JURNAL EMPATHY Pengabdian Kepada Masyarakat
Vol. 6, No.1, June 2025
DOI : https://doi.org/10.37341/jurnalempathy.v6i1.315

Together Prevent Anemia: Youth Empowerment in Nutrition and Healthy Lifestyle Campaigns

Nastitie Cinintya Nurzihan[1*], Ratih Wirapuspita Wisnuwardani[1], Nurul Afiah[1], Indria Pijaryani[1], Leny Eka Tyas Wahyuni[1], Akhmad Dzikri[1]

[1] Faculty of Public Health, Universitas Mulawarman, Indonesia

ABSTRACT

Background: *Anemia remains a significant public health issue among adolescent girls in Samarinda, with a reported prevalence of 20.3%. The condition, often linked to iron deficiency, poses risks to physical development, cognitive performance, and overall well-being. Contributing factors include unbalanced dietary habits, menstruation, parasitic infections, and low awareness of nutritional needs. This activity aims to enhance the capacity of adolescents to prevent anemia through participatory and sustainable nutrition campaigns and healthy lifestyle practices.*

Methods: *This community service initiative was conducted at SMA Negeri 1 and SMA Negeri 10 Samarinda from November 15-21, 2024, involving 40 female students. A participatory and educational approach was employed, including group discussions, health counseling, and the use of visual educational media such as booklets and PowerPoint presentations. Pre- and post-tests were administered to evaluate changes in knowledge.*

Results: *The participants, predominantly aged 16 years, showed low baseline awareness about anemia. The intervention led to a 22% increase in knowledge regarding the causes, symptoms, and prevention of anemia. Interactive discussions and visual media effectively engaged students, promoting better understanding and proactive attitudes toward healthy lifestyles and iron intake.*

Conclusion: *A participatory and visual-based approach is effective in promoting health knowledge and behavior change among adolescents, with potential long-term benefits for school and community health. Recommended activities include interactive nutrition education sessions, visual media campaigns, peer-led discussions, and community-based monitoring to sustain behavior change.*

ARTICLE HISTORY
Received: March 13th, 2025
Accepted: July 4th, 2025

KEYWORDS
adolescents; anemia; campaign, empowerment; health education;

CONTACT
Nastitie Cinintya Nurzihan
✉
cnurzihan@fkm.unmul.ac.id
Faculty of Public Health, Universitas Mulawarman. Jl. Kuaro, Mt. Kelua, Kec. Samarinda Ulu, Samarinda City, East Kalimantan 75119, Indonesia.

Cite this as: Nurzihan, N. C., Wirapuspita Wisnuwardani, R., Afiah, N., Pijaryani, I., Eka Tyas Wahyuni, L., & Dzikri, A. (2025). Together Prevent Anemia: Youth Empowerment in Nutrition and Healthy Lifestyle Campaigns. *Jurnal Empathy Pengabdian Kepada Masyarakat*, *6*(1), 66–73. https://doi.org/10.37341/jurnalempathy.v6i1.315

INTRODUCTION

Adolescence is a period of rapid growth that can increase the need for iron, but most adolescents do not meet iron intake according to daily needs coupled with an unbalanced diet, menstruation and lack of knowledge about nutrition. Based on the latest data from the Samarinda City Central Bureau of Statistics (BPS) in 2024, the number of adolescents in Samarinda City, which includes people aged 10 to 19 years, is recorded at around

146.000 people from the total population. This number consists of 74.000 males and 72.000 females. Adolescents are one of the significant age groups in the composition of the population of Samarinda City (1).

Anemia is a condition in which the body does not have enough healthy red blood cells to carry adequate oxygen to body tissues. This can occur due to a lack of red blood cell production, loss of blood or destruction of red blood cells faster than the body can produce which will have an impact on the symptoms experienced, namely fatigue, weakness and dizziness (2,3). Anemia is often an indicator of more fundamental health problems, such as malnutrition, infection and chronic disease (4).

