The Effectiveness of Moringa Leaves and Mung Beans on Increasing Hemoglobin Levels of Pregnant Women

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ABSTRACT

The high rate of anemia in pregnant women is a global problem that must be addressed immediately, because it can have a negative impact on pregnancy, childbirth, the puerperium and disorders of the fetus. The purpose of the study was to analyze the effectiveness of Moringa leaves and green beans on increasing hemoglobin levels of pregnant women. Quasi experimental research design, Two group approach Pre Post Test Design. The population of all pregnant women in the second trimester. Purposive Sampling Technique. Respondents were 22 pregnant women. The independent variables are Moringa leaves and green beans and the dependent variable is the increase in HB levels in pregnant women, the instruments used are SOPs and observation sheets. By identifying and analyzing the effectiveness of Moringa leaves and green beans on increasing hemoglobin levels of pregnant women, it is concluded that there is an effect of Moringa leaves on increasing HB levels in pregnant women. Statistical Test Paired T-test with the results of the significance of X1 Pre and X1 Moringa Leaves Moringa leaves is 0.000<0.05, with a t-count value of -7.420<-2.228 and a significance value of X2 Pre Mung Beans and X2 Post Mung Beans is 0.001<0 ,05, with t value -4.666<-2,228. After being given an intervention for 10 days, it was concluded that Moringa leaves and green beans can increase the Hb level of pregnant women.

Keywords: Green Beans, Hemoglobin, Moringa Leaves

INTRODUCTION

Pregnancy in general is a condition experienced by every normal woman. Pregnancy that takes place can run normally, but in the process there can be a problem that can endanger the lives of the mother and baby. This problem that can be faced by every pregnant woman can occur at any time in every pregnancy, both from the first trimester to the third trimester. One of the problems that are often experienced by pregnant women is low hemoglobin levels during pregnancy or what is more often called anemia that occurs during pregnancy. Anemia or lack of blood in pregnancy is a condition in which the body with Hb levels in the blood <11 g% which occurs in the first and third trimesters or hemoglobin levels < 10.5 g% which occurs in the second trimester of pregnancy (Aritonang, 2015). Indonesia is one of the developing countries with a fairly high incidence of anemia, iron deficiency is one of the most nutritional problems in Indonesia. Pregnant women, children, and women in their fertile period are at risk of suffering from anemia or lack of blood.

The high rate of anemia or anemia in pregnant women during pregnancy is a problem that occurs globally or worldwide that needs to be addressed immediately, because pregnancy is the most risky period for mothers to suffer from iron deficiency blood deficiency. On a macro level, the bad impact of anemia on pregnant women can result in high cases of illness

and will be fatal for pregnant women and fetuses is death. On a micro level, the adverse effects of anemia or anemia for pregnant women and babies vary from very mild complaints to disturbances in the continuity of a pregnancy such as miscarriage, immature birth, premature parturition, during the delivery process problems such as poor uterine contractions, long labor process, and bleeding can occur both during labor and after delivery, and will continue to the mother during the puerperium such as the uterine involution process does not run normally so that it inhibits the process of uterine shrinkage, body resistance to infection, easy to become stressed or depressed , and can interfere with the production of breast milk that is not good, and babies can experience disorders such as dysmaturity, babies born with defects, babies born with low weight, and more fatally it will cause perinatal death. The high cases of anemia or anemia in pregnant women also occur in the working area of Betun Health Center.

Based on data sources from WHO in 2017, cases of anemia prevalence are still high, namely globally the prevalence of anemia in pregnant women worldwide is 43.9%, the prevalence of anemia in pregnant women in Asia is estimated at 49.4%, Africa 59.1% in America 28.1% and Europe 26.1%. In developing countries about 40% of maternal deaths are related to anemia in pregnancy. Most anemia in pregnancy is caused by iron deficiency. The high prevalence of anemia in pregnant women is a problem that the Indonesian government is currently facing.

According to WHO in 2018, anemia in pregnancy is a major health problem in developing countries with high rates of morbidity and mortality in pregnant women. The total number of anemia sufferers in pregnant women in Indonesia is 70%, meaning that out of 10 pregnant women, 7 people will suffer from anemia. From the results of basic health research, it was noted that in 2013 the prevalence of anemia in pregnant women was 37.1% and in cases of anemia until 2018 it increased to 48.9% (RisKesDas, 2018), in East Nusa Tenggara Province there were 46.2% of mothers. pregnant women who are anemic (2018), the source of data from Malacca Regency is 380 people who experience anemia (2019 Health Office data), At Betun Health Center in 2020 the number of pregnant women is 701 people who experience anemia or 134 pregnant women although this is a decrease from 2019 but still high.

