

# The Relationship Between Adherence to The Consumption of Blood Supplement Tablets with the Incidence of Anemia in Pregnant Women in The Working Area of The Kreet Health Center, Madiun District

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## Abstract

Anemia is a common health problem in pregnant women. One of the causes of anemia is inadequate iron absorption. According to RISKESDAS statistics, 78% of pregnant women suffer from anemia in 2021. According to statistical data from the Kreet Health Center, the incidence of anemia in pregnant women will reach 7.75% in 2022. This research examines how compliance with consuming blood supplement tablets affects the incidence of anemia in pregnant women. Research Method: This research uses a cross-sectional design. The sampling technique used consecutive sampling involving 51 respondents. The data collection technique for the amount of compliance uses the MMAS-8 questionnaire and for the incidence of anemia uses secondary data. Test the data hypothesis using the Chi-square test. Research Results: The research results from 51 respondents, 49.01% were compliant, 50.9% were non-compliant. 60.7% of respondents experienced anemia (31 respondents), 39.3% of respondents were not anemic (20 respondents). A p value of 0.000 ( $< 0.05$ ) means that there is a relationship between the incidence of anemia and compliance Conclusion: There is a relationship between compliance with the consumption of blood supplement tablets and the incidence of anemia in pregnant women in the working area of the Kreet Community Health Center, Madiun Regency.

**Keywords:** *Anemia, Pregnant women, Blood supplement tablet.*



## INTRODUCTION

A condition where an Hb level or better known as hemoglobin in the blood is abnormal or tends to be low  $> 11\text{g/dl}$  is a condition called anemia. (Kemenkes RI, 2019). In 2019, WHO or World Health Organization 40% of pregnant women worldwide suffer from anemia with a percentage of 78% and this has increased by 48.9% in 2019 where the cause is iron deficiency according to data from Riskesdas 2021 (Kemenkes RI, 2022).

Pregnant women increased nutritional needs are the direct cause of anemia in their unborn children. Iron, vitamin C, protein, vitamin B1, and folic acid deficiency — all of which pregnant women require — have a significant impact on the synthesis of hemoglobin. The synthesis of red blood cells depends in part on amino acids, which are metabolized by folic acid. Pregnant women's increased dietary intake is the cause of anemia in fetuses. Iron, vitamin C, protein, vitamin B1, and folic acid deficiency — all of which pregnant women require — have a significant impact on the synthesis of hemoglobin. Amino acids have a vital role in the production of red blood cells

metabolized by folic acid (Akhtar & Hassan, 2012). Other variables that impact include age, the environment, education level, iron intake, and foods high in iron (Omasti, 2022).

The need for iron increases during pregnancy due to the increased blood volume in the mother and the high iron demand of the fetus to meet the needs of oxygen distribution and metabolic reactions. Daily iron supplementation can effectively prevent anemia and iron deficiency (Kaur et al., 2024).

Iron deficiency itself can cause deficiency anemia as, in the absence of adequate iron, the body is unable to provide sufficient production of hemoglobin as it is an important part of red blood cells, causing interference with oxygen supply. Pregnant women experience fatigue and dyspnea as a result. Biological processes like respiration, energy production, DNA synthesis, and cell proliferation can all be hampered by an iron deficit (Maiti et al., 2021). Given that iron is necessary for many physiological and cellular functions, accurately estimating the prevalence of iron deficiency anemia during pregnancy is crucial for creating health and nutrition policies as well as enhancing currently implemented therapies to treat anemia during pregnancy (Turawa et al., 2021).

Because iron is needed for the synthesis of hemoglobin and because this demand rises throughout pregnancy, women are given iron and folic acid supplements from the time of conception until the postpartum period. Folic acid, when taken before conception and sustained during the early stages of pregnancy during the development of the neurological system, prevents disability and macrocytic anemia (Mkhize et al., 2019).

The morbidity and death rates of mothers and children are negatively impacted by anemia. Intrauterine growth restriction (IUGR), preterm birth, birth abnormalities, low birth weight (LBW), and the possibility of intrauterine death are among the negative effects of anemia on the developing foetus. Pregnant women who suffer from anemia may experience breathing difficulties, exhaustion, anxiety, elevated blood pressure, sleep disorders, preeclampsia, miscarriage, and maternal mortality from hemorrhage (Pratama et al., 2019).

