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The Effectiveness Of Administration Of Kelor Tea To Increase Hemoglobin Levels In Pregnant Women With Anemia In The Work Area Of Pondok Ranji Tangerang Selatan Puskesmas Working Area

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ABSTRACT

The prevalence of anemia in pregnant women is increasing every year, including in developing countries such as Indonesia. The higher the prevalence, the more complications that will be encountered such as postpartum bleeding, prolonged labor and other labor complications. Moringa leaves have a high iron content which can increase hemoglobin levels so as to prevent anemia in pregnant women. The purpose of this study was to determine the effectiveness of giving Moringa leaf tea to increase hemoglobin levels in pregnant women with anemia. This research is a quasi-experiment with pre-post test with control group design. The study was conducted in the working area of Pondok Ranji Public Health Center, South Tangerang in 2022. The sample size in the study was 40 respondents consisting of 20 intervention groups and 20 control groups taken by purposive sampling. The research instrument used an observation sheet. The analysis used is the Independent T-Test test which was previously tested for normality and homogeneity. The results of the study on hemoglobin levels before being given Moringa leaf tea an average of 9.69 and after being given Moringa leaf tea an average of 11.12 with an average difference of 1.43, in the control group examination I an average of 9.94 and examination II an average of 10.55 with an average difference of 0.61. There was a significant difference in the mean hemoglobin level between the intervention group and the control group with a significance level of $0.028 < 0.05$.

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I. Introduction

MMR is one indicator to see the success of maternal health efforts. AKI is the ratio of maternal deaths during pregnancy, childbirth and the puerperium caused by pregnancy, childbirth, and the puerperium or its management but not due to other causes such as accidents or falls in every 100,000 live births.(DPR RI, 2021). Nutrition of pregnant women is one of the focuses of attention for community nutrition improvement activities because of its significant impact on the condition of the fetus they contain. The nutritional problem that is often encountered in pregnant women is the problem of anemia in pregnant women which more or less contributes to a significant increase in maternal mortality.

The World Health Organization (WHO) reports that the prevalence of pregnant women who experience iron deficiency is around 35-75% which increases with increasing gestational age and it is estimated that 30-40% of the causes of anemia are due to iron deficiency (WHO, 2019).

Based on WHO data, the incidence of anemia in pregnant women globally is 28-36 million people, while the highest number of anemia is in Asia, which is 12-22 million people. Based on data from the Indonesian Ministry of Health in 2018, anemia occurred in 37.1% (1,975,412) pregnant

women in Indonesia, 36.4% (719,049) pregnant women in urban areas and 37.8% (746,705) pregnant women in rural areas. (Ministry of Health RI, 2018). Based on the 2018 Basic Health Research (RISKESDAS) data report, the prevalence of anemia in Indonesia shows that almost half or 48.9% of pregnant women experience anemia.

Meanwhile, based on data on the Banten OpenData web, it was found that the number of pregnant women with anemia in Banten Province in 2020 was 46,766 people. With the City of South Tangerang totaling 1254 people. (Opendata Banten, 2021). Anemia is a condition in which the number of red blood cells or the capacity of red blood cells to carry oxygen is not sufficient to meet physiological needs. Anemic pregnant women are pregnant women with Hb levels <11.0 g/dl who are checked at the first visit (K1). (Riskestas, 2018)

The most common cause of anemia is a lack of nutrients needed for erythrocyte synthesis, especially iron, folic acid and vitamin B12. To determine the nutritional status of pregnant women, apart from measuring the upper arm circumference (LILA), it can also be done by measuring the content of hemoglobin in the blood (HB), if the hemoglobin level is low, it is considered anemia in pregnant women. (Khaskheli, 2016)

The impacts that will occur on pregnant women with anemia include having a higher risk of giving birth to babies with iron deficiency anemia that can last throughout the child's early years and inhibit the growth of the child's brain cells and other body cells, resulting in growth and development delays (Riskestas)., 2018)

Iron is needed to help the body produce fresh red blood cells that are rich in oxygen and nutrients. Blood flow, oxygen, and nutrients are very important to support the process of fetal growth and development and maintain optimal placental conditions. The main cause of iron deficiency is not eating iron-rich foods, such as animal protein since before and during pregnancy. Conditions that occur such as babies born prematurely (babies born prematurely), LBW (Low Birth Weight), and even fatal ones can cause the death of both mother and baby (Joseph, 2021)

Efforts made by the government are to establish an effective policy on the First 1000 Days of Life (HPK), i.e. all pregnant women will receive Fe tablets and must be consumed during pregnancy from the age of 3 months (trimester 1) to the age of 9 months (trimester 3). This is to support the intake of iron into the body of pregnant women, because pregnant women do need a lot of iron intake during the pregnancy process. (Dhafir, 2020).