Based on the source of writing (Ani, 2011) and direct observation of anemia due to iron deficiency can be caused by several factors, namely directly or indirectly. The direct causative factor is because the vitamin iron content of the food eaten by pregnant women does not meet the body's needs, the lack of eating foods that contain lots of iron vitamins from animal sources in the form of fish, meat, chicken and liver and foods derived from plants such as dark green vegetables. And indirect causes include: the frequency of checks that are not in accordance with the reason for the presence of pregnant women living in pocket areas, the behavior of patients who do not obey taking blood-added tablets for various reasons (there are complaints such as heartburn, nausea and vomiting after taking vitamin tablets). adding blood, vitamin tablets add a fishy smell), socio-economic conditions of pregnant women, knowledge of pregnant women, and education of pregnant women, pregnant women from among farmers who work in the garden so that they have less time to rest.

Alternatives in improving iron anemia status can be done in various ways, namely by pharmacological or non-pharmacological treatment. Pharmacological treatment includes the provision of blood-boosting vitamin tablets such as SF. While non-pharmacological treatment in improving iron anemia status can be given various types of green vegetables and foods containing flavonoids such as beans, one of which is green beans. One simple way to meet the iron needs of anemia is to consume foods that are a source of iron, including beans and green vegetables, education and efforts to increase iron intake, monitoring of infectious

diseases, getting enough rest, checking routine pregnancy at least 4 times, it is expected that pregnant women can consume nutritious food 3 times a day with 2 times more portions, counseling and KIE for pregnant women will benefit from consuming vitamin tablets plus blood and eating nutritious food, in collaboration with cadres to monitor women pregnant in taking vitamin tablets plus blood. Vitamin iron can also be found in vegetables such as Moringa leaves and legumes such as green beans.

Moringa leaf vegetable is one part of the Moringa plant that has been widely studied for its nutritional content and benefits. Moringa leaf vegetables are very rich in nutrients such as calcium, vitamins iron, phosphorus, potassium, zinc, and also contain lots of vitamins A, B, C, D, E, K, folic acid and biotics. Moringa leaf vegetables contain vitamin A, vitamin C, vitamin B, calcium, potassium, iron in very high amounts and are easily digested and assimilated by the human body. Moringa leaf vegetables contain various macro and micro nutrients as well as active ingredients that act as anti-toxins or antioxidants.

Green beans or vigna radiata are included in the legume tribe. Mung bean is a type of legume that contains a lot of high vitamin iron and contains many benefits. Green beans are one of the foodstuffs that contain substances needed to form blood cells in the body, so that it can overcome the effects of decreasing hemoglobin levels in pregnant women, because in green beans have a variety of content that can be useful for improving hemoglobin levels.

In accordance with the description of the problem above, the researcher is interested in conducting this research with the title "Effectiveness of Moringa Leaves and Mung Beans on Increasing Hemoglobin Levels of Pregnant Women in Betun Health Center, Malacca Regency, East Nusa Tenggara Province in 2021".

METHOD

Quasi experimental research design, Two group approach Pre Post Test Design. Which was carried out in July-August 2021. The population of all pregnant women in the second trimester in Kamanasa Village, Betun Health Center Region. The sampling technique in this research is purposive sampling. Respondents were 22 pregnant women. The independent variables are Moringa leaves and green beans and the dependent variable is the increase in HB levels in pregnant women, the instrument used is SOP and observation sheets. Data collection techniques used primary data and secondary data. Statistical Test Paired T-test with the results of the significance of X1 Pre and X1 Moringa Leaves Moringa leaves is 0.000<0.05, with a t-count value of -7.420<-2.228 and a significance value of X2 Pre Mung Beans and X2 Post Mung Beans is 0.001<0 ,05, with t value -4.666<-2,228

RESULT

A. CHARACTERISTICS OF RESPONDENTS

Characteristics of respondents are profiles of research objects that can provide research results regarding the effectiveness of Moringa leaves and green beans on increasing hemoglobin levels of pregnant women in Betun Health Center. Where to find out the respondents are grouped according to the description of the respondents based on age, occupation and education level.

