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Original Research

Anemia Awareness and Iron Supplement Adherence Among Adolescent Girls in East Kalimantan

Sumiati Sumiati[1*], Nur Halipah[2], Tuti Meihartati[3], Aries Abiyoga[4]

[1,2,3] Department of Midwifery, Institute of Health Technology and Science Wiyata Husada Samarinda, Indonesia
[4] Department of Nursing, Institute of Health Technology and Science Wiyata Husada Samarinda, Indonesia

ABSTRACT

Background: *Anemia remains a prevalent health issue among adolescent girls, often resulting from menstrual blood loss and insufficient iron intake. Globally, anemia prevalence among adolescents ranges from 40 to 88%. In Indonesia, the rate is 32%, while in East Kalimantan it reaches 43.2%. At Senior High School 3 Penajam Paser Utara, 57.14% of female students were identified as anemic. This condition may impair health, reduce learning concentration, and increase the risk of pregnancy complications in later life. This study aimed to analyze the association between anemia awareness and adherence to iron supplement consumption among adolescent girls at Senior High School 3 Penajam Paser Utara, East Kalimantan*

Methods: *A cross-sectional study with a descriptive-analytic design was employed, involving 74 adolescent girls through simple random sampling. Data were collected using the Morisky Medication Adherence Scale (MMAS) questionnaire, and statistical analysis was performed with the Chi-square test.*

Results: *Among the 74 respondents, 53 (71.6%) demonstrated low awareness of anemia, and 55 (74.3%) were non-adherent to iron supplement consumption. The Chi-square test revealed a significant association between anemia awareness and adherence ($p = 0.001$ $p < 0.05$).*

Conclusion: *Adolescent girls with higher awareness of anemia were more likely to adhere to iron supplement consumption compared to those with lower awareness.*

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KEYWORDS
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CONTACT
Sumiati
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sumiati@itkeswhs.ac.id
Department of Midwifery, Institute of Health Technology and Science Wiyata Husada Samarinda. Jl. Kadrie Oening Gang Monalisa No.77, Air Hitam, Kec. Samarinda Ulu, Samarinda City, East Kalimantan 75243 Indonesia.

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INTRODUCTION

Adolescence is a transitional phase from childhood to adulthood characterized by biological and psychological growth and development. The National Population and Family Planning Board of Indonesia (BKKBN) and the United Nations Population Fund (UNFPA) classify adolescence as ranging from ages 10 to 24 years, further divided into three stages: early adolescence (10–14 years), middle adolescence (15–19 years), and

late adolescence (20–24 years), provided they are unmarried (Kependudukan & Nasional, 2021). Globally, adolescents represent approximately 25% of the world's population.

Adolescent health is therefore a critical concern, as it determines future health outcomes during productive years. Due to rapid growth and development, adolescents are at increased risk of nutritional deficiencies, one of which is anemia (Faizah, 2022). Anemia is defined as a condition in which the number of red blood cells decreases, as indicated by reduced hemoglobin, hematocrit levels, and erythrocyte count (Astuti et al., 2023). Among adolescents, iron deficiency anemia is the most common type, and it predominantly affects adolescent girls more than boys (Srivastava et al., 2022).

A study conducted by University College Cork, Ireland, reported that adolescent girls are more vulnerable to anemia due to iron deficiency associated with blood loss during menstruation. Anemia has become a significant public health issue worldwide. According to the World Health Organization the prevalence of anemia among adolescents ranges between 40% and 88% (World Health Organization, 2024). In developing countries, approximately 53.7% of adolescent girls are affected, whereas the prevalence in developed countries is much lower, around 6% (McCann et al., 2020).

In Indonesia, the prevalence of anemia among adolescents is also high. The Basic Health Research reported that 32% of adolescents suffer from anemia, an increase from 22.7% in 2019. This indicates that 3 to 4 out of every 10 Indonesian adolescents are anemic (Ministry of Health, 2023). Regionally, East Kalimantan Province recorded a prevalence of 43.2% among adolescents. In Penajam Paser Utara Regency, a school-based study at Senior High School 3 found that 20 out of 35 female students (57.14%) were anemic.

