vitamin B6, the daily amount required by pregnant women to meet their vitamin B6 needs is 1.9 mg (Desmariyenti, 2022). Bananas are rich in vitamin C, vitamin B6, minerals, and dietary fiber (Paninsari et al., 2020). Because it contains a lot of carbohydrates and vitamins, bananas are used as a substitute for rice and wheat (Dewi, 2020). If consumed properly, vitamin B6 can overcome or reduce vomiting in pregnant women (Rohmah et al., 2018). Bananas contain vitamin B6 which can increase the development of fetal nerve cells, thus reducing vomiting in pregnant women. Because of its potassium content, bananas help maintain the body's water balance and send oxygen to the brain. Because of its high sugar content, bananas

also help smooth digestion and provide energy to the body (Ardiansyah, 2019). Bananas have a lot of B6 content, which is useful as a coenzyme for metabolic reactions, in the synthesis and metabolism of proteins, especially serotonin. Bananas also contain a lot of flavonoids and vitamin B6, which help overcome hyperemesis gravidarum (Ratih and Qomariah, 2017).

Mothers who vomit are usually lazy to eat. This is a condition in which patients experience nausea and vomiting more than ten times in one day, which interferes with their daily activities and causes their general condition to worsen. This condition usually appears around eight to twelve weeks of pregnancy (Susanti et al., 2019; Muntia et al., 2021). Hyperemesis gravidarum usually appears in the sixth to twelfth week of pregnancy and can last until the sixteenth to twenty-second week of pregnancy. Although nausea and vomiting in early pregnancy is often called "morning sickness", this vomiting can occur at any time (Warni et al., 2023). Hyperemesis Gravidarum can cause the body to burn carbohydrate reserves to meet energy needs, so that the body's combustion switches to fat and protein reserves. Insufficient food and oxygen to the tissues can cause tissue damage, which can worsen the condition of the fetus and mother.

The preliminary study conducted by the the researcher on the documentation of medical record data obtained from pregnant women patients with a diagnosis of hyperemesis gravidarum at the Mitra Siaga Hospital in 2023, there were 3,448, 244 (7.08%). This study aims to determine whether banana consumption contributes to a reduction in the number of cases of nausea and vomiting experienced by pregnant women.

SUBJECTS AND METHOD

1. Study Design

This study is an experimental type using a quasi-experimental method with one group pre-post test design. Location research at Mitra Siaga Hospital, Tegal in June-July 2024. The independent variable of this study is banana consumption. The dependent variable of this study is a decrease in complaints of nausea and vomiting.

2. Population and Sample

The target population in this study were pregnant women who experienced hyperemesis gravidarum at Mitra Siaga Hospital, Tegal in June-July 2024, total population 43 pregnant women. The sample was taken by Purposive Sampling technique resulting in 30 respondents. Inclusion criteria: pregnant women who experience hyperemesis gravidarum, who can read and write, and are willing to consume bananas. Exclusion criteria: pregnant women who are not willing to be respondents and have a history of chronic diseases such as cancer and heart disease. This instrument was made using the PUQE (Pregnancy Unique Quantification Of Emesis And Nausea) questionnaire. The data analysis technique uses bivariate analysis to determine the effect between variables. The bivariate analysis technique used is the Wilcoxon Test and linear regression test.

3. Study Variables

The independent variable of this study is banana consumption. The dependent variable of this study is a decrease in complaints of hyperemesis gravidarum.

4. Operational Definition of Variables

Hyperemesis gravidarum: The number of hyperemesis gravidarum experienced by pregnant women in 24 hours, measured through a validated the PUQE questionnaire.

Banana consumption: Consume boiled bananas for 40 minutes, with a dose of 1371

grams, eaten 3 times a day, measured using observation tool banana consumption menu.

5. Study Instrument

The PUQE questionnaire was measured complaints of hyperemesis gravidarum. Observation tool banana consumption menu was measured Banana consumption in 24 hours.

The study began by informing pregnant women who were willing to be respondents through a respondent screening sheet that was adjusted to the inclusion and exclusion criteria of the study. Then, using the pregnancy unique quantification of emesis and nausea (PUQE) sheet, pregnant women were given bananas to reduce hyperemesis gravidarum. Bananas can be consumed as much as 1,371 grams (10 mg Vit. B6) three times a day for seven days after being boiled for 40 minutes (Ratih and Qomariah, 2017). Furthermore, on the 8th day, a remeasurement of hyperemesis gravidarum was carried out after bananas were given. This measurement was carried out using the pregnancy unique quantification of emesis and nausea (PUQE) sheet, which was given 24 hours after the banana consumption intervention.