1. By Age

Table. 4.1.Respondent Identity Based on Age

Respondent's Age (Years)	Number of Respondents	Presentase (%)
<20	2	9,00
20-35	18	82,0
>35	2	9,00
Total	22	100

Source: Primary Data That Has Been Processed

Based on table 4.1, the identity of the respondents based on the age of the respondents is mostly in the productive age of less than 20 years as many as 2 people with a percentage of 9.00% and respondents aged 20-35 years as many as 18 people with a presentation of 82.0%, and respondents aged more than 35 years as many as 2 people with a presentation of 9.00%. Information about age is very important to know because the age difference of each respondent is very influential on attitudes and perspectives.

2. Based On Education Level

Table. 4.2.Respondent Identity Based on Education Level

Level of education	Number of Respondents	Presentase (%)
SD	6	27,3
SMP	5	22,7
SMA	10	45,5
Diploma dan Sarjana	1	4,5
Total	22	100

Source: Primary Data That Has Been Processed

Based on table 4.2 describes the most respondents are high school educated as many as 10 people with a percentage of 45.5%, but there are still respondents who have elementary education as many as 6 people with a presentation of 27.3% and junior high school with a number of 5 people each with a percentage of 22.7 %. With different levels of education, it is a consideration for policy making so that in conveying information about activities to be carried out, the method and language used are adjusted to the level of education of high school and below. The level of education will affect the way of thinking, perspective, attitude and knowledge. The level of education owned by the respondent will affect the knowledge and level of experience.

3. By Job

Table. 4.3 .Respondent Identity Based on Occupational Level

Work	Number of Respondents	Presentase (%)
Housewife/farmer	15	68,3
Businessman	6	27,2
Employee	1	4,5
Total	22	100

Source: Primary Data That Has Been Processed

Based on table 4.3, the results show that most of the respondents work as housewives or farmers as many as 15 people with a percentage of 68%, entrepreneurs as many as 6 people with a percentage of 27.2%, and 1 civil servant with a percentage of 4.5%. With the description above, it can be concluded that with work as a housewife or farmer, the time needed to take care of and pay attention to diet during pregnancy will be consumed because the time is only to complete work in the garden and in the fields.

B. VARIABLE CHARACTERISTICS
1. HB Levels Before And After Being Given Moringa Leaves
a. Hb Levels Before Being Given Moringa Leaves

Table. 4.4 HB Levels Before Consuming Moringa Leaves

Anemia	Number of Respondents	Presentase %
Heavy	0	0
Currently	4	36,4
Light	7	63,6
No anemia	0	0
Total	11	100

Based on table 4.4, it can be seen that before consuming Moringa leaves there were 4 respondents who experienced moderate anemia with a percentage of 36.4%, mild anemia as many as 7 people with a percentage of 63.6%. This shows that the majority of pregnant women are mildly anemic with a total of 7 people.

b. HB Levels After Being Given Moringa Leaves

Tables. 4.5. HB Levels After Consuming Moringa Leaves

Anemia	Number of Respondents	Presentase %
Heavy	0	0
Currently	2	18
Light	9	82
No anemia	0	0
Total	11	100

Based on table 4.5 it can be seen that after consuming Moringa leaves there are 2 people who are still in the category of moderate anemia with a percentage of 18%, 9 people in a mild anemia position with a percentage of 82%. This illustrates an increase in HB levels of pregnant women after consuming Moringa leaves.

2. HB Levels Before And After Being Given Green Beans
   a. Hb Levels Before Giving Green Beans

Table. 4.6 HB Levels Before Consuming Green Beans

Anemia	Number of Respondents	Presentase %
Heavy	0	0
Currently	4	36
Light	7	64
No anemia	0	0
Total	11	100

Based on table 4.6, it can be seen that before consuming green beans there were 4 respondents who experienced moderate category anemia with a percentage of 36%, mild anemia as many as 7 people with a percentage of 64%. This shows that most respondents are in the category of mild anemia.

b. HB Levels After Being Given Green Beans

Tables. 4.7. HB Levels After Consuming Green Beans

Anemia	Number of Respondents	Presentase %
Heavy	0	0
Currently	3	27.2
Light	8	72.8
No anemia	0	0
Total	11	100

Based on table 4.7, it can be seen that after consuming green beans there are 3 people still in moderate anemia with a percentage of 27.2%, 8 people in a position of mild anemia with a percentage of 72.8%. This illustrates an increase in HB levels of pregnant women after consuming green beans.

