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Effect of Combination Miding Fern (Stenochlaena palustris) and Iron Tablet to Pregnant Women at Sintang Regency

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ABSTRACT

Hemoglobin is one of the components of red blood cells to bind oxygen and then deliver oxygen to all body tissue cells. Lack of hemoglobin will cause anemia, which can increase the risk of morbidity in mother and baby. The purpose of this study was to analyze the effect of the combination of miding fern and iron tablets on hemoglobin levels in pregnant women in the Working Area of the Nanga Ketungau Public Health Center, Sintang Regency. This research was a quantitative study. The population were all pregnant women in the 1st to 3rd trimester in the Working Area of the Nanga Ketungau Public Health Center, Sintang Regency, totaling 298 pregnant women. In this study used consecutive sampling technique. The total sample were 33 respondents. Results: The median value before the intervention was 11.20 g/dl and after the intervention it was 13.10 g/dl. The p-value was 0.000 where p<0.05. Conclusion: There is an effect of the combination of miding fern (*Stenochlaena palustris*) and iron tablets on the increase in hemoglobin levels in pregnant women in the Working Area of the Nanga Ketungau Public Health Center, Sintang Regency.

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INTRODUCTION

Anemia can be found in all developing and developed countries in the world. According to data from World Health Organization (2015), prevalence of pregnant women with anemia was 38.2%. The highest prevalence of anemia was in the Southeast Asia region (48.7%), the Africa region was 46.3%, the Eastern Mediterranean region was 38.9%, the European region was 25.8%, the American region was 24.9% and the lowest in the western pacific region (24.3%).

Hemoglobin is a component of red blood cells or erythrocytes. Hemoglobin binds oxygen and then delivers oxygen to all body tissue cells. Deficiency of hemoglobin will cause anemia. (Ministry of Health RI, 2018). Complications of anemia in pregnancy are miscarriage, preterm delivery, bleeding after delivery, shock and infection during labor or after delivery. In severe anemia can cause cordis decompensation. Complications in the fetus are fetal death, early neonatal/perinatal death, premature babies, iron deficiency and birth defects. (Mahyuni A, et al. 2015).

Based on data from the 2018 Basic Health Research Report, there were 48.9% of pregnant women in Indonesia with anemia (Ministry of Health RI, 2018). The prevalence of pregnant women with anemia based on Basic Health Research data in 2013 was 37.1%. This data showed that there was an increase in cases of anemia in pregnant women by 11.8% in 2018 (Health Research and Development Agency, 2013). Based on data from the West Kalimantan Provincial Health Office in 2020, the number of first trimester pregnant visits that were checked for hemoglobin was 70.358 pregnant women and 27.3% with anemia. Meanwhile, the total number of pregnant women in West Kalimantan in 2020 is 109.314. This data showed that there were 38.956 pregnant women who have not had their hemoglobin checked.

Based on the Sintang Regency Health Office Report in 2020, the number of first visits to pregnant women was 86.02%, the number of fourth visits was 76.86%, the number of blood supplement tablets given to pregnant women was 80.03% and pregnant women with anemia was 18.16%. Based on the data, it showed that there were 3.978 pregnant women at the time of the first visit who had not had a hemoglobin check. In 2021, the first visit was 81.52%, the fourth visit was 73.09% and anemia was 4.90%. The data showed a decrease in the number of visits and the number of pregnant women who were checked for hemoglobin levels compared to 2020. This was due to the COVID-19 pandemic. The government had made efforts to resolve anemia in pregnant women through Regulation of the Minister of Health of the Republic of Indonesia Number 88 of 2014 concerning blood booster tablet standards for pregnant women and fertile women. Based on this regulation, pregnant women were given iron tablets during their pregnancy or at least get 90 blood tablets.Miding fern (*Stenochlaena palustris*) is a type of fern or ferns. This plant is very easy to find, grows wild in peatlands and does not know the season. This means that they are available throughought the year. For population of West Kalimantan, especially in the Ketungau Hilir area of Sintang Regency who live in rural areas, this plant is very easy to obtain without having to buy it. In everyday life, many people use the young miding fern leaves and stems as vegetables for stir-frying or clear vegetables. The results of the information obtained from residents in the area show that the majority of Ketungau Hilir residents do not know about the benefits of consuming the miding fern.

