THE EFFECT OF CONSUMPTION OF MORINGA LEAVES TO PREGNANT WOMEN'S HEMOGLOBIN LEVELS IN THE VILLAGE OF WAIMITAL, KAIRATU DISTRICT, WEST SERAM REGION, MALUKU IN 2019

Asih Dwi Astuti[1*], Siti Rochmaedah [2], Arsanti [3]
[1,2,3]STIKes Maluku Husada

*Coresponding author: asihastuti@28gmail.com

ABSTRACT

Anemia during pregnancy is a nutritional disorder as a result of the wrong diet in pregnant women. The wrong diet will result in a lack of nutrient intake in pregnant women. According to WHO (2010), globally the prevalence of anemia in pregnant women worldwide is 41.8. Anemia occurs because the concentration of red blood cells (hemoglobin) is low <11 g% (WHO 2010). One of the techniques to treat anemia is consuming Moringa leaves. This study aims to determine the effect of consumption of Moringa leaves on hemoglobin levels of pregnant women in Waimital Village, Kairatu District, West Seram Regency 2019. This research is a type of Quasy Experimental research with a Pretest-Posttest approach with Control Group, the sampling technique is using purposive sampling which amounts to 22 people, namely 11 respondents in the intervention group and 11 respondents in the control group. The research instrument used an observation sheet and a Hb Sahli measuring instrument. Data processing with computer devices, using the Independent sample t-test. The results in this study indicate that the effect of Moringa Leaves Consumption on Hemoglobin Levels of Pregnant Women in Waimital Village, Kairatu District, West Seram Regency in 2019 as a whole obtained p-value (p = 0.001). The conclusion is that there is a significant difference in hemoglobin levels between the intervention group and the control group. It is hoped that pregnant women apart from consuming Fe tablets can also consume green vegetables such as Moringa leaves which are rich in macro and micronutrients.

Keywords: Moringa leaf consumption, Anemia, Pregnant women

INTRODUCTION

Maternal and Child Health Problems (KIA) are still a health problem in Indonesia. This is because the maternal mortality rate is still high, namely 359 per 100,000 live births. The biggest direct cause of maternal death is bleeding, infection, and eclampsia, while the indirect cause of maternal death is anemia in pregnancy. Pregnancy is a physiological condition, but in reality, problems can arise during the pregnancy process, one of which is related to nutrition (SDKI, 2012).

A nutritional problem that often occurs in pregnant women is anemia. Anemia during pregnancy is a nutritional disorder as a result of the wrong diet in pregnant women. The wrong diet will result in a lack of nutrient intake in pregnant women. Anemia during pregnancy can increase the risk of fetal death during the prenatal period, babies born prematurely, the risk of postpartum hemorrhage, hypertension, and heart failure during pregnancy, Low Birth Weight (LBW) (Cunningham, 2011).

According to WHO (2010), globally the prevalence of anemia in pregnant women worldwide is 41.8%. The prevalence of anemia in pregnant women is estimated at 48.2% in Asia, 57.1% in Africa, 24.1% in America, and 25.1% in Europe. Meanwhile in Indonesia, from the results

of the 2012 Household Health Survey (SKRT) in Riskesdas 2013, cases of anemia in pregnancy were 50.5%, dropping to 37.1% in 2013. But based on data, anemia in pregnancy harms mothers (Noversiti E, 2012). Anemia occurs because the concentration of red blood cells (hemoglobin) is low <11 g% (WHO 2010, Stevens G. A et al 2013, de Camarge, et al, 2013).

Based on the 2018 Riskesdas data, the percentage of pregnant women who had anemia increased compared to the 2013 Riskesdas, which was 37.1 percent. From the 2018 data, the highest number of pregnant women who experienced anemia was at the age of 15-24 years at 84.6 percent, ages 25-34 years at 33.7 percent, ages 35-44 years at 33.6 percent, and age 45 -54 years by 24 percent (Riskesda, 2018).

The prevalence of anemia among pregnant women in Maluku is quite high. The results obtained in 2010 showed that the prevalence of anemia in pregnant women was 68.9% and in 2015 it was 78.8% (Maluku Health Office Profile, 2015). Based on data from the Annual Report of the West Seram District Health Office 2015-2017, anemia in pregnancy is still high, wherein 2015 there was 1.33%, in 2016 there was an increase to 2.52% and in 2017 it increased again by 3, 75% of cases (West Seram Health Office Profile, 2015).