6. Data Analysis

The data analysis technique uses bivariate analysis to determine the effect between variables. The bivariate analysis technique used is the Wilcoxon Test and logistic regression test.

7. Research Ethics

This study obtained ethical approval from the Health Research Ethics Committee of the Muhammadiyah Kudus University, with reference number: 360/Z-7/KEPK/UMKU/-V/2024.

RESULTS

1. Sample Characteristics

Based on table 1, it can be seen that the characteristics of the respondents

include the majority of respondents aged 20-35 years, namely 23 respondents (76.7%), while respondents aged less than 20 or above 35 years was 23.3%. The gestational age of the respondents is mostly 1-12 weeks, namely 18 respondents (60%) and

the gestational age of 13-28 weeks is 12 respondents (40%). From parity, the majority of respondents with multigravida are 24 respondents (80%) and respondents in primigravida are 6 respondents (20%).

Table 1. Frequency Distribution of Respondent Characteristics

Characteristic	Category	Frequency	Percentage
Gestational Age	<20 years old or >35 years old	7	23.3%
	20-35 years old	23	76.7%
Gravidarum	1-12 weeks	18	60 %
	13-28 weeks	12	40 %
Number of pregnancy	Primigravida	6	20 %
	Multigravida	24	80 %

1. Bivariate Analysis

Table 2 showed that mean of hyperemesis gravidarum score after intervention (Mean= 6.07; SD= 1.84) was lower than

before (Mean= 9.07; SD= 2.02), with $p < 0.001$.

Table 2. Mean difference analysis of hyperemesis gravidarum score before and after intervention

Banana Consumption	Mean	SD	p
Pre test	9.07	2.016	<0.001
Post test	6.07	1.837	

DISCUSSION

This study found that after consuming banana can reduce hyperemesis symptom in 1st trimester of pregnant women. According to Paninsari et al. (2020), giving bananas can reduce emesis gravidarum in pregnant women who experience it. Bananas are a great non-pharmacological treatment for hyperemesis gravidarum. This is because bananas contain vitamin B6, which can reduce emesis gravidarum, and can also improve the development of central nervous system cells in the fetus. Bananas, with their sweet taste and easy to find in Indonesia, are very good for your health. Bananas are cheap and often consumed, but they have many benefits for the mother and fetus in the womb. In fact, bananas are not only cheap, but also have many health benefits.

The carbohydrate content of kepok bananas is a moderate complex carbohydrate that is gradually available, allowing them to provide energy in quick amounts (Ratih and Qomariah, 2017).

Bananas contain vitamin B6, riboflavin, niacin, and thiamine. Vitamin B6 functions in the synthesis and metabolism of proteins, especially serotonin, and serves as a coenzyme for various metabolic pathways. Vitamin B6 is also involved in the metabolism of carbohydrates as an energy source. Vitamin B6 plays an important role in ensuring that the brain has the energy to perform daily tasks. Vitamin B6 is a water-soluble nutrient. Vitamin B6 helps the development of central nervous system cells in the fetus and reduces morning sickness (Susanti et al., 2021).

Banana content consists of 116 calories, 1.60 grams of protein, 0.20 grams of fat, 25.80 mg of carbohydrates, 8 mg of calcium, 32 mg of phosphorus, 0.50 mg of iron, and 72.90 grams of water. Minerals in bananas can be absorbed by the body in large part. The vitamin content in bananas is very high, especially pro vitamin A, namely from beta-carotene of 445 mg per 100 grams of dry weight. Other vitamins are 72 mg of vitamin C, 0.08 mg of vitamin B1, B complex (thiamine, riboflavin, niacin), and B6 (Pyridoxine 0.5 mg/100 mg) (Sunarni et al., 2024). Bananas also contain a high intake of folic acid which is beneficial for the growth and development of the fetus, so they can increase good nutritional intake for pregnant women who experience nausea and vomiting (Insani and Anggraini, 2024). The content in bananas is a natural source of sucrose, fructose, and glucose along with fiber. When compared to other fruits, bananas contain five times more vitamin A, twice as much carbohydrates, three times as much phosphorus, and four times as many other vitamins and minerals (Molisa et al., 2020).

Bananas contain folic acid and vitamin B6 (pyridoxine), both of which are water-soluble and play important roles in supporting digestion and reducing nausea. The consumption of bananas helps neutralize stomach acid, slows gastric emptying, and improves overall digestive function. Additionally, the vitamin B6 content in Ambon bananas has been shown to contribute to the reduction of vomiting. Bananas are absorbed in the intestines with the help of beneficial gut bacteria, which are closely connected to the nervous system. This interaction supports a healthy digestive environment, promotes the production of serotonin—a neurotransmitter that regulates mood and gut function—and enhances the

absorption and effectiveness of vitamin B. (Molisa et al., 2020).

