

The Potential of Cookies Mantul (Calamansi and Bekatul/Rice Bran) as A Healthy Snack to Reduce Emesis Gravidarum in Pregnant Women

1st Linda Yulyani^{1*}

2nd Yetti Purnama²

¹Department of Midwifery, Faculty of Mathematics and Natural Sciences, University of Bengkulu, Bengkulu, Indonesia

² Department of Midwifery, Faculty of Mathematics and Natural Sciences, University of Bengkulu, Bengkulu, Indonesia

*email: linda.yulyani13@unib.ac.id

Keywords:

Nausea

Vomiting

Pregnancy

Cookies

Rice Bran

Abstract

Nausea and vomiting in pregnancy (NVP) or emesis gravidarum (EG) is pregnancy discomfort experienced by 70-80% of pregnant women. In early pregnancy, pregnant women need to avoid chemical drugs as much as possible because of their potential teratogenic effects, so there is an increasing trend towards the use of alternative therapies. This research aimed to investigate the potential and influence of Cookies Mantul (a blend of calamansi and Bekatul/Rice Bran) on reducing the symptoms of nausea and vomiting in pregnant women in Trimester 1 (TM 1). This research was a Quasi-Experiment with a pre-post test control group design. There were 30 participants in this research, with 15 pregnant women in each group for the intervention and control groups. The data collected using the PUQE-24 Questionnaire and processed statistically using the Mann-Whitney test and the Wilcoxon test. The results of the statistical test showed that there was an effect of giving Mantul Cookies on reducing the level of nausea and vomiting in pregnant women in TM 1, with a p-value = 0.001. The statistical test for the control group also indicated a significant effect on reducing nausea and vomiting following the pregnant women's biscuit (p-value = 0.015). The results of the statistical test with the Mann-Whitney test showed that there was no difference in the level of nausea and vomiting in pregnant women after the intervention between the intervention and control groups, with a p-value = 0.240.

Received: Sept 2025

Accepted: Sept 2025

Published: Sept 2025



©2025. Linda Yulyani, Yetti Purnama. Published by Politeknik Kesehatan Kemenkes Jakarta III. This is Open Access article under the CC-BY-SA License (<https://creativecommons.org/licenses/by-sa/4.0/>). DOI: 10.32668/jitek.v13i1.2292

INTRODUCTION

Nausea and vomiting in pregnancy (NVP) or emesis gravidarum (EG) is one of the discomforts in pregnancy, which is estimated to be experienced by 70-80% of pregnant women (1). Symptoms of nausea and vomiting in pregnancy usually begin at 6 to 8 weeks of pregnancy and will subside at 20 weeks of pregnancy. Severe cases may require prolonged hospitalization and support from enteral or parenteral nutrition (2). According to Ellilä, Laitinen, Nurmi, Rautava, & Koivisto (2018), a total of 88.0% of women reported some level of NPV, with 6.4% severe, 52.2% moderate, and 29.4% mild (3).

According to the Indonesian Ministry of Health, half of all pregnant women experience nausea and vomiting (4), while another source indicates that nausea and vomiting occurs in approximately 70–85% of pregnant women (5). Nausea and vomiting in pregnancy (NVP) are common symptoms in pregnant women, but the symptoms become very

dangerous if they become hyperemesis gravidarum (HEG), which can cause death to the mother and fetus. HEG is described as a condition of severe nausea and/or vomiting, an inability to eat and drink normally, and a strong limitation of daily activity (6). HEG affects 0.3% to 3% of pregnant women and is characterized by intractable vomiting, dehydration, electrolyte imbalance, ketosis, nutritional deficiencies, and weight loss (7). Some women also suffer psychologically, and some of them decide to terminate their pregnancy rather than tolerate severe symptoms (8).

In early pregnancy, pregnant women need to avoid medication as far as possible because of their potential teratogenic effects, so there is an increasing tendency towards the use of alternative therapies (9). According to some studies, 50-65% of pregnant women use herbal remedies such as peppermint, ginger, cranberry, and raspberry leaf, and quince fruit to reduce the NVP they experience (10). Low vitamin B6 levels are one of the etiologies of nausea and vomiting in pregnancy (11). Pregnant women need about 1.9 milligrams of vitamin B6 per day during pregnancy (12).

