Jurnal Media Abdimas (JURMEDIMAS)
Volume 3, Nomor 2 October 2025
https://jurnal.kusumalintasmedia.com/index.php/jurmedimas

HEALTH EDUCATION ON THE IMPORTANCE OF EARLY DETECTION OF ANEMIA IN ADOLESCENT GIRLS

Nurul Pujiastuti[1*], Finta Isti Kundarti[2], Esti Widiani[3]
[1,3] Jurusan Keperawatan, Politeknik Kesehatan Malang
[2] Jurusan Kebidanan, Politeknik Kesehatan Malang
Correspondence author's email: nurul_pujiastuti@poltekkes-malang.ac.id

ABSTRACT

Anemia among adolescent girls remains a serious public health issue as it can have long-term impacts on the quality of future generations. Adolescent girls who experience anemia are at risk of concentration difficulties, fatigue, and complications during future pregnancies. The purpose of this activity was to improve the knowledge and skills of adolescent girls in conducting early detection of anemia through structured health education. The activity was carried out at SMK Al Inayah Purwosari. The implementation method included preparation, interactive education on the importance of early anemia detection, training on physical symptom examination, and random hemoglobin (Hb) testing. Evaluation was conducted using pre-test and post-test to assess knowledge improvement, as well as observation of participants' practical skills. A total of 30 adolescent girls actively participated in this activity. The results showed an increase in knowledge about anemia, from 60% of participants categorized as having poor knowledge in the pre-test to 91% with good knowledge in the post-test. The adolescents' skills in recognizing physical signs of anemia also increased from 53% to 87%. This educational activity proved effective in enhancing awareness and the ability of adolescent girls to perform early anemia detection. It is expected that this program will encourage the formation of youth anemia awareness cadres in schools as a sustainable effort to prevent anemia and improve adolescent nutritional status.
Keyword: *Anemia; early detection; adolescent girls*

INTRODUCTION

Anemia among adolescent girls is generally caused by inadequate iron (Fe) intake and low adherence to iron supplementation. Hemoglobin production depends on iron (Fe), vitamin C, and copper—where iron plays a crucial role in hemoglobin synthesis, vitamin C enhances iron absorption, and copper facilitates the absorption process of iron in the gastrointestinal tract (Dwik Nuraini et al., 2022). The impact of anemia on adolescents includes a weakened immune system, making them more susceptible to illness, decreased physical activity, reduced academic performance, and lower overall fitness levels. Moreover, adolescent girls are at risk of experiencing impairments in both physical and mental functions due to anemia (Agustina et al., 2024). This condition is partly attributed to adolescents' limited knowledge about anemia, which serves as a dominant risk factor contributing to its occurrence (Yulianingsih & Porouw, 2020).

National data recorded that the prevalence of anemia among individuals aged 15–24 years increased from 18.4% in 2013 to 32% in 2018 (Pibriyanti et al., 2025). Specifically, among adolescent girls in rural Indonesia, one study reported a 23.4% prevalence in the 12–18-year age group (Riskesdas, 2018), with a twofold higher risk of anemia among those living in rural areas compared to their urban

counterparts (OR = 2.06) (Nadiyah et al., 2022). A study conducted in a secondary school in Palu found that 67.6% of adolescent girls were anemic, which is classified as a severe level of public health problem (Taqwin et al., 2025). Meanwhile, interventions such as iron supplementation through iron-folic acid tablets (TTD) still show low adherence rates; for instance, only 1.4% of adolescent girls consume ≥52 tablets per year (Handayani et al., 2024).

During adolescence, particularly after menarche, the need for iron increases to support body growth and the physiological response to menstruation. However, iron intake is often inadequate, accompanied by an unbalanced diet or unhealthy dietary habits. Suboptimal nutritional status (such as malnutrition or macronutrient deficiency) and risk factors including irregular menstruation, limited health knowledge, and low adherence to iron supplementation (TTD) contribute to the accumulation of iron deficiency and a subsequent decline in hemoglobin levels (Ekasanti et al., 2020).

