



The relationship between teacher monitoring and the accuracy of iron tablet consumption among adolescent girls

Yeny Kuntari*, Kharisma Kusumaningtyas, Agustina Mar'atus Solichah

Midwifery Department, Poltekkes Kemenkes Surabaya, Surabaya, Indonesia

*Corresponding Author: yenytaufiq@gmail.com

ABSTRACT

Article history:

Submitted, 2026/06/29

Revised, 2026/07/06

Accepted, 2026/10/01

Published, 2026/10/19

Keywords:

Adolescent girls; iron tablet; teacher monitoring; anemia prevention; adherence.

Cite This Article:

Kuntari Y, Kusumaningtyas K, Solichah AM. The relationship between teacher monitoring and the accuracy of iron tablet consumption among adolescent girls. J Ilm Kebidanan (The J Midwifery). 2026;14(2):129-134. DOI: [10.33992/jik.v14i2.5216](https://doi.org/10.33992/jik.v14i2.5216)

Iron deficiency anemia remains a major public health problem among adolescent girls, and poor adherence to weekly iron tablet supplementation reduces the effectiveness of anemia prevention programs. Teacher monitoring is considered an important strategy to improve students' adherence to iron tablet consumption in school settings. This study aimed to determine the relationship between teacher monitoring and the accuracy of iron tablet consumption among adolescent girls at SMKN 1 Bendo Magetan. This quantitative study employed a cross-sectional design involving 237 female students selected using simple random sampling. Teacher monitoring data were collected using a validated questionnaire, while the accuracy of iron tablet consumption was assessed using the school monitoring checklist. Data were analyzed using the Fisher-Freeman-Halton Exact Test and Spearman correlation with a significance level of 0.05. Most respondents received good teacher monitoring (83.5%), and 90.7% demonstrated accurate iron tablet consumption. A statistically significant relationship was found between teacher monitoring and the accuracy of iron tablet consumption ($p < 0.001$), with a strong positive correlation ($r = 0.720$). Good teacher monitoring was associated with adherence to the weekly iron supplementation program. Strengthening teacher involvement through supervision, motivation, and monitoring may improve adherence to iron tablet consumption and support school-based anemia prevention programs among adolescent girls.

INTRODUCTION

Adolescent girls are among the population groups at the highest risk of developing iron deficiency anemia because of rapid physical growth during puberty, increased iron requirements, and blood loss during menstruation. Anemia in adolescence remains a major public health concern because it adversely affects physical growth, cognitive function, learning achievement, productivity, and future reproductive health. Furthermore, anemia during adolescence may increase the risk of adverse pregnancy outcomes later in life, including preterm birth, low birth weight, postpartum hemorrhage, and stunting. Therefore, preventing anemia among adolescent girls is an important strategy to improve maternal and child health outcomes and to support the achievement of the Sustainable Development Goals (SDGs).¹⁻³

The prevalence of anemia among adolescent girls in Indonesia remains high. The Indonesian Ministry of Health reported that approximately 32% of adolescent girls suffer from anemia. In East Java Province, the prevalence reaches 42%, while the prevalence in Magetan Regency is 9.15%, with 11.87% reported in the working area of Bendo Public Health Center. SMKN 1 Bendo has more female student



then any other school in Bendo district, and screening results showed that SMKN 1 Bendo recorded the highest prevalence of anemia among adolescent girls. A preliminary study conducted at SMKN 1 Bendo Magetan in December 2025 showed that 123 of 213 female students (57.75%) were anemic, indicating that anemia continues to be a significant health problem among adolescent girls in this area.⁴⁻⁶

To reduce the burden of anemia, the Indonesian government has implemented a weekly iron supplementation program for adolescent girls through schools. In this program, teachers play an important role in reminding, supervising, and motivating students to consume iron tablets regularly according to national guidelines. Consistent teacher monitoring is expected to improve adherence to iron tablet consumption and increase the effectiveness of anemia prevention programs in schools.⁵ Several previous studies have demonstrated that teacher support and school involvement are significantly associated with adherence to iron tablet consumption among adolescent girls. Nurharsiwi reported that teacher support was positively associated with compliance with iron tablet consumption among senior high school students. Likewise, Nurhayati found that school support significantly influenced adherence to weekly iron tablet consumption, while Pou et al. also reported that teacher support contributed to routine iron tablet consumption among adolescent girls.⁷⁻⁹ These studies mainly evaluated teacher support or general school support, whereas evidence specifically investigating teacher monitoring and its relationship with the accuracy of iron tablet consumption remains limited.

