

Effects of *Musa Paradisiaca* on Emesis Gravidarum in Pregnant Women

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ABSTRACT

Emesis gravidarum is a symptom that occurred 6-8 in 10 pregnancies for primigravida and 4-6 in 10 pregnancies for Multigravida. *Musa Paradisiaca* contain B vitamins, namely thiamine, riboflavin, niacin, and vitamin B6 (pyridoxine). The contents of the banana vitamin B6 are quite large. It helps to reduce nausea and vomiting for pregnant women. The purpose of this study was to determine the effect of *Musa Paradisiaca* on Emesis Gravidarum for pregnant women. It was quasi experimental study with pre-post with control group design. The study population was pregnant women in the first trimester who experienced nausea and vomiting in a private midwifery practice in 2019 with a sample of 16 people in the intervention group who were given *Musa Paradisiaca* with vitamin B6 and 16 people in the control group were given vitamin B6 alone, Sample was taken by using a purposive sampling technique. The results of the P Value of the intervention group are = 0.001 <0.05 and the results of the P Value of the control group are = 0.000 <0.05. This shows the difference in the reduction of nausea and vomiting which found the intervention group showed more significant changes. Suggestions for further research can be done by looking at the effect of parity on Emesis gravidarum on pregnant women in the first trimester.

Keywords: *musa paradisiacal, emesis gravidarum, pregnant*

1. INTRODUCTION

Pregnancy is defined as fertilization or union of spermatozoa and ovum, followed by nidation or implantation[1]. In the process of pregnancy there are anatomical physiological changes, besides these changes pregnant women experience discomfort in pregnancy such as fatigue, vaginal discharge, cravings, frequent urination and nausea (emesis gravidarum). The changes above occur due to an imbalance of the hormones progesteron and estrogen, the female hormones in the mother's body since the pregnancy. Some complaints that make mothers feel uncomfortable one of which is nausea, vomiting, if this condition is not treated it will have a negative impact on the mother and baby[2].

In pregnancy there are major changes in the endocrine system that occur aimed at maintaining pregnancy, maintaining normal fetal growth, and postpartum recovery (puerperium). The Human Chorionic Gonadotropins (HCG) test is positive and HCG levels have doubled from 48 hours to 6 weeks of pregnancy. About 50-90% of pregnant women experience nausea and vomiting. Nausea

and vomiting usually begin at 9 weeks of pregnancy until week 10, and are more severe at weeks 11 and 13, and end at weeks 12 to 14. Only in 1-10% of pregnancies continue through weeks 20 to 22nd week[3].

Nausea and vomiting (emesis gravidarum) are natural symptoms that are often found in the first trimester of pregnancy. Nausea usually occurs in the morning. This is caused by the increased levels of the hormone estrogen and HCG which are released are higher, HCG can cause nausea and vomiting during early pregnancy[4].

Emesis gravidarum will increase into hyperemesis gravidarum which causes the mother to vomit continuously every time she drinks or eats, consequently the mother's body becomes weaker, pale, and urination decreases drastically so that the body's fluid decreases and blood becomes potent (haemoconcentration) thereby slowing blood circulation namely oxygen and tissue that can cause tissue damage that can endanger the health of the mother and the development of the fetus[3].

In the United States and Canada about 400,000 and 350,000 pregnant women experience nausea and vomiting every year. In Western countries and city dwellers, According to Hernawati, et al 2014 in Dhillon, et al, 2018 in Cianjur, Indonesia there were 69.2% of pregnant women who experienced nausea and vomiting and 30.8% did not experience nausea and vomiting during pregnancy, from 52 samples taken[2].

Nausea and vomiting (emesis) a symptom that often occurs in pregnancy is 60-80% Primigravida and 40-60% Multigravida. Nausea usually occurs in the morning but can be felt at any time of the day and night. Nausea and vomiting usually begin in the first week of pregnancy and end in the fourth month can be felt by pregnant women throughout pregnancy if the handling of nausea and vomiting is not done correctly[2].

