

The Effect of Anemia Education on Adolescents' Intention to Undergo Hemoglobin Testing

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ABSTRACT

Anemia remains a common health problem among adolescents, characterized by low hemoglobin (Hb) levels that affect health, academic performance, productivity, and the overall quality of human resources in the future. This study aimed to determine the effect of anemia education on adolescents' intention to undergo hemoglobin testing at SMP Negeri 1 Gamping, Yogyakarta. The research employed a quantitative approach with a pre-experimental method using a one-group pre-test and post-test design. A total of 36 respondents participated in the study. The instrument used was a questionnaire. The participants, aged 12–13 years, consisted of an equal proportion of males and females. Before the intervention, most respondents (78%) demonstrated a moderate level of intention to undergo hemoglobin testing. After the anemia education intervention, the proportion of respondents with a high level of intention increased from 11% to 22%, while those with a low level of intention decreased from 11% to 8%. The Paired Sample t-Test yielded a Sig. (2-tailed) value of 0.000 (< 0.05), indicating a significant effect of anemia education on adolescents' intention to undergo hemoglobin testing. The findings suggest that anemia education is effective in enhancing adolescents' intention to have their hemoglobin levels checked, making it a valuable preventive educational strategy for the early detection of anemia among adolescents.

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Introduction

Preventive and control behaviors toward anemia can only occur when adolescents have the intention to act. Intention is an internal component that reflects a person's willingness to perform a certain behavior [1]. According to the Theory of Planned Behavior (TPB), intention is formed through three dimensions: attitude, subjective norms, and perceived behavioral control. TPB describes that an individual will behave when they believe that their actions will lead to satisfaction (attitude), are valued by important others (subjective norm), and when they feel they have the knowledge, skills, and confidence to perform the behavior (perceived behavioral control) [2]. In line with TPB, compliance with initial screening and hemoglobin testing among adolescents is influenced by their intention, which is shaped by attitude, subjective norms, and behavioral control.

Based on TPB, there are three main variables that predict behavioral intention: attitude toward the behavior, subjective norm, and perceived behavioral control. Intention is grounded in these three constructs and serves as the most influential factor in determining behavior. Intention is also assumed to be the direct determinant of behavior and guides actions under one's control. The stronger a person's intention to act, the greater the likelihood that the behavior will occur. Therefore, to understand someone's behavior, it is essential to first understand their intentions [3].

According to Green [4], behavior is determined by three factors: Predisposing Factors (including age, occupation, education, knowledge, and attitude), Enabling Factors (such as the physical environment and access to health facilities), and Reinforcing Factors (such as support from family or community leaders).

One effective effort to enhance adolescents' behavioral intention—especially among adolescent girls—is through health education. Health education is an activity aimed at providing individuals or groups with knowledge, information, and skills to shape their intentions, attitudes, and healthy behaviors. Essentially, health education is a non-formal activity designed to transform communities toward better health outcomes [5]. The primary goal of health education is to change intention and behavior; therefore, understanding the target audience and the theoretical foundation of behavior change is crucial [6].

In the Special Region of Yogyakarta (DIY), the prevalence of anemia among adolescent girls has increased significantly. Data from Riskesdas show that the prevalence rose from 37.1% in 2013 to 48.9% in 2018. The most vulnerable age groups are those aged 15–24 and 25–34 years [7]. A survey conducted by the Yogyakarta Health Office in 2018, involving 1,500 adolescent girls across five regencies and cities, revealed that approximately 19.3% suffered from anemia [8].

Furthermore, data from the Sleman Health Office in 2018 indicated that the prevalence of anemia among adolescent girls increased from 12.6% in 2017 to 22.86% in 2018 [9].

