Abdimas Umtas: Jurnal Pengabdian Kepada Masyarakat
LPPM-Universitas Muhammadiyah Tasikmalaya
Volume: 6 Nomor: 1
E-ISSN: 2614 - 8544

Education on Anemia Prevention and Post-Supplementation Hemoglobin Examination in Students at SMAN 5 Jambi City

Ruwayda[1,2,a)], Dzulfikar Djalil Lukmanul Hakim[3)], Edhyana Sahiratmadja[4)]

[1]Master of Midwifery, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia
[2]Department of Midwifery, Poltekkes Kemenkes Jambi, Jambi, Indonesia
[3]Department of Pediatrics, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia
[4]Department of Basic Medical Sciences, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia
[a)]Corresponding Author: ruwayda@poltekkesjambi.ac.id

Abstract

Based on the 2018 Riskesdas data, female adolescents with anemia increased by 48.9% with the largest proportion in the 15-24 year age group. A school-based iron tablet supplementation program is an alternative for reaching young girls, ensuring adherence, thereby reducing the prevalence of anemia. Iron tablet supplementation programs are not always effective. Low adherence to consumption of iron tablets is a determinant of program inhibition. One of the high schools implementing the program in Jambi City was SMAN 5. The number of young girls who received 52 iron tablets had reached 100%, however, hemoglobin levels had never been checked and knowledge evaluation about anemia and iron tablets had not been carried out. The purpose of community service activities is to evaluate the iron tablet supplementation program that is already running. The method of activity is through examination of hemoglobin levels and knowledge assessment of 260 young women. The examination results showed that 78 people (30%) had anemia with mild (18.8%), moderate (10.4%) and severe (0.8%) details. The majority knowledge assessment is good (73.47%) but there are still (26.53%) not good enough. It is recommended that health centers and schools improve socialization/counseling and routinely carry out hemoglobin level checks.

Keywords: Education, Iron Tablet Supplementation, Anemia

INTRODUCTION

Around 468.4 million people or 30% of the population of students and women of childbearing age (WUS) in the world experience anemia (Aguayo, Paintal, and Singh 2013). The prevalence of anemia among students in developing countries varies between 20-70%.World Health Organization (WHO) recommendations at the 65th World Health Assembly (WHA) agreed on action plans and global targets for maternal, infant and child nutrition with a commitment to reduce 50% of the prevalence of anemia in women of childbearing age by 2025(World Health Organization 2014).

Based on Basic Health Research the number of students with anemia increased from 37.1% to 48.9% with the largest proportion in the age group 15-24 years (Health Research and Development (Badan Penelitian dan Pengembangan Kesehatan 2018). The school-based blood-added tablet supplementation program is an alternative to reach students, ensure adherence, thereby reducing the prevalence of anemia. The iron supplementation tablet program is not always effective. The low adherence to consumption of iron tablets is a determinant of program inhibition (Fitriana and Dwi Pramardika 2019).

Circular Letter of the Director General of Public Health of the Ministry of Health concerning the Provision of Blood Supplement Tablets to Students and WUS is carried out through school/madrasah health efforts (UKS/M) in educational institutions by determining the day of taking the blood supplement tablets together. The dose given is one tablet per week for a year. The coverage of giving blood supplement tablets to adolescents in Indonesia in 2020 is 39.1%. The province with the highest percentage is North Maluku province (76.2%), Jambi Province is the second highest, namely 69% (Kementerian Kesehatan RI 2018b).

Giving iron tablets at the right dose can prevent anemia and increase iron reserves in the body. Giving is done to students ranging in age from 12-18 years at educational institutions (SMA/K equivalent) through UKS/M. The preventive dose is by giving one blood supplement tablet every week for 52 (fifty two) weeks(Kementerian Kesehatan RI 2018b).

Anemia is defined as a decrease in blood hemoglobin. Anemia can occur due to various factors. Underproduction of red blood cells (due to iron deficiency, folic acid deficiency, thalassemia, bone marrow disorders), or excessive destruction of red blood cells (from sickle cell anemia, thalassemia, autoimmune disorders, infections, or side effects of medications). Clinically, people with mild anemia do not show significant symptoms, apart from being more often drowsy, weak, and tired easily. As the condition gets worse, you may appear pale, cold sweat, palpitations, shortness of breath, and even a decrease in consciousness. This condition can have fatal and even fatal consequences if it does not receive prompt and appropriate treatment(Widiastuti et all 2020).

