

KNOWLEDGE AND ATTITUDES OF SMP NEGERI 1 BAUBAU FEMALE STUDENTS REGARDING IRON SUPPLEMENT TABLETS FOR ANEMIA PREVENTION

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ABSTRACT

Anemia is a global health problem affecting more than 30% of the world's population. Indonesia has a prevalence of 32% among adolescents aged 13-14 years. Adolescent girls are at higher risk due to iron loss during menstruation and rapid growth, making iron supplementation a strategic intervention to improve hemoglobin levels and cognitive function. However, the success of an iron supplementation program is strongly influenced by individual internal factors, particularly knowledge and attitudes. The purpose of this study was to determine the level of knowledge and attitudes of female students of SMP Negeri 1 Baubau regarding iron supplementation as an anemia prevention effort. The method used in this study was a descriptive study using a survey questionnaire. This study employed a cross-sectional approach. The sample used was 63 eighth-grade female students of SMP Negeri 1 Baubau. The results of the study indicate that female students' knowledge regarding the use of iron supplements is high, and their attitudes are positive. The results showed that 88.9% of female students had a high level of knowledge, 7.9% had a moderate level of knowledge, and 3.2% had a low level of knowledge. 93.7% of female students had a positive attitude and 6.3% of female students had a negative attitude. The conclusion is that the majority of female students at SMP Negeri 1 Baubau have a high level of knowledge and positive attitudes toward the use of iron supplements as an effort to prevent anemia.

INTRODUCTION

Anemia remains one of the major health problems in the world. According to the World Health Organization (WHO), more than 30% of the global population experiences anemia, with a prevalence of around 4.3–20% in developed countries and 30–48% in developing countries, mainly due to iron deficiency. Globally, anemia is found in 43% of children, 38% of pregnant women, 29% of non-pregnant women, and 29% of women of reproductive age (Amir & Djokkosujono, 2019). In Indonesia, anemia is also a serious health problem, with approximately one-third of the population experiencing it. Among adolescents aged 13–24 years, the prevalence of anemia reaches 32%, while adolescent girls have a higher risk (27.2%) than adolescent boys (20.3%), making this group a vulnerable population (Kusnadi, 2021).

Adolescence is a transition period toward adulthood characterized by very rapid physical growth, resulting in increased nutritional needs, particularly iron. If iron requirements are not met, adolescents are at risk of developing anemia (Astri Wahyuningsih, 2019). In addition, anemia in school-age children can be influenced by various factors such as nutritional deficiencies, low protein intake, lack of parental knowledge regarding healthy meal planning, limited socioeconomic conditions, and nutritional status (Riza dkk., 2025). This condition indicates that anemia in adolescents remains a problem requiring attention because it can affect health and academic performance.

One effort to prevent anemia in adolescent girls is through the provision of Iron Supplements (TTD). Adolescent girls are encouraged to consume TTD because they experience menstruation every month, which causes the loss of iron stores. Iron Supplements function to replace lost iron, help meet daily requirements that are not fulfilled through food, as well as support learning concentration, maintain physical fitness, and prevent anemia during the reproductive period (Laily et al., 2022). Routine provision of Iron Supplements has also been shown to increase hemoglobin levels and help improve concentration and cognitive function in adolescents and women experiencing anemia (Amir & Djokosujono, 2019).

Although the Iron Supplement program has been implemented, its success is influenced by adolescents' level of knowledge and attitudes toward TTD consumption. Good knowledge regarding the benefits, method of consumption, and effects of Iron Supplements can encourage adolescents to consume the tablets regularly as recommended, while lack of knowledge can lead to misunderstandings regarding their benefits and side effects (Sriwahyu dkk., 2025):(Luh & Sri, 2025). (Mutiarra dkk., 2023) found that most female students had fairly good attitudes toward Iron Supplement consumption, but their level of knowledge regarding anemia prevention was still relatively low. (Saputri dkk., 2025) also found a significant relationship between knowledge and adherence to Iron Supplement consumption among adolescent girls.

Research on knowledge and attitudes toward Iron Supplements has been widely conducted among university students and adolescents in general (Mutiarra dkk., 2023):(Saputri dkk., 2025). However, research specifically examining female junior high school students remains limited, even though this group is a target of the Iron Supplement program and has different age characteristics and levels of understanding. Therefore, research on the level of knowledge and attitudes of female students of SMP Negeri 1 Baubau toward Iron Supplements needs to be conducted as an effort to support anemia prevention. The purpose of this study was to determine the level of knowledge and attitudes of female students of SMP Negeri 1 Baubau regarding iron supplements as an effort to prevent anemia.

Anemia is a condition characterized by a decrease in hemoglobin levels in the body. Hemoglobin is a metalloprotein—an iron-containing protein found in red blood cells—that plays a role in transporting oxygen from the lungs to tissues throughout the body. One type of anemia is iron-deficiency anemia, a condition caused by a lack of the iron required for hemoglobin (Hb) production. Generally, individuals with anemia may experience symptoms such as physical weakness, a rapid and strong pulse, heart palpitations, and a sensation of ringing or roaring noises in the ears(Rizky RahmawatiAlami dkk., 2025).