3. Case Processing Summary

a. **Table 4.8: Comparison Of The Average Hb Of Respondents Before And After Consumption Of Moringa Leaves**

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
END * BEGINNING	11	100.0%	0	.0%	11	100.0%

Report

END BEGINNING	N
10,	2
8,8	2
8,9	2
9,5	2
9,6	1
9,7	1
9,8	1
Total	11

Based on the table above, the respondent's Hb before and after consuming Moringa leaves, the Hb of the respondents is more in the mean value at number 2.

b. Table 4.9: Comparison Of The Average Hb Of Respondents Before And After Consumption Of Green Beans

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
END * BEGINNING	11	100.0%	0	.0%	11	100.0%

Report

END BEGINNING	N
10,	1
8,6	1
8,7	1
8,8	1
8,9	1
9,5	1
9,7	2
9,8	2
Total	11

Based on the table above, the Hb of respondents before and after consuming Moringa leaves Hb of respondents is more in the mean value at number 1.

DISCUSSION

A. Identifying the Effectiveness of Moringa Leaves on Increasing Hemoglobin Levels of Pregnant Women at Betun Health Center

Based on table 4.4, it can be seen that before consuming Moringa leaves there were 4 respondents who experienced moderate anemia with a percentage of 36.4%, mild anemia as many as 7 people with a percentage of 63.6%. This shows that the majority of pregnant women are mildly anemic with a total of 7 people. Meanwhile, based on table 4.5, it can be seen that after consuming Moringa leaves there are 2 people who are still in the category of moderate anemia with a percentage of 18%, 9 people in the position of mild anemia with a percentage of 82%. This illustrates an increase in HB levels of pregnant women after consuming Moringa leaves, namely 4 respondents who before consuming Moringa leaves were in the moderate anemia category, 2 respondents remained in the moderate anemia category, while 2 respondents changed to the mild anemia category. In mild anemia which was originally 7 respondents to 9 respondents

According to the theory, iron is an essential microelement for the body. This substance is mainly needed in hemopobesis (blood formation), namely in the synthesis of hemoglobin (Hb). The total amount of iron in the body averages 4-5 grams, approximately 65 percent of which is found in the form of hemoglobin. About 4 percent is in the form of myoglobin, 1 percent is in the form of various heme compounds that promote intracellular oxidation, 0.1 percent is associated with the protein transferrin in blood plasma and 15-30 percent is mainly stored in the reticuloendothelial system and liver parenchymal cells, particularly in the form of ferritin. .

According to research results, Moringa leaves contain very high amounts of vitamin A, vitamin B, vitamin C, calcium, potassium, iron and protein which are easily digested by the human body. The high content of iron (Fe) in dried Moringa leaves or in the form of Moringa leaf flour, which is equivalent to 25 times higher than spinach, can be used as an alternative to natural anemia prevention in pregnant women. Moringa compounds have been studied and reported by Ibok Odura W, O Ellis, at all (2008) which states that Moringa leaves contain 28.29 mg of iron in 100 grams. The plant which has the Latin name as Moringa oleivera or in Indonesian called Moringa has stems that are rare and easily broken. The leaves themselves are small, oval in shape, arranged in one stalk. Moringa itself can grow very well in areas that have an altitude between 300 to 500 meters above sea level. Because it has many benefits and this plant is not too difficult to care for, many Moringa trees are cultivated independently by cuttings. One of the benefits of this Moringa leaf is that it is very good for consumption for pregnant women, breastfeeding and toddlers. (Satriadi, 2016)

The theory states that Moringa leaves are very beneficial for the body and contain lots of vitamins and are high in iron which can increase Hb levels in pregnant women. This is in line with research conducted on 11 respondents after consuming clear Moringa leaves for 10 days. hemoglobin although the average increase is 0.3-0.4g/dl. However, if it is seen directly that the increase in hemoglobin in pregnant women is influenced by many factors, namely supporting factors such as adequate rest patterns, this is supported by the work factor of respondents who work as housewives who will spend more time at home so that the pattern of rest and sleep can wake up. Consuming a variety of these vegetables will help pregnant women meet their nutritional status because consuming vegetables that contain iron will help the body prevent anemia. and compliance in consuming blood-added tablets regularly this will help the body in producing red blood cells so that anemia can be prevented