Siharina Febby (2020) in her research entitled Laborate Test for Iron Levels in Kelakai Biscuits states that the plant can be processed into various kinds of food and can meet the iron needs of pregnant women. In the study of Mahyuni, et al., (2015) in their research stated that there was an increase in hemoglobin levels in second trimester pregnant women who consumed miding fern by 0.82 g/dl. Gracea Petricka (2018) also stated in her research that the miding fern has been proven to increase hemoglobin levels. Therefore, it is recommended as a food supplement to prevent anemia. Christine Aden (2019) said that miding fern, which is a locally based additional food, is effective in increasing hemoglobin levels in pregnant women.

Miding fern is also believed to be able to treat anemia and facilitate milk production (Fahruni et al., 2018). In the Dayak Kenyah community, miding fern is used as an anemia medicine, antipyretic, skin disease medicine and is used as a medicine for diarrhea (Mawaddah, 2019). The iron contained in the miding fern can be used as a basis for the treatment of anemia. The abundant availability of miding fern can be an easy alternative for pregnant women to prevent and treat anemia due to iron deficiency. The enormous impact of anemia on pregnant women made researchers interested in conducting further research on the effect of the combination of miding fern (*Stenochlaena palustris*) and iron tablets on hemoglobin levels in pregnant women at the Nanga Ketungau Health Center Working Area, Sintang Regency.

RESEARCH METHOD

This research was a quantitative study using a quasi-experimental research design, pre-test and post-test without a control group. The population in this study were all pregnant women in the 1st

to 3rd trimester in the work area of the Nanga Ketungau Public Health Center, Sintang Regency, totaling 298 pregnant women. Sampling in this study used non-probability sampling with consecutive sampling technique. The total sample were 33 respondents. This research was conducted on May 9-31, 2022 at the Nanga Ketungau Public Health Center Working Area, Sintang Regency. The study began by measuring the hemoglobin level of the respondents before the intervention. Then an intervention was carried out in the form of giving a combination of miding ferns and iron tablets for 10 days. On the 11th day, hemoglobin was measured after the intervention. Then compared the results of each respondent's hemoglobin measurement before and after the intervention.

RESULTS AND DISCUSSIONS

Univariate Analysis

Table 1. Frequency Distribution

Number	Characteristics	Frequency	Percentage (%)
1	**Age (years old)**		
	a. <20 and >35	9	27,3
	b. 20-35	24	72,7
	Total	33	100
2	**Education**		
	a. Basic	20	60,6
	b. Middle	10	30,3
	c. Higher	3	9,1
	Total	33	100
3	**Occupation**		
	a. Housewife	30	90,9
	b. Labor	3	9,1
	Total	33	100
4	**Parity**		
	a. Primigravida	8	24,3
	b. Multigravida	21	63,6
	c. Grandemulti	4	12,1
	Total	33	100
5	**Gestational age**		
	a. First Trimester	9	27,3
	b. Second Trimester	10	30,3
	c. Third Trimester	14	42,4
	Total	33	100

Based on Table 1, it was found that the respondents in this study totaled 33 persons. The majority age is 20-35 years old as many as 24 persons (72,7%). Based on the education, most of the respondents had basic education as many as 20 persons (60,6%). Characteristics of respondents based on the occupation, mostly housewife as many as 30 persons (90,9%). Based on parity of respondents, most of parity are multigravida as many as 21 persons (63,6%). The majority of respondents were in the third trimester as many as 14 persons (42,4%).

Bivariate Analysis

Bivariate analysis is an analysis carried out to analyze the relationship between two variables that can be independent of each other, influence each other, one variable affects another variable. Bivariate analysis in this study was to analyze the effect of combination miding fern and iron tablets to pregnant women at Nanga Ketungau Health Center Working Area, Sintang Regency.