To determine whether a person has anemia or iron deficiency, a blood examination is required. Anemia is diagnosed through hemoglobin (Hb) testing. The diagnosis is confirmed via laboratory testing of blood hemoglobin levels using the Cyanmethemoglobin method, as stipulated in Minister of Health Regulation No. 37 of 2012 concerning the Organization of Public Health Center Laboratories [10]. In hospitals, Hb testing is usually performed using a hematology analyzer, while community health centers (puskesmas) often use photometers or the Sahli method. In lower-level health facilities, such as auxiliary health centers or village clinics, Point of Care Testing (POCT) with portable hemoglobinometers and capillary blood samples is commonly used [11].

Given the urgency of adolescent anemia and its complex determinants, various strategies have been implemented to address this issue. Midwives, as health educators, play a key role in providing health education to adolescents. Health education serves as an effective way to disseminate health information, encourage community participation, and promote self-reliance in health management. Lecture or discussion methods are commonly used to foster interaction between health educators and participants. Health education aims to transform unhealthy behaviors into healthy ones through persuasive communication that helps participants understand, internalize, and act upon health messages [12].

The government has also taken several initiatives to prevent anemia among adolescent girls, including routine hemoglobin testing, iron tablet supplementation, improving adolescent awareness about anemia, strengthening the role of school health units, and evaluating health education programs led by health professionals [13].

Based on a preliminary study conducted with 15 randomly selected students, it was found that 12 out of 13 had no intention of undergoing hemoglobin testing. This finding highlights the need for a study to examine the effect of anemia education on adolescents' intention to undergo hemoglobin testing at SMP Negeri 1 Gamping, Yogyakarta. Therefore, this study aims to determine the influence of anemia education on adolescents' intention to undergo hemoglobin testing.

Materials and Methods

This study employed a quantitative approach with a pre-experimental design, specifically the one-group pre-test and post-test design. The research used primary data collected directly from respondents. The population consisted of 128 adolescents enrolled at SMP Negeri 1

Gamping. The sample size was determined using the Slovin formula, resulting in 36 respondents who met the inclusion criteria for this study.

The inclusion criteria included adolescents within the working area of Puskesmas Gamping (i.e. students of SMP Negeri 1 Gamping, Yogyakarta) who were willing to participate and had signed the informed consent form. The exclusion criteria included adolescents who were unwilling or refused to fill out the informed consent form, as well as those who were currently ill.

The research procedure began with the researcher establishing communication with the school authorities to determine the appropriate time and location for conducting the study. After obtaining approval, the researcher gathered the selected respondents who met the inclusion and exclusion criteria. The researcher then clearly explained the objectives, benefits, and procedures of the study in an easily understandable manner. Participants were asked to sign the informed consent form as a voluntary agreement to take part in the research.

Fig. 1 shows the situation during the respondent gathering process in the school hall of SMP Negeri 1 Gamping.



Fig. 1. Situation during Respondent Gathering in the School Hall

The next stage was the pre-test, where respondents filled out a questionnaire measuring their intention to undergo hemoglobin testing.



Fig. 2. Respondents Completing the Pre-test Questionnaire

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Following the pre-test, respondents received an intervention in the form of anemia education delivered through a lecture and discussion method lasting approximately 20 minutes, using leaflet media.



Fig. 3. Anemia Education Intervention Session

During the session, respondents were encouraged to ask questions and engage in discussion to promote two-way communication. After the education session, respondents were asked to fill out the same questionnaire as a post-test to measure any changes in their intention after receiving the intervention.



Fig. 4. Respondents Completing the Post-test Questionnaire

All pre-test and post-test data were collected by the researcher, ensuring that no questionnaires were incomplete. The data collection process also included evaluation and documentation.

Ethical clearance for this research was granted by Universitas Aisyiyah Yogyakarta, issued in Yogyakarta on August 19, 2025, under approval number 4764/KEP-UNISA/VIII/2025.

Results

A. Respondent Characteristics

Table 1 presents the demographic characteristics of the respondents based on age and gender. The data indicate that participants were predominantly 12 years old (53%), while those aged 13 years accounted for 47% of the total sample. In terms of gender distribution, the respondents

were evenly divided, with 50% female and 50% male. This balanced composition suggests that the study sample represents both age and gender groups proportionally, allowing for unbiased analysis across demographic variables.