One of the efforts that can be made to prevent anemia in pregnant women is by consuming Fe tablets. Apart from that, what the community can do is to use local plants that exist in the community, namely by consuming Moringa leaves, which is one type of food that has a lot of moringa. grows in Indonesia, including in Maluku. Moringa contains nutrients that are good for body health. The results of research by Anna Technology University (2010) show the properties of Moringa leaves, including as a hepatoprotector (liver protector), very high antioxidants and very good for diseases related to digestive problems, suitable for treating diseases with heat energy or excess energy such as inflammation or cancer. The results of research conducted by Mutia Rahmawati with the title Effect of Moringa Leaf Extract on Increased Hemoglobin Levels of Pregnant Women in Trimester 2 and 3, show that there are differences in the hemoglobin levels of respondents in the group given Moringa leaf extract and those not given Moringa leaf extract (Mutia Rahmawati, 2017)

Based on a preliminary study obtained at the Waimital Health Center, the overall data for pregnant women in Waimital village until June 2019 were 22 pregnant women, from the results of interviews conducted with 10 pregnant women at Waimital Health Center, 8 of them said their hemoglobin had decreased and the results of the examination The Health centre was declared Anemia while 2 other people did not experience Anemia.

The formulation of the problem that can be enforced in this study is Is there an effect of consumption of Moringa leaves on hemoglobin levels of pregnant women? The purpose of this research was to identify hemoglobin levels in the intervention and control groups before and after being given Moringa leaves.

MATERIAL AND METHODS

This type of research used in this study is a Quasy Experimental study with a Pretest-Posttest with Control Group approach. This design is a design that reveals a causal relationship by involving a control group in addition to an intervention group for pregnant women to see hemoglobin levels before and after consuming Moringa leaves.

The population in this study were all pregnant women in Waimital Village, based on data for June 2019. The research

sample was pregnant women who came to have a pregnancy check-up at the Waimital Public Health Center during the study. With inclusion criteria: Pregnant women with anemia who are willing to be respondents and the exclusion criteria are pregnant women who suffer from other diseases (kidney disease, liver disease, infection, gastritis), dislike, or allergies to Moringa leaves. With the sampling technique with purposive sampling. So that the overall sample size of the study was 22 people, namely 11 pregnant women for the intervention group and 11 pregnant women for the control group. The variable in this study is a single variable, namely the Independent Variable: Effect of consumption of Moringa leaves.

Univariate data analysis was presented in the form of frequency distribution and percentage of each variable, while bivariate analysis was performed using paired t-test to compare the control group with the intervention group before and after consuming Moringa leaves.

RESULTS

Univariate analysis

Table 1
Frequency distribution of respondents based on age, education, occupation, hemoglobin levels before and after in the intervention and control groups.

Variables	Intervension group		Control group	
	n	%	n	%
Age				
> 20-35 year	9	81,8	8	72,7
> 35 Year	2	18,2	3	27,3
Total	11	100	11	100
Education				
SMP	2	18,2	2	18,2
SMA	8	72,7	9	81,8
D3	1	9,1	0	0
Total	11	100	11	100
Proffesion				
housewife	8	72,7	3	27,3
farmer	0	0	4	36,4
Government officials	1	9,1	0	0
entrepreneur	2	18,2	4	36,4
Total	11	100	11	100
HB Level Before				
< 10,9 gr/dl	10	90,9	11	100
≥ 11 gr/dl	1	9,1	0	0

Total	11	100	11	100
HB level after				
< 10,9 gr/dl	0	0	11	100
≥ 11 gr/dl	11	100	0	0
Total	11	100	11	100

Primary data, 2019

Based on Table 1, it shows that the age of respondents in the intervention group, the majority of which are vulnerable aged> 20-35 years, are nine people (81.8%) and the control group is 8 people (72.7%), while those aged> 35 years in the intervention group there were 2 people (18.2%) and the control group 3 people (27.3%). The education of respondents in the intervention group with high school education was 8 people (72.7%) and in the control group, SMA education was 9 people (81.8%). The respondent's occupation shows that in the intervention group the average housewife is 8 people (72.7%) while in the control group the average job is farmers and entrepreneurs as many as 4 people(36.4%). Hemoglobin levels of respondents before consuming Moringa leaves in the intervention group had hemoglobin levels <10.9 gr/dl as many as 10 people (90.9%), while the observations of respondents in the control group had hemoglobin levels <10.9 gr/dl as many as 11 people (100%). And in the intervention group respondents who had consumed Moringa leaves, hemoglobin levels> 11 g / dl were 11 people (100%), and in the control group after being observed hemoglobin levels <10.9 g / dl were 11 people (100%).