Common complaints in early pregnancy are nausea and vomiting of gravidarum. Pregnancy changes a woman's hormones, with increased estrogen and progesterone hormones and the release of placental human chorionic gonadotropin. It is suspected that these hormones cause emesis gravidarum, which will increase to hyperemesis gravidarum, which causes the mother to vomit every time she eats or drinks. As a result, the mother's body becomes weak, pale, and urination is significantly reduced, so that the blood becomes thick (hemoconcentration), which slows blood circulation, including oxygen and tissue, which can cause tissue damage (Susanti et al., 2021).

Nausea and vomiting can be worse if the mother is stressed, does not get enough sleep or rest, and has a poor diet before or during the early weeks of pregnancy. During pregnancy, major changes occur from early pregnancy to delivery and the most important thing is how to adapt to the changes that occur. Due to the lack of knowledge about the causes of nausea and vomiting, respondents are less able to interpret the condition of nausea and vomiting properly, so they are unable to adapt to the nausea and vomiting. Then it will cause nausea and vomiting to get worse because it is only left or considered normal because there is no good anticipation and therapy for pregnant women with nausea, so that each person's perception of nausea and vomiting is very subjective, it will affect different responses to nausea and vomiting. Because the mother's need for additional nutrients such as vitamins and minerals increases during pregnancy, the amount of food consumed by the mother must also increase. However, in some pregnant women, decreased appetite and nausea and vomiting, known as emesis

gravidarum, cause a lack of nutritional intake for pregnant women. As a result, this condition will continue until the 2nd and 3rd trimesters, and if the pregnant woman does not get treatment, this condition can get worse (Susanti et al., 2021).

The results of this study are in line with Shanti (2018) that vitamin B6 functions as an enzyme that regulates lipid, carbohydrate, and amino acid metabolism, showing that both groups experienced less nausea than the group given Ambon banana plus vitamin B6. This shows that both are in the effective category. A fairly effective dose of vitamin B6—around 12.5-25 mg per day every 8 hours—reduces nausea and vomiting in pregnant women in the first trimester. This study shows that, although the average decrease in value is very small, the use of vitamin B6 still changes the condition of pregnant women (Shanti et al., 2018).

Additional supporting studies have demonstrated that the reduction in nausea and vomiting was significantly greater in the intervention group compared to those who received only vitamin B6, with a reported p-value of 0.001. These findings suggest that, in the management of hyperemesis gravidarum, the combination of vitamin B6 and boiled banana may be more effective than vitamin B6 administration alone (Susanti et al., 2021).

Consistent with previous findings, a significant reduction in the frequency of nausea and vomiting was observed following the administration of combination therapy. In the intervention, vitamin B6 was given once daily at a dose of 10 mg, leading to a total daily intake of approximately 20 mg—falling within the recommended range of 10–25 mg for pregnant women experiencing these symptoms (Insani & Anggraini, 2024). The habitual consumption of fruits such as apples, pears, oranges, and bananas—starting before conception and continuing into

early pregnancy—can positively contribute to maternal nutritional status. A well-balanced diet is essential for supporting critical reproductive processes, including implantation, placentation, and embryogenesis (Skreden et al., 2017). The World Health Organization (WHO) emphasizes the importance of adequate intake of key micro-nutrients during pregnancy, including folic acid, iodine, calcium, vitamin D, vitamin B12, vitamin B6, vitamins A, E, and K, as well as choline, copper, magnesium, sodium, and zinc, to promote optimal maternal and fetal health. Among the recommended fruits for pregnant women, bananas stand out for their high nutrient content and their role in providing energy and physiological support during pregnancy (Ramulondi et al., 2021).

AUTHOR CONTRIBUTION

Indah Puspitasari designed the research plan. Anggit Yonika Dewi collecting data, and Ummi Kulsum assisted in writing the references and helped compile the research manuscript.

FINANCIAL SUPPORT AND SPONSORSHIP

None.

ACKNOWLEDGEMENT

The researcher would like to thank the Rector of the Muhammadiyah University of Kudus who has supported and funded this research and the Director of the Mitra Siaga Tegal Hospital who has given permission to conduct the research.

CONFLICT OF INTEREST

There are no conflicts of interest.

REFERENCE

Ardiansyah R (2019). *Banana Cultivation*. PT.Temprina Media Grafika.