Table 1. Frequency Distribution of Age and Gender

Characteristics	Frequency (f)	Percentage (%)
Age (years)		
• 12	19	53
• 13	17	47
Gender		
• Female	18	50
• Male	18	50
Total	**36**	**100**

Source: Primary Data

B. Adolescents' Intention Before Health Education (Pre-Test)

Table 2 illustrates the distribution of adolescents' intentions before receiving health education. The data reveal that the majority of respondents (78%) demonstrated a moderate level of intention to undergo hemoglobin testing prior to the intervention. A smaller proportion, 11%, exhibited low intention, while another 11% showed high intention. These findings suggest that before the health education program, most adolescents were moderately motivated, indicating potential for improvement through targeted educational efforts.

Table 2. Adolescents' Intention Before Health Education (Pre-Test)

Pre-Test Category	Frequency (f)	Percentage (%)
Low	4	11
Moderate	28	78
High	4	11
Total	**36**	**100**

Source: Primary Data

C. Adolescents' Intention After Health Education (Post-Test)

Table 3 presents the distribution of adolescents' intentions after participating in the health education intervention. The results indicate that the majority of respondents (70%) maintained a moderate level of intention to undergo hemoglobin testing. However, there was a positive shift, as the proportion of those with high intention increased from 11% to 22%, while those with low intention decreased slightly from 11% to 8%. This improvement suggests that the health education program effectively enhanced adolescents' motivation and awareness regarding hemoglobin testing. These findings indicate that although most respondents remained in the moderate category, the overall upward shift in intention levels reflects the positive behavioral influence of the health education intervention.

Table 3. Adolescents' Intention After Health Education (Post-Test)

Post-Test Category	Frequency (f)	Percentage (%)
Low	3	8
Moderate	25	70
High	8	22
Total	**36**	**100**

Source: Primary Data

D. The Effect of Anemia Education on Adolescents' Intention to Undergo Hemoglobin Testing

Table 4 presents the cross-tabulation analysis of adolescents' intentions before and after receiving anemia education. The data reveal notable shifts in respondents' intention levels following the intervention. Among the four respondents who initially demonstrated low intention, two (5.6%) remained in the low category, one (2.8%) moved to moderate, and one (2.8%) increased to high intention. Of the 28 respondents with moderate intention before the intervention, most (24 respondents or 66.7%) maintained the same level, while one respondent (2.8%) decreased to low and three respondents (8.3%) progressed to high intention. Meanwhile, all four respondents who initially had high intention consistently remained in the high category after the intervention.

Table 4. Cross Tabulation of the Effect of Anemia Education on Adolescents' Intention to Undergo Hemoglobin Testing

	Post-Test						Total		P-Value
	Low		Moderate		High				
Pre-Test	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
Low	2	5.6	1	2.8	1	2.8	4	11.1	0.000
Moderate	1	2.8	24	66.7	3	8.3	28	77.8	
High	0	0	0	0	4	11.1	4	11.1	
Total	3	8.3	25	69.4	8	22.2	36	100	

Source: SPSS Output

Overall, there was a clear upward trend in adolescents' intention to undergo hemoglobin testing. The proportion of respondents with high intention increased from 11.1% to 22.2%, whereas those with low intention decreased slightly from 11.1% to 8.3%. These findings suggest that the anemia education intervention effectively enhanced students' readiness and motivation to participate in hemoglobin testing. Furthermore, the results of the Paired Sample t-Test showed a significant difference between pre-test and post-test scores, with a Sig. (2-tailed) value of 0.000 (< 0.05). This statistical result confirms that anemia education had a significant and positive impact on improving adolescents' intention to undergo hemoglobin testing.