In order to detect the cause of anemia, a complete blood count is carried out, examination of the shape and size of red blood cells, and even examination of the spinal cord. Other examinations can also be carried out according to suspicion of the disease. Handling of anemia can be done depending on the cause and severity, can be done by administering drugs to transfusions in more severe cases. If the condition is caused by thalassemia, then depending on the type and severity, a bone marrow transplant, removal of the spleen, and stem cell transplantation can be performed if possible (Ministry of Health RI 2018a).(Kementerian Kesehatan RI 2018a)

In 2021 in the City of Jambi there are 76.2% of students who have received iron tablets in the last 12 months, but only 2.13% of them have taken blood tablets as recommended (≥ 52 tablets in one year). Data from the Simpang IV Sipin Health Center, the target number of students in 2021 is 4,533 people and 660 students (14.6%) will get TTD. One of the SMAs that was the target of the program and is located in the work area of the Health Center, namely SMAN 5. The number of students in grades 10 and 11 was 439 people and 100% had received 52 tablets of iron supplement, but only a few were examined for hemoglobin (Jambi City Health Office 2021).(Dinas Kesehatan Kota Jambi 2021) The purpose of this community service is education on prevention of anemia and post-supplementation hemoglobin checks for students at SMAN 5 Jambi City.

METHOD

There are three stages in the method of implementing this community service activity

- The preparation stage by obtaining permits from the Jambi City Health Office, Community Health Centers and Schools followed by an explanation/socialization of community service activities to the school and filling in the student's willingness form to be checked for hemoglobin levels.
- The second stage is implementation by providing education about prevention of anemia with counseling and discussion. The hemoglobin examination was continued by the Primary Health Care laboratory team.
- The evaluation stage of students' knowledge about anemia.

RESULTS

This community service program activity is carried out in accordance with the program objectives, this can be seen from the consistent participation of participants from the beginning to the end of the activity. Participants were seen for their insight and knowledge about the purpose of giving iron tablets, anemia detection and understanding of anemia prevention materials and the benefits of iron supplements supplementation. The series of activities that have been carried out can be seen in the following figure 1.

Educational activities were carried out for all students in grades 10-12 totaling 260 people. Furthermore, a hemoglobin examination can be seen in Figure 2. The results of hemoglobin examination revealed that 78 people had anemia (30%) consisting of 49 mild anemia (18.8%), moderate anemia 27 (10.4%) and severe anemia 2 (08%) can be seen in graph 1 below:

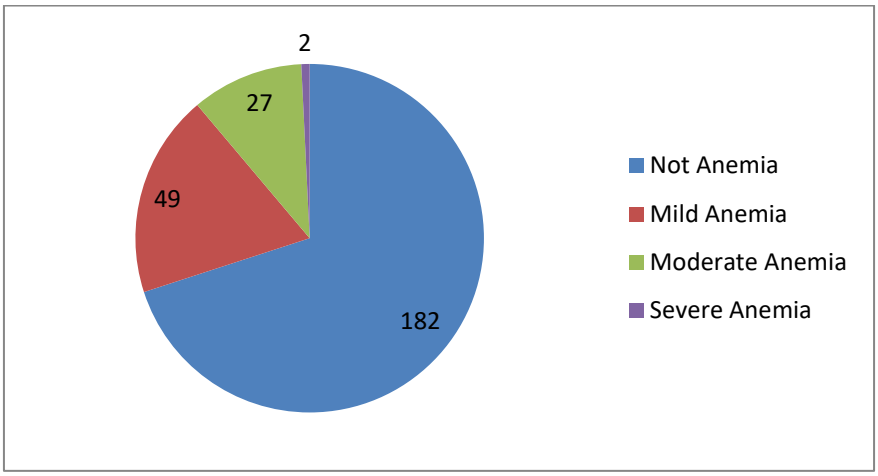

Figure 1. Distribution of Hemoglobin Examination Results

Checking Hemoglobin levels was carried out for 3 days divided according to examination class assisted by 7 officers consisting of laboratory workers, nutritionists and midwives. The results of the prick examination of the hemoglobin test found that 78 students had anemia (Hb <12 gr/dL). Still experiencing anemia as many as 78 people (30%). Based on the results of community service activities, as an evaluation of the program for administering blood-boosting tablets to students at SMAN 5 Jambi City, adolescents were still found to be anemic. This is in line with the results of an evaluation of hemoglobin levels after administering blood-boosting tablets at Ciamis Middle School showing that 35% of students were anemic and students had been given counseling about diet and adequate rest (Endang Purwati, Fauzi, and Litasari 2022). An anemia prevention program for students requires the participation of the community so that they are independent and can coordinate with teachers, community leaders, health workers or Primary Health Care (Yudina and Fayasari 2020)