Bivariate Analysis

Before using the Independent sample t-test, the researcher conducted a data normality test. In this study, the Shapiro-Wilk normality test was used with the results as shown in the following table

Table 2
Data Normality Test Results Using Shapiro-Wilk

group	Statistic	Df	Sig.	information
Before intervention	.952	11	.669	Normal
After intervention	.200	11	.488	Normal
Before control	.200	11	.316	Normal
After control	.200	11	.237	Normal

Primary data 2019

Table 3
Independent Sample T-Test Difference in Mean Hemoglobin Levels of Respondents in the Intervention and Control Groups

Group	n	Mean	P *Value*
Intervension group	11	10,836	0,001

Control group	11	9,418

Primary data 2019

Based on the results of statistical tests in Table 3, there is a difference in the mean hemoglobin levels between the intervention group and the control group, with a P-value of 0.001 (p <0.05), which means that there is a significant difference in hemoglobin levels between the intervention group and the control group.

DISCUSSION

Effect of Hemoglobin Levels before and After Consuming Moringa Leaves

Results of the study, there were 10 people (90.9%) of hemoglobin levels before intervention with hemoglobin levels <10.9 gr/dl and 11 people in the control group <10.9 gr/dl (100%).

The measurement of hemoglobin levels before consuming Moringa leaves has not got any results or there has been no change because the process of consuming Moringa leaves, the more we consume Moringa leaves, the more hemoglobin levels in pregnant women will be, the results obtained will be more optimal and faster to feel its properties. On the seventh day when the process of measuring the hemoglobin level began to increase because they often consume Moringa leaves which can provide stimulation to pregnant women. Research results after

Consumption of Moringa leaves in the intervention group increased with hemoglobin levels> 11 g / dl by 11 people (100%) and in the control group hemoglobin levels <10.9 g / dl as many as 11 people (100%) according to researchers in the control group did not occur increase because the control group was not given Moringa leaves.

The results of this study indicate that there is an effect of the consumption of Moringa leaves on hemoglobin levels of pregnant women. According to the assumption of this researcher, this occurs because Moringa leaves contain quite high iron and vitamin content so that if consumed it will increase hemoglobin levels. Based on table 3 there is a difference in mean hemoglobin levels between the intervention group and the control group, with a P-value of 0.001 (p <0, 05) which means there is a significant difference in hemoglobin levels between the intervention group and the control group.

This proves that the treatment group consuming Moringa leaves extract can increase hemoglobin levels in the blood, compared to the control group who does not consume Moringa leaves extract, so that Moringa leaves extract is best given to adolescent girls, especially those with anemia.

Based on the researchers' assumptions, the causes of anemia in this study were caused by several factors, namely iron loss during pregnancy, lack of consumption of Fe tablets, nutritional deficiencies, especially vitamin B12 and minerals, and iron deficiency due to lack of iron in food. Pregnant women are a group at risk of experiencing nutritional deficiencies. This is because changes in maternal nutritional needs increase during pregnancy to meet the nutritional needs of the mother and fetus in the womb. The wrong diet in pregnant women has an impact on the occurrence of nutritional disorders, including anemia, weight gain in pregnant women, and fetal growth disorders.

One of the efforts that can be done to prevent anemia in pregnant women is by

consuming Fe tablets. Besides that, what the community can do is by utilizing local plants that exist in the community, namely by consuming Moringa leaves. Moringa (Moringa oleifera Lam) is a local plant that has been known for centuries as multipurpose plant, nutrient-dense and medicinal. Contains more and more various natural compounds than other types of plants. This Moringa plant has stems that are sparse and break easily. The leaves themselves are small, oval-shaped arranged in one stalk. Moringa it self can grow very well in areas with an altitude of between 300 and 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 utilizing cuttings. One of the benefits of Moringa leaves is that it is very good for consumption for pregnant women, breastfeeding, and toddlers (Fitriani, 2016).