Additionally, data from the District Health Office revealed one in three adolescent girls in the area suffers from anemia. Compared to other schools in the region, Senior High School 3 had both the highest enrollment and the highest prevalence of anemia. In contrast, anemia prevalence in nearby schools was lower, recorded at 37.19% in SMK 6, 22.15% in SMK 1, and 23.17% in SMK 5 (Ministry of Health PPU, 2025). Iron deficiency anemia in adolescent girls can have detrimental effects on physical, mental, and academic performance. This condition often leads to fatigue, dizziness, and difficulty concentrating, which in turn negatively impacts learning achievement and productivity.

According to the Indonesian Ministry of Health, anemia in adolescence also poses risks to growth and reproductive system development, potentially affecting maternal health outcomes in later life (Ministry of Health, 2023). Moreover, insufficient iron levels weaken the immune system, making adolescents more susceptible to infections and other illnesses. The long-term consequences of anemia can be severe. Adolescent girls with anemia are at greater risk of experiencing high-risk pregnancies, including preterm delivery and low birth weight (LBW) infants.

Iron deficiency anemia is a medical condition characterized by a reduced number of red blood cells or hemoglobin levels below normal thresholds. Hemoglobin reference values differ by sex, with anemia typically defined as hemoglobin levels below 13.5 g/100 ml in males and below 12.0 g/100 ml in females (Nurjanah & Azinar, 2023). The Indonesian government has implemented preventive measures against anemia among adolescent girls through the distribution of iron and folic acid supplements, known as *Tablet Tambah Darah* (TTD), in accordance with Ministry of Health Regulation No. 88 of 2014 concerning iron supplementation standards for adolescents.

This program, initiated in 2014, is coordinated through schools, which are responsible for ensuring weekly supervised consumption of TTD by female students (Islamiyah, 2023). Each tablet contains 60 mg of elemental iron and 0.25 mg of folic acid, consistent with the World Health Organization (WHO) recommendations. When consumed regularly and in accordance with guidelines, TTD has been shown to prevent and manage iron deficiency anemia.

Adherence to TTD supplementation, however, is strongly influenced by awareness and compliance among adolescent girls. Awareness serves as an enabling factor for consistent consumption, while compliance is affected by various determinants, including the tablet's form, color, taste, and side effects. In addition, awareness has been identified as a key factor associated with adherence to supplementation (Agustina, 2019).

The low level of awareness among adolescent girls regarding anemia and iron supplements may result from limited access to information provided by healthcare workers, mass and electronic media, or family support, as well as the individual's ability to comprehend the information received. Insufficient awareness consequently leads to poor adherence to iron supplement consumption, which in turn hampers efforts to control anemia (Alanezi, 2024). Previous studies have demonstrated that iron supplementation is an effective intervention to reduce anemia in adolescent girls (Swamilaksita et al., 2022), while study conducted in Indonesia showed that weekly supplementation reduced anemia prevalence among adolescents from 20% to 5.7% within 12 weeks (Juffrie et al., 2020; Zuraida et al., 2020).

These findings highlight that weekly TTD distribution is a practical and effective strategy to prevent and reduce anemia. Thus, iron supplementation for adolescent girls is one of the Indonesian government's major efforts to address iron deficiency and improve adolescent health outcomes. This preliminary study illustrates that insufficient awareness may negatively affect students' behavior and adherence in maintaining their health. Therefore, further research is necessary to examine in depth the relationship between adolescent girls' awareness of anemia and their adherence to iron supplement consumption.

MATERIALS AND METHOD

A cross-sectional study with a descriptive-analytic design was employed, involving 74 adolescent girls selected via simple random sampling. The researcher chose this design because it allows for the simultaneous measurement of both the independent variable (knowledge) and the dependent variable (adherence) at a single point in time. This approach is highly efficient for identifying correlations and providing a "snapshot" of the current health behavior among adolescent girls without requiring a long-term follow-up (Notoatmodjo, 2018). The study was conducted at Senior High School 3 Penajam Paser Utara, East Kalimantan, in December 2024 to May 2025. The study involves two main variables:

Table 1. Operational Definitions

Variable	Definition	Instrument	Measurement Criteria	Scale
Independent: Knowledge of Anemia	Knowledge regarding the definition, causes, signs/symptoms,	Questionnaire	1. 1. Good: score ≥ 60	Ordinal

Variable	Definition	Instrument	Measurement Criteria	Scale
	impacts, iron-rich food sources, benefits of IFA, correct dosage, and side effect prevention.		2. Poor: score < 60 (Arrahiym, 2024)	
Dependent: IFA Tablet Consumption Adherence	The level of adherence of adolescent girls in consuming IFA tablets as recommended by health workers, including consistency and difficulties in consumption.	Morisky Medication Adherence Scale (MMAS-8)	1. Adherent: score ≥6 2. Non-adherent: score < 6 (Islamiyah, 2023)	Ordinal