In the study there were still 2 respondents who had moderate anemia before being given treatment and after being given treatment for 10 days they still experienced the category of moderate anemia. This is theoretically due to the characteristics of respondents who are in the second trimester of pregnancy, where at this time there is a very high risk of anemia even though physiologically this is caused by an increase in blood cells known as

hidremia or hypervolemia. However, the increase in blood cells is less than the increase in plasma, resulting in blood thinning. Physiologically, this blood thinning is to help ease the work of the heart which is getting heavier with pregnancy. But in fact respondents who do not experience changes in anemia status are caused by various factors, namely inadequate and regular rest patterns with adequate and regular rest can increase body stamina, eating patterns that are not in accordance with the needs of pregnant women due to low economic factors. so that they cannot meet nutritious food, as a result of this pregnant women will experience a lack of iron, a lot of activity patterns such as having to go to the garden, rice fields and take care of the household and young children, the midwifery factor is having children with a birth spacing that is less than two years can cause anemic mothers because it takes a mother 2 or 3 years to recover her body condition so that she can prepare herself for the next pregnancy and childbirth. The irregular pattern of consuming blood-added tablets caused by various complaints such as heartburn, drugs that smelled with this condition, it can be concluded that respondents did not get good information about the use of blood-added tablets.

B. Identifying the Effectiveness of Mung Beans on Increasing Hemoglobin Levels of   Pregnant Women at Betun Health Center

Based on table 4.6, it can be seen that before consuming green beans there were 4 respondents who experienced moderate category anemia with a percentage of 36%, mild anemia as many as 7 people with a percentage of 64%. This shows that most respondents are in the category of mild anemia. Based on table 4.7, it can be seen that after consuming green beans there are 3 people still in moderate anemia with a percentage of 27.2%, 8 people in a position of mild anemia with a percentage of 72.8%. This illustrates an increase in HB levels of pregnant women after consuming green beans. Before consuming green beans, there were 4 respondents who were in the moderate anemia category after being given intervention, 1 respondent experienced a change in anemia status from moderate anemia to mild anemia, 3 respondents did not experience a change in anemia status but there was still an increase in hemoglobin levels with a real average of 0.2 -0.3gr. This was also experienced by 7 (64%) respondents who had mild anemia before being given the invention, to 8 people, although there was no change in the category of anemia status but experienced an increase in hemoglobin levels. This illustrates an increase in HB levels of pregnant women after consuming green beans.

The target in the Sustainable Development Goals (SDDs) states that improving the health of a mother can reduce maternal and infant mortality. In the 2015 MDGs target, the maximum maternal mortality rate is 102 per 100 thousand births. This is one of the efforts to reduce maternal mortality. Anemia is one of the causes of maternal death, the frequency of anemia in pregnancy is very high worldwide, which ranges between 10% and 20%. Lack of food containing iron plays a major role in causing anemia.

The need for iron in pregnant women is on average close to 800 mg. This requirement consists of, approximately 300 mg is required for the fetus and the placenta another 500 mg is used to increase maternal hemoglobin mass. Approximately 200 mg more will be excreted through the intestines, urine and skin. Food eaten by pregnant women in 100 calories will produce about 8-10 mg of iron. The calculation of eating 3 times with 2500 calories will produce about 20-25 mg of iron per day. During pregnancy with a calculation of 288 days, pregnant women will produce as much as 100 mg of iron so that the need for iron is still lacking for pregnant women.