Anemia in adolescents is a common health problem, including in Samarinda City (5). Anemia is a condition where the body lacks enough red blood cells or hemoglobin to transport oxygen to body tissues. In adolescents, anemia can be caused by various factors including malnutrition, menstruation, worm infections and chronic diseases (6,7). Based on specific data on adolescent anemia in Samarinda City, the Samarinda City Health Office and related agencies have conducted routine health surveys, especially in schools with programs such as the Blood Additive Tablet (TTD) program, monitoring nutritional status in schools, worm infection eradication programs, empowering adolescent health cadres and mass health checks.

Adolescent empowerment is an important strategy in reducing the prevalence of anemia that includes increasing knowledge and active role of adolescents in maintaining their own health and the surrounding environment. Youth empowerment can make adolescents become agents of change in their environment both at school and in their communities which creates a domino effect in reducing anemia rates among peers (8). A study designed a digital campaign targeting adolescent girls aged 16-19 years through social media designed with a cheerful approach and in accordance with the interests of today's youth, aiming to raise awareness about anemia prevention (9).

A literacy review analyzed risk factors for anemia incidence in adolescent girls and emphasized the importance of school-based health education. This education is effective in preventing anemia and contributes to overcoming public health problems (10). Based on previous research conducted at 2 high schools in Samarinda City, it was found that 20.3% of adolescent girls still experience anemia and the low knowledge of adolescents about other causes of anemia in adolescents, which means that there is a need for community service by conducting a program that aims to increase the knowledge of high school students related to anemia, especially anemia due to iron deficiency, and encourage students to be able to implement a healthy lifestyle.

Therefore, through an empowerment approach, this program actively involves students in nutritional health campaign activities. The aim of this activity is to enhance knowledge about iron deficiency anemia and to promote a healthy lifestyle by empowering students in nutrition health campaigns. This program is expected to contribute to the development of sustainable, peer-led nutrition education strategies to prevent iron deficiency anemia among students.

METHODS

This community service activity was designed to increase the knowledge and awareness of adolescent girls about iron deficiency anaemia and encourage the adoption of a healthy lifestyle. The activity was carried out in a structured manner through three main stages, namely preparation, implementation, and evaluation, as follows:

Preparation Stage

The preparation stage began with the development of educational materials on iron deficiency, anaemia and healthy lifestyles. Pre- and post-tests were developed to measure participants' knowledge before and after the activity. Additionally, educational materials in the form of booklets and PowerPoint (PPT) presentations were created to be engaging and easy to understand. Coordination was also carried out with Samarinda State High School 1 and Samarinda State High School 10 to determine the implementation schedule and recruit 40 female students as participants. The location of the activity was selected based on previous research showing an incidence of anaemia of 20.3% among adolescent girls.



Figure 1. Educational booklet on iron deficiency anaemia and healthy lifestyle practices

Implementation

The activity was carried out on 15–21 November 2024, involving 40 female students from both schools. The methods used were participatory and educational, through group discussions, counselling sessions, and the use of visual media. Participants were encouraged to actively discuss the causes, effects, and prevention of anaemia, as well as how to apply healthy eating patterns and healthy behaviours in their daily lives.

Evaluation

Evaluation was conducted using pre- and post-tests to assess participants' knowledge of anaemia and healthy lifestyles. The evaluation results were used to measure the effectiveness of the activity and as an input for the improvement and development of similar community service programmes in the future.