During the hanging period, every mother should take at least ninety blood supplements to prevent anemia. The Ministry of Health did not meet the aim of 95%, and the total intake in Indonesia in 2018 was 81.16%. The provinces with the highest iron tablet coverage among pregnant women were Bengkulu at 99.49% and Banteng at 32.11% (MOH RI, 2019).

In 2022, the East Java Provincial Health Office reported that the percentage of pregnant women in the region receiving TTD was 66.8% which was lower than the previous year. However, the achievement of TTD in pregnant women in 2022 has been achieved. In 2022, the prevalence of anemia among pregnant women in Madiun District was 7.7% which increased from 5.2% in the previous year. According to the Madiun District Health Profile in 2022, the number of pregnant women who received TTD in the Kreet Health Center working area was 91.8%, but there were still mothers

who experienced anemia during their pregnancy even in the third trimester of their pregnancy.

This study is in line with research conducted by Nurmasari & Sumarmi (2019) which has found that pregnant women who do not take supplements in the form of tablets on time will have a higher risk of developing anemia. Conversely, if a mother takes tablets on time, the risk of developing anemia will tend to be lower. The purpose of this study is to determine a clause between the consumption of blood supplement tablets and the number of anemia cases that occur in pregnant women.

## METHODS

The method used is descriptive, with a qualitative approach. Qualitative research methods examine a wide range of topics in the study of environment and resource management (Caggiano & Weber, 2023). Descriptive method is to describe or expose the state of the object under study as it is, in accordance with the situation and conditions when the study was conducted. Qualitative approach is the mechanism of research work based on nonstatistical or nonmathematic subjective assessment, where the measure of value used is not the score numbers, but the categorization of value or quality (Sugiyono, 2017).

The study summarizes data from a variety of official reports related to the research topic, covering different points of view. These data are a bridge to a deeper understanding of the impact and prospects of digital broadcast implementation policies. Through careful qualitative analysis, we unearth the underlying systematics of the policy's effects and potential. At the initial stage, we carefully traced each official report, capturing every nuance contained in it. Then, these data are structured to facilitate a holistic understanding of the growing issues in the realm of digital broadcasting.

Qualitative analysis then becomes a major milestone in this process. We investigated every detail, identified emerging patterns, and interpreted the implications of the findings. This approach allows us to look beyond numbers and statistics, but also involves a deep understanding of the context and dynamics that influence digital Broadcast Policy. The results of this analysis are expected to provide a more comprehensive understanding of the complexity of the issues involved in digital broadcast policy. Thus, the study not only becomes a mere data collection, but also a substantial contribution to a deeper understanding of the dynamics as well as implications of such policies.

The process of occurrence in qualitative research is very dependent on the complexity of the problems to be answered and the sharpness of the researchers' traceability in making comparisons during the data collection process. How can the data analysis process be operated? This paper will attempt to answer and describe the parts (1) understanding the meaning of data analysis, (2) analysis when collecting

data; (3) data reduction; (4) data presentation; (5) drawing conclusions and verification (Rijali, 2019).

## METHODS

Analytic observational research is conducted with the aim of studying differences between dependent and independent variables, as this type will be used in this study. The research design uses a cross-sectional approach, with observation or data collection methods and research sampling to test the relationship between risk factors and outcomes.

The population in this study consisted of all pregnant women who made antenatal visits at the Kreet Health Center from January to February 2023, with a total of 87 pregnant women. The largest sample of this population will be calculated using the Slovin formula with a total of 51 pregnant women.

## RESULTS AND DISCUSSION

Univariate Analysis: Based on table 1 of the results of research conducted at the Kreet Health Center, Madiun Regency on January 15-25, 2024, the number of compliant pregnant women was 25 people (49.1%) and 26 people (50.9%) who were not compliant.