Discussion

A. Adolescents' Intention to Undergo Hemoglobin Testing Before the Counseling Intervention

Based on the frequency distribution of adolescents' intention levels before the counseling (pre-test), it was found that most respondents had a moderate level of intention, totaling 28 participants (78%). Meanwhile, respondents with low and high intention levels each accounted for 4 participants (11%). These results indicate that before the anemia counseling was conducted, the majority of adolescents did not yet have an optimal understanding of anemia or the importance of hemoglobin testing. This situation underscores the need for an educational intervention to strengthen adolescents' intentions, which in turn is expected to encourage them to undergo hemoglobin tests.

This finding aligns with the Theory of Planned Behavior (TPB), which posits that intention is the primary determinant of behavior. Intention is influenced by three major components: attitude toward the behavior, subjective norms, and perceived behavioral control [14]. In this context, adolescents' attitudes toward hemoglobin testing, social influences (such as peers, teachers, or parents), and perceptions of accessibility to health services collectively determine the strength of their behavioral intentions.

The predominance of moderate intention levels suggests that although adolescents are aware of the need to maintain their health, they have not fully understood the risks of anemia or the benefits of testing. This condition is likely influenced by a lack of prior information. According to Armini [15], low knowledge levels can negatively affect adolescents' intention to engage in preventive health behaviors. Similarly, Wati and Wulandari [16] found that adolescents with higher levels of health literacy and knowledge tend to show stronger intentions to participate in health screening activities.

Considering respondents' characteristics, most of those with moderate intention levels were in the middle-adolescent age group (12–13 years). At this stage, adolescents are still forming their identity, making them more vulnerable to external influences. Limited family support and motivation also reduce their initiative to maintain health. Conversely, respondents with high intention levels generally had better knowledge, gained through school information or personal experiences with anemia, which helped foster stronger motivation to undergo hemoglobin testing.

This finding supports Oktaviani et al. [17], who emphasized that adolescents' characteristics—particularly age, knowledge level, and gender—significantly influence their attitudes and intentions toward health behaviors. Although most respondents fell within the

moderate intention category, individual characteristics and family environment played an essential role in shaping readiness to participate in hemoglobin testing.

These results are consistent with international research [18], which demonstrated that TPB-based educational interventions significantly increased anemia-prevention intentions among female high school students in Iran by improving attitudes, subjective norms, and perceived behavioral control. Similarly, Choudhary et al. [19] in India found that lack of knowledge and limited access to health services were major barriers to adolescents' intentions to seek health examinations. Thus, the relatively low intention levels in this study reflect not only local conditions but also a global pattern influenced by inadequate education and accessibility.

Therefore, educational counseling is vital in raising adolescents' awareness and motivation. Targeted health education can enhance positive attitudes, strengthen social norms, and reduce perceived barriers, thereby increasing adolescents' willingness to undergo hemoglobin testing. The pre-test results highlight the urgency of such educational interventions as a preventive strategy against adolescent anemia.

B. Adolescents' Intention to Undergo Hemoglobin Testing After the Counseling Intervention

Based on the post-test results, most respondents still demonstrated a moderate level of intention, totaling 25 participants (70%). However, the number of adolescents with high intention increased to 8 (22%), while those with low intention decreased to 3 (8%). These findings suggest that anemia counseling improved adolescents' intentions, although the majority remained in the moderate category. This aligns with the research objective, which aimed to identify the positive effect of educational counseling on adolescents' understanding of anemia, thereby encouraging hemoglobin testing intentions.

In accordance with TPB, intention is the direct determinant of behavior, influenced by cognitive factors (such as knowledge) and external factors (such as social support). Counseling as an educational intervention successfully improved adolescents' understanding of anemia, resulting in more positive attitudes toward hemoglobin testing. This is supported by Nurhidayah and Fitriani [20], who found that health education significantly enhances adolescents' intentions to engage in anemia-prevention behaviors.