The next stage is to assess students' knowledge about anemia and high blood pressure can be seen in (table 3)

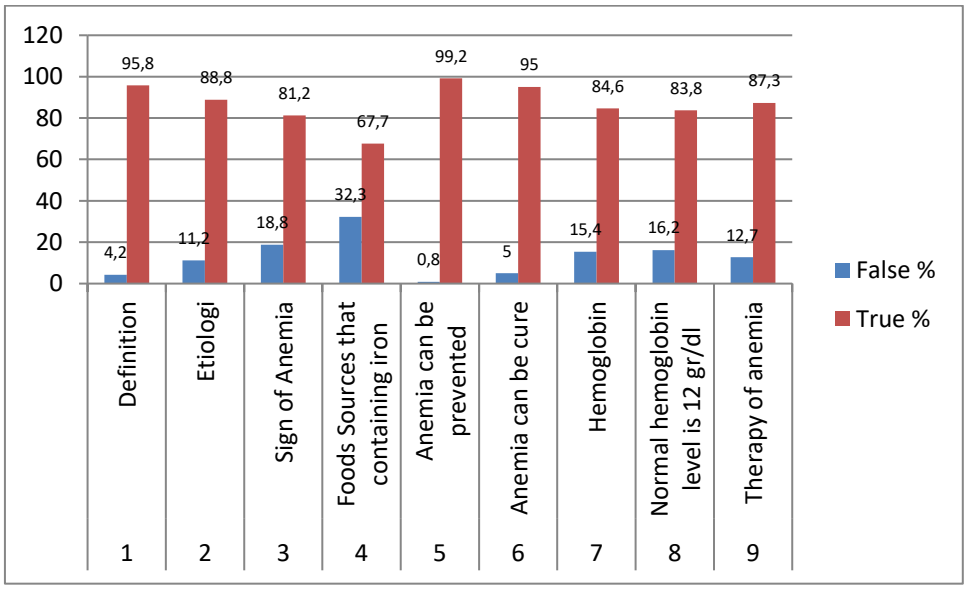

Figure 2. Distribution of Knowledge Answers About Anemia

Based on graph 2 on the statement about anemia can be prevented the majority of respondents answered correctly as many as 258 people (99.2%) and for the statement of food sources containing iron who answered incorrectly as many as 84 people (32.6%). Based on the calculation of the score the number of questions can be grouped into 2 categories, namely good knowledge (73.47%) and not good (26.53%) can be seen in the following figure 3.

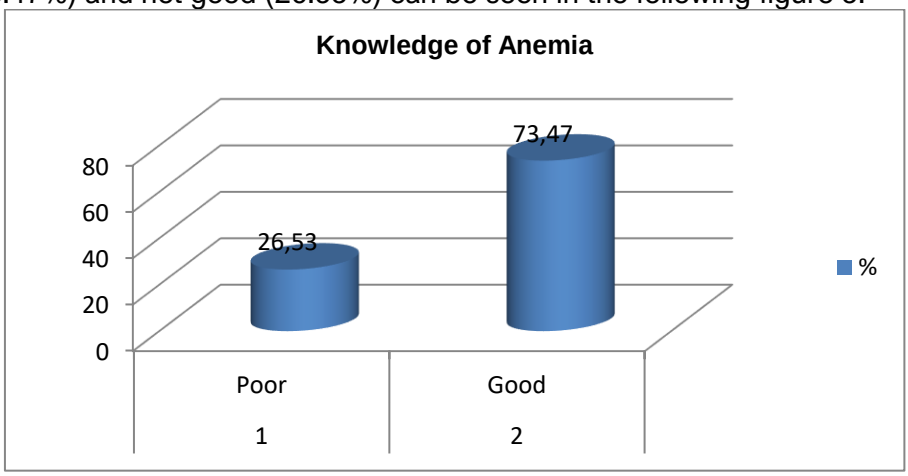

Figure 3. Distribution of Student Knowledge

The results of the knowledge evaluation showed that there were still students who had poor knowledge about anemia and iron supplements, so it was known that they only took blood supplements without knowing the benefits and understanding the purpose of supplementing them.
If presented in the table the results of the knowledge evaluation and the results of the hemoglobin examination can be seen in the following table 3:

Table 3. The Result of Distribution of Student Knowledge

Variable	Anemia		No Anemia		Total		P Value
	n	%	n	%	n	%	
Knowledge							
Poor	27	39,1	42	60,9	69	100	0,075
Good	51	26,7	140	73,3	191	100	

Based on the table, it can be seen that 27 students (39.1%) with poor knowledge have anemia, but there are still 51 students (26.7%) with good knowledge who have anemia.

DISCUSSION

Based on the results of community service activities, as an evaluation of the program for administering blood-boosting tablets to students at SMAN 5 Jambi City, adolescents were still found to be anemic. This is in line with the results of an evaluation of hemoglobin levels after administering blood-boosting tablets at Ciamis Middle School showing that 35% of students were anemic and students had been given counseling about diet and adequate rest (Endang Purwati et al. 2022).

An anemia prevention program for students requires the participation of the community so that they are independent and can coordinate with teachers, community leaders, health workers or Primary Health Care (Yudina and Fayasari 2020). The results of this measurement differ from research conducted at SMAN 3 Bandung on 229 students. Knowledge was measured before and

after providing education. It was found that providing education increased students' knowledge about thalassemia with a median value before (6.0) to (8.0) (Triatin et al. 2022).

In the implementation model of giving students blood supplement tablets, the Primary Health Care should empower them in implementing the program at the school level with an agreement to take tablets at school, because if the tablets are taken home, compliance with tablet consumption is very low. So it is necessary to increase the empowerment of teachers and students by the nutrition implementers of the health center so that the utilization of blood supplement tablets by students is more optimal (Widiastuti, Musdalifah, and Zuhriyatun 2020).

At the Air Bangis Community Health Center, the timing and distribution of iron supplement tablets is carried out with varying frequencies, some once to twice a year with a small number of tablets given. Some gifts are given all at once and some are given weekly. Blood supplement tablets are only given for a few months, so students don't consume enough throughout the year (Susanti, Sulastri, and Desmawati 2021). This is also in line with community service at SMAN 8 Jambi City in 2019, it is known that students' knowledge about anemia and the importance of taking blood-supplement tablets shows that most 60% of students know about anemia and 40% of students do not understand the side effects and benefits of blood-supplement tablets because I have never received information about taking blood-enhancing tablets during menstruation but I am afraid because after taking blood-added tablets it becomes difficult to defecate, nausea and black stools (Julaecha 2020).

This community service activity was welcomed by the Primary Health Care and schools. This is also in line with community service activities at the Kertayasa Tourism Vocational School and Werdi Sila Kumara Tourism Vocational School, Gianyar Regency, which also received good reception and support through the OSIS organization. Knowledge assessment was carried out and the results obtained the average value of knowledge about anemia before nutrition education, namely 80.80+8.64. After community service in the form of nutrition education, it was found that there was a significant increase in average knowledge ($p<0.01$) to 88.50+10.11. The education participants enthusiastically took part in counseling about anemia and the benefits of iron nutrition (Purnadhibrata 2019).

The results of this community service are in line with what was carried out in the village of Aluh-aluh Besar, Banjar Regency, where there was a significant difference between students' knowledge of iron tablets when filling out the questionnaire before and after counseling and there was a difference between students' attitudes when filling out the questionnaire before and after counseling (Lestari et al. 2021). Community service activities in Bangetayu Wetan Village RT 05 RW 05, Genuk District, Semarang City, it was concluded that 82.4% of participants understood anemia and hemoglobin. 73.3% of participants understand how to make soymilk. Hb levels ≥ 12 gr/dl as many as 28 people while those <12 gr/dl as many as 2 people, the results of training in making soy milk can improve health conditions besides paying attention to a diet that is high in iron and folic acid (Kuncara, Qomariyah, and Afrianti 2022)

Community service activities for 81 class X and XI students of SMA N 1 Godean showed that the majority of students were 16 years old (48.1%), had a normal body mass index (58%), menarche was 12 years old (38.3%), normal menstrual cycle (72.8%). The majority of students have breakfast habits (87.7%) and rarely eat junk food (54.3%). The majority of students did not experience anemia (53.1%) and most students were disobedient in taking iron supplement tablets (83.9%).(Susanti et al. 2021).