One of pharmacological ways to treat nausea and vomiting in pregnancy is pyridoxine (vitamin B6), which treats nausea and vomiting in pregnancy. Non-pharmacological therapy is done by regulating the diet of pregnant women, emotional support, and acupressure (Runiari & Imaningrum, 2012) and other non-pharmacological ways including consuming large amounts of Musa Paradisiaca as well as flavonoids and vitamin B6 which can overcome nausea and vomiting in pregnancy[5].

The majority of pregnant women who experience nausea and vomiting only understand that nausea and vomiting experienced by pregnant women can only be overcome by using drugs, whereas the use of drugs in pregnant women is very influential on the fetus being conceived. In addition, pregnant women who experience nausea and vomiting do not consume fruit because they assume the fruit they eat will aggravate nausea and vomiting[4].

Bananas are the best food because they contain vitamins that are needed by pregnant women. In addition to bananas, foods that can reduce nausea and vomiting in pregnant women are mint leaves, the main content of mint leaves is essential oils consisting of menthol, other monoterpenes including menthone (10-40%), menthyl acetate (1-10%), menthofuran (1-10%), cineol (eucalyptol, 2-13%) and limonene (0.2-6%) besides mint leaves which can reduce nausea and vomiting are ginger, according to Setyaningrum in Nuria (2019) said the chemical content of ginger is essential oil is 1.62-2.29%, in this study the researchers took banana kepok boiled because

pregnant women who like to consume bananas and are also easily obtained[4].

Thiamine, riboflavin, niacin, and vitamin B6 are all found in Musa paradisiaca (pyridoxin). The vitamin B6 level in bananas is quite high. Vitamin B6 plays a role in protein synthesis and metabolism, notably serotonin, in addition to serving as a coenzyme for various metabolic pathways. Vitamin B6 is also involved in the metabolism of carbohydrates as a source of energy. Vitamin B6 plays an important part in ensuring that the brain has the energy to carry out daily tasks. Vitamin B6 is a nutrient that is water soluble. Vitamin B6 aids in the development of central nervous system cells in the fetus as well as the reduction of morning sickness[5].

According to research conducted by Ratih, et al (2017) from the results of examinations when researching of 3 types of musa paradisiaca, the B6 content in each banana namely kepal banana is 0.2022 mg / ml, cooked banana kepok is 0.2530 mg / ml, and Musa paradisiaca boiled for 40 minutes at 0.3646 mg / ml. The conclusion of the study is that the highest vitamin B6 content in Musa paradisiaca that are boiled for 40 minutes which can be recommended to reduce nausea and vomiting in trimester I pregnant women[5].

Research conducted by Ratih, et al, (2017) is the first study regarding the administration of Musa paradisiaca which explains the B6 content that has been tested in a laboratory, thus researchers take reference from Ratih, et al, (2017) for further research to be conducted, the difference from the present research to be done is that the researchers are more focused on giving Musa paradisiaca that have been boiled for 40 minutes[5].

Data obtained from the Padang Pariaman District Health Office in 2018 that the Lubuk Alung Puskesmas was the highest Puskesmas with 798 of the 25 Puskesmas in Padang Pariaman District, while the K1 coverage in April 2019 obtained the Lubuk Alung Puskesmas with the highest pregnant mother 72 out of 25 Puskesmas in Padang Pariaman Regency.

2. METHOD

2.1 Design

This study was experimental study by using pretest-posttest with control group design. Intervention group was given Musa Paradisiaca boiled as much as 900 mg three times a day for 7 days and control was given B6 vitamin.

2.2 Population and Samples

Population was pregnant women in the first trimester who visit Midwifery Practice. Samples were women in the first trimester who visit Midwifery Practice who complain about nausea and vomiting and did not consume B6 vitamin and primigravida. Sample size was 16 by using purposive sampling.

2.3 Data Collect

These studies take place in Midwifery Practice in Pariaman City in 2019. Data collected by using PUQE-24 Questionnaire and for secondary data was take for medical record of patients. To observe the intervention researchers was using observation sheet.