Several studies explain the composition in green beans, among others, green beans are one of the food ingredients that contain substances needed for the formation of blood cells, so that they can overcome the effect of decreasing Hb. Mung bean itself acts as the formation of red blood cells and prevents anemia because in green beans have a variety of content that can be useful for improving hemoglobin levels, including Vitamin A, iron, Vitamin C,

Phosphorus, Calcium, Carbohydrates, fats, proteins, calories Vitamin B1 and also contains water. Green beans in addition to containing iron, vitamin C, and zinc which play a role in the treatment of iron deficiency anemia. Green beans also contain 7 mcg of vitamin A in half a cup. Vitamin A deficiency can worsen iron deficiency anemia. Vitamin A supplementation has a beneficial effect on iron deficiency anemia. Vitamin A has many roles in the body, including growth and differentiation of progenitorerythrocyte cells, immunity against infection and mobilization of iron reserves throughout tissues. The interaction of vitamin A with iron is synergistic

The nutritional content of green beans per 100 grams of material according to (Retnaningsih, et al 2008) are: calories (cal) 323, protein (g) 22, fat (g) 1.5, carbohydrates (g) 56.8, calcium (mg) 223, iron (mg) 7.5. phosphorus (mg) 319, vitamin A (SI) 157, vitamin B (mg) 0.46, vitamin C (mg) 10, and water (g) 15.5

The results of this study are in line with Dewi's research entitled The effect of giving fe tablets and mung bean juice porridge on hemoglobin levels in pregnant women. The research data was taken using an observation sheet and this was proven by a paired T-test which showed p-value = 0.005 (p < 0.05) that "there is an effect of giving Fe tablets and mung bean juice pulp on hemoglobin levels in pregnant women". The results of this study are in line with research conducted by Amirul (2016) with the title "the effectiveness of mung bean drinks is an increase in Hb levels". The results showed that the average effect of green bean juice on hemoglobin (Hb) levels was 9.6 g/dl or had mild anemia before giving green bean drinks, and the average hemoglobin (Hb) level was 10.6 g/dl or not anemia after administration of green bean drink. There is an effect of giving green bean drink, there is an increase in hemoglobin (Hb) levels with p = 0.000.

According to the researcher's assumption, the problem of hemoglobin levels is very influential on the mother and fetus because if the mother has less hemoglobin levels, there will be problems so that it will affect the baby in the womb. So to avoid the above problems, preventive measures are needed to overcome the increased hemoglobin levels. One of them is the use of green beans to increase Hb levels which in this study have been processed into mung bean juice with the results of the study showing differences in the increase in hemoglobin levels.

Green bean seeds that have been boiled or processed and then consumed have high digestibility and low flatulence. Hemagglutinin can clump red blood cells and is toxic. Hemagglutinin toxicity can be destroyed by heating at 100ºC. Phytic acid can form complexes with Fe or mineral elements, especially Zn, Mg, and Ca into an insoluble form and difficult for the body to absorb, thereby reducing its availability in the body because it becomes very difficult to digest. The fermentation process can increase the availability of iron for the body. This is important to prevent iron deficiency anemia. Green beans also contain vitamin C which helps in the absorption of iron in the body because it can change the form of ferries to ferrous (Astawan, 2019).

From various opinions of experts and theories that suggest that green beans are one of the nuts that contain lots of nutrients, one of which is iron and green beans have many benefits in meeting the needs of the body, especially in pregnant women. One of the benefits of green beans is that it can increase the hemoglobin level of a pregnant woman in preventing anemia in line with the analysis of research conducted on 11 respondents, according to the results of the study before being given treatment there were 2 pregnant women who complained of dizziness after being given treatment for 10 days by giving mung bean porridge both respondents began to improve and did not complain of dizziness

The results of the study 11 respondents after consuming mung bean porridge all experienced an increase in HB even though there were still those in the anemia category position, their hemoglobin increased in the range of 0.1-02 g/dl. In general, this is due to the

characteristics of respondents who are in the second trimester where this pregnancy period will be at risk of anemia even though physiologically this is caused by an increase in red blood cells in the body called hypervolemia. In the second trimester, the need for iron in pregnant women is on average close to 800 mg. This requirement is used to increase the mass of maternal and fetal hemoglobin. According to the researchers' assumptions, the iron content in mung bean porridge can increase hemoglobin production in pregnant women. Green beans are very easy and young to get anywhere, both in rural and urban areas, so they are easy to process into mung bean porridge for consumption during pregnancy to help prevent anemia. However, the increase in hemoglobin levels that occurs is not solely due to consuming green beans. The increase in Hb levels was influenced by respondents who took blood-added tablets given by the local midwife regularly and according to the recommended dose, ate a variety of foods with varied menus, and 2 respondents were very regular in managing their rest patterns so that both respondents looked fresher. both respondents who complain of dizziness because both are private workers who sell and tailor which with this work will take adequate and regular sleep and rest time so that the need for disturbed sleep and rest patterns will result in unstable body conditions so that pregnant women will experience complaints such as dizziness, fatigue.