**Table 1. Frequency Distribution of Adherence of Pregnant Women Taking Fe Tablets**

<b>Compliance</b>	<b>Total</b>	<b>Percentage</b>
Obedient	25	49,1%
Not obey	26	50,9%
<b>Total</b>	<b>51</b>	<b>100</b>

Univariate Analysis: Based on table 2, the results of research conducted at the Kreet Community Health Center, Madiun Regency on 15 – 25 January 2024, it was found that the number of pregnant women who were anemic was 31 people (60.8%) and 20 pregnant women who were not anemic (39, 2%).

**Table 2. Incidence of Anemia**

<b>Category</b>	<b>Total</b>	<b>Percentage (%)</b>
Anemai	31	60,8
Not Anemic	20	39,2
<b>Total</b>	<b>51</b>	<b>100</b>

Bivariate Analysis: The results showed that 9.8% of pregnant women were compliant but experienced anemia. The percentage of pregnant women who were not compliant but experienced anemia was 50.98%. The percentage of pregnant women who are compliant but not anemic is 39.2%

**Table 3. Relationship between compliance and the incidence of anemia**

	Chi-Square				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	34.219 <sup>a</sup>	1	.000		
Continuity Correction <sup>b</sup>	30.946	1	.000		
Likelihood Ratio	43.290	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	33.548	1	.000		
N of Valid Cases	51				

The incidence of anemia among pregnant women at the Kreet Community Health Center in Madiun Regency in 2024 is related to compliance with the use of iron tablets, according to statistical tests using the chi-square test (P value (0.000) <  $\alpha$  (0.05)).

**Compliance of Pregnant Women**

The results of research conducted on 51 pregnant mothers indicated that 49.1% or the equivalent of 25 of them complied with TTD consumption, while the other 26 or equivalent to 50.9% of them did not comply. The amount of blood supplements taken, accuracy and frequency are several ways to find out how appropriate a person is in taking blood supplements. One of the main challenges in preventing and overcoming anemia, especially iron deficiency anemia, is taking blood-boosting supplements (Kadek et al., 2022).

Iron requirements during pregnancy increase, which can lead to iron deficiency anemia as iron stores decrease. Women in developing countries are more often susceptible to general nutritional deficiencies which can be exacerbated by iron deficiency during pregnancy. Poverty and low knowledge are the main factors influencing compliance with taking blood supplement tablets and fulfilling nutrition, in the end various efforts from multidisciplinary health professionals such as doctors, nurses, pharmacists and nutritionists need to be made to overcome iron deficiency, instead of managing it as a supplementation treatment (Araujo Costa & de Paula Ayres-Silva, 2023).

Currently, WHO recommends taking iron supplements every day as part of antenatal care to reduce the risk of low blood pressure in pregnant mothers and the risk of LBW. However, there are indications that proper adherence to iron supplementation is a challenge for pregnant women (Skolmowska et al., 2022). During her pregnancy, a mother must consume at least ninety blood-boosting tablets. Maternal compliance plays an important role in increasing hemoglobin (Hb) levels. Iron supplementation during pregnancy reduces the risk of anemia (WHO, 2011). The findings presented in this research are consistent with previous studies, as demonstrated by a 2019 study by Nurmasari and Sumarmi, which found that pregnant mothers who did not take supplement tablets had a 3.46 times higher risk of developing anemia compared to mothers who regularly took supplements.

Similar studies were also carried out by Nadiya et al. in 2023, who found a connection between pregnant women's incidence of anemia and their adherence to taking iron tablets. According to research by Mkhize et al., 2019, non-compliance with taking iron tablets and other variables including health issues were the primary causes of the iron supplementation program's failure. The degree to which a person complies with medical recommendations is referred to as compliance. Using other drugs concurrently has an impact on compliance and may make pregnant anemia more severe.

According to a 2019 study by Gebremichael et al., the availability of health counseling and education regarding the significance of folic acid and iron supplements was another factor that was independently linked to compliance. Respondents who had counseling and health information were five times more likely to take their iron supplements as prescribed. and folic acid. Nutrition education needs to be simple and tailored to the socioeconomic background, dietary preferences, and food sources that are readily available in the community. Iron deficiency can be safely controlled and prevented with nutrition improvement measures (Irandegani et al., 2019).

