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# Awareness-Raising Program of Anemia Using Comics and Social Media for Teenage Girls

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**Abstract.** Nutritional problems that teenagers often experience are malnutrition, overweight, obesity and anemia. Risk of anemia in teenage girls is higher than in boys because of the increased demand of iron during the menstruation period. However this also becomes problematic because girls often limit their food intake. Blood Boost Formula is often prescribed to prevent anemia in teenage girls. The purpose of this community dedication activity is to find out about the compliance with consuming Blood Boost Formula, anemia prevalence and knowledge improvement of the audience after the program. This community dedication activity used comics and social media such as WhatsApp group. The target of this activity is 47 teenage girls of SMK Budi Nasional Tebing Tinggi students. Measured parameters for evaluation are medication compliance with consuming Blood Boost Formula, the degrees of awareness in anemia using questionnaire and anemia prevalence through Hemoglobin test using digital test. The results are showing that 69% of the students are not complying with the medication. There are 34% anemia prevalences. The pretest score was 20 points at the lowest and 60 points at the highest. While the post-test score was 27 points at the lowest and 67 points at the highest. There is an increase of mean value between pretest and post-test by about 10 points.

**Keyword:** Anemia prevalence, blood boost formula, awareness-raising program, teenage girls

**Abstrak.** *Masalah gizi yang sering dialami remaja adalah kekurangan gizi, kelebihan berat badan (Overweight), kegemukan (obesitas) serta anemia. Resiko anemia pada remaja putri lebih tinggi dibandingkan dengan remaja putra, karena peningkatan kebutuhan besi selama haid serta perilaku makan yang salah, karena membatasi setiap asupan makanan. Pemberian tablet tambah darah (TTD) sering dilakukan untuk mencegah anemia pada remaja putri. Tujuan kegiatan pengabdian masyarakat ini adalah mengetahui kepatuhan konsumsi tablet tambah darah, prevalensi anemia, serta peningkatan pengetahuan sebelum dan sesudah penyuluhan. Kegiatan penyuluhan dilakukan dengan menggunakan media komik dan media social berupa whatsapp group. Target kegiatan pengabdian pada masyarakat adalah siswa remaja putri di SMK Budi Nasional Tebing Tinggi sebanyak 47 siswa. Parameter yang diukur meliputi kepatuhan konsumsi TTD, pengetahuan tentang anemia menggunakan kuesioner, prevalensi anemia melalui pemeriksaan kadar hb siswa menggunakan digital test. Hasil kegiatan menunjukkan siswi yang tidak patuh mengkonsumsi TTD sebanyak 69%. Prevalensi anemia sebesar 34%, nilai pre test terendah adalah 20 dan tertinggi 60, sedangkan nilai post test terendah 27 dan tertinggi 67. Terjadi kenaikan rata-rata pengetahunan sebelum dan sesudah penyuluhan sebesar 10 point.*

**Kata Kunci:** *Prevalensi Anemia, Tablet Tambah Darah, Penyuluhan, Remaja Putri*

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## 1    Introduction

Teenagers are divided into 2 age groups, early and late adolescence. Early adolescence are teenagers aged 10–14 years old, while late adolescence are teenagers aged 15–19 years old. Adolescence is also called transition between childhood and adulthood; developing from different aspects and functions to enter adulthood.[1]

Nutritional problems that teenagers often experience are malnutrition, overweight, obesity and anemia. This problem is related to the bad habit of consuming fast foods such as instant noodles [2] that could affect nutrition intake and create problems such as malnutrition, obesity, and anemia [3]. Anemia is a condition where there is a decrease in hemoglobin levels, hematocrit, and red blood cell counts below normal values benchmark for individuals. Anemia is also a a condition in which the red blood cell count and oxygen capacity in the body is not sufficient [3].

Risk of anemia in teenage girls is higher than in boys. This is caused by the increased demand of iron during menstruation period, and this is further aggravated by bad eating behavior/habits such as limiting nutrition intake especially Animal Source Foods (ASF) which are seldom assumed as high-fat foods and could cause obesity [3]. The effects of anemia in teenagers are late physique development, decreasing body immunity, getting limp and hungry easily, difficulty in concentration, decreased learning achievement and low work productivity [4].

