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Improving Adolescent Reproductive Health Literacy through Community-Based Health Screening and Education in Rural East Java

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ABSTRACT Adolescents are an age group that is prone to health problems such as anemia, impaired nutritional status, premature hypertension, and the risk of metabolic disorders due to lifestyle changes. In addition, low reproductive health literacy increases the risk of risky behaviors and long-term health problems. This community service activity aims to identify adolescent health conditions through integrated screening and increase reproductive health knowledge through a community-based approach. The methods used include blood pressure, hemoglobin, hematocrit, blood glucose, Body Mass Index (BMI) measurement, and interactive counseling on reproductive health. The activity was attended by 17 teenagers from Mrican Village. The screening results showed that 17.7% of adolescents were in the prehypertensive category, 17.7% had poor nutritional status based on BMI, and 17.7% had high blood glucose levels. As many as 11.8% of adolescents had low hemoglobin levels, while 29.4% showed low hematocrit levels. Educational evaluation showed that 88.2% of participants obtained perfect scores on the reproductive health post-test. This activity is able to provide an overview of adolescents' health conditions through health screening while increasing their knowledge about reproductive health. In addition, the findings of health risk factors in some adolescents are also an important basis for follow-up efforts in the form of health education, monitoring nutritional status, and fostering healthy living behaviors in adolescents in the community.

INDEX TERMS : Educational Interventions, Community-Based Reproductive Health, Adolescents.

I. INTRODUCTION

Adolescence is an important period in the life cycle characterized by rapid physiological, psychological, and behavioral changes. These changes affect nutritional needs, diet, and lifestyle that can lead to a variety of health problems, including anemia, impaired nutritional status, and the risk of metabolic disorders such as hypertension and diabetes later in life. Anemia in particular remains a public health problem in Indonesia. According to a report [1] The prevalence of anemia in adolescents aged 15-24 years reached 15.5% nationally, although this figure shows a decrease compared to previous data, it is still considered high according to public health standards.

In addition to anemia, data from *Basic Health Research* (Riskesdas) [2] It shows that the prevalence of anemia in the age group of 15-24 years reaches about 32%, with

differences in proportion by gender and region of residence. This condition suggests that some adolescents still face nutritional problems that can affect organ function and physical capacity, which if not intervened can have an impact on learning achievement, reproductive health, and productivity in adulthood.

Reproductive health is an important aspect of adolescent health. However, a lack of understanding of physical changes during puberty, reproductive organ hygiene, and prevention of risky behaviors can potentially lead adolescents to develop long-term health problems such as sexually transmitted infections, unplanned pregnancies, and other health complications. This is reinforced by several studies that show low reproductive health literacy among adolescents as well as inaccurate myths about puberty and sexuality. [3] [4] Integrated health screening and

community-based reproductive health education are strategic approaches to address this issue. Health screenings that include blood pressure measurements, hemoglobin checks, blood glucose, and nutritional status assessments are important to identify problems as early as possible. Meanwhile, reproductive health education designed in an interactive and participatory manner has been proven to be effective in increasing knowledge and healthy behaviors among adolescents.

A community approach involving peer educators adds to the sustainability and relevance of the intervention. Community-based education has been shown to significantly increase health literacy and encourage positive attitudes towards healthy behaviors in adolescents [5]

Based on this background, this community service activity is designed to provide integrated health screening and community-based reproductive health education to adolescents in Trenceng Hamlet, Mrican Village, Jenangan District, Ponorogo Regency, East Java. This intervention is expected to not only provide an overview of these conditions physical health of adolescents, but also improves their understanding of reproductive health while providing skills that are useful for current and future quality of life. The results of initial coordination with village officials, health cadres, and community leaders in Trenceng Hamlet show that there has never been an integrated adolescent health screening which includes checking nutritional status, blood pressure, blood glucose levels, hemoglobin, and hematocrit. In addition, based on informal interviews with health cadres and parents of adolescents, there are still limited knowledge about reproductive health, puberty, reproductive organ hygiene, and prevention of risky behaviors. Adolescent health coaching activities have also not been carried out in a structured manner so that early detection of adolescent health problems is not optimal. This condition shows the need for community-based interventions that integrate health screening and reproductive health education as a promotive and preventive effort in Trenceng Hamlet, Mrican Village.

