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The Effect Of Administering Iron Tablets (Fe) On Increasing Haemoglobin Levels In Postpartum Mothers At Merauke Hospital

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ABSTRACT

Postpartum mothers experience a decrease in Hb levels due to bleeding during childbirth, postpartum bleeding can cause death. Predisposing factors include anemia. Efforts to prevent and control anemia in postpartum mothers by administering Fe tablets for 3 weeks. In theory, Fe tablets really help the absorption of iron. To identify and analyze the effect of giving Fe tablets on increasing HB levels in postpartum women in the Merauke Regional Hospital Work Area in 2023. Research method: Quasi experimental with a One Group design which was studied twice, namely pre-test and post-test. The population was all postpartum mothers. Sample of 30 people using purposive sampling. The statistical test used is the independent sample t test. Research results: Show that the average Hb level before consuming Fe tablets was 12,521 g/dl and the average Hb after consuming Fe tablets was 14,039 after 3 weeks with an increase in Hb levels of 1,518 g/dl. In the intervention group, the average initial Hb level was 10.4 g/dl. The average increase in Hb level was 0.7 g/dl in 3 weeks. The results of statistical tests show that there is an effect of giving Fe tablets on Hb levels in postpartum women with a p value of 0.000 ($p < 0.05$). There is a significant influence. by administering Fe tablets to Hb levels in postpartum mothers. Before and after administering Fe tablets can help increase Hb levels.

Keywords : Effect, Fe tablets,Hb levels, postpartum mothers

INTRODUCTION

Based on data obtained from the Merauke District Hospital, the number of postpartum mothers with anemia in 2023 will be 30 people. The postpartum period is a challenge for many mothers who have just given birth. Recovering from childbirth, learning to parent and taking care of yourself takes a lot of energy. The postpartum period is a physiological event and during the postpartum period the internal and external genital organs will gradually recover to their pre-pregnancy state (Rukiyah, et al, 2013).

However, the 2012 IDHS showed a significant increase in Maternal Mortality Rate, namely to 359 maternal deaths per 100,000 live births. MMR again showed a decline to 305 maternal deaths per 100,000 live births based on the results of the 2015 Inter-Census Population Survey (SUPAS). Meanwhile, the death rate in Papua in 2022 will be 75/100,000 live births (Ministry of Health of the Republic of Indonesia, 2016). Data from the 2022 Household Health Survey (SKRT) states that the prevalence of anemia in postpartum women is 45.1% (Ministry of Health of the Republic of Indonesia, 2013).

The most important thing during the postpartum period is to evaluate the occurrence of bleeding, because postpartum bleeding can cause death in postpartum mothers. Postpartum hemorrhage is a complication that occurs in the period between delivery and the postpartum

period. Predisposing factors include anemia, the most frequent causes of bleeding are uterine atony, placental retention. The most important thing during the postpartum period is lactation. (Rukiyah, et al, 2013).

Nutritional anemia is a condition where the Hb level in the blood is more than normal, due to a deficiency of one or more types of nutrients needed for blood formation, for example iron, folic acid and vitamin B12, regardless of the cause of the deficiency. Iron deficiency anemia is a type of malnutrition that is often found not only in Indonesia but throughout the world (Fatimah, S, 2017).

The consequence of anemia during the postpartum period is uterine subinvolution which can cause post-partum bleeding, making it easier for puerperium infections, reduced milk production and easy mammary infections. Anemia during the postpartum period is a continuation of anemia suffered during pregnancy, which causes many complaints for the mother and reduces work presentation, both in daily housework and in caring for the baby (Wijanarko, 2010).

The status of iron in the human body depends on the absorption of iron. Things that can increase iron absorption include enhancers (ascorbic acid and animal protein) which play a major role in iron absorption. Efforts to prevent and control anemia in postpartum mothers such as giving Fe tablets for 3 weeks. Several researchers found that iron absorption can increase Hb levels (Permaesih et al., 2011) as well as giving Fe has a significant increase (Pradanti et al., 2015). Based on the results of the initial survey at the Merauke District Hospital, information was obtained through interviews with 30 postpartum mothers who consumed Fe tablets but experienced anemia.

METHODS

This research used an Observational Analytical research design with a purposive sampling technique, obtaining a sample of 30 Quasi experimental respondents with a One Group design who were studied twice in a pre-test and post-test design, namely before giving Fe tablets their Hb levels were measured and after giving Fe tablets they were measured postpartum mother's Hb level given for 3 weeks. independent variable Fe tablet administration using a questionnaire and dependent variable Hemoglobin Level (HB) using an observation sheet. Quasi experimental design was used with a One Group design which was studied twice pre-test and post-test design to determine the relationship between the two variables. Analysis using the T-Test showed that $p = 0.000 < 0.05$, so H0 was rejected and H1 was accepted, which means there is a relationship between giving Fe tablets with hemoglobin levels at Merauke District Hospital.