C. Analyzing the Effectiveness of Moringa Leaves and Mung Beans on Increasing Hemoglobin Levels of Pregnant Women at Betun Public Health Center

Based on the results of research conducted on pregnant women with Moringa leaf and mung bean treatment, the significance value of X1 Moringa Leaf Pre and X1 Moringa Leaf Post was 0.000 <0.05, with a t value of -7.420 <-2.228 (t table). While the significance value of X2 Pre Mung Beans and X2 Post Mung Beans is 0.001 <0.05, with a t value of -4.666 <-2.228 (t table). Based on the test results, it is known that there is a significant difference between X1 Pre Moringa leaves and X1 Post Moringa leaves and X2 Pre Green Beans with X2 Post Mung Beans so that it shows the effect of giving Moringa leaves and mung beans on Hb values in pregnant women.

The condition of the mother in pregnancy there can be an increase in blood volume called hypervolemia which is the result of an increase in the volume of plasma and erythrocytes or red blood cells in the body, but this increase is not balanced, namely the increase in plasma volume is much greater so that it gives the effect that the hemoglobin concentration is reduced. of 12%/100ml.

Moringa leaves are leaves from the Moringa tree which contain various macro and micro nutrients as well as active ingredients that act as antioxidants and contain important nutrients such as iron (Fe) 28.2 mg, calcium (Ca) 2003.0 mg and vitamin A 16, 3 mg is rich in -carotene, protein, vitamins A, C, D, E, K and B (thiamine, riboflavin, niacin, pantothenic acid, biotin, vitamins B6, B12 and folate. The content of moringa compounds has been studied and reported by While Gopalan, el al and published in All Thing Moringa (2010). These compounds include nutrients, vitamins, minerals, antioxidants and amino acids.

The nutritional content of green beans per 100 grams of material according to (Retnaningsih, et al 2008) are: calories (cal) 323, protein (g) 22, fat (g) 1.5, carbohydrates (g) 56.8, calcium (mg) 223, iron (mg) 7.5. phosphorus (mg) 319, vitamin A (SI) 157, vitamin B (mg) 0.46, vitamin C (mg) 10, and water (g) 15.5.gr

According to theory and various studies, these two types of food contain lots of all the nutrients and vitamins that are useful for the body of a pregnant woman in preventing a condition of the body that is weak, tired, lethargic, pale, easily dizzy and various complaints that lead to anemia. The results of the study above are in line with the results of research conducted on 22 respondents by being treated with consuming clear Moringa leaves and green beans for 10 days. It can be analyzed that the nutritional content contained in Moringa leaves and mung beans can help increase hemoglobin levels in pregnant women if consumed

regularly and according to the rules so that anemia in pregnancy can be prevented. This can be seen by the change in anemia status in pregnant women who were given treatment even though there were respondents who experienced an increase in hemoglobin in the range of 0.1-0.4 g/dl. This situation is very normal because the respondent is in the second trimester of pregnancy, during which the body will experience a maximal physiological hemodilution process, namely plasma increases by 50% while the mass of red blood cells only increases by 20%.

Anemia in pregnancy occurs due to impaired formation of erythrocytes by the spinal cord. Iron deficiency anemia is influenced by several factors, one of which is consuming less food sources from plant materials in the form of green vegetables and nuts which are high in iron and which are easily digested by the body. The body requires large portions to meet daily iron needs. However, the increase in hemoglobin levels that occurred in 22 respondents was supported by several factors, namely pregnant women consuming blood-added tablets regularly, not having diseases such as malaria, tuberculosis, and other comorbidities. In theory, nutritional status in pregnant women is a nutritional condition of pregnant women as a result of the use and use of food in accordance with the quantity and quality of food eaten by pregnant women to meet the body's needs during pregnancy. In fact, not all pregnant women consume food in accordance with the maximum body needs in accordance with the quality and quantity. This is related to the education factor of pregnant women and the work factor.