2.4 Data Analysis

Univariate analysis has been done to analyze frequency of nausea and vomiting in the intervention and control group. Bivariate analysis has been done by using independent t-test.

3. RESULT

Table. 1 Average Frequency of Nausea and Vomiting Before Musa Paradisiaca Boiled Intervention

Emesis Gravidarum	n	Mean	SD	Min-Max
Pre Test	16	10.00	2.366	7 - 13

It was found that from 16 respondents before being given an intervention with an average frequency of vomiting as musch as 10.

Table. 2 Average Frequency of Nausea and Vomiting After Musa Paradisiaca Boiled Intervention

Emesis Gravidarum	n	Mean	SD	Min-Max
Post Test	16	4.17	1.169	3-6

It was found that from 16 respondents after being given the intervention of Musa Paradisiaca with an average frequency of vomiting as much as 4.17.

Table. 3 Average Frequency of Nausea and Vomiting Before B6 Vitamin Intervention

Emesis Gravidarum	n	Mean	SD	Min-Max
Pre Test	16	10.33	1.966	8 - 13

It was found that from 16 respondents before being given B6 Vitamin intervention with an average frequency of vomiting as much as 10.33.

Table. 4 Average Frequency of Nausea and Vomiting After B6 Vitamin Intervention

Emesis Gravidarum	n	Mean	SD	Min-Max
Post Test	16	7.50	2.258	5-10

It was found that from 16 respondents after being given B6 Vitamin intervention with an average frequency of vomiting as much as 7.50.

Table. 5 Effects of Nausea and Vomiting Frequency before and After Musa Paradisiaca Intervention

Variable	n	Mean	SD	SE	P Value
Pre Test	16	10.00	2.366	0.966	0,001
Post Test	16	4.17	1.169	0.477	

P Value = 0.001 which indicates there was a significant effect of boiled Musa Paradisiaca on nausea and vomiting frequency in pregnant women in their first trimester.

Table. 6 Effects of Nausea and Vomiting Frequency before and After B6 Vitamin Intervention

Variable	n	Mean	SD	SE	P Value
Pre Test	16	10.33	1.966	0.803	0,000
Post Test	16	7.50	2.258	0.922	

P Value = 0.001 which indicates there was a significant effect of B6 Vitamin on nausea and vomiting frequency in pregnant women in their first trimester.

Table. 7 The difference of effect of boiled *Musa Paradisiaca* and B6 Vitamin on Nausea and Vomiting Frequency

Variable	N	Mean	SD	SE	Mean Different	P Value
Musa Paradisiaca	16	5.83	1.941	0.792	3.0	0.011
B6 Vitamin	16	2.83	0.573	0.307	3.0	

Based on statistical analysis we know that p value was 0.011, it means that there was a significant difference of nausea and vomiting frequency between boiled *Musa Paradisiaca* and B6 vitamin.

4. DISCUSSION

4.1 The effect of *Musa Paradisiaca* on Nausea and Vomiting

Emesis gravidarum is a common complaint made in young pregnancies. The occurrence of pregnancy causes hormonal changes in women due to an increase in the hormones oestrogen, progesterone, and the release of human chorionic gonadotropin placenta. These hormones are thought to cause emesis gravidarum[6].

Emesis gravidarum will gain weight into hyperemesis gravidarum which causes the mother to vomit continuously every time she drinks or eats, consequently the mother's body becomes weaker, pale, and urination decreases drastically so that the body's fluid decreases and blood becomes thick (hemoconcentration) thereby slowing blood circulation namely oxygen and tissue that can cause tissue damage that can endanger the health of the mother and the development of the fetus it contains[7]. The results of this study are in line with research conducted by Saleha (2017) that prior to the intervention the mean value of nausea and vomiting in the intervention group 9.23. According to the researchers' assumption that the frequency of vomiting in women emesis gravidarum before intervention is due to increased levels of the hormone HCG (Human Chronic Gonadotropin) produced in the bloodstream to maintain estrogen and progesterone supply. This HCG hormone will double from 48 hours to 6 weeks of pregnancy and will directly affect the digestive system such as decreased digestive and intestinal peristalsis accompanied by increased stomach acid and decreased appetite. In spite of that, nausea and vomiting can also occur if the mother smells certain scents, psychological, to lifestyle. Poor diet before or during the early weeks of pregnancy, lack of sleep or lack of rest and stress can aggravate nausea and vomiting.