Rice bran itself is a by-product of rice that is rarely used by the society. At the same time, it is known that bran is one of the richest sources of vitamin B complex, especially thiamine (B1), nicotinic acid, riboflavin, and vitamin B6. One serving of rice bran (28 grams according to the USDA) provides more than half of the daily nutritional needs for thiamine, niacin, and vitamin B6 (based on a 2,000-calorie reference diet) (13,14).

From several journals, it is known that the nutritional content of bran is very high, especially the content of vitamins B1 and B6 and antibacterial and anti-inflammatory substances, which are thought to help relieve symptoms of nausea and vomiting. Previous research conducted by Ardian et al. (2022) on the use of bran flour and tuna fish flour for malnourished toddlers showed a significant effect (15). While research by Auliana (2010) demonstrated that bran flour is a suitable ingredient for cookie production (16). This study addresses a gap in the literature, as research on using bran-based functional food to prevent emesis gravidarum has not yet been carried out.

In addition, calamansi orange (*Citrofortunella microcarpa*) is one of the commodities that has been developed in Bengkulu Province. Furthermore, calamansi orange is one of the leading commodities in Bengkulu Province and is widely processed into calamansi orange syrup (17). The by-products of the calamansi orange syrup industry are peel, pulp, seeds, and sedimentation liquid. Orange peel contains a lot of essential oils, one of the uses of which can be in the form of lip balm and peel-off mask preparations (18). Therefore, the researcher intends to find out the "Potential of Cookies Mantul (Kalamansi and Bekatul/Rice Bran) as a Healthy Snack to Reduce Emesis Gravidarum in Pregnant Women in Bengkulu City."

METHODS

This research is a quasi-experiment with a nonequivalent control group pretest-posttest design. There are 15 people in each group for the intervention and control groups, 30 respondents in total. Respondents were recruited using purposive sampling from independent midwifery practices in Bengkulu City. They met the inclusion criteria of being pregnant women in their first trimester, aged 20–40 years, experiencing nausea and vomiting, having no hearing or speech impairment, and willing to participate. Those with hyperemesis gravidarum or hypersensitivity to calamansi orange aroma were excluded. Since random assignment was impractical, a nonequivalent control group pretest-posttest design was used. The first respondent was assigned to the intervention group, the second to the control group, and so on, until the required sample size was reached. Respondents in the intervention group received two packs of Mantul Cookies (2 x 250 grams)

and consumed them for one week. Each day, respondents were asked to consume 4-5 Mantul cookies (approximately 15 grams per serving). Similarly, respondents in the control group were given biscuits for pregnant women and asked to consume 4-5 cookies every morning, especially when the mother experienced nausea and vomiting.

The data was collected from August to October 2024, using a questionnaire namely the 24-Hour Pregnancy Unique Quantification Of Emesis (PUQE-24), in several independent midwifery practices in Bengkulu City. In this study, the degree of vomiting will be divided into no nausea and vomiting (0-3), mild (4-6), moderate (7-12), and severe nausea and vomiting (13-15). Before the intervention, the levels of nausea and vomiting will be measured using the PUQE-24 Questionnaire, and one week after the intervention, these levels will be measured again. Mothers were advised to consume the cookies in the morning. The data will be analyzed using the Wilcoxon test and Mann-Whitney test.

Before the intervention started, the researcher made the cookies first, using the modified recipes from previous research. Cookies Mantul were then tested in the laboratory to ensure the safety and nutritional content contained therein. In this study, Cookies Mantul were tested in the chemistry laboratory, University of Bengkulu, and Bengkulu Province Food and Drug Authority (BPOM). In addition, before the intervention was carried out, the researcher also conducted an organoleptic test first on the Cookies Mantul that were made. This research has passed the ethical clearance test from Jember State University, No.333/UN25.1.14/KEPK/2024.