Anemia counseling effectively fostered positive attitudes by providing new insights into the impact of anemia on health and academic performance. Additionally, subjective norms were strengthened as adolescents felt increased support from teachers, health workers, and parents. Another key factor—perceived behavioral control—also improved, as participants realized that hemoglobin testing is both simple and beneficial. With improvements across these three TPB components, adolescents developed stronger intentions to undergo hemoglobin testing [20].

Although most respondents remained in the moderate intention category, the increase in those with high intention reflects the positive influence of counseling on motivation. This reinforces the idea that health education plays a crucial role in altering perceptions and enhancing awareness of early anemia detection. According to Armini [15], increased knowledge through education can significantly strengthen adolescents' preventive health intentions.

The reduction in low-intention respondents also indicates a shift from indifference to greater awareness of health importance. This aligns with Dewi et al. [21], who reported that health counseling reduces cognitive barriers, enhances intrinsic motivation, and strengthens adolescents' intention to undergo hemoglobin testing.

Internationally, Sadeghi et al. [18] found that TPB-based educational interventions significantly improved intention and preventive behavior regarding anemia among Iranian female students by enhancing attitudes, norms, and perceived behavioral control. Likewise, Muhammadi et al. [22] confirmed that TPB interventions among female adolescents led to significant improvements in both intention and preventive behavior ($P < 0.05$).

Therefore, post-test findings clearly indicate that anemia counseling positively influenced adolescents' intention to undergo hemoglobin testing. Despite the majority remaining in the moderate category, the increase in high-intention respondents and the decline in low-intention ones confirm that educational interventions are effective in preparing adolescents for preventive health actions against anemia.

C. The Effect of Anemia Counseling on Adolescents' Intention to Undergo Hemoglobin Testing

The results of the Paired Sample t-Test showed a Sig. (2-tailed) value of 0.000 (< 0.05), indicating that H_0 is rejected and H_a is accepted. This means there is a significant effect of anemia counseling on the improvement of adolescents' intention to undergo hemoglobin testing. Theoretically, this result aligns with Ajzen's [14] TPB, which asserts that intention is the key predictor of behavior. The increase in adolescents' intention can be explained by changes in the three main TPB components: attitude, subjective norms, and perceived behavioral control. Counseling successfully improved adolescents' attitudes toward hemoglobin testing, strengthened social support from peers and adults, and increased perceived ease and benefit of the behavior [20].

Empirically, this is consistent with Nurhidayah & Fitriani [20], who reported that health education significantly enhances adolescents' intentions to prevent anemia. Similarly, Armini (2022) found that knowledge gained from counseling encourages healthy behaviors, including regular health checkups. Dewi et al. (2021) also confirmed that counseling effectively boosts motivation and reduces behavioral barriers among adolescents regarding early anemia detection.

Thus, the statistical findings affirm that anemia counseling plays a significant role in increasing adolescents' intention to undergo hemoglobin testing. Educational interventions not only improve cognitive aspects (knowledge) but also influence affective (attitude) and social (support) dimensions, which together foster stronger behavioral intentions toward anemia prevention.

Conclusion

Based on the results of this study on the effect of anemia counseling on adolescents' intention to undergo hemoglobin testing at SMP Negeri 1 Gamping, Yogyakarta, it can be concluded that the research involved 36 respondents aged 12–13 years, of whom 53% were 12 years old and 47% were 13 years old, with an equal gender distribution of 18 males (50%) and 18 females (50%). Before the intervention (pre-test), most respondents were in the moderate intention category (28 respondents or 78%), while the low and high categories each accounted for 4 respondents (11%). After the counseling (post-test), changes were observed: respondents in the high intention category increased to 8 (22%), and those in the low category decreased to 3 (8%), though the majority remained in the moderate category (25 respondents or 70%). The Paired Sample t-Test analysis showed a Sig. (2-tailed) value of 0.000 (< 0.05), indicating that H_0 was rejected and H_a accepted. This finding confirms a significant effect of anemia counseling on increasing adolescents' intention to undergo hemoglobin testing.