Table 2. Effect of Combination Miding Fern and Iron Tablets to Pregnant Women

	n	Median	Std. Deviation	p-value
Pre Test	33	11,20	1,59	0,000
Post Test	33	13,10	1,50	

Table 2 above showed the results of bivariate analysis using the Wilcoxon Signed Rank Test. The results obtained between pre test and post test group with a p-value 0,000 or p<0,05. It can be concluded that there was an Effect of Combination Miding Fern and Iron Tablets to Pregnant Women at Nanga Ketungau Health Center Working Area, Sintang Regency.

Discussion

Based on the results of data analysis, it can be seen the results before and after being given the combination of miding fern (*Stenochlaena palustris*) and iron tablets. The median value before being given the combination of miding fern and iron tablets was 11.20 g/dl and after being given the combination of fern miding and iron tablets increased to 13.10 g/dl with a p-value = 0.000. These results indicated that p<0.05, which means that there was a significant effect of giving the combination of miding fern and iron tablets on increasing hemoglobin levels. This study showed that there were 31 respondents who experienced an increase in hemoglobin levels after being given a combination of miding fern and iron tablets, and there were 2 respondents who experienced a decrease in hemoglobin levels after being given a combination of miding fern and iron tablets.

In this research, there were 9 respondents (27.3%) with gestational age in the 1st trimester. After being given miding fern and iron tablets, there were 8 respondents who experienced an increase in hemoglobin levels, while 1 respondent experienced a decrease, namely from 14 g/dl to 13.7 g/dl. This is because the respondent experienced nausea and vomiting so that the appetite decreased. The median hemoglobin levels of respondents before being given miding fern and iron tablets was 12 g/dl. After being given miding fern and iron tablets it became 13.10 g/dl. The average increase in respondent's hemoglobin level in the first trimester was 1.1 g/dl.

In the second trimester, 10 respondents after being given miding fern and iron tablets, there were 9 respondents who experienced an increase in hemoglobin levels, while 1 respondent experienced a decrease from 12.2 g/dl to 9.7 g/dl. Even though they are in the 2nd trimester, there were still respondents who experienced nausea and vomiting. The median hemoglobin levels of respondents before being given miding fern and iron tablets was 11 g/dl, after being given miding fern and iron tablets was 12.1 g/dl. Respondents in the second trimester experienced an increase in hemoglobin levels of 1.2 g/dl.

In the third trimester, after being given miding fern and iron tablets, all of them experienced an increase in hemoglobin levels. The median hemoglobin levels of respondents before being given miding fern and iron tablets was 11.4 g/dl, after being given miding fern and iron tablets was 13.1 g/dl. The increase in the respondent's hemoglobin in the third trimester was 1.7 gr/dl. It can be concluded that based on the respondent's gestational age, the average increase in hemoglobin in the third trimester is the highest, namely 1.7 g/dl.

The difference in the increase in hemoglobin levels in the 1st, 2nd and 3rd trimester was due to an increase in iron requirements during pregnancy. Iron is useful for the growth of the fetus and placenta. In addition, during pregnancy there is an increase in maternal blood volume. During pregnancy a woman experiences an increase in blood plasma. In the 1st trimester the increase reached 10-15%, in the 2nd trimester it increased to 30%, in the 3rd trimester there was a gradual decrease. Nausea and vomiting also caused the increase in the respondent's hemoglobin levels to be varied.

Based on the results of this research, there were 8 primigravida respondents. The median hemoglobin level of primigravida respondents before being given miding fern and iron tablets was 11.8 g/dl, after being given miding fern and iron tablets was 12.9 g/dl. The increase in the hemoglobin level of the primigravida respondents was 1.1 g/dl. Multigravida respondents as

many as 21 persons. The median hemoglobin level of respondents before being given miding fern and iron tablets was 11 g/dl, after being given a miding fern and iron tablets it became 13.1 g/dl. The average increase in hemoglobin level in multigravida respondents was 2.1 g/dl.