RESULTS AND DISCUSSION

The research started by making the Cookies Mantul. These are the ingredients of that were used:

Table 1. Receptie of Cookies Mantul

Inggridients	Amount (gr)	Information
Margarine	250	
Grind sugar	200	
Egg yolk	60	
Wheat flour	100	
Rice bran flour	200	roast
Cornmeal flour	50	
Grated coconut	100	roast
Calamansi orange syrup	100	

Table 1 presents the recipe for the cookies Mantul, which have a bran-to-wheat flour ratio of 2:

1. The following are the results of the baked cookies:



Picture 1. Cookies Mantul

Table 2. Nutritional Content Cookies Mantul

Name	Amount
Fe	0.03 mg/l
Vit.C	0.07%
Vit. B6*	0.90 mg/kg
Fat/Oil	3.73%
Protein	5.71%
Carbohydrate	51.12%
Calcium	0.2%
Sucrose	18.97%
Water	2.41%
Ash	3.33%

Analysis of the cookies revealed that the highest content was carbohydrates (51.12%), followed by sucrose (18.97%), and protein (5.71%). The vitamin B6 content was 0.9 mg/kg, which is a supplementary source for pregnant women already receiving B6 supplements from healthcare providers. The relatively high carbohydrate and protein content is beneficial, as these nutrients are known to help treat nausea and vomiting in first-trimester pregnant women. The ash content of 3.33% was well within the normal range, falling significantly below the 16% limit set by the Ministry of Health (2008).

Table 3. Characteristic of respondent.

Characteristic	Intervention (n=15)		control (n=15)	
	f	%	f	%
Parity:				
Multipara (Second pregnancy or more)	6	40	5	33.3
Primipara (First Pregnancy)	9	60	10	66.7
Age:				
20-30 th	13	86.7	10	66.7
31-40 th	12	13.3	5	33.3
Education level:				
Low	2	13.3	1	6.7
Middle	8	53.3	9	60
High	5	33.3	5	33.3
Gestational Age:				
1-5 weeks	0	0	0	0
6-10 weeks	9	60	11	73.3
11-12 weeks	6	40	4	26.7
Level of Nausea and Vomiting (PUQE-24):				
No Nausea and Vomiting	0	0	0	0
Mild	0	0	2	13
Moderate	15	100	13	86.7
Severe	0	0	0	0

Table 3 shows that the majority of respondents in this study are primiparous mothers. There are 9 primiparous mothers in the intervention group and 10 primiparous mothers in the control group. The results of this study are in line with research conducted by Asyma in 2018, which stated that primigravida mothers are more likely to experience nausea and vomiting compared to multigravida mothers because primigravida mothers have not yet adapted to estrogen and chorionic gonadotropin hormones. Meanwhile, multiparous women have a lower risk of hyperemesis gravidarum because they have already adapted to the hormonal rise, and it is also supported by their previous experience of pregnancy. The increase in these hormones also raises stomach acid levels, which leads to the complaint of nausea. This symptom typically occurs in the morning when the mother's stomach is empty and the hormonal levels increase (19,20).

The results of this study also showed that the majority of respondents were within a safe reproductive age range in both the intervention and control groups (20-30 years old). Previous research has shown a significant relationship between age and the incidence of hyperemesis gravidarum. This could be because age is closely related to the physical and psychological maturity of the mother in facing pregnancy (21). Before the age of 20, the reproductive organs are not fully prepared for pregnancy and childbirth, which can cause nausea and vomiting. Meanwhile, after the age of 35, women may also feel unprepared or even no longer want to become pregnant, which can also cause feelings of depression and stress, which can trigger nausea and vomiting (22).

Table 3 shows that there are still pregnant women with low levels of education, namely 13.3% in the intervention group and 6.7% in the control group. The majority of mothers in this study were housewives or unemployed, and also had a secondary education. The results of this study also show that the level of nausea and vomiting in pregnant women in the first trimester who responded before the intervention was

mostly at a moderate level in both the intervention and control groups. Education is a form of intervention that is expected to have a positive impact on health maintenance. Education will influence a person's knowledge; the higher a person's education, the easier it is for them to receive information, thus improving their knowledge. The lack of knowledge among pregnant women in the first trimester is related to their ability to handle emesis gravidarum early (23).