Limitations

First, the research design employed a pre-test and post-test without a control group, making it difficult to completely eliminate the influence of external factors on changes in adolescents' intentions. Second, the sample size was relatively small, which limits the generalizability of the findings to other adolescent populations with different social, cultural, or economic backgrounds. Third, the use of a self-reported questionnaire relied heavily on the honesty of respondents, which may have introduced social desirability bias. Fourth, the counseling intervention was conducted only once over a relatively short period, which may not have produced a stronger or more sustained impact on adolescents' intentions. Lastly, the study focused solely on intention, without measuring actual behavioral changes therefore the long-term impact of the counseling cannot be fully determined.

Recommendations

Adolescents are encouraged to increase their awareness of the importance of maintaining good health, especially in the prevention and early detection of anemia. They should begin developing healthy habits such as consuming iron-rich foods, maintaining an active lifestyle, and

regularly undergoing hemoglobin testing. These efforts can optimize anemia prevention from an early age.

Schools are expected to take an active role in providing continuous health education, particularly about anemia, through regularly scheduled counseling programs. Collaboration with community health centers (puskesmas) or local health professionals can also facilitate mass hemoglobin screening, motivating students to be more health-conscious. Furthermore, schools should support these efforts by offering healthy canteen options and promoting health-related extracurricular activities that contribute to anemia prevention.

Future research is encouraged to involve larger and more diverse samples across different educational levels to produce more representative findings. Subsequent studies should also examine actual behavioral outcomes, such as whether adolescents undergo hemoglobin testing after receiving counseling. Moreover, extended or varied interventions, including repeated sessions or digital-based health education methods, are recommended to achieve more optimal and sustainable results.

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Conflict of Interest

The authors declare that this study was conducted objectively and independently, without any influence from external parties that could affect the results or interpretations. Therefore, the authors affirm that there is no conflict of interest in the conduct or reporting of this research.

References

[1] I. Ajzen and M. Fishbein, *Theories of Cognitive Self-Regulation*. New York: Routledge, 2020.
[2] M. A. Ramdhani, *Psikologi Sosial: Konsep dan Penerapan Theory of Planned Behavior*. Bandung: Alfabeta, 2021.
[3] S. Nasrah, A. Putri, and D. Wahyuni, "Penerapan theory of planned behavior dalam perilaku kesehatan remaja," *Jurnal Psikologi Sosial*, vol. 9, no. 2, pp. 55–63, 2021.
[4] D. Mayasari, R. Putra, and H. Nugroho, "Analisis faktor predisposisi, pemungkin, dan penguat terhadap perilaku pencegahan anemia," *Jurnal Kesehatan Masyarakat Andalas*, vol. 15, no. 1, pp. 45–53, 2021.
[5] S. Notoatmodjo, *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta, 2020.
[6] N. Nursalam and F. Efendi, *Pendidikan dalam Keperawatan: Aplikasi untuk Praktik Profesional*. Jakarta: Salemba Medika, 2021.
[7] Badan Penelitian dan Pengembangan Kesehatan, *Laporan Nasional Riset Kesehatan Dasar (Riskesdas) 2018*. Jakarta: Kementerian Kesehatan RI, 2018.
[8] R. Wardani, P. Lestari, and M. Wibowo, "Prevalensi anemia pada remaja putri di Daerah Istimewa Yogyakarta," *Jurnal Biomedika dan Kesehatan*, vol. 7, no. 1, pp. 25–32, 2024.
[9] A. Dewinta, I. Cahyani, and R. Prabowo, "Peningkatan kasus anemia pada remaja putri di Kabupaten Sleman tahun 2017–2018," *Jurnal Kesehatan Reproduksi*, vol. 15, no. 2, pp. 110–118, 2024.

