
The Relationship Between Knowledge of Iron (Fe) Tablet Consumption Practices and the Incidence of Anemia Among Pregnant Women in the Working Area of Telaga Dewa Community Health Center, Bengkulu City

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Abstract

Anemia in pregnant women remains a health issue that can have adverse effects on both the mother and the fetus. One preventive measure against anemia is the proper consumption of iron tablets; however, the success of this effort is influenced by the level of knowledge pregnant women have regarding the proper consumption of iron tablets. The research question of this study is whether there is a relationship between knowledge regarding the proper consumption of iron tablets and the incidence of anemia among pregnant women in the service area of the Telaga Dewa Community Health Center, Bengkulu City. This study aims to determine the relationship between knowledge regarding the proper consumption of iron tablets and the incidence of anemia in pregnant women. This study employed a quantitative method with a descriptive-analytical design using a cross-sectional approach. The study population consisted of 378 pregnant women, with a sample of 45 respondents selected using purposive sampling. Data were collected using a questionnaire and hemoglobin level tests, then analyzed univariately and bivariate using the chi-square test. The results showed that of the 18 respondents with good knowledge, 16 (88.9%) were not anemic and 2 (11.1%) were anemic. Of the 11 respondents with adequate knowledge, 4 respondents (36.4%) were not anemic and 7 respondents (63.6%) were anemic. Of the 16 respondents with poor knowledge, 4 respondents (25.0%) were not anemic and 12 respondents (75.0%) were anemic. Overall, 24 respondents (46.7%) were not anemic, and 21 respondents (53.3%) were anemic. The chi-square test yielded a p-value of 0.000 ($p < 0.05$), indicating a significant association between knowledge of how to take iron tablets and the incidence of anemia in pregnant women.

Keywords: Anemia, Knowledge Of Consumption Method, Fe Tablets.

INTRODUCTION

Maternal Mortality Rate (MMR) remains one of the primary indicators used to assess public health status, particularly maternal and child health. One of the major factors contributing to maternal mortality in developing countries is anemia during pregnancy, with approximately 40% of maternal deaths associated with this condition. Iron deficiency and acute bleeding are the leading causes of anemia among pregnant women and often occur simultaneously (WHO, 2021).

According to the Indonesian Health Survey (SKI), the prevalence of anemia among pregnant women in Indonesia reached 27.7% in 2023. The highest prevalence was found among women aged 35–44 years (39.6%), followed by those aged 25–34 years (31.4%). Pregnant women living in rural areas also experienced a higher prevalence of anemia (31.3%) than those residing in urban areas (25.5%) (Kementerian Kesehatan BKPK, 2023). Globally, anemia affects approximately 36.5% of pregnant women, making it a significant public health problem. Although its prevalence has declined since 2000, the rate remains high, prompting the World Health Organization to target a 50% reduction in anemia among women of reproductive age (WHO, 2020).

During pregnancy, iron requirements increase substantially due to the expansion of maternal blood volume and fetal development. Approximately 1,000 mg of additional iron is required throughout pregnancy, with the highest demand occurring during the second and third trimesters (Rosnidar, 2024). Therefore, the Indonesian government recommends routine consumption of iron (Fe) tablets throughout pregnancy as part of antenatal care services. However, the effectiveness of supplementation depends not only on compliance but also on appropriate consumption practices, including the correct timing and combination with vitamin C to enhance iron absorption (Rafeifadattis et al., 2024; Annisa, 2024).

Despite the implementation of iron supplementation programs, anemia among pregnant women remains prevalent. One contributing factor is the limited knowledge regarding the proper consumption of Fe tablets, resulting in suboptimal iron absorption and reduced effectiveness of supplementation (Omasti et al., 2022). Previous research by Nova and Irawati (2021) demonstrated a significant relationship between proper Fe tablet consumption and anemia incidence among pregnant women ($p = 0.001$), indicating that appropriate knowledge and practices are essential for preventing anemia.

In Bengkulu Province, 1,850 of 22,082 pregnant women were diagnosed with anemia in 2021, with the highest prevalence reported in South Bengkulu Regency. Furthermore, data from the Bengkulu City Health Office in 2024 indicated that although 99.1% of pregnant women received health services, only 78.9% consumed Fe tablets, and the highest number of anemia cases was reported in the working area of the Telaga Dewa Community Health Center.

Preliminary data collected at the Telaga Dewa Community Health Center showed that, among 378 registered pregnant women, 57 were diagnosed with anemia. Considering the adverse effects of maternal anemia on both mothers and fetuses, identifying factors associated with anemia is essential. Therefore, this study aims to analyze the relationship between knowledge of proper Fe tablet consumption and the incidence of anemia among pregnant women in the working area of the Telaga Dewa Community Health Center, Bengkulu City.