The increasing prevalence of cases due to overnutrition, the prevalence of diseases due to undernutrition is still high. Pregnant women are one of the groups who are very at risk of experiencing malnutrition. One of the efforts to meet the nutritional needs of pregnant women is to modify the food menu (Pramono, 2019).

Moringa leaves are one of the types of trees for food sources that thrive in Indonesia. The results showed that the calcium content of Moringa (*Moringa oleifera*) leaves was 497.8 mg/100 grams and the iron content was 6.24 mg/100 grams. (Dhafir, 2020) Moringa leaves can be used as a source of nutrients even since 1988 the world health organization (WHO) has introduced Moringa as an alternative food ingredient to overcome nutritional problems (malnutrition) (Egbuna, 2015).

One of the efforts made to prevent anemia in pregnant women is to utilize local plants that exist in the community, namely Moringa leaves. Moringa leaves contain high levels of iron and vitamins. In this study, Moringa leaves were made in the form of packaged tea bags so that they were easy to consume, safer and last longer. According to research conducted by Fitriani, et al (2020) with the title the effect of Moringa Oliefera consumption on the incidence of anemia in pregnant women in Ponkesdes Mojorejo, Kedungadem District, Bojonegoro Regency. The results of the study from 15 respondents showed that before consuming Moringa Oliefera, most of them experienced mild anemia, as many as 10 respondents (66.7%), after consuming Moringa Oliefera, almost most did not experience anemia.

anemia as many as 7 respondents (46.7%) and there is an effect of consumption of Moringa Oliefera on the incidence of anemia in pregnant women. According to research conducted by Arini and Hutagaol (2021) with the title Anchovy Flour Biscuits and Moringa Leaves on increasing HB levels and body weight of pregnant women that there is an effect of giving anchovy biscuits and Moringa flour biscuits to mother's weight during pregnancy, there is a difference before and after giving anchovy and Moringa flour biscuits in pregnant women who are anemic and the difference before and after giving biscuits with anchovy flour and Moringa flour in pregnant women with low Lila.

According to research conducted by Atika, et al (2021) with the title The effect of Moringa leaves (Moringa Oliefera Larn) on HB levels of pregnant women in PMB Zummatul Atika. The results showed that there was a significant effect of giving Moringa leaves on hemoglobin levels of pregnant women.

In the Pondok Ranji Health Center area, South Tangerang City itself, data was obtained that in 2021 pregnant women with anemia amounted to 167 people or 25% of the total 646 pregnant women who had Hb checked in 2021. This trend increased from 2020 which amounted to 59 pregnant women with anemia or 10% of the total 595 pregnant women who had Hb checked. Based on these problems, the researchers felt it was important to conduct this study to find out about the effectiveness of giving Moringa leaf tea to increase hemoglobin levels in pregnant women with anemia in the working area of Pondok Ranji Health Center, South Tangerang.

2. Methods

This type of research is a quasi-experimental design with pretest and posttest with control group design. The study was conducted in the working area of the Pondok Ranji Public Health Center, South Tangerang in 2022. The population in this study was 162 pregnant women with anemia, the number of samples was 40 people consisting of 20 intervention groups and 20 control groups. The sampling technique is purposive sampling. The data used is primary data. Data were analyzed univariate and bivariate with paired T-Test and Independent T-Test. The data was processed using a computer with the SPSS 25.0 program.