Efforts to prevent anemia among adolescents can be carried out through various educational approaches and media, such as videos and interactive learning tools (Elok Mardliyana et al., 2025). Structured health education has been shown to enhance adolescents' knowledge of the importance of iron, anemia symptoms, early detection, and the habit of consuming iron supplementation tablets (TTD). A community service-based study found that educational interventions significantly improve adolescents' understanding of early anemia detection (Ariyanto et al., 2025). Furthermore, conducting physical symptom examinations and random Hb measurements in schools or community settings serves as an essential initial step before anemia worsen conditions (Az-Zahra et al., 2025).

These studies highlight that structured education effectively enhances adolescents' knowledge and skills in performing early anemia detection. Therefore, the goal of this community service activity is to improve adolescent girls' knowledge and skills in early anemia detection through structured health education.

METHODS

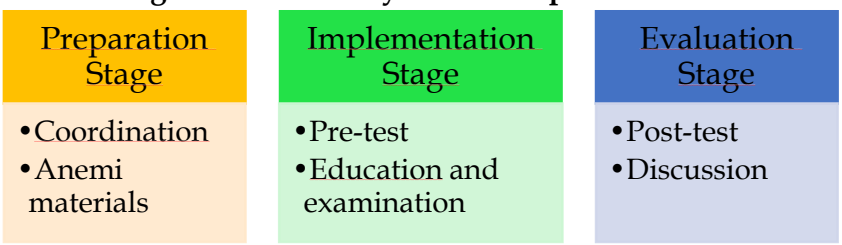
The implementation method consisted of three main stages: the preparation stage, the interactive education and training stage, and finally, the evaluation stage.

The first stage involved coordination with SMK Al Inayah Purwosari regarding the schedule and venue for the activity. The program was conducted at SMK Al Inayah, located in Martopuro Village, Purwosari District, Pasuruan Regency. The school provided facilities such as a sound system, room, laptop, and projector screen. It was agreed that the activity would take place in early August 2025. The community service team then prepared educational materials on anemia to enhance the students' knowledge. A total of 30 female adolescents participated in the activity.

The second stage consisted of health education about anemia among adolescents, focusing on the importance of early detection, including definitions,

symptoms, prevention, and management of anemia. This was followed by hands-on training on how to identify physical signs of anemia and perform random hemoglobin (Hb) level examinations.

Figure 1
Stages of Community Service Implementation



Source: Pujiastuti, 2025

The third stage involved conducting pre-tests and post-tests before and after the education and training sessions to assess improvements in participants' knowledge and observe their skill development. In addition, the community service team facilitated discussions and Q&A sessions with the participants, allowing them to share experiences and deepen their understanding.

RESULTS AND DISCUSSION

This section provides an explanation of the pre-test and post-test results conducted by the community service team, including:

Table 1
Pre-test and post-test results on knowledge

Category	*Pre-test*	%	*Post-test*	%
Good	4	13	27	91
Moderate	8	27	3	9
Low	18	60	0	0
Total				100

There was an improvement in the participants' knowledge who took part in the community service activity. This was evident from the pre-test results, where 60% of participants were in the *low knowledge* category, increasing to 91% in the *good knowledge* category during the post-test.

Table 2
Pre-test and post-test results on skills

Category	*Pre-test*	%	*Post-test*	%
Good	6	24	26	87
Moderate	7	23	4	13
Low	17	53	0	0
Total				100

There was an improvement in the participants' skills who took part in the community service activity. This was evident from the pre-test results, where 53% of participants were in the *low skill* category, which increased to 87% in the *good skill* category after the post-test.