According to the World Health Organization (WHO), 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 powder, which is equivalent to 25 times higher than spinach, can be used as an alternative to treat anemia in pregnant women naturally. The content of moringa compounds has been researched 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.

Iron is an essential microelement for the body. This substance is mainly needed in hemopobesis (blood formation), that is, in the synthesis of hemoglobin. The total amount of iron in the body averages 4-5 grams, approximately 65 percent found in the form of hemoglobin. About 4 percent is in the form of 5 myoglobin, 1 percent is in the form of various heme compounds that increase intracellular oxidation, 0.1 percent combines with transferrin protein in blood plasma, and 15-30 percent is mainly stored in the reticuloendothelial system and liver parenchymal cells, especially in ferritin form (Arthur C. Guyton and John E. Hall, 2014).

The analysis showed that the moringa leaves that had the best nutritional content were the moringa leaves on the top layer or the young leaves. Moringa plants have many benefits ranging from leaves, bark, fruit to seeds. Moringa can be processed as daily necessities such as vegetables, medicinal raw materials, and can be traded. The habit of using Moringa plants is also influenced by socio-cultural factors. The taboo culture of moringa leaves for some Javanese (myth) has the belief that it can reduce supernatural powers so that it affects the habit of consuming moringa plants for health (Indonesia Health Info, 2015) so that one of the efforts made to prevent anemia during pregnancy is in addition to consuming tablets fe can also take advantage of local plants that exist in the community which is like Moringa leaves which have a high enough iron and vitamin content.

CONCLUSION

There was a difference in the mean hemoglobin levels between the intervention group and the control group, with a P-value of 0.001 ($p < 0.05$), which meant that there was a significant difference in hemoglobin levels between the intervention group and the control group before and after consuming Moringa leaves.

REFERENCES

Adi DI, Syam A, Nur Rahmawati S. 2012. Nutritional Education on Consumption Patterns of Pregnant

Women with Anemia in an Effort to Improve Hemoglobin Levels in Siduang Raya Makasar Community Health Center. Indonesian Community Nutrition Media.

Ajeng, K.S. 2016. Nutritional Content of Moringa Oleifera Leaves Based on Leaf Position and Brewing Temperature. Thesis, Department of Community Nutrition, Faculty of Human Ecology, Bogor Agricultural University

Allen L.H., 2012. Anemia and Iron Deficiency: Effects on Pregnancy Outcome. AmJ Clin Nutr

Anggreani, Besuni. 2014. The Relationship between Red Blood Cell Forming Nutrients and Hemoglobin Levels in Pregnant Women in Gowa Regency. Study Program of Nutrition Science, Faculty of Public Health, Hasanuddin University Makassar.

Arief Mansjoer 2010, Kapita Selekta Medicine, 4th edition, Jakarta: Aesculapius media.

Arisman. 2011. Textbook of Nutrition Science: Nutrition in the Cycle of Life. Jakarta: EGC

Arthur C. Guyton, M. D. and John E. Hall; translation, Irawati; editor Rachman L.Y. 2011, Textbook of Medical Physiology. Ed. 11, Jakarta: EGC

Budiono, I. 2009. Prevalence and determinants of anemia in pregnant women in fishing villages. Pack-Volume 4 / No. 2.

Bobak, Lowderwik, Jense, 2012. Textbook of maternity nursing. 4th Edition Jakarta: EGC

Bora T. 2017. The Relationship between Moringa Leaf Consumption Patterns and Hemoglobin Levels of Pregnant Women in the Work Area of Kandai Health Center, Kendari City, Southeast Sulawesi Province. Nusantara University PGRI Kediri

Bungsu P. 2012. Effect of tannin levels in tea bags on iron nutritional anemia (AGB) in pregnant women at UPT Puskesmas Citeureup, Bogor district. Jakarta (Indonesia): University of Indonesia

Christy, M.Y. 2014. Factors Associated with the Incidence of Diarrhea Dehydration in Toddlers in the Kalijudan Health Center Work Area. Journal of Epidemiology, 297-308.

Citrakesumasari. 2012. Nutritional Anemia, Problems and Prevention. Yogyakarta, Kalika

Cunningham and Garry F. Obstetrics Williams. 21st ed. Vol. 2. Jakarta: EGC Medical Book Publishers; 2011.