Grande multigravida respondents as many as 4 persons. The median hemoglobin level of respondents before being given miding fern and iron tablets was 11.8 g/dl, after being given the miding fern and iron tablets it became 13.8 g/dl. The increase in hemoglobin in grande multigravida respondents was 2 g/dl. It can be concluded that based on the respondent's parity, the average increase in hemoglobin level is multigravida, which is equal to 2.1 gr/dl. Parity is the number of times a mother has given birth to a live or dead child, but not an abortion. The more often a woman experiences pregnancy and childbirth, the more iron loss. In this research, respondents with multigravida characteristics experienced the highest increase in hemoglobin.

Research conducted by Febby (2020) stated that the miding fern (*Stenochlaena palustris*) can be processed into various kinds of food, one of which is biscuits which contain 245 mg of iron. These biscuits consumed 3-4 times a day can help the iron needs of pregnant women. In a study conducted by Aden (2019) stated that there was an increase in hemoglobin levels of pregnant women after consuming miding fern (*Stenochlaena palustris*) stew. Pregnant women who consumed boiled miding fern (*Stenochlaena palustris*) experienced an increase in hemoglobin levels of 0.711 g/dl.

Regulation of the Minister of Health Number 88 of 2014 explained that the program for administering blood supplement tablets is given to fertile women and pregnant women. For fertile women it is given 1 (one) time a week and 1 (one) time a day during menstruation and for pregnant women every day or at least 90 (ninety) tablets, where each tablet contains iron equivalent to 60 mg elemental iron (in dosage forms Ferro Sulfate, Ferro Fumarate or Ferro Gluconate) and Folic Acid 0.400 mg.

Research conducted by Mawaddah (2018) on students who experienced anemia with the results showed that the average hemoglobin levels of students who experienced anemia before being given miding fern syrup was 10.9 g/dl, while the average hemoglobin level after being given miding fern syrup was 12.7 g/dl. This showed that there was an increase in hemoglobin levels in female adolescents by 1.8 g/dl after being given miding fern syrup. Research conducted by Petricka (2018) on late adolescents (17-19 years old) who experienced anemia, showed that there was an increase in hemoglobin levels with anemia of 3.24 g/dl after consuming miding fern (*Stenochlaena palustris*) for a week. Mahyuni (2015), in her research stated that in the 2nd trimester pregnant women group after being given the miding fern (*Stenochlaena palustris*), there was an increase of 0.14 g/dl, while in the 2nd trimester pregnant women group after giving only iron tablets, it increased 0.49 g/dl.

Based on the research that has been done, increasing hemoglobin in the blood is not only overcome by giving iron tablets, but it is necessary to provide iron-containing foods. Miding fern as much as 100 grams which has been processed into vegetable stew within 1-5 minutes has an iron content of 0.38 mg. The iron will help the formation of red blood cells and increase hemoglobin in the blood. Iron has an important role in the formation of red blood cells and keeping the body's organs functioning properly. Iron metabolism is very useful for the formation of hemoglobin. Iron in the body's cells has a role as an electron carrier or cytochrome which is useful for activating bound oxygen in hemoglobin and myogoblin.

Iron is related to the process of absorption, transportation, utilization, storage and disposal. Iron bound in the content of plant foods is called ferric. Iron bound to the content of animal foods is called ferrous. In the stomach, iron in the ferric form is converted into the ferrous form with the help of vitamin C so that it is more easily absorbed by the intestinal mucosa. Iron in the ferrous form combines with apoferritinin to form an iron-containing protein called ferritin. Iron that will enter into the blood circulation is released in ferrous form which will later undergo oxidation and change form to transferrin after combining with specific proteins. The source of iron from food

absorption will be stored as a reserve and transferred to the spinal cord as a material for the formation of hemoglobin. Every day about 20-30 mg of iron is needed by the body for the formation of hemoglobin and iron needs. The combination of miding fern (*Stenochlaena palustris*) and iron tablets has sufficient iron content so that it can increase hemoglobin levels. The increase in hemoglobin levels in pregnant women after being given a combination of miding fern and iron tablets was 1.90 g/dl.

CONCLUSION

Based on the results of the research and discussion described previously, it can be concluded that there is an effect of the combination of miding fern (*Stenochlaena palustris*) and iron tablets on increasing hemoglobin levels in pregnant women at Nanga Ketungau Health Center Working Area, Sintang Regency.

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