This community service activity had a positive impact both directly and indirectly on SMK Al Inayah, Martopuro Village, Purwosari District, Pasuruan Regency. Directly, the program enhanced participants' knowledge and skills in conducting early detection of anemia through interactive education and training sessions. The participants' enthusiasm was reflected in their active engagement during the activities, such as answering questions, participating in discussions, and sharing opinions — demonstrating a strong interest in adolescent health, particularly concerning anemia. Evaluation through pre-test and post-test showed a significant improvement in knowledge and skills related to physical examination and random hemoglobin (Hb) measurement. Most participants were able to correctly perform physical examination practices. Moreover, the program successfully fostered awareness of the importance of early anemia prevention, especially within the school environment. It is expected that the sustainability of this program will strengthen the school's efforts in nurturing a healthy and productive young generation.

A study conducted by (Ariyanto et al., 2025) revealed that structured health education can enhance adolescents' knowledge regarding the importance of iron, symptoms of anemia, early detection, and the habit of consuming iron supplementation tablets (TTD). This finding indicates that educational interventions are effective in improving adolescents' understanding of early anemia detection. In line with the study by (Az-Zahra et al., 2025), physical symptom examination and random Hb measurement conducted in schools or community settings serve as an initial step to prevent the worsening of anemia conditions. Similarly, research conducted by Febrianti et al. (2023) emphasized that consistent nutrition education effectively improves knowledge about anemia and hemoglobin levels among adolescent girls aged 12–19 years. These findings reinforce the importance of educational and training activities in significantly enhancing adolescents' capacity for early anemia prevention (Kamila Dwi Febrianti et al., 2023).

The author argues that school-based intervention programs have great potential to be developed as effective strategies for preventing anemia among adolescents. The active involvement of participants in educational activities, health examinations, and early detection of hemoglobin levels demonstrates that a participatory approach can enhance adolescents' understanding and awareness of their own health more effectively than conventional one-way education methods.

Furthermore, the success in improving participants' knowledge and skills cannot be separated from cross-sectoral synergy, particularly the collaboration between educational institutions and health services. This collaborative approach is essential for the program's sustainability, as it requires continuous support in the form of iron supplement provision, monitoring of adolescents' health status,

as well as regular training and supervision. Through this integrated strategy, the intervention program is expected to encourage the development of sustainable healthy behaviors and strengthen adolescent health resilience within the school environment.

Figure 1
Random hemoglobin level examination

Source: Personal Documentation, 2025

CONCLUSSION

The community service activity focusing on adolescent anemia prevention has successfully achieved its intended goals. Evaluation results showed a significant increase in participants' knowledge, with most reaching a good category after the educational intervention. In addition, participants' skills in recognizing the physical signs of anemia and performing hemoglobin level checks also improved markedly, indicating their readiness to take an active role in anemia prevention efforts within the school environment.

Through a school-based and youth empowerment approach, it is expected that a network of students actively engaged in promotive and preventive activities will be established—such as peer education, improved adherence to iron supplement (TTD) consumption, and early detection of anemia. The active participation of adolescents in schools serves as an essential asset to strengthen existing adolescent health programs, which often face limited coverage.

By optimizing the role of adolescents as health promoters, such initiatives are expected to make a tangible contribution to the government's efforts to reduce the prevalence of anemia among adolescents and to help break the cycle of stunting in the future. An integrated approach combining education, empowerment, and cross-sector collaboration is believed to foster a healthier, more productive, and highly competitive young generation.

REFERENCES

Agustina, A. N., Dewi, S. U., Rahayu, H. S., & Mahardika, P. (2024). Upaya Menurunkan Kejadian Anemia melalui Program Pelayanan Kesehatan

Peduli Remaja. *GEMAKES: Jurnal Pengabdian Kepada Masyarakat*, *4*(1), 120–128. https://doi.org/10.36082/gemakes.v4i1.1513

Ariestiningsih, E. S., Syarifah Has, D. F., Kurniawan, B. A., Yuliati, L. Y., Laurita, H. P., & Arifani, M. N. (2025). Effectiveness of Peer Education Based on Social Cognitive Theory in Preventing Anemia among Adolescent Girls at the State Senior High School 1 Kebomas Gresik. *AcTion: Aceh Nutrition Journal*, *10*(2), 461. https://doi.org/10.30867/action.v10i2.2576