- Aspiani RY (2017). Textbook of Maternity Nursing Care. Trans Info Media.
- Carolin BT (2019). Pengaruh pemberian Aromaterapi Ginger Oil (*Zingiber officinale*) terhadap Emesis Gravidarum pada ibu hamil trimester I di Klinik Makmur Jaya tahun 2019 (The effect of ginger oil aromatherapy (*Zingiber officinale*) on Emesis Gravidarum in pregnant women in the first trimester at Makmur Jaya Clinic in 2019). *Jurnal kesehatan Qamarul Huda*. 7(1): 1–5. doi: 10.37824/jkqh.-v7i1.2019.66.
- Desmariyenti (2022). The effectiveness of Ambon banana (*Musa Paradisiaca* L) on the frequency of Emesis Gravidarum in pregnant women in the first trimester. *J Midwifery Sempena Negeri*. 2(2):45–48.
- Dewi R, Rahmi (2020). The effectiveness of Kepok banana (*Musa paradisiaca formatipya*) and Vitamin B6 in reducing the intensity of Emesis Gravidarum in pregnant women. *SAGO J Nutr Health*. 1(2): 180–184. doi: 10.30867-/gikes.v1i2.413.
- Fitriya I, Oktaviyana C, Desreza N (2023). Effectiveness of lemon aromatherapy on Emesis Gravidarum in 1st trimester pregnant women at Ulee Kareng Health Center Banda Aceh. *J Health-care Technol Med*. 9(2): 2615–109.
- Herawati M, Lisviarose, Uli A (2022). The effectiveness of Kepok banana (*Musa Paradisiaca* L) consumption on reducing first trimester I Emesis Gravidarum. *Science Midwifery*. 10(5): 4232–4236. doi: 10.35335/midwifery.v10i5.-1009.
- Insani AN, Anggraini L (2024). The effectiveness of Ambon aanana administration in reducing Emesis Gravidarum in pregnant women in the first trimester at Tamansari Health Center, Tasikmalaya City. *MANUJU: Malahayati Nurs J*. 6(7): 2715–2727. doi: 10.33024/mnj.v6i7.11554.
- Khairani, Putri, M (2022). The effectiveness of Ambon banana (*Musa paradisiaca*) with vitamin B6 in reducing nausea and vomiting intensity in pregnant women in the 1st trimester at Lina Hinai Kiri Clinic, Secanggang District. *Imelda Midwifery Scientific J*. 8(2): 61–65. doi: 10.52943/jikebi.v8i2.1096.
- Mahmud H, Kasim H (2020). Community partnership program for banana chips processing in Tidore district, Tidore Islands City. *Process. National Seminar on Research Results & Community Service*.
- Molisa Y, Lailyana, Laila A (2020). The effect of giving Ambon banana (*Musa Paradisiaca* L) to Emesis of Gravidarum in pregnant women at Sidomulyo Health Center of Pekanbaru in 2019. *Jurnal Ibu dan Anak*. 8(1): 31–37. doi:10.36929/jia.v8i1.288.
- Muntia WO, Hardianti SL Karuniawati N, Sundari S, Husnah N. (2021). Management of antenatal midwifery care for Mrs. J with hyperemesis gravidarum level II. *Window of Midwifery Journal*. 1(2): 54–64. doi: 10.33096/wom.vi.-241.
- Mutia F, Harahap M (2024). Overview of pregnant women's knowledge about hyperemesis Gravidarum in the working area of Batangtoru Health Center in 2024. *Indones Health Sci J*. 9(1): 138–144. doi: 10.51933/health.v9i1.13-40.
- Nurleny N, Kossasy SM (2024). Pengaruh pisang ambon (*Musa paradisiaca* var) terhadap tekanan darah pada penderita hipertensi di kelurahan andalas wilayah kerja Puskesmas Andalas Padang (The Effect of Ambon Banana (*Musa paradisiaca* Var) on blood