The objectives of this service activity are: (1) identifying adolescent health conditions through integrated screening; (2) improving knowledge and understanding of reproductive health; and (3) youth empowerment through the formation of peer educators to support the sustainability of health education in the community of Trenceng Hamlet, Mrican Village, Jenangan District, Ponorogo Regency, East Java.

Solutions To Problems

This community service activity was carried out in Trenceng Hamlet, Mrican Village, Jenangan District, Ponorogo Regency, East Java. The target of the activity is adolescents aged 11-18 years who are domiciled in the region. The total participants who participated in this

activity were 17 teenagers. The activity was carried out in one day with an integrated promotive and preventive approach.

II. Method

The implementation of activities is carried out through three main stages, namely the preparation stage, the stage of implementing educational interventions and health screening, and the evaluation stage.

1. Preparation Stage

1.1 Community Coordination Meeting

The activity began with coordination between the community service team of the Ministry of Health Polytechnic Surabaya with village officials, health cadres, community leaders, schools (if involving schools), and related stakeholders. This meeting aims to agree on the time, place, activity targets, implementation flow, and division of tasks of each party.

1.2 Participant recruitment and inclusion criteria

Participants were recruited through coordination with village officials, health cadres, and adolescent families in Trenceng Hamlet. Inclusion criteria include: (1) adolescents aged 11–18 years; (2) domiciled in Trenceng Hamlet, Mrican Village; (3) willing to participate in the entire series of health screening and reproductive health education activities; and (4) obtain the consent of parents/guardians to participate in activities. Adolescents who were not present during the activity or did not complete all stages of examination and education were not included in the analysis of the results.

a. Participant Registration

Participants who meet the target criteria register by filling out a basic identity form containing their name, age, gender, education, and address.

b. Ethics Briefing and Approval to Participate in Activities

Before the activity started, participants were given an explanation of the purpose of the activity, benefits, health examination procedures, data confidentiality, and participants' rights during the activity. Participants then gave their consent to participate in the entire series of activities. Community service activities are carried out by paying attention to ethical principles in the form of respect for the rights of participants, data confidentiality, and consent to participate in activities. Before the implementation of the activity, parents/guardians and participants were given an explanation of the objectives, benefits, inspection procedures, and the use of data for the purpose of reporting activities. Parents/guardians' consent is obtained before the teenager participates in the activity. All health examination results are recorded confidentially and are only used in aggregate data without including the identity of the participant

c. Basic Data Preparation

Initial data collection of participants was carried out

through filling out questionnaires on respondent characteristics and basic knowledge about reproductive health before receiving counseling.

2. Implementation Stage

2.1 Opening Ceremony

The activity was officially opened by representatives of the Polytechnic of the Ministry of Health of Surabaya and the local village government. At this stage, the objectives of



FIGURE 1. Opening of the activity

the activity and expectations for the results to be achieved are conveyed FIGURE 1.

Participant Attendance Documentation

Before the core activity started, the participants' attendance was recorded and verified.



FIGURE 2. Attendees activity

2.2. Health Screening Stage

a. Anthropometric Measurements

Includes measuring body weight and height to determine nutritional status based on Body Mass Index (BMI).

b. Blood Pressure Check



Figure 3. Anthropometric measurements

Blood pressure was measured using a calibrated digital sphygmomanometer, while blood glucose levels were

assessed using a calibrated digital glucometer following standardized measurement procedures. All measurements were performed by trained personnel in accordance with the manufacturer's instructions and established clinical protocols to ensure the accuracy and reliability of the collected data



FIGURE 4. Blood pressure check (a) and Blood glucose check

c. Hemoglobin and Hematocrit Examination

The examination was carried out using point-of-care testing tools to detect the risk of anemia and the blood health condition of the participants.



FIGURE 5. Hb and Hematocrit Examination

2.3. Educational Intervention Stage (Counseling and Counseling)

Reproductive health counseling was provided to all participants using interactive lecture methods, group



Figure 7. Media Education

discussions, questions and answers, and educational media.