Figure 2. Power Point Presentation as One of The Materials Supporting the Educational Activities

RESULTS

The results of community service activities carried out on adolescents at SMA Negeri 1 Samarinda and SMA Negeri 10 Samarinda are as follows:

Table 1. Distribution of Adolescent Participant Characteristics at SMA Negeri 1 and SMA Negeri 10 Samarinda (n = 40 Adolescent)

Characteristics	Frequency (n)	Percentage (%)
Age		
15 years old	2	5
16 years old	26	65
17 years old	12	30
Total	**40**	**100**
Student allowance (in Rupiah)		
10.000 - 20.000	13	32,5
21.000 - 30.000	13	32,5
31.000 - 40.000	3	7,5
41.000 - 50.000	11	27,5
Total	**40**	**100**
Menstrual Cycle		
Normal	35	87,5
Not Normal	5	12,5
Total	**40**	**100**
Duration of Menstruation		
>7 days	22	55
7 - 8 days	14	35
<8 days	4	10
Total	**40**	**100**

In general, the age of the target in this service activity is mostly 16-26 years old (65%) and who have the most pocket money ranging from 10,000-30,000 (65%), the menstrual cycle of adolescents is also mostly categorized as normal as many as 35 people (87.5%) but many adolescents experience menstruation every month which is >7 days as many as 22 people (55%).

Table 2. Anthropometric Profile of Adolescent Participants at SMA Negeri 1 and SMA Negeri 10 Samarinda (n = 40 Adolescent)

Characteristics	Min-Max	Mean ± SD
Body Weight (kg)	3.5–57.2	43.04 ± 5.87
Height (cm)	143.1–159.9	153.9 ± 4.7

Note: SD = Standard Deviation

Table 2. shows the anthropometric profiles of 40 adolescent participants at State Senior High School 1 and State Senior High School 10 Samarinda. Body weight ranged from 3.5–57.2 kg with an average of 43.04 ± 5.87 kg, while height ranged from 143.1–159.9 cm with an average of 153.9 ± 4.7 cm. These data provide an overview of the physical condition of the participants as the target of the community service activity.

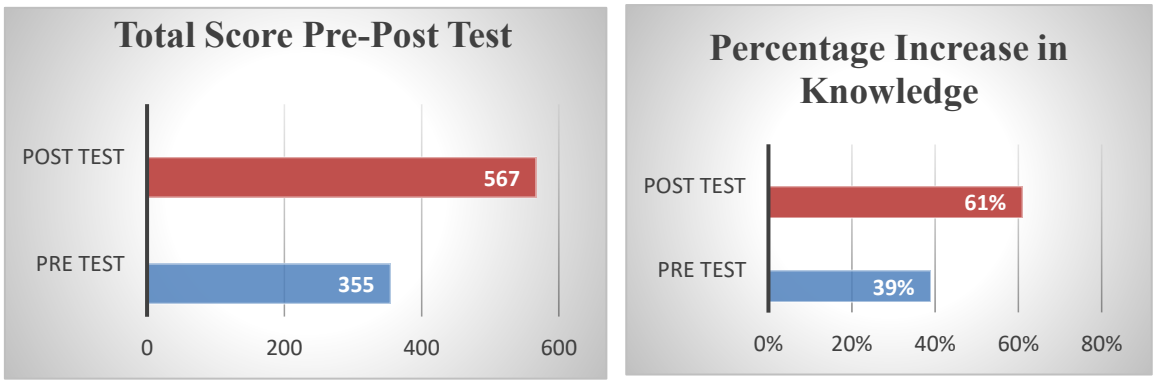


Figure 3. Pre Post Test Results and Percentage of Knowledge Improvement

The figure shows an increase in the total pre-post test score from 355 to 567 and an increase in the percentage of knowledge from 39% to 61%. This indicates the positive impact of educational intervention on adolescents' knowledge about anaemia and the implementation of a healthy lifestyle.



Figure 4. Activity Documentation: Together Prevent Anemia–Youth Empowerment in Nutrition and Healthy Lifestyle Campaigns

DISCUSSION

This community service activity also conducted a pre-post test to find out how much knowledge adolescents have about anemia. The material presented by the community service team in the form of the importance of balanced nutrition, menstruation and TTD, health education and anemia, helminthiasis problems and careful reading of food labels is expected to have a positive effect with a campaign in the form of an invitation to change the lives of adolescents in dealing with anemia and prevention in the youth community in

their environment. In this service activity, the resource person conducted a method using booklet media with interactive small group discussions.