[10] S. Marsudi and A. Wahid, "Pemeriksaan hemoglobin dalam deteksi dini anemia sesuai Permenkes No. 37/2012," *Jurnal Teknologi Laboratorium*, vol. 12, no. 2, pp. 65–73, 2023.
[11] R. Ismawatie, D. Rahmah, and L. Nurhayati, "Penggunaan metode POCT hemoglobinometer portable dalam skrining anemia remaja," *Indonesian Journal of Clinical Pathology and Medical Laboratory*, vol. 29, no. 1, pp. 21–28, 2023.
[12] J. Lyong, M. Hutapea, and F. Simbolon, "Efektivitas metode ceramah dalam penyuluhan kesehatan pada remaja," *Jurnal Promosi Kesehatan Indonesia*, vol. 18, no. 3, pp. 140–149, 2020.
[13] Kementerian Kesehatan Republik Indonesia, *Pedoman Pencegahan dan Penanggulangan Anemia pada Remaja Putri*. Jakarta: Kemenkes RI, 2020.
[14] I. Ajzen, "The theory of planned behavior," *Organizational Behavior and Human Decision Processes*, vol. 50, no. 2, pp. 179–211, 1991, doi: 10.1016/0749-5978(91)90020-T.
[15] N. K. A. Armini, "Anemia prevention behavior in female adolescents and related factors based on Theory of Planned Behavior: A cross-sectional study," *Bali Medical Journal*, vol. 11, no. 1, pp. 118–125, 2022.
[16] N. K. Wati and N. P. Wulandari, "Hubungan pengetahuan gizi dengan perilaku pencegahan anemia pada remaja putri (The relationship between nutritional knowledge and anemia prevention behavior among female adolescents)," *Jurnal Kesehatan Reproduksi*, vol. 12, no. 3, pp. 175–182, 2021.
[17] N. L. Oktaviani, R. Puspitasari, and I. Rahmawati, "Faktor-faktor yang memengaruhi niat remaja dalam pencegahan anemia (Factors influencing adolescent intention in anemia prevention)," *Jurnal Kesehatan Reproduksi*, vol. 11, no. 2, pp. 85–92, 2020.
[18] S. Sadeghi, M. Asgari, A. A. Sadeghi, and A. R. Karimi, "The effect of educational intervention based on the theory of planned behavior to prevent iron deficiency anemia in female high school students," *J. Educ. Health Promot.*, vol. 13, no. 75, pp. 1–7, 2024, doi: 10.4103/jehp.jehp_1103_23.
[19] N. Choudhary, R. Kamboj, and P. Singh, "Knowledge and practices regarding anemia among adolescent girls: A cross-sectional study in rural India," *Int. J. Community Med. Public Health*, vol. 8, no. 6, pp. 2812–2817, 2021, doi: 10.18203/2394-6040.ijcmph20212164.
[20] R. Nurhidayah and A. Fitriani, "Pengaruh pendidikan kesehatan terhadap niat remaja putri dalam melakukan pencegahan anemia (The effect of health education on female adolescents' intention to prevent anemia)," *Jurnal Kesehatan Reproduksi*, vol. 11, no. 3, pp. 145–153, 2020.
[21] K. S. Dewi, I. P. Lestari, and A. Ramadhani, "Efektivitas penyuluhan kesehatan terhadap peningkatan pengetahuan dan sikap remaja tentang anemia (The effectiveness of health education on improving adolescents' knowledge and attitudes toward anemia)," *Jurnal Promosi Kesehatan Indonesia*, vol. 16, no. 2, pp. 132–141, 2021.
[22] M. Mohammadi, H. Tehrani, H. Esmaily, N. Palahang, and M. Vahedian-Shahroodi, "Nutritional education of anemia: applying the theory of planned behavior to student girls," *J. Educ. Community Health*, vol. 11, no. 1, pp. 31–37, 2024, doi: 10.34172/jech.2694.
[23] T. Rakhshani *et al.*, "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*, vol. 25, article 1448, 2025, doi: 10.1186/s12889-025-22711-6.

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