The education factor of 22 respondents with elementary education is around 27.2%. Low education generally greatly affects mothers in accessing information and knowledge about health, especially anemia because there are respondents who think that the current condition is fine, lacks understanding in choosing nutritious food ingredients, especially those containing nutrients because in fact the food ingredients are contain nutrients such as Moringa leaves and green beans are easy to obtain and affordable prices and easy to manage. And seen from respondents who have high school education as many as 10 people with a percentage of 45.5% and experience anemia, this illustrates that even though they have secondary education they have the potential to experience anemia, this is due to lack of knowledge about anemia and lack of information in accessing information. With a high level of education will have an influence on the ability to think in the sense of being able to take a more rational decision.

In terms of work factors, based on table 4.3, the results of the study show that most of the respondents work as housewives or farmers as many as 15 people with a percentage of 68%, entrepreneurs as many as 6 people with a percentage of 27.2%, and 1 civil servant with a percentage of 4.5%. . With the description above, it can be concluded with work as a housewife or farmer. Work will affect the level of family income in meeting the need to meet nutritional intake during pregnancy so that mothers tend to experience anemia. This is in line with research conducted by A.D Putri about the education factor on household income. It is concluded that education has a partial effect on household income. So it is expected that the higher the family income, the higher the life in fulfilling their needs. If you look at the mother's work on behavior in the family, a mother spends more of her time taking care of all the needs in the household, helping her husband in doing work in the fields or gardens, this will affect the mother's condition during pregnancy because it will affect rest and sleep patterns. This condition will aggravate the condition of the mother to the hemodilution process.

Judging from the respondents based on the age of the respondents, many of them were in the productive age of 17-34 years as many as 17 people with a percentage of 77.2% and respondents aged 35-40 years as many as 5 people with a presentation of 22.8%. Information about age is very important to know because the age difference of each respondent is very influential on attitudes and perspectives.

According to Wijianto, 2012 if a person's age at the time of pregnancy is younger than 20 years will be at risk of anemia, this is because at that age there is still growth that really needs more nutrients compared to the age above it, if these nutrients are not available. fulfilled during pregnancy, there will be nutritional compensation between the mother and the baby in her womb. This is in line with the research conducted, there were 5 respondents aged 17-20 years who experienced anemia. While at the age above 35 years there are 5 respondents, this illustrates the age above 35 years is very high risk for anemia because at this age there has been a decrease in the functions of the body's organs so that pregnant women will experience various infections, one of which is anemia due to decreased power. the condition of decreasing the body's resistance to disease. this is according to the opinion by Lulu, 2009

In analyzing Moringa leaves and mung beans, the researchers concluded that Moringa leaves are more effective in helping to increase hemoglobin levels in pregnant women. From the statistical test results in Tables 4.8 and 4.9, it can be seen from the mean results that Moringa leaves are larger because there are more numbers 2 compared to the results of the mean value. on mung beans so that the effectiveness of Moringa leaves has more effect on increasing hemoglobin levels of pregnant women in Kamanasa village, Betun Health Center.

CONCLUSION

In tackling anemia in pregnant women can be done in various ways, one of which is by consuming Moringa leaves and green beans during pregnancy

1. Based on the results of the study, it can be concluded that before consuming Moringa leaves there were 4 respondents who experienced moderate anemia with a percentage of 36.4%, mild anemia as many as 7 people with a percentage of 63.6%. This shows that the majority of pregnant women are mildly anemic with a total of 7 people.

2. Based on the results of the study it can be concluded that after consuming Moringa leaves there are 2 people who are still in the category of moderate anemia with a percentage of 18%, 9 people are in a position of mild anemia with a percentage of 82% This illustrates an increase in HB levels of pregnant women after consuming Moringa leaves. .

3. Based on the results of the study that before consuming green beans there were 4 respondents who experienced moderate category anemia with a percentage of 36%, mild anemia as many as 7 people with a percentage of 64%. This shows that most respondents are in the category of mild anemia.

4. Based on the research results, it can be seen that after consuming green beans there are 3 people who are still in moderate anemia with a percentage of 27.2%, 8 people in a position of mild anemia with a percentage of 72.8%. This illustrates an increase in HB levels of pregnant women after consuming green beans.

5. Based on the results of analyzing the effectiveness, it can be concluded that Moringa leaves and mung beans are very effective in increasing hemoglobin levels of pregnant women in the village of Kamanasa Puskesmas Betun.

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