Basic Health Research 2013 shows that anemia prevalence in Indonesia is 22.7% in teenage girls aged 13–18 years old. The 2018 result shows that the prevalence increased to 48.9%. Caturiyantiningtiyas' [5] research shows that in SMA Negeri 1 Polokarto 79.4% of the female students were suffering anemia. Suiyatin's [6] research shows that in Pesantren modern Ummul Qura Al-Islam Bogor 52% of the female students were suffering anemia. Rotua's [7] research shows that in SMA Negeri 14 Palembang 40% of the female students were suffering from anemia. The prevalence number of anemia in North Sumatera is also still fairly high, i.e. 78.4%. In Desa Paluh Kemiri Kecamatan Lubuk Pakam the number is higher, i.e. 82.2% [8]. Sihotang and Tarigan's [9] research shows that in 60 female students of SMA Trisakti Lubuk Pakam, 48.3% were suffering anemia, and 35% showed lack of awareness about anemia.

One of the causes of anemia is the lack of awareness about anemia. Awareness of anemia itself proved to be important in case of anemia. If the awareness of anemia is low, the incidence of suffering anemia will increase [10]. The result shows that 84.4% of female students that have low awareness are suffering anemia [11].

Research conducted by Laksmita [12] in SMA Negeri 1 Talang Padang shows that 32 (47.1%) female students with "sufficient" awareness of anemia aren't suffering anemia, while 36 (52.9%) female students are suffering anemia. Meanwhile, 22 (28.6%) female students with "low"

awareness of anemia are not suffering from anemia, while 55 (71.4%) female students are suffering anemia.

Anemia in teenage girls could be prevented by prescribing Blood Boost Formula and giving awareness-raising programs to increase awareness about anemia. The program can be conducted by using a variety of media to make it easy and clear to the audience in receiving and understanding the presented material [13]. One of the media that could be utilized to give information to teenagers is comics [14].

This community dedication activity is conducted on female students of SMK Budi Nasional Tebing Tinggi. The purpose of this activity is to reduce anemia prevalence in students and raise the awareness about anemia through the awareness-raising program using comics and WhatsApp group.

## 2    Methods

Community dedication activity is conducted at the vocational school of (SMK) Budi Nasional Tebing Tinggi. The number of female students at the SMK Nudi Nasional is 60 people. Partners and target audiences are 47 female students of the 12th grade of SMK Budi Nasional who are prescribed Blood Boost Formula from Puskesmas Sri Padang.

The activities conducted in this community dedication were initial evaluation to the student awareness of anemia, evaluating students' medical compliance with Blood Boost Formula given by Puskesmas and giving a lecture about anemia through comics and WhatsApp group. Comics are given in the form of a book (hard copy) and students are asked to read it.

Hemoglobin test was conducted at the beginning and the end of the activity. Anemia status was measured by looking at hb levels using a digital Hb meter. Blood sampling was carried out by analysts from Lubuk Pakam Health Center.

At the end of the activity post-test is conducted to measure the students' awareness of anemia. Respondent's knowledge about anemia was collected with the questionnaire method, namely giving a questionnaire to the sample and filled in by themself. Questions given to evaluate the compliance with consuming Blood Boost Formula and pretest/post-test questions can be seen in Table 1 and 2. Pretest /post-test questions were given in multiple choice form. Evaluation indicator could be seen in Table 3. For each answer given the highest score is 3 and the lowest score is 1. Based on the score obtained, the criteria for measuring knowledge are as follows: Good: 41-60, Enough: 21-40, and Not Enough: < 21.

**Table 1**. Questionnaire in evaluating students' compliance with consuming Blood Boost Formula

| No. | Question |
|---|---|
| 1 | In 2020, how many times are you prescribed Blood Boost Formula from the nutritionist?<br><br>1.  1 time   2.  2 times   3.  3 times |
| 2 | Every time you're prescribed Blood Boost Formula from Puskesmas' nutritionist, how much did you get?<br><br>1.  4 pills   2.  8 pills   3.  12 pills |
| 3 | Did you comply with the Blood Boost Formula given by Puskesmas' nutritionist?<br>1.  yes                    2.  no |
| 4 | (If answered yes) what is the reason? |
| 5 | (If answered no) how many pills did you consume? |
| 6 | (If answered no) What is the reason? |
| 7 | When was the last time you were prescribed Blood Boost Formula? |