An Indian study by Ramachandran et al., 2023 demonstrated that there was a relationship between health education and using blood supplement pills as prescribed. While the majority of prenatal visits involve general health education and counseling, giving individual instruction through films and pamphlets has been

found to be strongly linked to raising awareness of anemia and encouraging adherence to iron tablet use.

### **Anemia Occurrence**

The results of this study show that 60.8% or the equivalent of 31 pregnant mothers experienced anemia, and the remaining 39.2% or the equivalent of 20 mothers did not experience it. Based on theory, anemia is considered mild if the mother's Hb level is 9-10 grams/dl. Meanwhile, if the mother's Hb level is 7-8 grams/dl and it is included in the severe category if the mother's Hb level is less than 7 grams/dl (Dhiny Easter Yanti, 2016). Pregnant mothers who experience anemia will generally have symptoms such as frequent shaking, nausea, watery eyes, mouth ulcers, poor concentration, shortness of breath and loss of appetite or generally what we hear more often are symptoms of 5L, weakness, lethargy, tired, weary and inattentive. (Putri et al., 2023).

A full blood count provides the foundation for a laboratory diagnosis of iron deficiency anemia, according to Al-Khaffaf et al. in 2020. This is because transferrin, total iron binding capacity, iron, and serum ferritin are all examined. Examinations carried out on patients with iron deficiency anemia will usually show results in the form of a decrease in hemoglobin and hematocrit, a decrease in serum ferritin, an increase in transferrin or total iron binding capacity, a decrease in average cell volume, and a decrease in iron saturation. A small oval cell with a pale center, can be found on the edge of the intestine and in blood products. In addition, severe iron deficiency can result in low white blood cells and low platelet counts.

The health of a mother and fetus can be affected by undiagnosed anemia and therefore no treatment during pregnancy. The mother's general condition is affected by long-term iron deficiency, as this causes fatigue and decreased ability to work, to other symptoms of anemia combined with anxiety, headaches, uncontrolled emotions such as irritability and even panic attacks (Muxiddinovna & Sobirovna, 2022 ). There is also evidence that anemia correlates with a higher risk of pregnancy and birth outcomes, including perinatal death, maternal death, low birth weight and premature birth. There is a high risk of bleeding before and after delivery. Anemia during a mother's pregnancy can cause many problems, such as increased syncope, increased risk of miscarriage, poor labor and prolonged labor (Nadiya et al., 2023). A previous study by Deficiency & Parameters, 2020 also stated that pregnant women have a high risk of experiencing pregnancy complications.

Anemia during pregnancy puts a woman at risk for a number of concerns, including heart issues, preeclampsia, hemorrhagic shock, and the requirement for peripartum blood transfusions in the event of bleeding. Pregnancy-related anemia severity and maternal mortality risk are positively connected (Garzon et al., 2020).

Malnutrition is another factor that contributes to anemia. Iron deficiency and excess nutrition are examples of deficiencies and excess nutrition that are part of this

intake problem, which results in a double burden of malnutrition. First, measures to improve teenage nutrition have been taken. A number of initiatives and regulations have been put into place. Since teens who suffer from anemia are more likely to encounter anemia during pregnancy, nutrition education is crucial to addressing the issue of anemia as soon as possible (Sari et al., 2022).

The research supports the findings of Mahundi et al., 2023, who found a substantial correlation between educating pregnant women about diet and raising their knowledge and hemoglobin levels. Most pregnant women prefer pamphlets as their educational tool; they contain information on the value and advantages of iron supplementation, the appropriate time and amount to take it, and how foods high in iron and vitamin C can help with anemia symptoms and signs in expectant mothers.

Health officials have advised pregnant women to consume blood supplement tablets along with nutritious food for optimal absorption, and to consume them before bed to reduce the effects of nausea. Procurement of quality blood supplement tablets is also expected to increase compliance. Similar to research conducted in India, pregnant women are not aware that foods that are high in nutrition can improve anemia status (Nahrisah et al., 2020).

In research conducted by Abd Rahman et al., 2022 in Malaysia, several factors were found that influence the occurrence of anemia, including, pregnant women at a very young age, not having ANC regularly, low compliance, low education level, economic problems and not getting enough nutrients. iron. In his research, the highest prevalence was found to be anemia due to iron deficiency, 34.6%.