The educational process carried out at SMAN 5 Jambi City is also in line with the provision of KIE (Communication, Information, Education) to teenagers at the Muhammadyah Purwokerto orphanage. The KIE provided is in the form of counseling and health education as well as training in solving problems. The results of the community service program activities were carried out according to plan and were successful with consistent participant indicators from the beginning to

the end of the program, increased insight and knowledge of partners seen from the accuracy in understanding and understanding the material, modules and leaflets provided (Noviyana and Purwati 2019).

The target of this community service activity is also in line with the activities at SDN Karang Indah and Karang Indah Village, Mandastana District, Batola Regency. The target set for each participant is that at least each participant can understand and know what can be done as an effort to prevent anemia. Adolescents are a very strategic target of anemia prevention interventions, considering that the prevalence of anemia is quite large (Fathony et al. 2022). The results of the community service carried out at SMAN 10 Makassar, obtained a significant increase in knowledge with the results that 93.33% of respondents understood and understood anemia after counseling and training through a questionnaire post test. There was a change in target behavior, namely adherence to taking iron tablets, this activity also produced a product in the form of a short film as an educational medium for students which was made by a team with targets, modules for youth cadres and opened opportunities for networking and publications. The need for strengthening support in the form of cooperation agreements between institutions for the continuation of activities (Maria Sonda, Agustina Ningsi, Andi Zulfaidawaty 2020).

This promotive and preventive program in community service is in line with the program implemented at Jatinagor High School through educating students with counseling and screening for thalassemia at school, because schools can be used as counseling facilities because they are an effective place because they are also places of learning (Alyumnah, Ghozali, and Dalimoenthe 2016).

Also in line with the activities in Banjarmasin where the service team carried out education about thalassemia and health promotion screening before marriage (premarital medical check-up) for the community, especially teenagers through webinars on social media, namely live streaming, Instagram and WA groups. As many as 22 teenagers have attended the webinar health education regarding thalassemia and health promotion regarding prevention, one of which is early detection of thalassemia before marriage. As many as 100% of adolescents participating in two webinars experienced an increase in knowledge of Thalassemia and its prevention through early detection screening before marriage. The average value of increasing the value of the post test is 14.45. Most expressed satisfaction with community service activities (Hanik Fetriyah et al. 2022).

Outreach activities about thalassemia, prevention and treatment to improve the quality of life of patients need to be carried out regularly and continuously to the community. This is to break the chain of thalassemia which is genetic in nature, understand the importance of helping by donating blood regularly in accordance with the provisions, improving the quality of life of children with thalassemia. The target of counseling should be from adolescence to adulthood both in urban and rural areas for PMI.(Iis Aisyahi 2021). Community empowerment efforts in Ternate are one of the efforts that can be used as a health promotion strategy at both the primary, secondary and tertiary levels in accordance with the Otttawa charter charter. Education on understanding anemia and how to prevent it shows an increase in the knowledge and attitudes of all participants(Afiah and Husen 2022).

The results of this service are also in line with community service activities at SMAN I Pancur Batu Deli Serdang in checking Hb levels and the average student knowledge increases after being given counseling with an increase in pre and post tests from 5.68 to 11.05 and based on the results of checking Hb levels it is found that students are anemic (29.8%) (Hastuty, Khodijah, and Hasibuan 2021). Likewise, educational activities at SMPN 6 Jakarta must continue to be developed regularly as one of the supporters of the success of efforts to control anemia in students. The results of nutrition counseling activities about anemia, students are motivated to maintain their health by consuming a balanced nutritious diet, and routinely consuming iron tablets as an effort to prevent anemia (Feby Elvira 2022).

CONCLUSIONS AND RECOMENDATION

This community service program has been carried out by evaluating post-counseling students' knowledge about anemia in students who have taken iron tablets with the result that most of the knowledge is good. Even so, there are still anemic students. It is suggested that the Primary Health Care can provide socialization about anemia prevention and the benefits of giving blood-boosting tablets more intensively, and armed with knowledge especially about anemia and iron supplementation, adolescents can become peer educators and can have a positive influence on other youth at school and in their environment.

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APPENDIX


Figure 4. Anemia Prevention Education

Figure 5. Hemoglobin examination