Despite the availability of iron tablets in schools, adherence among adolescent girls is still suboptimal. Many students do not consume the tablets because of unpleasant taste, nausea, forgetfulness, or inadequate knowledge regarding the benefits of iron supplementation. In addition, weak monitoring systems often result in tablets being distributed without ensuring that they are consumed according to the recommended schedule. These findings indicate that strengthening teacher monitoring may improve the effectiveness of the school-based iron supplementation program. Therefore, this study aimed to analyze the relationship between teacher monitoring and the accuracy of iron tablet consumption among adolescent girls at SMKN 1 Bendo Magetan.

METHODS

This study employed a quantitative analytical design with a cross-sectional approach to determine the relationship between teacher monitoring and the accuracy of iron tablet consumption among adolescent girls. A cross-sectional study measures the independent and dependent variables simultaneously at a single point in time.¹⁰ This study was conducted at SMKN 1 Bendo, Magetan, Indonesia, from January to May 2026, with data collection carried out in April 2026. The study population consisted of 579 female students in grades X, XI, and XII of the 2025/2026 academic year. The minimum sample size was calculated using the Slovin formula with a 5% margin of error, resulting in 237 respondents. Participants were selected using a simple random sampling technique. Inclusion criteria were female students who agreed to participate and were present during data collection. Students diagnosed with thalassemia, polycythemia vera, allergy to iron tablets, those consuming privately purchased iron supplements, or those unwilling to participate were excluded.^{11,12}

The independent variable was teacher monitoring, while the dependent variable was the accuracy of iron tablet consumption. Teacher monitoring was defined as systematic supervision conducted by teachers or School Health Unit (UKS) coordinators to ensure the implementation of the weekly iron supplementation program through supervision, monitoring, and motivation. Every Friday, female students at SMKN 1 Bendo usually consume iron supplements together in the school hall during *Keputrian*, a routine activity for female students. This activity facilitates teachers' use of the iron supplementation monitoring checklist. Teacher monitoring was measured using a researcher-developed questionnaire consisting of 12 Guttman-scale items with dichotomous responses ("Yes"=1; "No"=0). Teacher monitoring was categorized as good (80–100%), moderate (60–79%), and poor (<60%).⁴ The accuracy of iron tablet consumption was assessed using an iron supplementation monitoring checklist based on the national guideline. Respondents were classified as having accurate consumption if they consumed one iron tablet every week (four tablets within one month) according to the national recommendation and inaccurate consumption if they failed to meet the recommended schedule.^{4,5}

Before data collection, the questionnaire was tested for validity using the Pearson Product-Moment correlation test, and all 12 items were declared valid. Reliability testing using Cronbach's

Alpha produced a coefficient of 0.823, indicating good internal consistency.¹³ Data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics were used to summarize respondent characteristics and study variables. The association between teacher monitoring and the accuracy of iron tablet consumption was initially analyzed using the Chi-square test. Because more than 20% of the expected cell frequencies were less than five, the Fisher-Freeman-Halton Exact Test was applied as an alternative. The strength of the relationship was further assessed using Spearman's correlation coefficient. Statistical significance was set at $p < 0.05$. This study has been approved by the Ethics Committee of Politeknik Kesehatan Kemenkes Surabaya with approval number EA/4211/KEPK-Poltekkes_Sby/V/2026.

RESULT AND DISCUSSION

A total of 237 female students participated in this study. Most respondents were aged 16 years (61.2%), followed by those aged 17 years (21.5%) and 15 years (14.8%). Based on grade level, the majority were Grade X students (70.9%), followed by Grade XI (22.8%) and Grade XII (6.3%).

Table 1. Characteristics of respondents

Characteristics	n	%
Age (years)		
13	1	0.4
15	35	14.8
16	145	61.2
17	51	21.5
18	4	1.7
19	1	0.4
Grade		
Grade X	168	70.9
Grade XI	54	22.8
Grade XII	15	6.3

Teacher monitoring was assessed based on each student's experience and perception of the supervision they received during the iron tablet supplementation program. Although all respondents attended the same school, teacher monitoring reflected differences in the frequency, consistency, and quality of monitoring experienced by individual students. Overall, most respondents perceived teacher monitoring as good (83.5%), while 8.4% and 8.0% reported moderate and poor teacher monitoring, respectively. Furthermore, 90.7% of respondents consumed iron tablets according to the recommended schedule.