Data were collected using a closed-ended questionnaire comprising two primary domains. The Knowledge Domain was assessed using a 17-item multiple-choice instrument developed by Arrahiym, (2024) which demonstrated strong psychometric properties with validity coefficients (r count) exceeding 0.78 and a Cronbach's Alpha of 0.77, indicating high internal consistency. The Adherence Domain was measured using the 8-item Morisky Medication Adherence Scale (MMAS-8), a globally recognized and validated instrument employing a Guttman scale (Yes/No) to evaluate medication compliance.

The data collection was conducted through the following systematic phases: Preparation Phase: Securing administrative permits from ITKES Wiyata Husada Samarinda and SMA Negeri 3 Penajam Paser Utara; Implementation Phase: Selecting respondents via stratified random sampling. The researcher explained the study's purpose, provided instructions, and obtained signed informed consent from each participant; Completion Phase: Respondents completed the self-administered questionnaires, which were then checked for completeness (editing) before being processed for analysis.

The study was conducted in accordance with ethical standards and received formal approval from the Health Research Ethics Committee of the Institute of Health Technology and Sciences (ITKES) Wiyata Husada Samarinda (No. 20/ITKES-WHS/KEPK/EC/2024), valid from December 2024 to July 2025. Administrative clearance and field research permission were further granted by the authorities of SMAN 3 Penajam Paser Utara through official response letter number B/400.3.8/3/SMAN 3 PPU/2025.

RESULTS

The characteristics of respondents in this study are an essential factor that may influence the results and interpretation of the data. The characteristics assessed include age and grade level of the adolescent girls at Senior High School 3 Penajam Paser Utara.

Table 1. Characteristics of respondents

Characteristics	n	Frequency (%)
Age (years)		
< 16	4	5.4
16–17	66	89.2
> 17	4	5.4
Grade Level		
XI	37	50.0
XII	37	50.0
Total	74	100

Source: Primary Data, 2025

The data in Table 1 shows that the majority of respondents were aged 16–17 years, with 66 participants (89.2%). Respondents aged below 16 years accounted for 4 participants (5.4%), while those aged above 17 years were also 4 participants (5.4%). In other hand, across grade levels, with 37 students (50.0%) from grade XI and 37 students (50.0%) from grade XII. In addition, univariate analysis was performed on each variable from the research results. The purpose of this analysis was to explain or describe the frequency distribution of each variable (Santoso, 2018).

Table 2. Distribution of Respondents' Awareness about Anemia and Adherence to Iron Tablet Supplementation

Variable	n	Frequency (%)
Anemia Awareness Level		
Good	21	28.4
Poor	53	71.6
Iron Supplement Adherence		
Adherent	19	25.7
Non-adherent	55	74.3
Total	74	100.0

Source: Primary Data, 2025

Table 3 shows that the majority of respondents had poor awareness about anemia, with 53 students (71.6%), while only 21 students (28.4%) demonstrated good awareness. Moreover, the majority of respondents were non-adherent in consuming iron tablets, with 55 students (74.3%), whereas only 19 students (25.7%) reported adherence. Furthermore, based on the data obtained, the Chi-square test was used to determine the relationship between the independent variable (awareness of anemia) and the dependent variable (adherence to iron tablet supplementation). The results of the analysis using SPSS version 23 are presented in Table 3.

Table 3. Relationship between Awareness of Anemia and Adherence to Iron Tablet Supplementation among Adolescent Girls at Senior High School 3 Penajam Paser Utara

Awareness Level	Adherence		Total	p-value	α
	Adherent	%	Non-adherent	%	
Good	19	90.5	2	9.5	21 (100)
Poor	0	0	53	100	53 (100)
Total	19	25.7	55	74.3	74 (100)

Source: Primary Data, 2025

Table 3 shows that among the 74 respondents, 53 students (100%) with poor awareness were classified as non-adherent, while 19 students (90.5%) with good awareness were adherent, and 2 students (9.5%) with good awareness were non-adherent. No respondents were found in the category of oor awareness with adherence to iron tablet supplementation. The chi-square test revealed a p-value = 0.001 ($p < 0.05$), indicating that the null hypothesis (H0) was rejected. Thus, there is a significant relationship between the awareness of adolescent girls about anemia and their adherence to iron tablet supplementation at Senior High School 3 Penajam Paser Utara.