Table 4. The Effect of Intervention on the Level of Nausea and Vomiting in Each Group

Group	Mean	St.D	Min	Max	Z score	P-Value
Intervention:						
Pre	3	0	3	3	-3.286	0.001
Post	1.80	0.676	1	3		
Control						
Pre	2.87	0.352	2	3	-2.428	0.015
Post	2.13	0.834	1	3		

Based on the statistical test results using the Wilcoxon Sign Rank Test in Table 5.5, it was found that there is a significant effect on the reduction of nausea and vomiting in the intervention group, with a p-value of 0.001. Meanwhile, the control group also showed an effect on the reduction of nausea and vomiting levels in first-trimester pregnant women, with a p-value of 0.015. This indicates that consuming snacks or breakfast in the morning can help reduce nausea and vomiting in pregnant women. The results of this study align with previous research, which also found that consuming a morning snack can reduce nausea and vomiting in pregnant women. When you wake up in the morning, your stomach is empty, which can stimulate increased stomach acid production, so consuming a morning snack is essential (24).

Table 5. The Effectiveness of Cookies Mantul in Reducing Nausea and Vomiting in the First Trimester of Pregnancy

Variable	Mean	St.D	Z score	Mean rank		Mann-Whitney U	P-Value
				Interventio n	control		
Post-test	1.97	0.765	-1.176	13.73	17.27	86.000	0.240

The Mann-Whitney Test showed no significant difference between the intervention and control groups in reducing nausea and vomiting among first-trimester pregnant women ($p = 0.240$). This result may be because the control group had pregnant women with only mild nausea and vomiting at the start, while the intervention group had women with moderate symptoms. Other factors could not be controlled, such as how each respondent behaved and how they consumed snacks in the morning, whether with the provided biscuits alone or with other foods, and other food that they were consumed during the day also cannot be control.

It is known that women with NVP (Nausea and Vomiting of Pregnancy) and those who experience only nausea (Nausea Pregnancy/NP) have a higher risk of developing pelvic girdle pain (PGP) 4–6 months after delivery. Women with prolonged duration of NVP and NP are at a higher risk of PGP compared to those with shorter duration, both during pregnancy and 4–6 months postpartum (25). They are also at risk of developing hypertension before and during pregnancy, proteinuria, and preeclampsia compared to women who do not experience these symptoms. NP may reduce the risk of gestational diabetes in women without a previous history of the condition. Furthermore, collectively, NVP and NP are

associated with a higher likelihood of delivering a female baby, term births, and a lower likelihood of emergency cesarean sections, non-cephalic presentations, preterm births, and low APGAR scores at 5 minutes after delivery (26).

Rice bran is a by-product of rice that, although rarely utilized by the community, is known to be a rich source of B-complex vitamins, particularly thiamine (B1), niacin, riboflavin, and vitamin B6. A single serving (28 grams, according to USDA) provides more than half of the daily nutritional requirement for thiamine, niacin, and vitamin B6 (based on a 2,000-calorie reference diet) (13). As a by-product of rice milling, rice bran also contains dietary fiber, protein, and bioactive compounds such as γ -oryzanol and tocotrienols, which possess antioxidant and anti-inflammatory activities (27). Furthermore, a study by Schupfer et al. found that the rice bran arabinoxylan compound (RBAC) can modulate gut microbiota by increasing the diversity of beneficial bacteria and reducing inflammatory biomarkers (28). In other words, rice bran in the form of biscuits not only functions as a stomach filler to prevent hypoglycemia and improve eating patterns but also works through more complex biological pathways to strengthen the digestive system and reduce nausea symptoms. This makes rice bran biscuits a relevant and safe functional food intervention for pregnant women experiencing morning sickness.