**Table 2.** Questions on pretest and post-test

| No. | Question |
|---|---|
| 1 | In 2020, how many times are you prescribed Blood Boost Formula from the nutritionist? |
| 2 | Every time you're prescribed Blood Boost Formula from Puskesmas' nutritionist, how much did you get? |
| 3 | Did you comply with the Blood Boost Formula given by Puskesmas' nutritionist? |
| 4 | (If answered yes) what is the reason? |
| 5 | (If answered no) how many pills did you consume? |
| 6 | (If answered no) What is the reason? |
| 7 | When was the last time you were prescribed Blood Boost Formula? |

**Table 3.** Evaluation conducted on female students who become the target in community dedication activity regarding awareness-raising program about anemia

| No. | Activity | Evaluation Indicator |
|---|---|---|
| 1 | 'Female students' compliance with Blood Boost Formula | Percentage of students consuming Blood Boost Formula |
| 2 | Lecture about iron-deficiency anemia | - Participants attend the lecture thoroughly<br>- Participants could answer the question orally at the end of activity<br>- Increase in awareness about iron-deficiency anemia |
| 3 | Hemoglobin test | Anemia prevalence in female students of SMK Budi Nasional |

## 3    Results and Discussion

### 3.1  Prescribing Blood Boost Formula

Prescribing Blood Boost Formula by Puskesmas was conducted once a month; 4 pills for a month, means that Blood Boost Formula is consumed one per week. Prescribing was conducted for 3 months. The distribution could be seen in Table 4. Table 4 shows that there are 18 female students (38.3%) who didn't get Blood Boost Formula. According to evaluation results, it is known that the reason was the absence of the students because of activities outside of school, namely field work practice.

**Table 4.** Distribution of the students based on the frequency of being prescribed Blood Boost Formula in 2020

| Frequency | Recipient | Percentage(%) |
|---|---|---|
| 0 | 18 | 38.3 |
| 2 | 11 | 23.4 |
| 3 | 18 | 38.3 |
| Total sum | 47 | 100 |

### 3.2    Compliance with Blood Boost Formula

The compliance with Blood Boost Formula of female students of SMK Budi Nasional is shown in table 3. Table 5 shows that from 29 students prescribed Blood Boost Formula, there are 20 students (69%) not complying. Evaluation results show that the reason not to consume Blood Boost Formula is because of forgetness (6 students), feeling nausea and headache (6 students) and taking a dislike because of the bitter taste (8 students). On the other hand, 9 students

complied with Blood Boost Formula. The reason was to prevent anemia and increase stamina and immunity.

**Table 5.** Compliance with Blood Boost Formula of female students of SMK Budi Nasional

| Compliance with Blood Boost Formula | Recipient | Percentage(%) |
|---|---|---|
| Consuming all Blood Boost Formula | 9 | 31 |
| Not consuming all Blood Boost Formula | 20 | 69 |
| Total sum | 29 | 100 |

### 3.3 Blood Hemoglobin Level in Female Students

Anemia is a condition of decreased level of hemoglobin, hematocrit and red blood cell counts below average person normal [2]. Anemia is also a condition where red blood cell counts and oxygen capacity in the body is not sufficient [15]. The respondent frequency distribution based on hemoglobin level status is shown in Table 6.

**Table 6.** Respondent Frequency Distribution Based on Hemoglobin Level Status

| Anemia Status | Recipient | Percentage(%) |
|---|---|---|
| Positive | 16 | 34 |
| Negative | 31 | 66 |
| Total sum | 47 | 100 |

Table 6 shows that 16 female students (34%) are suffering from anemia. The prevalence is higher than the one that shown in Basic Health Research 2013 (22.7%). This result explains that anemia prevalence in female students of SMK Budi Nasional Tebing Tinggi is still relatively high. Anemia in teenage girls affects growth and development, immunity towards infection, everyday activity, concentration, intelligence, and comprehension. As a mother-to-be, the demand for iron in teenage girls is high, and the intake should be sufficient so that deficiency does not occur before pregnancy. If the intake is insufficient, it could affect childbirth such as premature birth, abnormal birth, low weight birth, even mother's death [7].