In pregnancy there are major changes starting from the beginning of pregnancy until birth and most importantly how to adapt to the changes that occur. Due to lack of knowledge about the causes of nausea and vomiting, respondents are unable to interpret the state of nausea and vomiting properly, so they cannot adapt to the nausea and vomiting. Then it will cause nausea and vomiting to get worse because it is only left or is considered normal because there is no anticipation and good therapy in the mother of nausea, so that everyone's perception of nausea and vomiting is very subjective then it will affect the response of nausea and vomiting varies. During pregnancy the nutritional needs of mothers such as vitamins and minerals increase so food intake must also increase. However, some pregnant women experience a decrease in appetite and experience nausea and vomiting (emesis gravidarum) so that it results in a lack of nutritional intake for pregnant therefore this if left unchecked will continue until the 2nd and 3rd trimesters, this situation will be a danger if pregnant women do not do the treatment that result in getting worse. Bananas taste sweet, are cold and astringent. This fruit is useful for maintaining energy, lubricating the intestine, bidding toxins, reducing heat (antipyretics), smoothing the skin, anti-inflammatory, shed urine (diuretic) and as a mild laxative[7].

The results of this study are in line with research conducted by Saleha (2017) that the mean value of nausea and vomiting in pregnant women after getting intervention is 2.533 (SD = 2.501 CI = 1.599-3.467) there are differences in the degree of nausea and vomiting pre and post intervention (P value = 0,000).

According to the researchers' assumptions, there was a reduction in vomiting felt by the respondents after being given an intervention. Respondents like boiled kepok banana because it tastes sweet and is better consumed when warm and can be used as an alternative to rice because 600 grams of banana consumed can be filling, so in addition to reducing nausea and vomiting of respondents, boiled *musa paradisiaca* are used as additional food.

Even some respondents who already know boiled *musa paradisiaca* can reduce nausea and

vomiting respondents take their own boiling and not only that respondents have decreased vomiting because since eating boiled *musa paradisiaca* the usual natural nausea is slightly reduced, almost all respondents like bananas the boiled kepok because before the respondent never knew that the boiled banana was a lot of vitamins and could be an alternative to prevent nausea and vomiting in mothers *emesis gravidarum* Trimester 1. In *Kepok* banana there are many health benefits, including containing folic acid, which easily absorbed by the fetus through the womb, the vitamin B6 content of bananas is quite high, which is equal to 0.5 mg per 100 grams.

Banana, has many benefits including reducing blood pressure, so eating bananas is very good for health, besides the cheap price and we often find it has many benefits and there are no side effects for the mother or fetus they contain. Vitamin B6 (Pridoxin) is important for the manufacture of amino acids in the body. This vitamin is also given to reduce complaints of nausea in pregnant women¹⁰. Besides being effective in treating nausea in pregnant women in the first trimester, this vitamin is also good for brain development and the nervous system of the fetus. Vitamin B6 can be found in avocados, bananas, watermelons, potatoes, wheat, beef, poultry meat and brown rice[11]. *Musa paradisiaca* boiled in 40 minutes will produce a sizable content of other bananas, bananas are very easy to get, cheap and delicious[5].