This study found that most respondents perceived teacher monitoring as good (83.5%), indicating that teachers actively supervised, motivated, and monitored students' adherence to the weekly iron supplementation program. Teacher monitoring in schools extends beyond administrative supervision, serving as a behavioral reinforcement strategy that encourages students to comply with health programs. Schools provide an ideal setting for implementing adolescent health interventions because students spend a substantial portion of their daily activities within the school environment. Consequently, consistent teacher involvement may improve adherence to preventive health behaviors, including regular iron tablet consumption.¹⁴ The present study also demonstrated that 90.7% of respondents consumed iron tablets according to the recommended schedule. This finding indicates a high level of adherence to the national iron supplementation program among female students. Regular weekly iron supplementation is essential for preventing iron deficiency anemia, particularly among adolescent girls who have increased iron requirements due to rapid growth and menstrual blood loss. Appropriate adherence to iron tablet consumption contributes to maintaining adequate iron stores before pregnancy and may reduce the risk of anemia during future reproductive years.¹⁵

Table 2. Distribution of teacher monitoring and accuracy of iron tablet consumption

Variables	n	%
Teacher monitoring		
Good	198	83.5
Moderate	20	8.4
Poor	19	8.0
Accuracy of iron tablet consumption		
Accurate	215	90.7
Inaccurate	22	9.3

The bivariate analysis demonstrated a significant association between teacher monitoring and the accuracy of iron tablet consumption among adolescent girls (Table 3). All respondents who received good teacher monitoring showed accurate iron tablet consumption (198/198, 100%). In contrast, inaccurate consumption was more frequently observed among respondents who received moderate or poor teacher monitoring.

Table 3. Association between teacher monitoring and accuracy of iron tablet consumption

Teacher monitoring	Accurate n (%)	Inaccurate n (%)	Total	p-value
Good	198 (100.0)	0 (0.0)	198	
Moderate	9 (45.0)	11 (55.0)	20	
Poor	8 (42.1)	11 (57.9)	19	
Total	215	22	237	<0.001*

*Fisher-Freeman-Halton Exact Test.

The Pearson chi-square test initially indicated a significant association ($p < 0.001$). However, because two cells (33.3%) had expected counts below five, the Fisher-Freeman-Halton Exact Test was applied. The exact test confirmed a statistically significant relationship between teacher monitoring and the accuracy of iron tablet consumption ($p < 0.001$). Spearman's correlation analysis further demonstrated a strong positive correlation between the two variables ($r = 0.720$; $p < 0.001$).

The main finding of this study was the significant relationship between teacher monitoring and the accuracy of iron tablet consumption ($p < 0.001$), with a strong positive correlation ($r = 0.720$). Students who received good teacher monitoring were more likely to consume iron tablets according to the recommended schedule than those receiving moderate or poor monitoring. This finding supports previous studies reporting that teacher support and school-based supervision significantly improve adherence to iron supplementation programs among adolescent girls. Teacher monitoring functions not only as direct supervision but also as continuous motivation, health education, and social support, which strengthen students' commitment to healthy behaviors.^{9,16,17} The implementation of the weekly iron supplementation program during the Keputrian activity at SMKN 1 Bendo may explain the high adherence observed in this study. Teacher monitoring may have varied among students because some were absent due to illness, participated in on-the-job training, or attended other school activities. These circumstances may have influenced students' perceptions of the continuity of teacher monitoring. Conducting supervised group consumption under teachers' direct observation enables immediate monitoring, ensures that tablets are actually consumed, and provides opportunities to address students' concerns regarding side effects or misconceptions. This structured school-based approach may enhance the effectiveness of the national iron supplementation program and could be considered for implementation in other secondary schools to improve adolescent anemia prevention.

CONCLUSION

Most adolescent girls at SMKN 1 Bendo Magetan experienced good teacher monitoring and demonstrated accurate adherence to the weekly iron tablet supplementation program. A statistically significant and strong positive relationship was identified between teacher monitoring and the accuracy of iron tablet consumption. These findings suggest that active teacher involvement through regular supervision, motivation, and monitoring plays an important role in improving adherence to iron

supplementation among adolescent girls. Strengthening teacher participation in school-based iron supplementation programs may contribute to more effective anemia prevention among adolescents.

ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the Director of Poltekkes Kemenkes Surabaya, the Department of Midwifery, the Principal of SMKN 1 Bendo Magetan, the teachers, and all female students who participated in this study. The authors also appreciate all individuals who contributed to the completion of this research.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

DECLARATION OF ARTIFICIAL INTELLIGENCE USE

The authors used ChatGPT (OpenAI, GPT-6) to assist with language editing, grammar improvement, and manuscript formatting. The authors reviewed and verified the AI-assisted suggestions and take full responsibility for the accuracy, originality, and integrity of the manuscript.

AUTHOR CONTRIBUTIONS

YK contributed to the conceptualization, methodology, data collection, data analysis, investigation, and writing of the original draft, including manuscript preparation and editing. KK and AMS contributed to supervision, validation, critical review, and revision of the manuscript. All authors reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

REFERENCES

1. Dungga EF, Ihsan M. Pendidikan kesehatan reproduksi pada remaja. *J Pengabd Masy Farm Pharmacare Soc.* 2023;2(3):134-9. doi:10.37905/phar.soc.v2i3.21146.
2. Dewi VNL, Kumalasari D, Mutiara VS, Sari NDF. Bagaimana mencegah anemia pada remaja dan wanita usia subur: literature review. *J Ilmu Kesehat Mandira Cendikia.* 2023;2(8):374-88.
3. Izzara WA, Yulastri A, Erianti Z, Putri MY, Yuliana Y. Penyebab, pencegahan dan penanggulangan anemia pada remaja putri (studi literatur). *J Multidisiplin West Sci.* 2023;2(12):1051-64. doi:10.58812/jmws.v2i12.817.
4. Kementerian Kesehatan Republik Indonesia. Buku saku anemia remaja dan ibu hamil. Jakarta: Kementerian Kesehatan Republik Indonesia; 2023.
5. Kementerian Kesehatan Republik Indonesia. Pedoman pemberian tablet tambah darah (TTD) bagi remaja putri pada masa pandemi COVID-19 bagi tenaga kesehatan. Jakarta: Kementerian Kesehatan Republik Indonesia; 2020.
6. Kementerian Kesehatan Republik Indonesia. Pedoman penatalaksanaan pemberian tablet tambah darah. Jakarta: Kementerian Kesehatan Republik Indonesia; 2018.
7. Nurharsiwi RT. Hubungan sikap siswi dan dukungan guru terhadap kepatuhan konsumsi tablet tambah darah pada siswi SMA Negeri 1 Gamping. 2023;2:11.
8. Nurhayati. Hubungan dukungan sekolah dengan kepatuhan minum tablet tambah darah pada siswi SMPN 1 Lubuk Besar. Yogyakarta: Politeknik Kesehatan Kementerian Kesehatan Yogyakarta; 2023.
9. Pou R, Azhari ES, Virzanisda R. Dukungan guru terhadap kepatuhan konsumsi tablet tambah darah rutin remaja putri sekolah. *J Penelit Karya Ilm Lemb Penelit Univ Trisakti.* 2024;9:97-105. doi:10.25105/pdk.v9i1.16927.
10. I Ketut S. Metodologi penelitian kesehatan. Mayasari L, editor. Yogyakarta; 2023.
11. Prawirohartono E. Metodologi penelitian klinis. Penerbit NEM; 2024.
12. Ggreni D. Buku ajar. Mojokerto: STIKes Majapahit; 2022.

13. Nursalam. Metodologi penelitian ilmu keperawatan. Jakarta: Salemba Medika; 2020.
14. Saputro NT, Pradana AE. Monitoring pelayanan rekam medis. Yogyakarta: Poltekkes Kemenkes Yogyakarta; 2022. p. 2-24.
15. Priskila L, Wicaksono H, Jhonatan M, Arkananta EVP, Warsito MYPS, Surya HG, et al. Tampilan anemia pada remaja: kajian pustaka. Med Rev. 2025;38(5):19-28.
16. Damayanti F, Kusharisupeni K, Adawiyah AR, Hymawati H. Determinan kepatuhan mengonsumsi tablet tambah darah (TTD) pada remaja putri di SMAN 02 Gunung Putri Kabupaten Bogor. J Untuk Masy Sehat. 2025;9(1):15-31. doi:10.52643/jukmas.v9i1.4891.
17. Wardani DSSJ. Studi literatur: faktor-faktor yang berhubungan dengan kepatuhan konsumsi tablet tambah darah pada remaja putri di Indonesia. Media Gizi Kesmas. 2024;13(2):878-97.