An empty stomach triggers increased gastric acid production and unstable stomach movements. This can stimulate the nausea center in the brain and cause severe nausea, even vomiting. Regular biscuits, which are easily digested, can serve as an appropriate initial food to fill the stomach and neutralize stomach acid. According to the guidelines from the American College of Obstetricians and Gynecologists (ACOG, 2015), pregnant women are advised to consume light snacks, such as biscuits, before getting out of bed as part of non-pharmacological efforts to manage morning sickness (7).

In addition, there are variants of regular biscuits formulated with active ingredients such as ginger. Ginger has long been known as a natural antiemetic agent and is traditionally used to treat stomach disorders, including nausea. The compounds gingerol and shogaol in ginger act on the central nervous system and gastrointestinal tract by reducing serotonin activity that triggers nausea. A study by Basirat et al. (2009) showed that consuming five pieces of ginger biscuits daily for four days can significantly reduce nausea scores based on the VAS scale (29).

However, not all regular biscuits provide positive effects. Biscuits that contain only flour and sugar have limited nutritional value and may cause blood sugar spikes, which can worsen symptoms in some pregnant women. Therefore, selecting the right type of biscuit is crucial and should be tailored to individual nutritional needs and bodily responses. In general, both rice bran biscuits and regular biscuits offer benefits in reducing nausea and vomiting symptoms in pregnant women. Both work through the primary mechanism of preventing an empty stomach and helping to stabilize gastric conditions.

CONCLUSION

This study found a significant effect (p -value = 0.001) of consuming Mantul Cookies on reducing nausea and vomiting among first-trimester pregnant women. Similarly, respondents in the control group who consumed regular biscuits also experienced a decrease in nausea and vomiting (p -value = 0.015). This suggests that the consumption of biscuits, in general, can help alleviate symptoms of nausea and vomiting during pregnancy. However, no statistically significant difference was observed between the intervention and control groups regarding nausea and vomiting levels. To further enhance the potential of rice bran, additional research is warranted. The Mantul Cookies recipe requires continuous development to ensure the optimal retention of rice bran's nutritional content, particularly B6, after cooking.

Future studies should also improve the monitoring of consumption methods and compliance by considering greater respondent involvement.

ACKNOWLEDGEMENT

Researchers would like to thank all the Independent Midwifery practice that help the researcher during the research and also to all mothers and who have facilitated the implementation of this research. This research was funded by the Faculty of Mathematics and Natural Sciences, University of Bengkulu.