In line with research conducted by Azmi & Puspitasari, 2022, namely from various factors that cause anemia, the highest prevalence was found to be iron deficiency. One thing that influences iron deficiency is compliance. The p value = 0.000 was obtained, where there was a very strong relationship between compliance and iron deficiency and a 14 times risk of experiencing anemia. However, there are also side effects from iron tablets, such as feeling nauseous and vomiting, pain in the pit of the stomach, as this is also avoided by pregnant mothers due to not consuming blood-boosting tablets regularly. (Georgieff et al., 2019).

### **The Relationship between Compliance with Blood Supplement Tablet Consumption and the Incidence of Anemia in Pregnant Women**

P-value (0.000) <  $\alpha$  (0.05) was obtained from statistical tests using the chi-square test, indicating a relationship between TTD use and anemia in expectant mothers at the Kreet District Health Center Madiun in 2024.

According to a prior study conducted in 2023 at the Peusangan District Health Center, the consumption of TTD was correlated with the degree of anemia experienced by expectant mothers. Bireuen, this is consistent with the findings of a 2019 study by Nurmasari & Sumarmi, which found that pregnant women who do not

take blood-boosting supplements as directed had a 3.46-fold increased risk of anemia compared to those who do. In addition, Pohan's research from 2022 shows that there is a p-value of 0.005 for the relationship between anemia incidence and compliance.

According to the World Health Organization (WHO), pregnant women who use blood supplements will have higher levels of hemoglobin than mothers who do not use blood supplements. The positive effect for pregnant women who use blood supplements in the first trimester is that they can reduce the risk of pregnancy death compared to the second trimester. Because iron levels are raised by blood supplements during pregnancy—a nutrient that isn't typically obtained through diet—anemia can be avoided and managed during this time. For pregnant women, taking blood supplements is vital. Consequently, it's critical to regularly take iron supplements to avoid unpleasant symptoms. (Yanti, 2016).

In line with research by Aras Utami, Dodik Pramono, 2017, there is a significance of the inter-compliance clause in the incidence of anemia, pregnant women who consume blood supplements in the recommended amount have a smaller risk of anemia, in fact supplementation with blood supplement tablets and proper nutritional requirements able to increase hemoglobin and ferritin levels during pregnancy. Apart from that, some mothers who do not comply complain of the bad effects of blood supplement tablets, including discomfort in the epigastrium, nausea, vomiting and diarrhea.

In research conducted by (Cindy Narita Kusuma Astuti et al., 2023) it was found that a mother who was pregnant but was not compliant and also had anemia had low knowledge and often had a negative view of the bad effects of blood supplements, such as nausea, vomiting, diarrhea, constipation, and the face becomes dull. This causes pregnant women to always forget or stop taking blood supplement tablets.

Research conducted by El-Kholy et al., 2023. Counseling from health workers helps increase hemoglobin values during pregnancy. Where, during counseling regarding nutritional anemia, it has been proven to increase pregnant women's knowledge and increase compliance in consuming blood supplement tablets. Counseling and providing education are the basis for increasing awareness, therefore health workers have an important role in treating and preventing anemia in pregnancy.

In Ethiopia, partner support was found to be a key determinant in compliance with TTD consumption, in addition to the function of health personnel (Gebremichael & Welesamuel, 2020). Pregnant mothers who have the support of their husbands to take blood supplements will have a 2.23 kai greater chance of complying with a natural protocol for using blood supplements compared to the opposite.

The researchers hypothesized that the more regularly pregnant mothers consume blood supplements, the less likely they are to have low blood pressure. Conversely, the less frequently pregnant women consume blood supplements, the

higher the risk of developing anemia. One of the important steps to prevent and treat iron deficiency anemia in pregnant women is to drink blood supplements.

## CONCLUSIONS

With a study involving 51 people as shown by P-value  $(0.000) < \alpha (0.05)$  in the chi-square statistical test, it was concluded that in 2024, pregnant mothers at the Kreet District Health Center. Madiun experienced anemia as stated in the clause by complying with the consumption of blood supplement tablets.

It is hoped that these results will be useful as a basis for research with additional clauses regarding the consumption of blood-boosting supplements, pregnant mothers and anemia.

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