Ariyanto, Yuli Fatmawati, T., & Efni, N. (2025). Peningkatan Pengetahuan tentang Deteksi Dini Anemia pada Remaja Putri. *Jurnal Abdimas Kesehatan (JAK)*, *7*(1), 9–14. https://doi.org/10.36565/jak.v7i1.721

Az-Zahra, B. R., Kumalasari, I., & Amin, M. (2025). Deteksi Dini Anemia Berdasarkan Tanda Gejala dan Pemeriksaan Hb pada Remaja Putri di SMPN 18 Palembang. *Jurnal Rumpun Ilmu Kesehatan*, *5*(3), 01–14. https://doi.org/10.55606/jrik.v5i3.5514

Ekasanti, I., Adi, A. C., Yono, M., Nirmala, F., & Isfandiari, M. A. (2020). Determinants of Anemia among Early Adolescent Girls in Kendari City. *Amerta Nutr*, *4*(4), 271–279. https://doi.org/10.2473/amnt.v4i4.2020

Elok Mardliyana, N., Anifah, F., Nuzula, F., & Aryunani, A. (2025). Edukasi Cara Pencegahan Anemia pada Remaja Putri di Pondok Pesantren. *GEMAKES: Jurnal Pengabdian Kepada Masyarakat*, *5*(2), 176–182. https://doi.org/10.36082/gemakes.v5i2.1934

Handayani, D., Sumiati, Risnawati, & Meihartati, T. (2024). The Effect of Anemia Education Videos on Compliance Take Blood Booster Tablets. *Jurnal Kebidanan Malahayati*, *10*(6), 597–606. https://doi.org/https://doi.org/10.33024/jkm.v10i6.14503

Kamila Dwi Febrianti, Wilis Cahyaning Ayu, Yusrita Anidha, & Trias Mahmudiono. (2023). Effectiveness of Nutrition Education on Knowledge of Anemia and Hemoglobin Level in Female Adolescents Aged 12-19 Years: a Systematic Reviews and Meta-Analysis. *Amerta Nutrition*, *7*(3), 478–486. https://doi.org/https://doi.org/10.20473/amnt.v7i3.2023.478-486

Nadiyah, N., Sitoayu, L., & Dewanti, L. P. (2022). Remaja Putri Pedesaan di Indonesia Berisiko Anemia Dua Kali Lebiih Tinggi. *GIZI INDONESIA*, *45*(1), 35–46. https://doi.org/10.36457/gizindo.v45i1.614

Pibriyanti, K., Sukowati, D., Rooiqoh, Q. F., Pinasti, L., Luthfiya, L., Mufidah, I., Fathimah, & Fadholah, A. (2025). Effectiveness of Educational Media Instagram Reels and Tiktok on Knowledge to Prevent Iron Deficiency Anemia. *Media Gizi Indonesia*, *20*(2), 144–152. https://doi.org/10.20473/mgi.v20i2.144-152

Dwik Nuraini, R., Ariestaningsih, E., & Sholikhah, D. (2022). Hubungan antara Intake Zat Gizi Makro, Zat Besi, dan Vitamin C dengan Kadar Hemoglobin Siswa SMA di Kecamatan Kebomas. *Ghidza Media Journal*, *4*(1), 15–19. https://doi.org/https://doi.org/10.30587/ghidzamediajurnal.v4i1.4529

Taqwin, T., Sari, E. P., Asrawati, A., Hadriani, H., Tondong, H. I., Batjo, S. H., Kusika, S. Y., & Silfia, N. N. (2025). Anemia Associated with Student

Learning Achievement: Cross-Sectional Study. *Journal of Public Health and Pharmacy*, *5*(1), 22–28. https://doi.org/10.56338/jphp.v5i1.5005

Yulianingsih, E., & Porouw, H. S. (2020). Risk Factor Determination Of Anemia Event In Adolescent Princess In The Working Area Of Puskesmas Kota Selatan. *Jurnal Ners Dan Kebidanan Indonesia*, *8*(3), 194–205. https://doi.org/10.21927/jnki.2020.8(3).194-205