METHODOLOGY

This study used a descriptive research design with a survey method using a questionnaire. The data source used was data obtained directly from the original source without an intermediary. This study used a cross-sectional approach in which data collection was conducted during only one specific period without considering history and future effects. This study was conducted at SMP Negeri 1 Baubau in May 2026.

The population of this study consisted of 172 eighth-grade female students of SMP Negeri 1 Baubau. The sample used in this study consisted of eighth-grade female students of SMP Negeri 1 Baubau. The sample size was calculated using the Slovin formula, resulting in a sample of 63 people. The sampling technique was determined based on predetermined inclusion criteria, namely female students of SMP Negeri 1 Baubau, aged 13–14 years, who had experienced menstruation, had consumed Iron Supplements, and were willing to become respondents.

Primary data in this study were obtained directly using a questionnaire related to Iron Supplements as an Effort to Prevent Anemia, which was given to respondents at SMP Negeri 1 Baubau and contained names, classes, and ages, as well as a list of prepared questions and answer choices. Secondary data in this study were obtained from the student affairs staff of SMP Negeri 1 Baubau. The research instrument used in this study was a questionnaire containing questions regarding the knowledge and attitudes of female students toward Iron Supplements as an effort to prevent anemia.

Data management in this study began with distributing questionnaires to respondents who met the inclusion criteria. After the questionnaires were returned, an examination process was carried out to ensure that every answer had been completed fully and clearly. Next, the collected data were coded for each answer to facilitate the processing and analysis process. The next stage was scoring, in which each answer on the knowledge and attitude variables was assessed according to the predetermined provisions, resulting in a score for each respondent. The scored data were then processed and arranged in tables to display frequency distributions based on the research variables, making it easier to see the level of knowledge and attitudes of female students toward Iron Supplements as an effort to prevent anemia (Notoatmodjo, 2010).

Data analysis in this study used descriptive statistics. Percentage was used as the main instrument to measure and draw conclusions through two stages of analysis. Knowledge category analysis was conducted to determine whether each respondent belonged to the High, Moderate, or Low category. Raw scores from the questionnaire were converted into percentages using the Guttman scale (Anggraini & Lubis, 2023). Attitude category analysis was conducted to determine whether each

respondent belonged to the Positive or Negative category. Raw scores from the questionnaire were converted into percentages. The assessment of the attitudes of female students of SMP Negeri 1 Baubau regarding Iron Supplements as an effort to prevent anemia used 10 questions contained in the questionnaire format, using a Likert scale (Mutiar dkk., 2023).

RESULTS & DISCUSSION

Based on the results of data collection, 63 respondents aged 14 years were obtained. The respondents were eighth-grade female students of SMP Negeri 1 Baubau who met the respondent characteristics and were willing to complete the questionnaire. The data in this study were obtained using primary data collected through the distribution of questionnaires to respondents.

Table 1. Respondent Characteristics.

Respondent Characteristics			
Age	Class	Number	n (%)
14 Years	8.1	11	17,5
	8.2	8	12,7
	8.4	7	11,1
	8.5	2	3,2
	8.7	17	27,0
	8.8	9	14,3
	8.9	8	12,7
	8.11	1	1,6
Total		63	100,0

Based on **Table 1**, it is known that the number of respondents in this study was 63 female students. All respondents were 14 years old. This indicates that the study was conducted in a homogeneous age group, so there was no age variation. Based on class characteristics, the respondents came from eight classes, namely classes 8.1, 8.2, 8.4, 8.5, 8.7, 8.8, 8.9, and 8.11. The largest number of respondents came from class 8.7, with 17 female students (27.0%), while the smallest number came from class 8.11, with 1 female student (1.6%). The difference in the distribution of students, which was not equal in each class, as well as the number of female students who met the criteria as research respondents.

According to WHO (2025), all respondents aged 14 years are included in the early adolescent category, namely the age range of 10–14 years. During this period, adolescents experience rapid physical growth, increased iron requirements, and the onset of menstruation among adolescent girls. These conditions make adolescent girls more vulnerable to anemia if their iron requirements are not adequately met. Therefore, education regarding anemia and the importance of consuming Iron Supplements in this age group is very necessary as an effort to prevent anemia from an early age.

Table 2. Distribution of Respondents' Knowledge Level

Category	Score	n (%)
High	56	88,9
Moderate	5	7,9
Low	2	3,2
Total	63	100,00

Based on **Table 2**, which was conducted among 63 female students of SMP Negeri 1 Baubau, it was found that most respondents had a high level of knowledge regarding Iron Supplements as an effort to prevent anemia, namely 56 respondents (88.9%). Meanwhile, 5 respondents (7.9%) had a moderate level of knowledge and 2 respondents (3.2%) had a low level of knowledge. These results indicate that the majority of female students have understood information related to Iron Supplements, ranging from their definition, benefits, purpose of administration, to the role of Iron Supplements in preventing anemia among adolescents. However, knowledge related to question 5 still needs to be improved. The question refers to the statement that Iron Supplements should not be taken together with tea, because tea contains tannin and polyphenol compounds that can bind iron in the digestive tract, forming compounds that are difficult for the body to absorb (Zulkarnain dkk., 2025). Likewise, question 6 refers to the statement that Iron Supplements cannot be taken together with antacids (gastric medicines), because antacids work by neutralizing stomach acid, whereas an acidic gastric environment is needed for iron to dissolve and be absorbed optimally (Risesdas, 2018).