RESEARCH METHODS

This study employed a quantitative analytical approach using a cross-sectional design to examine the relationship between pregnant women's knowledge regarding proper iron (Fe) tablet consumption and the incidence of anemia. The study was conducted in the working area of the Telaga Dewa Community Health Center, Bengkulu City, from December 2025 to February 2026.

The study population consisted of 378 pregnant women registered at the Telaga Dewa Community Health Center between January and December 2025. The sample size was determined using the Slovin formula, resulting in 45 respondents selected through purposive sampling. The inclusion criteria were pregnant women in the second and third trimesters who were willing to participate in the study, whereas pregnant women who were unable to read and write or had physical disabilities that interfered with questionnaire completion were excluded.

The independent variable was the level of knowledge regarding proper Fe tablet consumption, while the dependent variable was the incidence of anemia. Knowledge was measured using a 21-item questionnaire adopted from Iskandar (2023), which had previously been tested for validity ($r = 0.837$) and reliability (Cronbach's Alpha = 0.731). Knowledge levels were categorized as good (76–100%), moderate (56–75%), and poor (<56%). Anemia status was determined by measuring hemoglobin (Hb) levels using a hemoglobinometer, with Hb <11 g/dL classified as anemia.

Primary data were collected through questionnaire administration and hemoglobin examination after obtaining informed consent from all participants. Data processing included editing, coding, data entry, and data cleaning before statistical analysis.

Descriptive (univariate) analysis was performed to describe the distribution of respondents' characteristics, knowledge levels, and anemia status. Bivariate analysis using the Chi-square test was conducted to determine the relationship between knowledge of Fe tablet consumption and anemia incidence among pregnant women. Statistical significance was established at a p -value of <0.05.

This study received ethical approval from the Health Research Ethics Committee of the University of Bengkulu with approval number 3781/UN25.8/KEPK/DL/2026. All respondents voluntarily participated after providing written informed consent, and confidentiality and anonymity were maintained throughout the study.

RESULTS AND DISCUSSION

Univariate Analysis

Distribution of Knowledge Level Regarding Iron (Fe) Tablet Consumption

Table 1. Distribution of Knowledge Level Regarding Iron (Fe) Tablet Consumption

Knowledge Level	n	%
Good	18	40.0
Moderate	11	24.4
Poor	16	35.6
Total	45	100.0

Source: Primary Data, 2026

Based on Table 1, the frequency distribution indicates that most respondents had a good level of knowledge regarding the proper consumption of iron (Fe) tablets, accounting for 18 respondents (40.0%). These findings suggest that the majority of pregnant women possessed adequate knowledge about the correct method of consuming iron supplementation.

Distribution of Anemia Incidence

Table 2. Distribution of Anemia Incidence

Anemia Status	n	%
Anemia	21	46.7
Non-anemia	24	53.3
Total	45	100.0

Source: Primary Data, 2026

Based on Table 2, 24 respondents (53.3%) were not diagnosed with anemia, while 21 respondents (46.7%) experienced anemia. These results indicate that slightly more than half of the respondents did not suffer from anemia.

Bivariate Analysis

Table 3. Association Between Knowledge of Iron (Fe) Tablet Consumption and Anemia Incidence

Knowledge Level	Non-anemia n (%)	Anemia n (%)	Total	p-value
Good	16 (88.9)	2 (11.1)	18	
Moderate	4 (36.4)	7 (63.6)	11	
Poor	4 (25.0)	12 (75.0)	16	0.000
Total	24 (53.3)	21 (46.7)	45	

Source: Primary Data, 2026

Table 3 shows that among respondents with good knowledge of iron (Fe) tablet consumption, only 2 respondents (11.1%) experienced anemia, whereas 16 respondents (88.9%) were not anemic. In contrast, among respondents with poor knowledge, 12 respondents (75.0%) experienced anemia, while only 4 respondents (25.0%) were classified as non-anemic.

The Chi-square test produced a p-value of 0.000 ($p < 0.05$), indicating a statistically significant association between knowledge of iron (Fe) tablet consumption and the incidence of anemia among pregnant women. Therefore, it can be concluded that a higher level of knowledge regarding the proper consumption of iron tablets is significantly associated with a lower incidence of anemia in the study population. Tables and charts or captions are arranged in the form of a phrase (not a sentence) succinctly.

C. Discussion

Knowledge of Proper Iron (Fe) Tablet Consumption

The findings showed that most respondents had good knowledge of proper Fe tablet consumption (40.0%), followed by moderate (24.4%) and poor knowledge (35.6%). However, many respondents had limited understanding of practical aspects, including the recommended minimum intake of 60 tablets during pregnancy, consuming Fe tablets with vitamin C to enhance absorption, taking the tablets after meals when experiencing nausea, and the role of iron-rich foods in supporting absorption. Approximately 34.6% of respondents answered these questions incorrectly.