DISCUSSION

Based on Table 2, the majority of respondents were found to have a poor level of anemia awareness, accounting for 53 individuals (71.6%), while only 21 respondents (28.4%) demonstrated a good level of awareness. This finding indicates that most adolescent girls at Senior High School 3 Penajam Paser Utara still have limited understanding of anemia, including its causes, consequences, and prevention strategies. The low level of awareness suggests a potential risk for a high prevalence of anemia and reflects suboptimal implementation of anemia prevention programs, particularly iron tablet supplementation, within the school setting.

Furthermore, age and educational level were also found to influence adolescents' capacity to absorb health-related information. Cahyani, (2023) highlighted that higher education levels correspond with improved comprehension of health information. This is particularly relevant for the respondents of this study, who were high school students. Diatri et al., (2023) further emphasized that awareness is a strong predictor of preventive behavior. Adolescents who are unaware of anemia risks are less likely to engage in preventive actions, such as consuming TTD.

Additionally Wahyuningsih & Rohmawati, (2020) reported that improved awarness of anemia positively correlates with TTD adherence. Similarly, Feriyanti & Rahayu, (2024) found that students with higher understanding of anemia demonstrated better adherence to TTD than those with lower awarness. Fitraniar et al., (2025); Rakhshani et al., (2025); Shalini et al., (2025) further emphasized that nutritional education for adolescent girls enhances awarness and ultimately influences anemia prevention behaviors, including adherence to TTD. Therefore, enhancing awareness should be prioritized in nutritional interventions for adolescents. This reflects the existing gap between awareness and practice, signaling the need for stronger behavioral reinforcement strategies.

In addition to these findings, Table 2 also reveals that adherence to iron tablet supplementation among respondents remains relatively low. Out of a total of 74 respondents, only 19 individuals (25.7%) were classified as adherent, whereas the majority, 55 respondents (74.3%), were categorized as non-adherent. This low adherence rate indicates that the iron supplementation program has not yet been optimally implemented. Several factors may contribute to this condition, including insufficient knowledge, negative perceptions of iron tablets, concerns about side effects, and limited health education and monitoring during program implementation (Astuti et al., 2023; Jafari et al., 2023).

On top of that, Table 3 shows a consistent pattern emerges showing that a low level of anemia awareness is associated with poor adherence to iron tablet consumption. Respondents with good anemia awareness demonstrated significantly higher adherence compared to those with poor awareness. This finding reinforces the assumption that

awareness and understanding of anemia play a crucial role in shaping adherence behavior toward iron supplementation.

Adolescent girls who are aware of the risks of anemia and the benefits of iron supplementation are more likely to take responsibility for their health and consistently follow health recommendations. Besides that, the low level of awareness was also found to correlate with poor adherence to TTD consumption. Suraya et al., (2024) demonstrated that ignorance of anemia was directly linked to non-compliance with TTD intake. This aligns with the findings at SMA Negeri 3 Penajam Paser Utara, where limited awareness contributed to suboptimal preventive practices. Similar evidence was reported in Pekanbaru, which showed a significant relationship between awarness and adolescent health behavior (Arrahiym, 2024).

Numerous studies have demonstrated that knowledge and perceptions regarding anemia influence adolescents' adherence to iron tablet consumption. For example, a study conducted at Muhammadiyah 15 Senior High School in Jakarta reported a significant association between perceived risk of anemia and adherence to iron–folic acid (IFA) supplementation, although knowledge alone was not consistently statistically correlated in all cases. Other studies have likewise indicated that low levels of knowledge are frequently accompanied by poor adherence to iron supplementation (Amalia et al., 2025; Hazadina et al., 2025).

Moreover, adherence to iron tablet consumption is a key intervention for reducing the prevalence of iron deficiency anemia among adolescent girls, as reduced intake of iron supplements has been shown to increase the risk of anemia. Further evidence suggests that low adherence is strongly influenced by multiple factors, including risk perception, concerns about side effects, levels of social support, and insufficient intensity of health education (Feriyanti & Rahayu, 2024; Kamal Agus Efendi et al., 2025). These findings are consistent with health behavior theories, which emphasize that knowledge and awareness are key determinants in the formation of health-related attitudes and practices.