The high level of respondents' knowledge may be influenced by various factors, such as health education provided by health workers, information obtained from teachers at school, social media, the internet, and the family environment. SMP Negeri 1 Baubau, which has collaborated with Puskesmas Wolio in various health activities, may also be one of the factors supporting the improvement of female students' knowledge regarding adolescent health, including anemia prevention through the consumption of Iron Supplements. In addition, the development of information technology makes it easier for female students to obtain health information from various available sources (Zulkarnain dkk., 2025).

Although most respondents had a high level of knowledge, there were still respondents in the moderate and low knowledge categories. This condition indicates that not all female students have the same understanding of Iron Supplements. Differences in knowledge levels may be influenced by the level of attention of female students when receiving information, interest in health materials, personal experience, and the frequency of receiving information related to anemia and Iron Supplements. Therefore, health education activities need to be conducted routinely and continuously so that all female students have good and evenly distributed knowledge (Renaldi dkk., 2024).

Overall, the results of this study show that the level of knowledge of female students of SMP Negeri 1 Baubau regarding Iron Supplements as an effort to prevent anemia is in the high category. The high level of knowledge possessed by female students is an important asset in supporting the success of anemia prevention programs among adolescents, because good knowledge will make it easier for female students to understand the benefits and importance of consuming Iron Supplements regularly (Amira dkk., 2024).

Table 3. Distribution of Respondents' Attitudes

Category	Score	n (%)
Positive	59	93,7
Negative	4	6,3
Total	63	100,00

Based on **Table 3**, it is known that of the 63 respondents studied, 59 respondents (93.7%) had positive attitudes toward Iron Supplements as an effort to prevent anemia, while 4 respondents (6.3%) had negative attitudes. These results indicate that most female students have a good view and accept the importance of using Iron Supplements in preventing anemia among adolescents.

Attitude is a person's response or tendency in assessing an object, whether in the form of acceptance or rejection. Unlike knowledge, which focuses on the ability to understand information, attitude describes more how a person evaluates something based on beliefs, experiences, and understanding (Poernomo, 2022).

The high percentage of positive attitudes in this study may be influenced by the respondents' high level of knowledge as well. Good knowledge regarding the benefits of Iron Supplements can form positive attitudes, making female students more likely to accept the importance of consuming Iron Supplements. When a person understands the benefits of a health action, their tendency to give a positive evaluation of the action becomes greater. Thus, knowledge is one of the factors that plays a role in the formation of a person's attitude (Luh & Sri, 2025).

Nevertheless, there were still 4 respondents (6.3%) who had negative attitudes. This may be caused by various factors, such as lack of experience consuming Iron Supplements, inaccurate perceptions regarding the side effects of Iron Supplements, lack of support from the surrounding environment, or limited information received. The negative attitudes still found in this study indicate that education and assistance efforts still need to be carried out so that all female students have a more positive view of consuming Iron Supplements (Ansju dkk., 2026).

A similar study conducted by (Mutiarra dkk., 2023) reported that 56% of adolescent girls had moderate knowledge, whereas in this study most respondents had a high level of knowledge. However, for the attitude variable, 94.2% of adolescent girls had positive attitudes, and the results of this study are consistent with that finding, namely that most respondents had positive attitudes toward consuming Iron Supplements. (Saputri dkk., 2025) stated that good knowledge was significantly associated with Iron Supplement consumption behavior among adolescent girls. In addition, positive attitudes are also a factor supporting adherence to consuming Iron Supplements. These findings are consistent with the results of this study, which showed high knowledge and positive attitudes among respondents toward Iron Supplements.

CONCLUSION

The level of knowledge of female students of SMP Negeri 1 Baubau regarding iron supplements as an effort to prevent anemia was in the high category, namely 56 female students (88.9%), while 5 female students (7.9%) had a moderate level of knowledge and 2 female students (3.2%) had a low level of knowledge. These results indicate that most female students had a good understanding of Iron Supplements, while the attitudes of female students of SMP Negeri 1 Baubau regarding iron supplements as an effort to prevent anemia were dominated by positive attitudes toward the use of Iron Supplements, namely 59 female students (93.7%), while 4 female students (6.3%) had negative attitudes. These results indicate that some female students had a good understanding and positive attitudes toward Iron Supplements as one of the efforts to prevent anemia.

The limitation of this study is that it was conducted only among female students of SMP Negeri 1 Baubau, so the research results cannot yet be generalized to all adolescent girls in other areas. In addition, the data were obtained through questionnaires, so respondents' answers depended on the honesty and understanding of each respondent.

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