The materials provided include:

1. Anatomy and physiology of the reproductive system.
2. Physical and psychological changes during puberty.
3. Menstrual health.
4. Hygiene of the reproductive organs.
5. Prevention of sexually transmitted infections (STIs).
6. The impact of early marriage.
7. A healthy lifestyle for teenagers.

2.3 Evaluation Stage

The evaluation is carried out after all counseling materials have been provided.

a. Evaluation of Knowledge

Participants filled out a reproductive health knowledge questionnaire to measure the level of understanding after receiving education.



Figure 8. Evaluation of knowledge

b. Outcome Analysis

The team tabulated and descriptively analyzed the results of the health screening and the results of the participants' knowledge evaluation.

Evaluation indicators:

- Nutritional status based on BMI.
- Blood pressure category.
- Blood glucose levels.
- Hemoglobin and hematocrit levels.
- Understanding level of reproductive health.

The results of the examination activities on adolescents are described in detail in the form of a table as follows:

1. Characteristics of adolescents by gender and age

TABLE 1.

Distribution of Adolescents by Gender in Mrican Village, Ponorogo Regency February 2026

Gender	Frequency	Percentage (%)
Male	4	23,5%
Women	13	76,5%
Quantity	17	100%

Based on Table 1, the composition of adolescents is almost entirely female (76.5%), while adolescent boys are mostly

female (23.5%). This imbalance of proportion can be caused by local cultural factors and customs in which adolescent girls are more actively participating in health activities in the community. This is in line with research [6] which states that adolescent girls tend to have higher health awareness than boys.

TABLE 2.

Distribution of adolescents by age in Mrican Village, Ponorogo Regency, February 2026

Age (Years)	Frequency	Percentage (%)
11	1	5,9%
12	3	17,6%
13	5	29,5%
14	3	17,6%
15	1	5,9%
16	3	17,6%
18	1	5,9%
Quantity	17	100%



Figure 6. Educational Intervention Activities

Based on TABLE 2. Nearly half of adolescents (29.5%), in the 13-year-old age group, followed by a small percentage (17.6%) in the 12-, 14- and 16-year-old age groups.

2. Blood Pressure Screening Results

TABLE 3.

Results of Adolescent Blood Pressure Measurement in Mrican Village, Ponorogo Regency February 2026

Classification	Frequency	Percentage (%)
Normal	14	82,3%
Pre-hypertension	3	17,7%
Quantity	17	100%

The results of blood pressure measurement in Table 3 show that almost all (82.3%) adolescents have blood pressure

within normal limits, while a small percentage of adolescents (17.7%) are detected to be in the pre-hypertension category. These data show that although almost all adolescents have a stable cardiovascular condition, the presence of pre-hypertension in nearly one-fifth of adolescents requires ongoing attention and monitoring. Pre-hypertensive conditions in adolescence can be a risk factor for hypertension in adulthood if interventions are not carried out through regulation of diet, physical activity, and a healthy lifestyle.

3. Nutritional Status Screening Results

TABLE 4.

Nutritional Status of Adolescents Based on BMI in Mrican Village, Ponorogo Regency February 2026

Categories	Frequency	Percentage (%)
Normal	14	82,3%
Underweight	3	17,7%
Quantity	17	100%

TABLE 4 describes the nutritional status of adolescents (BMI). Almost all of them fall into the normal category (82.3%), the prevalence of underweight is small (17.7%). In terms of nutritional status, this figure shows a proportion that indicates a problem with adequate energy and protein intake.

4. Blood Glucose Level Screening Results

TABLE 5.

Adolescent Blood Glucose Levels in Mrican Village, Ponorogo Regency February 2026

Categories	Frequency	Percentage (%)
Normal	14	82,3%
Height	3	17,7%
Quantity	17	100%

The results of the blood glucose level examination in table 5, show that almost all (82.3%) adolescents are within normal limits, a small percentage (17.7%) have high glucose levels. Although the proportion is relatively small, the presence of adolescents with high blood glucose levels is an important signal that cannot be ignored.

6. Screening Results of Hemoglobin and Hematocrit Levels

TABLE 6.