World Health Organization, (2024) emphasizes that iron supplementation interventions among adolescent girls are more effective when accompanied by continuous health education aimed at improving awareness. Similarly, Djati et al., (2025) highlights the importance of school-based anemia education as part of the national strategy for anemia prevention among adolescent girls, given that this population is particularly vulnerable to iron deficiency. This finding is consistent with Monika et al., (2023), who emphasized that school-based health education plays a crucial role in improving adolescents' awareness of anemia. In aligns with Suaib et al., (2024) who emphasized that family and teacher support significantly encourage adolescents to follow TTD recommendations.

Such support includes supervision, provision of information, and routine monitoring by parents or schools. In conclusion, the low level of anemia awareness and the high proportion of non-adherence to iron tablet supplementation are closely interrelated and represent major challenges in anemia prevention among adolescent girls. Therefore, strengthening health education programs through structured and continuous school-based interventions, along with improved monitoring of iron tablet consumption, is essential to enhance adherence and improve the effectiveness of anemia prevention programs.

However, in this study there was several limitations: Limited Scope and Resources: Due to constraints in time, energy, and researcher capacity, this study was

limited in its ability to reach a wider range of respondents or conduct deeper data exploration. Consequently, the findings are restricted to the pre-defined scope and may lack broader generalizability; Environmental and Temporal Constraints: Data collection was conducted in two separate sessions (Grade X and Grade XI) due to limited classroom availability. The restricted timeframe of 15 minutes per session may have impacted the respondents' concentration and tranquility while completing the questionnaire; Potential for Response Bias: The close physical proximity between students during the session allowed for interaction and peer-viewing of answers. This introduces a risk that the responses may not fully reflect the respondents' objective personal opinions; Timeline Discontinuity: A significant time gap occurred between the proposal seminar and the actual fieldwork due to a two-week school holiday. This interval potentially affected the continuity of planning and the overall preparedness for field execution.

To enhance the robustness of future studies, it is recommended to expand the research scope and personnel by broadening geographical coverage and employing enumerators to manage larger sample sizes. Furthermore, optimizing the data collection environment, specifically by securing larger venues and extending session durations, is essential to allow participants sufficient time for thoughtful responses. To ensure data integrity and objectivity, researchers should implement controlled seating arrangements modeled after formal examination conditions to prevent peer influence. Finally, strategic scheduling that synchronizes the data collection timeline with the academic calendar is vital to avoid interruptions, such as long holidays, and maintain the overall momentum and continuity of the research process.

Regarding the practical implications, these findings establish a foundational baseline for school administrators to understand student conditions across Grades X and XI; however, practitioners should exercise caution when applying these results, taking into full account the specific environmental constraints identified. From a methodological standpoint, this research underscores the necessity of rigorous environmental control in school-based surveys, demonstrating that spatial management, physical seating arrangements, and temporal synchronization are as critical to ensuring data quality as the design of the survey instrument itself.

CONCLUSION

Based on the research results, data analysis, and discussion regarding the relationship between adolescent girls' awareness of anemia and their adherence to iron tablet consumption at SMA Negeri 3 Penajam Paser Utara, it can be concluded that the majority of adolescent girls have insufficient awareness about anemia, with 53 individuals (71.6%) falling into this category. Additionally, the majority of the students (55 individuals or 74.3%) were found to be non-compliant with iron tablet consumption. Furthermore, there is a significant relationship between adolescent girls' awareness of anemia and their adherence to iron tablet consumption at SMA Negeri 3 Penajam Paser Utara, as evidenced by a p-value of 0.001 (α=0.05). This indicates that adolescent girls with better awareness about anemia are more likely to comply with iron tablet consumption compared to those with lack of awareness.

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REFERENCES

Agustina, A. (2019). Analisis pengetahuan dengan kepatuhan remaja putri dalam mengkonsumsi tablet tambah darah untuk pencegahan dan penanggulangan anemia gizi besi. *Jurnal Ilmiah Kesehatan Masyarakat: Media Komunikasi Komunitas Kesehatan Masyarakat*, *11*(4), 269–276. https://doi.org/10.52022/jikm.v11i4.51

Alanezi, F. (2024). Addressing Iron Deficiency without Anemia: Challenges and Solutions. *International Journal for Scientific Research*, *3*(12), 574–630. https://doi.org/10.59992/IJSR.2024.v3n12p17

Amalia, R., Dewi, R., & Firdaus, D. P. (2025). *Hubungan pengetahuan remaja putri tentang anemia dengan kepatuhan dalam mengonsumsi tablet zat besi (Fe)*. *14*(1). https://doi.org/10.62094/jhs.v14i1.201