### 3.4 Awareness-Raising Program About Anemia Utilizing Comics and Social Media

Awareness-Raising program about anemia to the students was conducted by utilizing comics (Fig 1) and social media namely WhatsApp group (Fig 2). Activity results show that there was an increase in students' awareness after this activity was conducted. This could be seen from the pretest and post-test score (Fig 3).
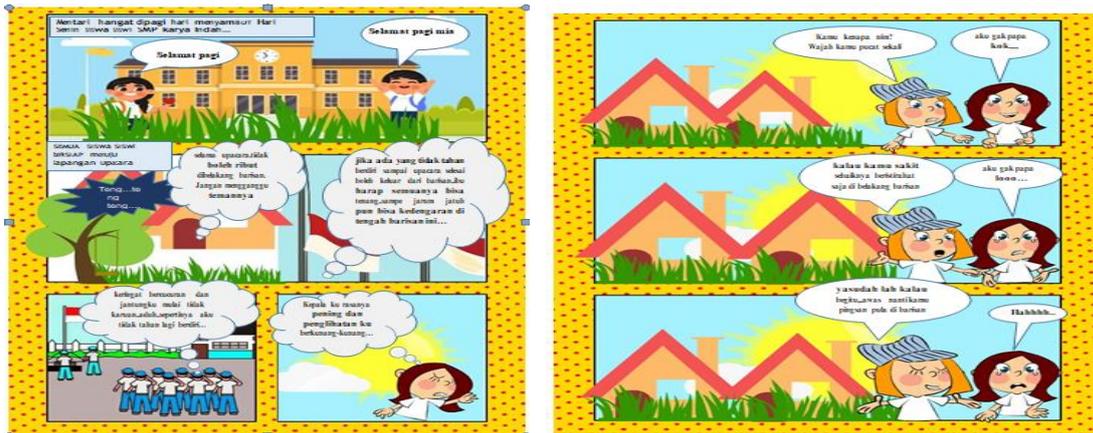
**Figure 1.** The Comic Media Form That Was Given to Students in The Awareness-Raising Program About Anemia.
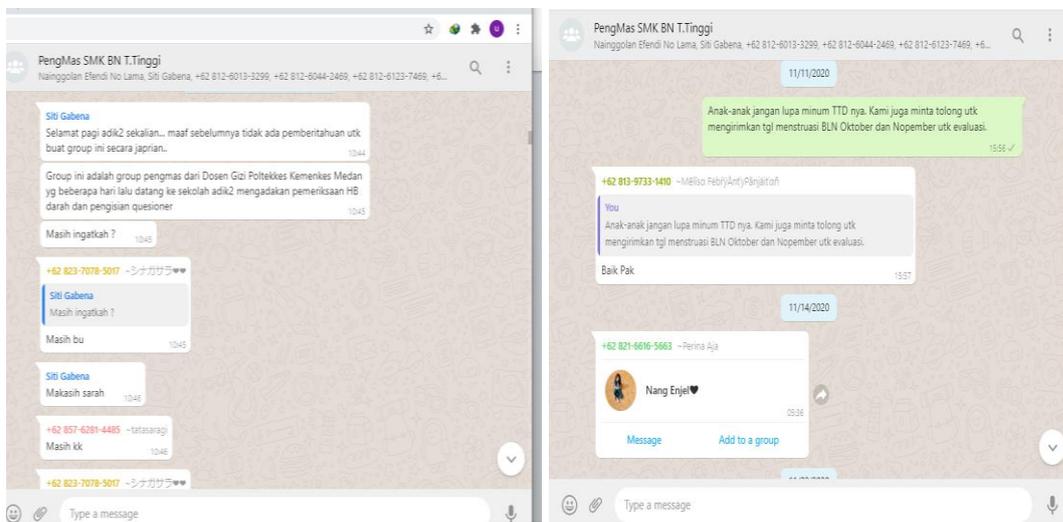