The use of the right media will have an impact on the desired results. Booklets and PPTs that present information with simple language, attractive visuals and layouts that facilitate understanding of adolescents through education that shows a significant increase in knowledge, symptoms and prevention of anemia (11). Booklets can also be used as repeated reading material while PPT presentations are interactive and attention-grabbing with the combination of both media increasing participant engagement (12).

Research shows that the use of educational media in the form of booklets has a significant effect on increasing the understanding of adolescent girls' nutrition education about anemia (13). In addition, nutrition education using booklet media significantly increases the preventive actions of iron nutritional anemia in adolescent girls where the lecture method with booklets as educational media and the results shows an increase in knowledge and preventive actions against anemia (14). When viewed from the percentage of changes that show an increase in knowledge, namely with an initial percentage of 39% to 61%. This shows a 22% increase in target knowledge about anemia.

So, it is hoped that these changes can invite adolescents to pay more attention to the causes of anemia. Anemia is not only caused by lack of iron consumption but there are other things that can affect it such as stress, menstruation, helminthiasis and less careful in reading packaging labels. Socialization and interactive discussions showed an increase in knowledge and positive changes in nutritious food consumption behavior (15).

This community service activity made an important contribution to improving adolescents' knowledge about anaemia through interactive educational methods using booklets and small group discussions. Pre-post test results showed a 22% increase in knowledge, indicating the effectiveness of this approach in delivering health information. This increase in knowledge is expected to influence adolescents' behaviour in choosing nutritious foods, understanding the importance of iron-rich foods, and being more aware of other risk factors such as worm infections and lack of attention to food labels. Thus, this activity has implications for strengthening adolescents' capacity as agents of change in preventing anaemia in their communities.

Based on the results of the activity, it is recommended that similar programmes be implemented on an ongoing basis with a wider range of participants, including schools, youth health cadres, and parents to strengthen the anaemia prevention network. There is also a need to develop more varied and technology-based educational media (such as short videos or interactive apps) to make them more appealing to adolescents. Additionally, cross-sectoral collaboration between health workers, educators, and local governments is crucial to ensure the availability of TTD, regular health check-ups, and periodic deworming programmes as comprehensive efforts to prevent anaemia among adolescents.

CONCLUSIONS AND SUGGESTIONS

This service activity showed an increase in the knowledge of adolescent girls by 22%. So that through a participatory and educational approach carried out on adolescents, it is hoped that it can build adolescent awareness that has a positive impact on the school community. It is recommended that education about anaemia through booklets and interactive discussions be carried out continuously and involve more parties, such as schools and health workers, to expand the reach and strengthen efforts to prevent anaemia in adolescents.

ACKNOWLEDGEMENTS

The authors would like to thank the principal, teachers, and staff at the school who have provided support and facilities as well as all those who have contributed. The authors would also like to thank the Faculty of Public Health, Mulawarman University for providing the community service grant.

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

AI tools were used solely for grammar and language editing. The authors take full responsibility for the content and integrity of the manuscript.

CONFLICT OF INTERESTS

The author states that there are no conflicts of interest.

REFERENCES

1. Badan Pusat Statistik Kota Samarinda. Kota Samarinda dalam angka: Samarinda municipality figures. 2024 [Accessed 16th July 2024]. Jumlah Penduduk Menurut Kelompok Umur dan Jenis Kelamin di Provinsi Kalimantan Timur, 2024 - Statistical Data - BPS-Statistics Indonesia Kalimantan Timur Province [Accessed 16th July 2024].

2. World Health Organization (WHO). Indonesian guideline of prevetion and countermeasures of anemia in teenage girl and women of childbearing age. 2016. IDN-RH-43-02-GUIDELINE-2016-ind-Guideline-of-Prevention-and-Countermeasures-of-Anemia-in-Teenage-Girl-and-Women-of-Childbearing-Age.pdf [Accessed 16th July 2024].