According to Notoatmodjo (2018), knowledge is acquired through sensory experience and influences individual health behavior. Adequate knowledge encourages positive health practices, including correct Fe tablet consumption during pregnancy. Knowledge is also influenced by education, experience, and access to health information. This finding is consistent with Iskandar (2023), who reported that health education from healthcare providers improves pregnant women's knowledge of Fe supplementation. Overall, the results indicate that health education has been relatively effective, although further efforts are needed to improve practical knowledge among women with moderate and poor knowledge.

Incidence of Anemia

The results indicated that 53.3% of respondents were not anemic, while 46.7% experienced anemia. Although the majority did not have anemia, the prevalence remains relatively high, particularly among women in the third trimester, when iron requirements increase substantially. Other contributing factors include inadequate dietary iron intake and poor physical health.

According to the Ministry of Health of Indonesia (2020), anemia in pregnancy is defined as a hemoglobin level below 11 g/dL and is mainly caused by iron deficiency, increased iron requirements, and physiological hemodilution. Prawirohardjo (2020) also explained that plasma volume increases more rapidly than red blood cell production during pregnancy, resulting in lower hemoglobin concentrations. These findings are consistent with Mardiah (2020), who reported that anemia among pregnant women is associated with nutritional intake, adherence to Fe tablet consumption, and maternal health status. Therefore, continuous education and monitoring of Fe tablet consumption remain essential to reduce anemia during pregnancy.

Relationship Between Knowledge of Fe Tablet Consumption and Anemia

The study demonstrated a significant relationship between knowledge of proper Fe tablet consumption and anemia among pregnant women. Most respondents with good knowledge were not anemic (88.9%), whereas anemia was more common among women with moderate (63.6%) and poor knowledge (75.0%). Women with adequate knowledge are more likely to consume Fe tablets correctly, including taking them regularly, combining them with vitamin C, and avoiding tea, coffee, or milk, which inhibit iron absorption.

Notoatmodjo (2018) stated that knowledge is a fundamental determinant of health behavior. Physiologically, vitamin C enhances iron absorption by converting ferric (Fe^{3+}) into ferrous (Fe^{2+}), thereby improving hemoglobin synthesis. These findings are consistent with Nurhasanah (2022), who found that better knowledge was associated with lower anemia risk through improved adherence to Fe supplementation.

Nevertheless, some women with good knowledge still experienced anemia, while several with poor knowledge did not. This suggests that anemia is multifactorial and influenced by dietary intake, nutritional status, gestational age, infections, adherence to Fe supplementation, and increased physiological iron requirements during pregnancy (Manuaba, 2021; World Health Organization, 2021). Lawrence Green's behavioral theory also emphasizes that knowledge alone is insufficient, as health behavior is shaped by reinforcing factors such as family support, healthcare access, and individual motivation.

Furthermore, respondents showed limited understanding of practical aspects of Fe tablet consumption, particularly regarding food and beverage interactions affecting iron absorption.

According to Hastuty et al. (2023), effective knowledge should progress beyond understanding to practical application. Dewi et al. (2023) and the Ministry of Health of Indonesia (2020) emphasize that appropriate timing of Fe tablet consumption, vitamin C co-administration, and avoidance of tea, coffee, milk, and antacids are essential for optimal iron absorption.

Overall, these findings suggest that although general knowledge regarding Fe supplementation is relatively good, practical application remains insufficient. Strengthening health education should therefore focus not only on increasing knowledge but also on improving mothers' ability to apply appropriate Fe tablet consumption practices in daily life, thereby enhancing anemia prevention during pregnancy.

CONCLUSIONS

The study conducted among pregnant women at Telaga Dewa Public Health Center, Bengkulu City, from December 20, 2025, to January 31, 2026, found that most respondents had good knowledge of proper Fe tablet consumption (40.0%), while the majority were not anemic (53.3%). Statistical analysis also demonstrated a significant relationship between knowledge of proper Fe tablet consumption and the incidence of anemia among pregnant women ($p = 0.000$; $p < 0.05$), indicating that better knowledge is associated with a lower risk of anemia.

Future studies are recommended to include additional variables and different research designs to obtain more comprehensive evidence regarding factors affecting Fe tablet consumption. The findings may also serve as a reference for midwifery education and community health practice. In addition, healthcare providers at Telaga Dewa Public Health Center should strengthen regular health education on the correct use, benefits, and recommended dosage of Fe tablets during pregnancy using more engaging educational approaches. Pregnant women are encouraged to apply this knowledge by adhering to government recommendations for Fe tablet supplementation throughout pregnancy to help prevent anemia and improve maternal health.

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