Arrahiym, A. A. (2024). Hubungan Pengetahuan Anemia Dengan Kepatuhan Konsumsi Tablet Tambah Darah (TTD) Pada Siswi Di Smpn 31 Kota Pekanbaru. *Doctoral Dissertation, Universitas Islam Negeri Sultan Syarif Kasim Riau.* http://repository.uin-suska.ac.id/id/eprint/82957

Astuti, C. N. K., Prasetyo, B., & Setyowati, D. (2023). The effect of iron tablets' side effects on the level of compliance to consuming iron tablets in pregnant woman: A systematic review. *World J. Adv. Res. Rev*, *17*, 395–403. https://doi.org/10.30574/wjarr.2023.17.1.0037

Cahyani, E. D. (2023). Pengetahuan Remaja Putri Tentang Anemia Dengan Konsumsi Makanan Sehat Di Smp Negeri 2 Tuban. *Jurnal Multidisiplin Indonesia*, *2*(8), 1883–1888. https://doi.org/10.58344/jmi.v2i8.375

Diatri, D., Chasani, S., Aini, G. N., & Putri, N. A. (2023). Analisis Sikap dan Pengetahuan Terhadap Kepatuhan Remaja Putri Dalam Mengkonsumsi Tablet Fe di SMPN 36 Semarang. *Prosiding Seminar Nasional UNIMUS*, *6*. https://prosiding.unimus.ac.id/index.php/semnas/article/viewFile/1576/1579

Djati, I. S., Nugrahen, S. A., & Sriatmi, A. (2025). Factors Influencing Attitude Making in The Prevention of Anemia in Female Adolescent: A scoping review. *Jurnal Indonesia Sosial Teknologi*, *6*(1). https://doi.org/10.59141/jist.v6i1.8901

Faizah, N. N. (2022). Hubungan tingkat pengetahuan tentang anemia dengan kepatuhan konsumsi tablet tambah darah pada siswi Madrasah Aliyah Al Khoiriyah Kababupaten Malang. *Undergraduate Thesis, Universitas Islam Negeri Maulana Malik Ibrahim*. http://etheses.uin-malang.ac.id/46777/

Feriyanti, A., & Rahayu, A. P. (2024). *Social Support and Iron Tablet Supplementation in Adolescents: A Literature Review*. https://e-journals2.unmul.ac.id/index.php/panakeia/article/view/2108

Fitraniar, I., Anita, A., & Yusnaini, Y. (2025). The effectiveness of educational media in preventing anemia among adolescent girls. *Science Midwifery*, *13*(2), 444–453. https://doi.org/10.35335/midwifery.v13i2.1935

Hazadina, T., Melani, V., Mulyani, E. Y., Ronitawati, P., Novianti, A., & Gifari, N. (2025). *Anemia Knowledge, Perception, and Teacher Support Related to Iron Supplement Adherence among Female Students at SMA Muhammadiyah 15 Jakarta*. *9*(2). https://doi.org/10.21580/ns.2025.9.2.28564

Islamiyah, A. F. (2023). Hubungan Tingkat Pengetahuan dengan Kepatuhan Konsumsi Tablet Tambah Darah (TTD) pada Remaja Putri di SMP Negeri 6 Kota Kupang. *Jurnal Ilmiah Kedokteran Dan Kesehatan*, *5(1)*, 18-28. https://doi.org/10.55606/klinik.v5i1.5308

Jafari, A., Hosseini, Z., Tehrani, H., & Alami, A. (2023). Evaluation of the barriers and facilitators of iron supplementation program among adolescent females. *Clinical Nutrition ESPEN*, *56*, 36–42. https://doi.org/10.1016/j.clnesp.2023.04.024

Juffrie, M., Helmyati, S., & Hakimi, M. (2020). Nutritional anemia in Indonesia children and adolescents: Diagnostic reliability for appropriate management. *Asia Pacific Journal of Clinical Nutrition*, *29*. https://doi.org/10.6133/apjcn.202012_29(S1).03

Kamal Agus Efendi, Ari Yuniastuti, & Intan Zainafree. (2025). Perceptions and beliefs of adolescent girls regarding adherence to iron supplementation: An analysis using the health belief model. *Nursing and Health Sciences Journal (NHSJ)*, *5*(3), 364–372. https://doi.org/10.53713/nhsj.v5i3.570

Kependudukan, B., & Nasional, K. B. (2021). *Laporan Kinerja BKKBN Tahun 2020*.