- pressure in hypertensive patients in Andalas Village, working area of Puskesmas). *Saint Mand Health J.* 7(1): 432–441.
- Nurpadilah S (2024). Studi Kasus Penatalaksanaan Diet Hiperemesis dengan Asupan Karbohidrat dan Protein pada Ibu Hamil Diruang Rawat Inap Rumah Sakit Daerah Gunung Jati Kota Cirebon (Case Study: Management of Hyperemesis Diet with Carbohydrate and Protein Intake in Pregnant Women at the Inpatient Room of Gunung Jati Regional Hospital, Cirebon City). Thesis Repository: Health Polytechnics of Tasikmalaya.
- Orimoloye HT, Deng C, Hansen J, Olsen J, Saechao C, Ritz B, Heck JE (2023). Hyperemesis gravidarum and the risk of childhood cancer—A casecontrol study in Denmark. *Cancer Epidemiol.* 87(10): 102472. doi: 10.1016/j.canep.-2023.102472.
- Paninsari D, Buulolo K, Lubis, Riskawati M, Panjiatan (2020). The effectiveness of Kepok banana on the first trimester Emesis Gravidarum. *Jurnal Penelitian Perawat Profesional.* 2(4):393–398. doi: 10.37287/jppp.v2i4.179.
- Puspitasari I, Indrianingrum I (2021). Karakteristik ibu hamil yang mengalami Hiperemesis Garvidarum di wilayah kerja Puskesmas Purwosari Kudus. Indonesia (Characteristics of pregnant women with Hyperemesis Gravidarum in the working area of Purwosari Health Center, Kudus. Indonesian). *Jurnal Kebidanan:* 4(2). doi: 10.26751/ijb.v5i1.985.
- Rachmadiani N, Parellangi A, Syukur NA, Ambon P (2023). The effect of Ambon banana cookies consumption on emesis gravidarum in pregnant women in the first trimester at Bumi Rahayu Public Health Center, Bulungan Regency, 2023. Thesis. Health Polytechnics of East Kalimantan.
- Ramulondi M, Ntuli NR (2021). Traditional food taboos and practices during pregnancy, postpartum recovery, and infant care of Zulu women in northern KwaZulu-Natal. *J Ethnobiol Ethnomed.* 17(1): 1–19. doi: 10.1186/s13002-021-00451-2.
- Ratih RH, Qomariah S (2017). Efektifitas konsumsi buah pisang terhadap emesis gravidarum trimester I di Kabupaten Kampar tahun 2017 (Effectiveness of banana consumption against Emesis Gravidarum in the first trimester in Kampar Regency, 2017). *Proceedings.*
- Rohmah M, Natalia S (2018). The influence of consumption of Ambon banance (*Musa Paradisiaca. L*) towards a decrease in the intensity of nausea vomiting in pregnant women in i trimester. *J Quality Women's Health.* 1(1): 1-51. doi: 10.30994/10.30994/voliissipp51.
- Saodah L, Pangaribuan M, Rostianingsih D (2024). Efektivitas mengonsumsi pisang Ambon terhadap penurunan intensitas mual dan muntah pada ibu hamil trimester I di Puskesmas Karang Harja Kabupaten Bekasi (The effectiveness of consuming Ambon bananas in reducing the intensity of nausea and vomiting in pregnant women in the first trimester at Karang Harja Health Center, Bekasi Regency). *Manuju: Malahayati Nurs J.* 6(9): 1–23. doi: 10.33024/mnj.v6i9.16414.
- Shanti EFA, Barokah L, Rahayu B (2018). Efektivitas pemberian pisang ambon dan vitamin b untuk menurunkan hiperemesis gravidarum di BPM Endah Bakti (The effectiveness of Ambon banana and vitamin B in reducing hyperemesis Gravidarum at BPM Endah Bakti). *Media Ilmu*

- Kesehatan. 7(1): 17–21. doi: 10.30989-/mik.v7i1.218.
- Sunarni N, Litasari R, Rizqiyani AT (2024). The effect of consuming dates on increasing hemoglobin levels in pregnant women. *Nurul Ilmi: J Health Sci Midwifery*. 2(1): 20–25. doi: 10.5222-1/nuri.v2i1.547.
- Susanti E, Firdayanti, Haruna N. (2019). Management of Antenatal Midwifery Care for Mrs. S with Hyperemesis Gravidarum Level II. *Window Midw J*. 1(2): 79–91. doi:10.33096/wom.vi.241.
- Susanti E, Nurdiyan A, Putra Y (2021). Effects of Musa Paradisiaca on Emesis Gravidarum in pregnant women. *Proceedings. Adv Health Sci Res*. 39(1): 381–387. <https://doi.org/10.2991/ah-sr.k.211026.076>.
- Warni S, Manurung B (2023). Pengaruh pemberian jahe hangat dalam mengurangi emesis gravidarum pada ibu hamil trimester I di PBM HJ Hotma Deli Siregar Tahun 2022 (The Effect of Warm Ginger Administration in Reducing Emesis Gravidarum in First Trimester Pregnant Women at HJ Hotma Deli Siregar's Midwifery Practice in 2022). *Termometer: Jurnal Ilmiah Ilmu Kesehatan dan Kedokteran*. 1(1): 138–144. doi: 10.55-606/termometer.v1i1.1113.