REFERENCES

1. Lee NM, Saha S. Nausea and Vomiting of Pregnancy. *Gastroenterology Clinics of North America*. 2011 Jun;40(2):309–34. <https://doi.org/10.1016/j.gtc.2011.03.009>
2. Niebyl J. Clinical practice. Nausea and vomiting in pregnancy. *N Engl J Med*. 2010;363:1544–50. <https://www.nejm.org/doi/abs/10.1056/NEJMcp1003896>
3. Ellilä P, Laitinen L, Nurmi M, Rautava P, Koivisto M, Polo-Kantola P. Nausea and vomiting of pregnancy: A study with pregnancy-unique quantification of emesis questionnaire. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2018 Nov;230:60–7. <https://doi.org/10.1016/j.ejogrb.2018.09.031>
4. Balitbangkes Kemenkes. *Warta Litbangkes Vol.2*. 2019; <https://repository.badankebijakan.kemkes.go.id/id/eprint/4277/1/>
5. Islamiyati. *Kesehatan Ibu Dan Anak Peningkatan Pengetahuan Pelayanan Kehamilan*. 1st ed. PT. Literasi Nusantara Abadi Grup. Malang: PT. Literasi Nusantara Abdi Group; 2024. 120 p.
6. Jansen LAW, Koot MH, van't Hooft J, Dean CR, Bossuyt PMM, Ganzevoort W, et al. The windsor definition for hyperemesis gravidarum: A multistakeholder international consensus definition. *European Journal of Obstetrics and Gynecology and Reproductive Biology*. 2021;266:15–22. <https://doi.org/10.1016/j.ejogrb.2021.09.004>
7. American College of Obstetricians and Gynecologists. . Practice Bulletin Summary No. 153: nausea and vomiting of pregnancy. *Obstet Gynecol*. 2015;126(3):687–8. <https://doi.org/10.1097/aog.0000000000001048>
8. Einarson TR, Piwko C, Koren G. Prevalence of nausea and vomiting of pregnancy in the USA: a meta analysis. *Journal of population therapeutics and clinical pharmacology = Journal de la therapeutique des populations et de la pharmacologie clinique*. 2013;20(2):e163-70. <https://pubmed.ncbi.nlm.nih.gov/23863545/>
9. Haji E, Javadi S, Salehi F, Mashrabi O. Comparing the Effectiveness of Vitamin B6 and Ginger in Treatment of Pregnancy-Induced Nausea and Vomiting. 2013;2013:4–7. <https://doi.org/10.1155/2013/927834>
10. Jafari-Dehkordi E, Hashem-Dabaghian F, Aliasl F, Aliasl J, Taghavi-Shirazi M, Sadeghpour O, et al. Comparison of quince with vitamin B6 for treatment of nausea and vomiting in pregnancy: a randomised clinical trial. *Journal of Obstetrics and Gynaecology*. 2017;37(8):1048–52. <https://doi.org/10.1080/01443615.2017.1322046>
11. Wibowo N, Purwosunu Y, Sekizawa A, Farina A, Tambunan V, Bardosono S. Vitamin B6 supplementation in pregnant women with nausea and vomiting. *International Journal of Gynecology & Obstetrics*. 2012 Mar 20;116(3):206–10. <https://doi.org/10.1016/j.ijgo.2011.09.030>
12. Eva Dasher. Vitamin B6 during pregnancy [Internet]. Available from: https://www.babycenter.com/pregnancy/diet-and-fitness/vitamin-b6-in-your-pregnancy-diet_666
13. U.S. Department of Agriculture. Rice bran, crude - Nutrients - SR Legacy | USDA FoodData Central [Internet]. 2019 [cited 2025 Aug 27]. Available from: <https://fdc.nal.usda.gov/food-details/169713/nutrients>
14. Sapwarobol S, Saphyakhajorn W, Astina J. Biological Functions and Activities of Rice Bran as a Functional Ingredient: A Review. *Nutrition and Metabolic Insights*. 2021;14. <https://doi.org/10.1177/11786388211058559>
15. Ardian IL, Puspareni LD, Fauziyah A, Ilmi IMB. Analisis kandungan gizi dan daya terima cookies berbahan dasar tepung bekatul dan tepung ikan tuna untuk balita gizi kurang. 2022;11:42–50. <https://doi.org/10.14710/jnc.v1i1.31177>
16. Auliana R. Pemanfaatan Bekatul dalam Pembuatan Cookies untuk Meningkatkan Ketrampilan Ibu Rumah Tangga. *Prosiding Pendidikan Teknik Boga Busana*. 2010;5(1):411–22. <https://jurnal.uny.ac.id/index.php/ptbb/article/download/43178/16132/118072>
17. Tutuarima T, Dewi KH, Sinambela N. Optimasi Proses Maserasi Hasil Samping Industri Sirup Jeruk Kalamansi (*Citrofortunella microcarpa*). 2018;3(2):359–64. <https://doi.org/10.24843/JITPA.2018.v03.i02.p07>
18. Elmitra YN. Uji Sifat Fisik Sabun Padat Transparan Dari Minyak Astiri Jeruk Kalamansi (*Citrus Microcarpa*). *Jurnal Akademi Farmasi Prayoga*. 2020;5(1). <http://download.garuda.kemdikbud.go.id/article.php?article=2811644>