RESULTS

Distribution of Respondent Characteristics

Tabel 4.1. Characteristics of Respondents based on Age in the Group of Postpartum Mothers Who Consumed Fe Tablets at Merauke District Hospital

Age	F	%
18-19 years	4	13,3
19-20 years	3	10
21-22 years	3	10
23-24 years	6	20
25-26 yers	2	6,7
27-28 years	3	10
29-30 years	4	13,3
31-32 years	5	16,7
Total	30	100

Based on table 4.1, it is known that the characteristics of respondents based on age in the group of postpartum mothers who consume Fe tablets at the Merauke Regional Hospital are at most 23-24 years, namely 6 respondents or 20%.

Table 4.2. Characteristics of Respondents based on Education in the Group of Postpartum Mothers Who Consumed Fe Tablets at Merauke District Hospital

Education	F	%
Elementary School	5	16,7
Junior High School	10	33,3
Senior High School	8	26,7
College	7	23.3
Total	30	100

Based on table 4.2, it is known that the characteristics of respondents based on education in the group of postpartum mothers who consumed Fe tablets at the Merauke District Hospital were that most of the postpartum mothers had junior high school education, namely 10 respondents or 33.3%.

Table 4.3. Characteristics of Respondents based on Occupation in the Group of Postpartum Mothers Consuming Fe Tablets at Merauke District Hospital

Occupation	F	%
Housewife	15	50
Private Staff	10	33,3
Lecture	5	16,7
Total	30	100

Based on table 4.3, it is known that the majority of postpartum mother respondents who consumed Fe tablets at the Merauke District Hospital were mostly housewives, namely 15 respondents or 50%.

Table 4.4. Distribution of Nutritional Status of Postpartum Mothers Who Consumed Iron Tablets at Merauke District Hospital

Nutritional Status	F	%
Thiny	0	0
Normal	30	100
Fat	0	0
Total	30	100

Based on table 4.4, it is known that all postpartum mother respondents who consumed iron tablets had normal nutritional status (100%).

Characteristic of Variables

Table 4.5. The effect of giving Fe tablets on increasing Hb levels of postpartum mothers at Merauke District Hospital

No	Keterangan	Pre Hb examination (g/dl)	Post Hb examination (g/dl)
1	Mean	12,521	14,039
2	Median	12,600	13,900
3	Minimum	10,4	12,5
4	Maximum	14,3	15,7

The table above shows that the Hb level of postpartum mothers who consumed Fe tablets from the normality test results on pre Hb was 0.475 and on post Hb the result was 0.412, so both results were more than 0.05 so this data was found to be normal with a value

minimum value at pre 10.4 g/dl and post 12.5 g/dl and maximum value at pre 14.3 g/dl and post 15.7 g/dl. The data obtained is normal, so use the mean value information with pre Hb examination results of 12,521 g/dl and post Hb examination results of 14,039 g/dl.

Table 4.6. Increase in Hb levels of postpartum mothers at Merauke Regional Hospital

Average of Pre Hb check (g/dl)	Average of Post Hb check (g/dl)	Increase Hb levels (g/dl)
12,521	14,039	1,518

From the table above, it can be seen that the average Hb level of postpartum mothers who consumed Fe tablets increased between the pre and post Hb examinations by 1,518 g/dl. So postpartum mothers who consume Fe tablets for 3 weeks can increase HB levels by 1.5 g/dl.

Cross Tabulation Between Variables

Table 4.10 Cross tabulation between variables on the effect of giving Fe tablets and the variable increasing maternal Hb levels.

	N	Min	Max	Mean
Average of Pre Hb levels (g/dl)	30	10,4	12,5	12,521
Average of Post Hb levels (g/dl)	30	14,3	15,7	14,039
Average of Pre-Post Hb levels (g/dl)	30	0,7	2,6	1,518

Results based on a table of differences in Hb levels of postpartum mothers before and after consuming Fe tablets at Merauke District Hospital. that the average HB pre level is 12,521 g/dl and the average post HB level was 14,039 g/dl. So the average increase in HB levels in postpartum mothers was 1,518 g/dl.