3. Results and Discussion

The results of the univariate analysis of the dependent variable Antenatal Care can be seen from the table below:

3.1 Univariate Analysis Results

Table 1
Average Value of Hemoglobin Levels of Pregnant Women Before and After Giving Moringa Leaf Tea and Fe Tablets in the Intervention Group

Intervention Group	n	mean	Mean Difference	Standard Deviation	Min	Max
Pretest	20	9.69		0.7622	8.1	10.7
Posttest	20	11.12	1.43	0.8715	10.0	13.0

Based on table 1, it is known that the hemoglobin level of pregnant women in the intervention group before being given Moringa leaf tea and Fe tablets obtained an average pretest value of 9.69 with a standard deviation of 0.7622. After being given Moringa leaf tea and Fe tablets, the average posttest value was 11.12 with a standard deviation of 0.8715. So that the difference in the average value of hemoglobin levels of pregnant women before and after being given Moringa leaf tea and Fe tablets is 1.43.

3.2 Bivariate Analysis Results

Table 2
The Average Value of Hemoglobin Levels of Pregnant Women Before and After Giving Fe Tablets in the Control Group

Control Group	n	mean	Mean Difference	Standard Deviation	Min	Max
Pretest	20	9.94		0.7864	8.0	10.9
Posttest	20	10.55	0.61	0.6747	9.1	11.4

Based on table 2, it is known that the hemoglobin level of pregnant women in the control group before being given Fe tablets obtained an average pretest value of 9.94 with a standard deviation of 0.7864. After being given Fe tablets, the average posttest value was 10.55 with a

standard deviation of 0.6747. So that the difference in the average value of hemoglobin levels of pregnant women before and after being given Fe tablets was 0.61

Table 3
Paired T-Test Test for Differences in Hemoglobin Levels of Pregnant Women Before and After in the Intervention and Control Group

Hemoglobin levels	Pre test mean	Post test mean	Mean Difference	Standard Deviation	Standard Error	P- value	n
Intervention	9.69	11.12	1.43	0.8240	0.1843	0.000	20
Control	9.94	10.55	0.61	0.2125	0.475	0.000	20

Based on the results of a different test using a paired sample t-test, it has a significant value of 0.000 (<0.05), meaning that there are differences in hemoglobin levels of pregnant women in the intervention group before and after being given Moringa leaf tea and Fe tablets in the work area of Pondok Ranji Public Health Center, South Tangerang City. While in the control group, the results of the different test using the paired sample t-test had a significant value of 0.000 (<0.05), meaning that there was no change in hemoglobin levels in pregnant women in the control group for examination I and examination II in the work area of Pondok Ranji Public Health Center, South Tangerang City.

Table 4
Independent Test of Hb Levels of Pregnant Women Before and After in the Intervention and Control groups

Hemoglobin levels	Intervention mean	Control mean	Mean Difference	Standard Error	P- value	n
Pretest	9.69	9.94	0.25	0.2449	0.304	20
Post test	11.12	10.55	0.57	0.2465	0.028	20

The calculation of the difference in the mean (average) pretest hemoglobin levels of pregnant women in the intervention and control groups was 0.25. The results of the Independent T-Test test are known to have a significance value of $0.304 > 0.05$, so it can be concluded that there is no difference in hemoglobin levels of pregnant women before being given treatment in the intervention group and the control group in pregnant women in the Pondok Ranji Public Health Center, South Tangerang.

The calculation of the difference in the mean (average) posttest hemoglobin levels of pregnant women in the intervention and control groups was 0.57. The results of the Independent T-Test test revealed a significance value of $0.028 < 0.05$, so it can be concluded that there are differences in hemoglobin levels of pregnant women after being given Moringa leaf tea in the intervention group compared to pregnant women in the control group in the working area of Pondok Ranji Health Center, South Tangerang..

3.3 Discussion

a. The Effectiveness of Giving Moringa Leaf Tea to Increase Hemoglobin Levels in Pregnant Women with Anemia

The results of the study in the intervention group after being given Moringa leaf tea, there was an increase in hemoglobin levels from anemia to normal with a difference of 1.43. For the control group who took only Fe tablets, there was also an increase in hemoglobin levels by a difference of 0.61. The increase in hemoglobin levels was not too significant because there were some pregnant women who did not regularly drink the Moringa leaf tea given by the researchers. One of the reasons is because the aroma of Moringa leaf tea is not liked by the research subjects.