**Figure 2.** WhatsApp Group as a Media of Awareness-Raising Program About Anemia in Teenage Girls.
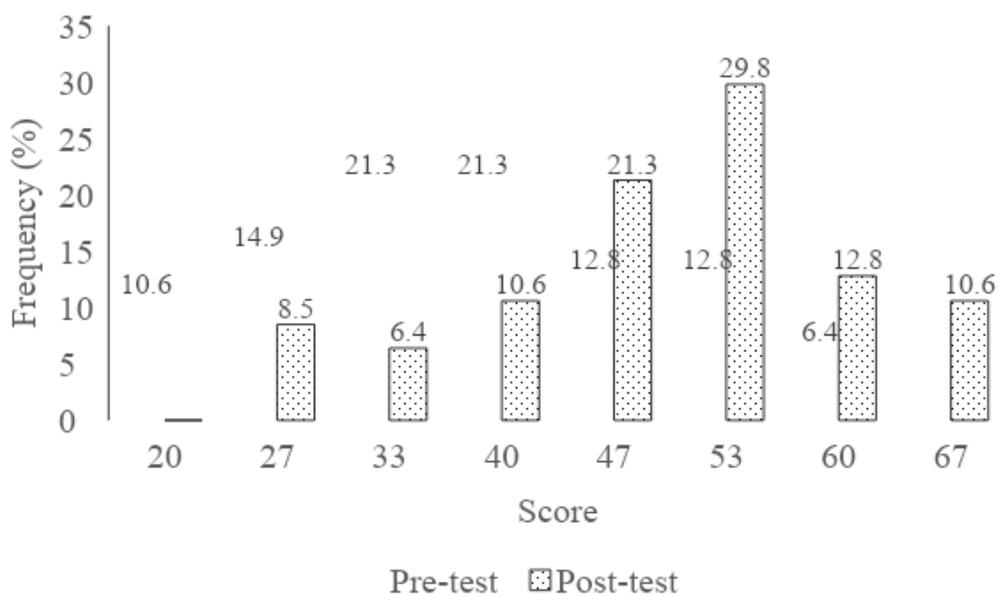


**Figure 3.** Score During Pre-test and Post-Test

Mean awareness score of female students of SMK Budi Nasional about anemia is still relatively low, which is 38 points. Fig 3 shows that 10.6% of the students score 20 points–which is the lowest score–at pre-test, and 0% at post-test. Meanwhile, 6.4% of the students scored 60 points–which is the highest score at pretest, and 10.6% at post-test. Based on the question given, the question with the most number of correct answers was the one about the definition of anemia (74.6%), the cause of anemia (89.4%) and the function of iron (66%). The percentage of other questions being correctly answered is under 30%, mostly because they didn't yet understand its meaning. Even for a question about foods that contain iron (Fe), only 12.7% of students answered correctly, and for a question about ASF that contain iron none of them answered correctly.

Fig 3 shows there is an increase in awareness score after the activity compared to before the activity with a mean increase by 11.1 point. The largest increase is 40 points scored by one student, 33.3 points increase scored by 2 students and 26.7 points increase scored by 6 students. At pretest, there were still 10.6% students scoring 20 points, but at post-test there were none. While at pretest there were none scoring 67 points, but at post-test 10.6% students scored it. Based on the give questions, the largest increase were questions about knowledge about iron (Fe) source (40%), the term iron from vegetables (36.2%), how to prevent anemia (31.9%), iron (Fe) function (23.4%) and the term iron from animals (14.9%). From the mean value, there was an increase in awareness by 11 points. Based on this result it is known that an awareness-raising program could increase the awareness of female students of SMK Budi Nasional. Cahyaningsih's [16] research that was conducted with oral speech and leaflets also showed that there was an increase in respondents' awareness after the program compared to before the program.

Knowledge is the result of knowing, which is usually obtained from the senses. The higher a person's level of knowledge, the more something he will observe. In addition, knowledge is the totality of thoughts, ideas, concepts, and understandings that humans have. Knowledge includes reasoning and human understanding of everything that includes practice or the ability to solve life problems that have not been done systematically. Good knowledge can be obtained from several factors, namely experience and exposure to information [18].

## 4    Conclusion

Compliance of female students at SMK Budi Nasional with Blood Boost Formula given by Puskesmas was only about 69% of 47 students. Anemia prevalence of female students at SMK Budi Nasional was 34%. Awareness-Raising program about anemia through comics and WhatsApp group increase students' awareness by 10 points with the lowest pretest score of 20 points, and the highest score of 60 points. While the lowest post-test score of 27 points, and the

highest score of 67 points. Socialization about nutritious food and anemia to students needs to be carried out continuously in order to prevention and control of anemia, so that students do not experience anemia in adolescence which will have bad consequences for the future.

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