Result of T-Test Analysis

Analysis of giving Fe tablets to postpartum mothers on increasing Hb levels using the T-Test statistical test as follows:

Table 4.11. Results of Paired T-Test Analysis, Differences in HB Levels of Postpartum Mothers Before And after taking Fe tablets at Merauke District Hospital

	N	Min	Max	Mean	*P-Value*
Average of Pre Hb levels (g/dl)	30	10,4	12,5	12,521	0,000
Average of Post Hb levels (g/dl)	30	14,3	15,7	14,039	
Average of Hb levels pre and post (g/dl)	30	0,7	2,6	1,518	

Results based on table 4.11 differences in Hb levels of postpartum mothers before and after consuming Fe tablets at Merauke District Hospital. After being tested using the T-Test test with a computerized program, it showed that the average HB pre level was 12,521 g/dl and the average

post HB level was 14,039 g/dl. So the average increase in HB levels in postpartum mothers is 1,518 g/dl. Based on the dependent t-test, it can be seen that there is significant effectiveness after consuming Fe tablets, p value = 0.000 < 0.05, so Ha is accepted. Which

means there is a relationship between giving Fe tablets and Hemoglobin levels at Merauke District Hospital.

DISCUSSION

Identifying the Average Hb Levels of Postpartum Mothers Before Consuming Fe Tablets

In this study, the average pre-Hb levels in postpartum mothers were obtained consuming Fe tablets was 12,521 g/dl, thus indicating that the average level Hb pre is within normal limits. Of the 30 respondents with pre-Hb levels, there were 2 respondents who had included in moderate anemia and 3 respondents included in mild anemia, In this study, it was found that the average pre-Hb level in postpartum mothers before consuming Fe tablets was 12,521 g/dl, indicating that the average pre-Hb level was within normal limits. Of the 30 respondents with pre-Hb levels, there were 2 respondents who were categorized as moderate anemia and 3 respondents who were categorized as mild anemia, and the rest were within normal limits. In accordance with the theory of Simbolon (2018; p.44) which states that in women aged ≥ 15 years the limit for anemia HB levels is 12g/dl, mild anemia 11-11.9 g/dl and moderate anemia 8-10.9 g/dl. This happens because postpartum mothers on the first day to day 3 already receive iron intake from the food consumed by postpartum mothers. So that the deficiency is covered by the food eaten by postpartum mothers, the average HB pre level results are within normal limits. In accordance with Walyani's theory (2017; p.99) which states that nutrients are substances needed by the body for its metabolic needs. Nutritional needs during the postpartum period, especially when breastfeeding, will increase by 25%, because it is useful for the healing process after giving birth and for producing enough milk to keep the baby healthy. All of this will increase three times the normal needs. The theory above is supported by research conducted by Erlinda Permatasari (2015) entitled the relationship between nutritional intake and breast milk production in mothers who breastfeed babies aged 0-6 months at the Sewon I Bantul Community Health Center. With the results of the Kendall Tau correlation test, a significance p value of 0.000 was obtained (p value <0.05), so it can be concluded that there is a relationship between nutritional intake and breast milk production in mothers who breastfeed babies aged 0-6 months with a correlation coefficient value of 0.469. This can mean that mothers who provide breast milk with good nutritional intake will have better breast milk production. Apart from that, it is also supported by research conducted by Marissa Anggraini, Evawany Y Aritonang, and Zulhaida Lubis (2013) with the title the relationship between food consumption patterns and hemoglobin levels in pregnant women in the third trimester in the working area of the Lalang Village Community Health Center, Medan Sunggal District. Based on the results of their research, it was found that The results of statistical tests using the chi square test show that the p value = 0.001 (p <0.05), which means there is a significant relationship between energy adequacy and hemoglobin levels in pregnant women.

Identifying Average Hb Levels of Postpartum Mothers After Consuming Fe Tablets The post Hb level results showed that the average was 14,039 g/dl so that after consuming Fe tablets the HB levels in postpartum mothers helped increase Hb levels well. Of the 30 respondents, there was the lowest post Hb level, namely 12.5 g/dl and the highest, namely 15.7 g/dl. So from the results of post Hb levels it can be seen that the highest Hb levels are still within normal limits, because Hb levels in normal women are 12-16 g/dl (Firani, 2018; p.47). The iron in the body comes from three sources, namely iron obtained from the destruction of red blood cells (hemolysis), iron taken from storage in the body, and iron absorbed from the digestive tract. Of these three sources, in normal humans approximately 20-25 mg of iron per day comes from hemolysis and around 1 mg comes in limited quantities

(Adriani, 2016; p.51-2). Breastfeeding mothers require additional Fe of 6 mg/day which is needed to replace blood loss and maintain Fe in the body (Department of Nutrition and Public Health, University of Indonesia, 2016; p.142). The above theory is supported by research conducted by Indah Kusumawati S, et al (2016) with the title of the relationship between food intake, Fe supplementation and folic acid with hemoglobin levels in pregnant women with a history of chronic lack of energy and anemia during breastfeeding showing that the results in this study were analyzed between Fe supplementation and Folic acid in pregnant women with CED and anemia on breastfeeding hemoglobin levels, the result was $p<0.05$, which means that Fe supplementation and folic acid are related to hemoglobin levels in breastfeeding mothers. Supplementation with 90 Fe tablets and folic acid has the opportunity to increase hemoglobin levels by 0.720 g/dL. Meanwhile, every 1 calorie increase in energy intake will reduce hemoglobin levels by 0.005. So Fe and folic acid supplementation are the main factors that influence hemoglobin levels during breastfeeding.