Based on bivariate analysis, pregnant women who were given Moringa leaf tea and Fe tablets were more effective at increasing hemoglobin levels than those who only received Fe tablets. According to Fitriany (2018), iron deficiency is a reduction in the total amount of iron in the body. Iron deficiency anemia occurs when the iron deficiency is severe enough to cause impaired erythropoiesis and cause anemia. If iron deficiency occurs during pregnancy, it will increase the perinatal risk and infant mortality. Small amounts of iron are needed to replace the amount lost in

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the process of cell damage. Because only less than 10% of the amount of iron is absorbed each day, a nutritional intake of 8-10 mg of iron per day is needed to maintain the amount of iron in the body.

According to Hikmah (2021), one of the government's efforts to overcome iron deficiency anemia in pregnant women is by giving blood-added tablets (Fe). The lack of success in giving iron tablets is not only caused by problems related to program management, compliance, schedule of administration, it is also necessary to consider the nutrients consumed, besides that the effect of iron (Fe) tablets, namely nausea, is considered as one of the factors of maternal disobedience in consuming tablets. the iron (Fe).

According to Krisnadi (2015), Moringa contains nutrients that are good for body health. Moringa leaves or Moringa Oleifera contain iron as much as 28.2 mg/100 grams of dry leaves, 25 times more than spinach, 3 times more than almonds and 1.77 times more absorbed into the blood. In addition, the content of vitamin C in Moringa (Moringa Oleifera) leaves can help the absorption of iron in the intestines. The content of vitamin C in Moringa (Moringa Oleifera) leaves is 220 mg/100 grams of fresh leaves, 7 times more than oranges and 10 times more than grapes. Moringa leaves (Moringa Oleifera) contain 10 times more vitamin A than carrots which can help bone health

Currently, giving Moringa leaf tea and iron (Fe) tablets is considered capable of influencing the hemoglobin (Hb) level of pregnant women. This is based on research that has been done (Nadimin et al., 2015) that the group given Fe tablets alone did not increase hemoglobin levels enough, on the contrary in the group given additional Moringa leaf extract there was a significant increase in hemoglobin levels of pregnant women.

Fitriani (2020) conducted on 15 anemic pregnant women who were given a decoction of Moringa leaves by boiling 3 stalks of Moringa leaves (50 grams) in a glass of water after which they drank warm water which was drunk every day for 2 weeks or for 14 days. that this study has significant results. This is because Moringa leaves are food that is easily available and contains a lot of iron. Consumption of Moringa leaves can increase the iron needed by the body for the formation of hemoglobin during pregnancy. Iron is needed during pregnancy more than when not pregnant. Iron is needed to meet the basal loss and formation of red blood cells, as well as for the needs of the fetus and placenta.

Wisdom (2021) was conducted on 18 anemic pregnant women who were given Moringa leaf tea and iron tablets for 60 days, then pretest and posttest were taken, hemoglobin was measured by a hematology analyzer. In this study, before the intervention with Moringa leaf tea, the average hemoglobin level was 10.53 and after the intervention, the average hemoglobin level increased to 11.78. These results indicate an increase in hemoglobin levels in pregnant women after being given Moringa leaf tea. Thus, there is an effect of giving Moringa leaf tea on increasing hemoglobin levels of pregnant women.

The next study was conducted by Atika (2021) which was conducted on 22 pregnant women who met the inclusion and exclusion criteria given in the form of pudding. This is because pudding is a processed Moringa leaf which has higher nutrients than processed vegetables, because it uses dried Moringa leaf powder. The results of this study showed an increase in hemoglobin levels after the intervention was given with an average difference of 0.6054. Thus, there is an effect of giving Moringa leaves on increasing hemoglobin levels of pregnant women.

4. Conclusions

Based on the results of the study, it can be concluded that: In the intervention group given Moringa leaf tea and Fe tablets, there was an increase in hemoglobin levels with an average difference of 1.43. In the control group given Fe tablets alone, there was an increase in hemoglobin levels with an average difference of 0.61. Giving Moringa leaf tea together with Fe tablets was proven to be effective in increasing hemoglobin levels of pregnant women compared to those given only Fe tablets.

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