McCann, S., Perapoch Amadó, M., & Moore, S. E. (2020). The role of iron in brain development: A systematic review. *Nutrients*, *12*(7), 2001. https://doi.org/10.3390/nu12072001

Ministry of Health. (2023, December 18). *Profil kesehatan indonesia 2022*. https://kemkes.go.id/id/profil-kesehatan-indonesia-2022

Ministry of Health PPU. (2025, September 17). *Kabupaten Penajam Paser Utara—SATU DATA*. https://data.kaltimprov.go.id/dataset/remaja-putri-yang-menerima-layanan-pemeriksaan-status-anemia-hemoglobin-di-kabupaten-ppu

Monika, A., Sulistyorini, C., Wahyuni, R., & Meihartati, T. (2023). Hubungan pengetahuan remaja putri tentang anemia dengan kepatuhan konsumsi tablet Fe di

SMP Negeri 36 Samarinda. *MUTIARA Multidiciplinary Scientifict Journal*, *8*(2), 22–28.

Notoatmodjo, S. (2018). Metodologi penelitian kesehatan. *Jakarta: Rineka Cipta*.

Nurjanah, A., & Azinar, M. (2023). Kepatuhan Konsumsi Tablet Tambah Darah Remaja Putri pada Sekolah Percontohan Kesehatan Reproduksi dan Seksualitas. *HIGEIA (Journal of Public Health Research and Development)*, *7*(2), 244–254.

Rakhshani, T., Masoomi, R., Yousefi, M., Kamyab, A., Taravatmanesh, S., & Jeihooni, A. K. (2025). The effect of educational intervention based on the theory of planned behavior to prevent iron deficiency anemia in female high school students. *BMC Public Health*, *25*(1), 1–8. https://doi.org/10.1186/s12889-025-22711-6

Shalini, C., Soesanti, I., Hafid, F., & Shofiya, D. (2025). Anemia Knowledge and Its Relationship with Iron Supplement Consumption and High-Iron Diet among Adolescents at SMP Muhammadiyah 7 Surabaya. *Journal of Nutrition and Health Development*, *1*(1), 44–51.

Srivastava, S., Kumar, P., Paul, R., & Debnath, P. (2022). Effect of change in individual and household level characteristics on anemia prevalence among adolescent boys and girls in India. *BMC Public Health*, *22*(1), 1478. https://doi.org/10.1186/s12889-022-13863-w

Suaib, F., Rowa, S. S., & Adwiah, W. (2024). Hubungan Kepatuhan Konsumsi Tablet Tambah Darah Dengan Kejadian Anemia Pada Remaja Putri. *Media Kesehatan Politeknik Kesehatan Makassar*, *19*(1). https://doi.org/10.32382/medkes.v19i1.549

Suraya, R., Maharani, A., Ahmadi, D., Anggita, D., Witriani, E., Hannari, M., Maulida, P., Rizqi, S., Refiana, R., & Annisa, R. (2024). Gambaran Pengetahuan Remaja Putri Tentang Anemia Gizi Di Smp Negeri 30 Medan. *Jurnal Kesehatan Tambusai*, *5*(1), 1095–1101. https://doi.org/10.36568/nersbaya.v17i3.89

Swamilaksita, P. D., Amir, H., Suryani, F., & Livana, P. (2022). Effective methods to prevent or treat anemia in adolescent women. *International Journal of Health Sciences*, *IV*, 440–452. https://doi.org/10.53730/ijhs.v6nS4.5528

Wahyuningsih, A., & Rohmawati, W. (2020). Hubungan Pengetahuan Dengan Kepatuhan Konsumsi Tablet Tambah Darah Pada Remaja Putri Di SMP N 1 Karangnongko. *INVOLUSI: Jurnal Ilmu Kebidanan*, *10*(1), 8–12. https://doi.org/10.61902/involusi.v10i1.115

World Health Organization. (2024). *Guideline on haemoglobin cutoffs to define anaemia in individuals and populations*. World Health Organization.

Zuraida, R., Lipoeto, N. I., Masrul, M., & Februhartanty, J. (2020). The effect of anemia free club interventions to improve adolescent dietary intakes in Bandar Lampung city, Indonesia. *Open Access Macedonian Journal of Medical Sciences*, *8*(B), 145–149.