Analyzing the Average Increase in HB Levels Before and After Consuming Fe Tablets Hemoglobin is a protein rich in iron. Hemoglobin has an affinity (combining power) for oxygen, with oxygen it forms oxyhemoglobin in red blood cells. Through this function, oxygen is carried from the lungs to the tissues (Evelyn, 2011; p. 160). According to Marmi (2017; p.135-6) states that breastfeeding mothers need to consume an additional 500 calories every day, eat a balanced diet to get enough protein, minerals and vitamins, drink at least 3 liters every day (encourage mothers to drink every times breastfeeding), take vitamin A (200,000 units) 1x1 so that you can provide vitamin A to your baby through breast milk and iron pills are taken to increase nutrition for at least 40 days after giving birth. Based on the Performance Accountability Report by the Directorate General of Nutrition Development and KIA, Ministry of Health of the Republic of Indonesia in 2015, namely the operational strategy for developing community nutrition for 2015-2019 in terms of improving nutrition in the first 1000 days of life (HPK), one of which is the provision of blood supplement tablets for pregnant women until the postpartum period. The results of analysis of research data regarding the effect of giving Fe tablets on increasing Hb levels in postpartum mothers obtained a p value of 0.000, which means there is a significant effect after consuming Fe tablets in postpartum mothers. Of each respondent, totaling 30 postpartum mothers, all experienced an increase in Hb levels after consuming 1x1 Fe tablets at a dose of 60 mg. Where the 30 respondents experienced an increase in minimum Hb levels, namely 0.7 g/dl and an increase in maximum Hb levels, namely 2.6 g/dl. Based on the table above, it is known that 1 of the previous studies by Shinta Kristianti, Siti Asiyah and Nur Afifa with the title combination of vitamin C and Fe tablets, the results of this study showed that postpartum mothers who had not been given Fe tablets had an average Hb level of 10.587 g/dl then during After 3 weeks, the average HB level was 10.927 g/dl. This shows that consuming Fe tablets for 3 weeks can effectively increase Hb levels by 0.58 g/dl. The results of the research above are supported by the theory of Almatsier (2009; p. 251-2) which explains that absorption mainly occurs in the small intestine (duodenum) with the help of a special protein transport device. There are 2 types of protein transport vehicles in the small intestinal mucosal cells that help iron absorption, namely transferrin and ferritin. Transferrin protein is synthesized in the liver, existing in two forms. Mucosal transferrin transports iron from the gastrointestinal tract into mucosal cells and transfers it to transferrin receptors in mucosal cells. Mucosal transferrin then returns to the gastrointestinal cavity to bind other iron, while transferrin receptors transport iron through the blood to all body tissues. The level of iron absorption is regulated by the gastrointestinal mucosa which is determined by the body's needs. Mucosal transferrin released into the bile acts as a protein transport vehicle that carries iron back and forth to the surface of small intestinal cells to be bound by transferrin receptors and back to the gastrointestinal cavity to transport other iron. In mucosal cells, iron can bind apoferritin and form ferritin as a temporary iron store in cells. Most blood transferrin carries

iron to the bone marrow and other parts of the body. From the bone marrow, iron is used to make hemoglobin which is part of red blood cells. Excess iron can be stored as ferritin and hemosideric proteins in the liver, spinal cord and the remainder in the spleen and muscles. So from this theory it can be seen that each respondent has different needs, so the increase varies according to the body's needs.

Research Limitations

In this research the author faced limitations that could affect the conditions of the research carried out. This limitation is that this study did not examine confounding factors, namely the food consumed by respondents. So that each sample obtained different improvement results because the food consumed by respondents was different.

CONCLUSION

From research conducted on 30 respondents, it shows that the effect of giving Fe tablets on the Hb levels of postpartum mothers has increased with the following conclusions.

1. Average Hb levels of postpartum mothers before consuming Fe tablets from day 3 namely 12.521 g/dl with a minimum value of 10.4 g/dl and a maximum value of 14.3 g/dl
2. Average Hb levels of postpartum mothers after consuming Fe tablets from day 23 or after 3 weeks, namely 14.039 g/dl with a minimum value of 12.5 g/dl and a value maximum 15.7 g/dl
3. The results of data analysis using the dependent t-test can show an increase significant after consuming Fe tablets (p-value 0.000<0.05 then Ha is accepted). So it can be interpreted that giving Fe tablets to postpartum mothers has proven to be effective increase Hb levels

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