The results of this study are in line with research conducted by Ratih (2017) that the results of research with the consumption of vitamin B6 can help reduce nausea-vomiting. vitamin B6 content in bananas is equal to 0.5 mg / 100 gram. To overcome the nausea of vomiting during pregnancy, the required dose of vitamin B6 is greater, 10 mg for 3-4 times a day. Conclusion From the results of research that has been conducted by researchers, namely the effectiveness of consumption of *musa paradisiaca* on first trimester *emesis gravidarum* in *Kampar* district, namely: There is a significant influence on the frequency of *emesis gravidarum* on first trimester pregnant women before and after consumption of *musa paradisiaca* in *Kampar* district, obtained p value = 0, 04 which result is smaller than ($\alpha = 0.05$)[5].

According to researchers' assumptions that *emesis gravidarum* causes decreased appetite so that there is a change in the balance of electrolytes with potassium, calcium and sodium which causes changes in the body's metabolism. At the time of the study, pregnant women with vomiting more than > 7 times a day said the loss of appetite and fear of eating because they would vomit again, but after giving boiled *musa paradisiaca* with vitamin

B6, the respondent's vomiting was reduced by > 4 times a day and made *pisag kepok* boiled as a substitute for food with a filling banana and it tastes sweet and delicious[8].

So, in addition to taking medications to treat nausea and vomiting, mothers can try a variety of suggested fruits, such as bananas, to relieve nausea and vomiting. Which fruit is simple to get by and is rarely disliked by expectant mothers? Vitamin B6, which is found in bananas, is a water-soluble vitamin. Vitamin B6 can help a fetus's central nervous system cells develop more quickly. *Emesis gravidarum* can be reduced if enough vitamin B6 is consumed[8].

4.2 The effect of B6 Vitamin on Nausea and Vomiting

Increased levels of estrogen and progesterone also cause nausea due to the direct influence of this hormone on digestive hormones. Respondents will feel very tortured during the period of the biggest hormonal changes in the first three months. At the end of the third month, when the levels of these hormones in the blood disappear or begin to decrease, digestive complaints caused by these hormones will also decrease. Prepare to experience *emesis gravidarum*[12].

The results of this study are in line with research conducted by Faizah (2018) that before being given vitamin B6, the most respondents were in the category of moderate nausea, vomiting, as many as 12 people (80.0%), after being given vitamin B6, the respondents who were mostly in the category mild nausea, vomiting, as many as 12 people (80.0%)[14].

Nausea (nausea) and vomiting or in medical terms known as *emesis gravidarum* is a natural symptom and is often found in the first trimester of pregnancy. Nausea usually occurs in the morning, but can also occur at any time and night¹⁴. In dealing with nausea and vomiting, there are two efforts that can be done by someone in reducing nausea and vomiting during pregnancy, namely pharmacological methods and non-pharmacological methods. One non-pharmacological therapy that is recommended for treating nausea and vomiting during pregnancy is vitamin B6. Vitamin B6 is a vitamin that is soluble in water[14].

The results of this study are in line with Shanti (2018), that based on the research it was found that the administration of vitamin B6 was effective in reducing the frequency of nausea and vomiting marked by all respondents included in the effective category of 10 (100%). This study concludes that supporting evidence is only limited to the use of pharmacological therapies including

vitamin B6 and antiemetic drugs. Vitamin B6 is the main choice in reducing nausea and vomiting in pregnancy[3].

According to the researchers' assumptions that some respondents were able not to throw up, shifted the focus of their minds. The rest are relieved when vomiting, so respondents just do it. Many respondents felt unwell throughout the day hoping they could vomit, but they could not). There are also respondents choosing to sleep longer, because for them sleep relieving symptoms of emesis gravidarum.

Morning sickness can occur due to vitamin B6 deficiency. Some say that the risk of fetal miscarriage in women who experience morning sickness is decreasing. Nearly half of all pregnant women experience symptoms of nausea to vomiting. These symptoms also indicate changes in hormone levels, stress, and fatigue[12].

In dealing with nausea and vomiting, there are two efforts that can be done by someone in reducing nausea and vomiting during pregnancy, namely pharmacological methods and non-pharmacological methods. One non-pharmacological therapy that is recommended for treating nausea and vomiting during pregnancy is vitamin B6[14].