3. A. Victor Hoffbrand, David P. Steensma. Hoffbrand's essential haematology. 8th Edition. Wiley; 2019.

4. Zhang J, Li Q, Song Y, Fang L, Huang L, Sun Y. Nutritional factors for anemia in pregnancy: A systematic review with meta-analysis. Frontiers in Public Health. 2022; 1–13. https://www.crd.york.ac.uk/prospero/

5. World Health Organization (WHO). Micronutrient deficiencies: Iron deficiency anaemia. 2023. https://www.who.int/health-topics/micronutrients#tab=tab_1[Accessed 16th July 2024].

6. Eka Rati Astuti. Literature review: Faktor-faktor penyebab anemia pada remaja putri literature review. Jambura Journal of Health Science and Research. 2023;5(2): 550–561. https://ejurnal.ung.ac.id/index.php/jjhsr/index

7. Chaparro CM, Suchdev PS. Anemia epidemiology, pathophysiology, and etiology in low- and middle-income countries. Ann N Y Acad Sci. 2019;1450(1):15–31. http://doi.org/10.1111/nyas.14092

8. Bhandari B, Kachapati A, Lamichhane K, Khadka G. Anemia among adolescent girls attending the pediatric outpatient department of a tertiary care hospital: A descriptive cross-sectional study. Journal of the Nepal Medical Association. 2021;59(241): 862–866. https://doi.org/10.31729/jnma.6897

9. Novita Andini D, Solicitor Costa Rica El Chidtian A, Daniar A. Perancangan kampanye digital pencegahan anemia untuk perempuan usia 16-19 tahun di surabaya. Jayapangus Press Metta: Jurnal Ilmu Multidisiplin. 2024;4. https://jayapanguspress.penerbit.org/index.php/metta

10. Rahman RA, Fajar NA. Analisis faktor risiko kejadian anemia pada remaja putri: Literatur review. Jurnal kesehatan komunitas (Journal of community health). 2024;10(1): 133–140. https://doi.org/10.25311/keskom.vol10.iss1.1403

11. Sheladjiq AC, Yulianti F. Pengaruh media e-booklet terhadap pengetahuan tentang pencegahan anemia pada remaja putri. Jurnal Kesehatan Siliwangi. 2023;3(3): 494–500. https://doi.org/10.34011/jks.v3i3.1021

12. Efni N, Yuli Fatmawati T, Tinggi Ilmu Kesehatan Baiturrahim Jambi S. Pengaruh media booklet terhadap peningkatan pengetahuan tentang anemia remaja putri. Seminar Kesehatan Nasional. 2023;2. https://prosiding.stikba.ac.id/83

13. Puspita Dewi N, Monalisa Rusliani D, Intan Navelia Z, Purnamasari I, Studi Kebidanan P, Guna Bangsa Yogyakarta S. Literatur review: Efektivitas media edukasi terhadap pencegahan anemia pada remaja putri. Jurnal Ilmu Kebidanan dan Kesehatan. 2024;15(2): 136–141.

14. Yudesti E, Djamil A. Pengaruh edukasi gizi dengan media booklet terhadap tindakan pencegahan anemia gizi besi pada remaja putri di SMPN 4 Tulang Bawang Barat. Jurnal Maternitas Kebidanan. 2024;9(2): 1.

15. Larasanti A, Erieza F, Aziz F, Ichwan Prasetyo M, studi Manajemen P, Ekonomi dan Bisnis F. Peningkatan pengetahuan gizi dan pencegahan anemia menuju remaja sehat dan cerdas di Kelurahan Jombang Wetan. Proseding Seminar Nasional Pengabdian Masyarakat: SENAMA. 2024; 1–8. https://ejournal.unsera.ac.id/index.php/senama