19. Asyima. Hubungan Paritas dan Dukungan Suami Terhadap Kejadian Hyperemesis Gravidarum Di RSUD Syekh Yusuf Gowa Tahun 2018. Jurnal kesehatan Delima Pelamonia. 2018;2(1):43.
<http://download.garuda.kemdikbud.go.id/article.php?article=1065184&val=15985&title=Hubungan%20Paritas%20dan%20Dukungan%20Suami%20Terhadap%20Kejadian%20Hyperemesis%20Gravidarum%20Di%20RSUD%20Syekh%20Yusuf%20Gowa%20Tahun%202018>
20. Munir R, Yusnia N, Lestari CR. Faktor-Faktor yang Mempengaruhi Hiperemesis Gravidarum pada Ibu Hamil. Jurnal Formil (Forum Ilmiah) KesMas Respati. 2022;7(3):326–36. <https://doi.org/10.35842/formil.v7i3.460>
21. Mardika Mangidi A, Ode W, Kamba Wuna S, Rahmawati DA, S1 P, Sekolah K, et al. The Relationship between Maternal Age and Parity with the Incidence of Hyperemesis Gravidarum at Dewi Sartika General Hospital Kendari City. Jurnal Pelita Sains Kesehatan. 2023;3(6):1–8.
<https://ojs.pelitaibu.ac.id/index.php/jpasaik/article/view/118?articlesBySameAuthorPage=1>
22. Munisah, Sukarsih RI, Mudlikah S, Rachmawati A. Faktor Tingkat Pendidikan, Usia, Paritas, Status Pekerjaan Dan Riwayat Emesis Gravidarum Mempengaruhi Terjadinya Emesis Gravidarum. IJMT : Jurnal Kebidanan. 2022;1(2):45–53. <https://journal.umg.ac.id/index.php/ijmt/article/view/4006>
23. Wahyuni R, Rohani S. Hubungan Paritas Dan Tingkat Pendidikan Ibu Dengan Emesis Gravidarum Pada Ibu Hamil TM I Di Desa Waluyoajati Tahun 2024. Jurnal Maternitas Aisyah. 2024;14–8.
<https://journal.aisyahuniversity.ac.id/index.php/Jaman/article/view/1837>
24. Sulistyawati M, Umamah F. Konsumsi Makanan Kecil Di Pagi Hari Mempengaruhi Morning Sickness Pada Ibu Hamil Trimester Pertama Di Wilayah Kerja Bps Ida Ayu Desa Becirongengor Sidoarjo. Jurnal Ilmiah Kesehatan. 2019;7(12):1–8. <http://repository.unusa.ac.id/2270/1/>
25. Chortatos A, Iversen PO, Haugen M, Eberhard-Gran M, Bjelland EK, Veierød MB. Nausea and vomiting in pregnancy - association with pelvic girdle pain during pregnancy and 4-6 sssmonths post-partum. BMC Pregnancy and Childbirth. 2018;18(1):1–8. <https://doi.org/10.1186/s12884-018-1764-7>
26. Chortatos A, Haugen M, Iversen PO, Vikanes Å, Eberhard-Gran M, Bjelland EK, et al. Erratum to Pregnancy complications and birth outcomes among women experiencing nausea only or nausea and vomiting during pregnancy in the Norwegian Mother and Child Cohort Study. [BMC Pregnancy Childbirth, 15, (2015), 138] doi: 10.1186/s12884-015-0580-6. BMC Pregnancy and Childbirth. 2015;15(1):4–5.
<https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-015-0580-6>
27. Tuarita MZ, Sadek NF, Sukarno, Yuliana ND, Budijanto S. Pengembangan Bekatul sebagai Pangan Fungsional: Peluang, Hambatan, dan Tantangan. Jurnal Pangan. 2017;26(2):24–31.
28. Schupfer E, Ooi SL, Jeffries TC, Wang S, Micalos PS, Pak SC. Changes in the Human Gut Microbiome during Dietary Supplementation with Modified Rice Bran Arabinoxylan Compound. Molecules. 2023;28(14).
<https://www.mdpi.com/1420-3049/28/14/5400>
29. Basirat Z, Moghadamnia AA, Kashifard M, Sarifi-Razavi A. The effect of ginger biscuit on nausea and vomiting in early pregnancy. Acta Medica Iranica. 2009;47(1):51–6.
<https://acta.tums.ac.ir/index.php/acta/article/view/3543>