The results of this study are in line with research conducted by Faizah (2018) that there are differences in the intensity of nausea and vomiting in respondents before and after in the control group (given vitamin B6) with a p value of 0,000 <0.05 where the average value before given was 14.60 and after it was given it was reduced to 5.93 with a difference in the average value of 8,667[14].

The results of another study by Shanti (2018) that the administration of vitamin B6 was effective in reducing the frequency of nausea and vomiting was marked by all respondents included in the effective category of 10 (100%). This study concludes that supporting evidence is only limited to the use of pharmacological therapies including vitamin B6 and antiemetic drugs. Vitamin B6 is the main choice in reducing nausea and vomiting in pregnancy[3].

The results of another study by Shanti (2018) that the administration of vitamin B6 was effective in reducing the frequency of nausea and vomiting was marked by all respondents included in the effective category of 10 (100%). This study concludes that supporting evidence is only limited to the use of pharmacological therapies including vitamin B6 and antiemetic drugs. Vitamin B6 is the main choice in reducing nausea and vomiting in pregnancy. Cochrane systematic reviews also show vitamin B6 (pyridoxine) to be effective in reducing

the symptoms of nausea and vomiting, although there is no evidence that pyridoxine reduces the frequency of vomiting[3].

According to the researchers' assumptions during the study that the respondents consumed vitamin B6 according to the recommendations given which were obtained before administration of vitamin B6 where the respondent experienced vomiting > 7x a day and after administration of vomiting decreased by <5x a day but the reduction in nausea and vomiting was not very significant, and the respondent also complaining that it is still difficult to eat for fear of vomiting after eating even though I have tried other ways such as eating a little but often.

Vitamin B6 helps the formation of red blood cells and helps to overcome morning sickness symptoms, this vitamin can be found in bananas, chicken, fish, watermelon, broccoli etc.

4.3 The difference of effect of Musa Paradisiaca and B6 Vitamin on Nausea and Vomiting

Vitamin B6 can help a fetus's central nervous system cells develop more quickly. The daily quantity required for pregnant women to meet vitamin B6 requirements is 1.9 milligrams with the proper amount of vitamin B6. Pregnant women frequently feel nauseous and vomit early in the morning. During the first three months of pregnancy, this can be visible[14].

The content of vitamin B6, vitamin C and iron in ambon bananas can help produce antibodies, fat metabolism, red blood cells, and stimulate the production of hemoglobin in the blood in people with anemia. Bananas containing vitamin B6 are water-soluble vitamins Vitamin B6 can help increase the development of central nervous system cells in the fetus[3].

The results of this study are in line with Shanti (2018), that based on research conducted the frequency of nausea in pregnant women between groups given Vitamin B6 alone with groups given ambon bananas plus vitamin B6 shows that all fall into the effective category, this is in line with research said that vitamin B6 is an enzyme that plays a role in the metabolism of lipids, carbohydrates and amino acids. The role of vitamin B6 in dealing with hyperpermicide dose of vitamin B6 is quite effective around 12.5-25 mg per day every 8 hours. The results of this study showed a decrease in nausea and vomiting in first trimester pregnant women who were given vitamin B6, although the decrease in the average value was very small but it

still brought a change in the condition of pregnant women if taking vitamin B6[3].

According to the researchers' assumptions in this study, it was obtained from 6 respondents in the intervention group and 6 respondents in the control group that respondents in the intervention group expressed reduced nausea and vomiting that they felt, and made Kepok banana as an alternative to rice because of fear of vomiting after consuming rice or other foods. While in the control group some respondents said that he still consumed vitamin B6 but the nausea and vomiting that the respondents experienced remained even though occasionally disappeared, and respondents also complained that it was still difficult to eat for fear of vomiting after eating[15].

5. CONCLUSION

Giving Vitamin B6 singly or giving vitamin B6 plus boiled musa paradisiaca can play an effective role in reducing emesis gravidarum. However, the provision of vitamin B6 plus boiled musa paradisiaca can be more effective than the provision of vitamin B6 alone in overcoming emesis gravidarum

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