Adolescent Hemoglobin Levels in Mrican Village, Ponorogo Regency February 2026

Categories	Frequency	Percentage (%)
Low	2	11,8%
Normal	13	76,4%
Height	2	11,8%
Quantity	17	100%

TABLE 7.

Adolescent Hematocrit Rate in Mrican Village, Ponorogo Regency February 2026

Categories	Frequency	Percentage (%)
Low	5	29,4%
Normal	10	58,8%
Height	2	11,8%
Quantity	17	100%

The results of the hemoglobin examination in table 6 show that almost all (76.4%) adolescents are in normal condition, while a small percentage (11.8%) of adolescents are in the low and high categories. Hematocrit examination (table 7) showed that most (58.8%) of adolescents were in the normal category, almost half (29.4%) low, and a small percentage (11.8%) high. Hematocrit tests are used as indicators to assess the condition of red blood cells and help detect anemia or other hematological disorders

5. Results of Reproductive Health Counseling Evaluation

TABLE 8.

Results of Evaluation of Adolescent Reproductive Health Counseling in Mrican Village, Ponorogo Regency February 2026

Evaluation Score	Frequency	Percentage (%)
100 (Perfect)	15	88,2%
< 100	2	11,8%
Quantity	17	100%

The results of the counseling evaluation (Table 8) showed a very high level of understanding, where almost all (88.2%) adolescents (15 out of 17 adolescents) managed to achieve perfect scores after participating in reproductive health education sessions. A small percentage (11.8%) of adolescents who obtained a score below 100. This can be influenced by several factors, such as differences in concentration levels, initial knowledge background, and individual level of understanding of the material presented.

2.4 Closure of Activities



Figure 9. Final Session and Group Documentation

FIGURE 9. Submission of general results of the activity, thanks to all parties involved, and group photos.

III. DISCUSSION

Theoretically, adolescence is divided into three stages of development, namely early adolescence (10–13 years), middle adolescence (14–16 years), and late adolescence (17–19 years). In the early and middle adolescence phase, there is an acceleration of growth (growth support), maturation of the reproductive organs, and significant hormonal changes due to the activation of the hypothalamic-pituitary-gonadal axis [7]. These biological changes lead to increased requirements for energy, protein, iron, and other micronutrients to support physical growth and sexual development.

According to Erikson's developmental theory, adolescents are in *Identity Stage versus Role Confusion*, in which individuals begin to form self-identity, including in terms of values, health behaviors, and self-concept [8][9]. In this phase, adolescents tend to have high curiosity and begin to be exposed to various environmental influences, including diet, lifestyle, and information related to reproductive health. If not accompanied by adequate education, this condition can increase the risk of unhealthy behaviors [10] [11]. In the context of reproductive health, hormonal changes such as increased estrogen in adolescent girls and testosterone in adolescent boys trigger the development of secondary sexual characteristics as well as the maturation of the reproductive system. Without a correct understanding of this process, teens can experience anxiety, misunderstandings, or improper hygiene practices [12] which is the most critical period in the formation of long-term health behaviors [5] [13].

From a public health perspective, adolescence is *Window of opportunity* for promotive and preventive interventions because the behaviors formed in this period tend to last into adulthood [14] [15].

In terms of nutritional status, this figure shows a fairly high proportion and indicates a possible problem with adequate energy and protein intake. Anemia in adolescents shows the risk of anemia in a group of adolescents, especially women, negatively impacting learning concentration, productivity, and physical stamina. This condition needs to be followed up by providing iron supplements (blood-boosting tablets) according to government programs, as well as education about iron-rich foods [5].

Interventions in the early and middle adolescence phases have been shown to be more effective in preventing anemia, nutritional disorders, and risky behaviors compared to interventions in older age. This is in line with *Life Journey Theory* which states that health investment in the early stages of life will have a long-term impact on an individual's quality of life [4].

These findings are in line with a report [13] which noted that there is still a high prevalence of malnutrition in adolescents

in rural East Java. Interventions in the form of nutritional supplementation and balanced diet education are priority steps that need to be taken immediately. In addition, hypertension data in adolescents are also obtained, this condition needs serious attention because pre-hypertension is a significant risk factor for the incidence of hypertension in adulthood [16] [17]. According to [18] [7], Increased blood pressure at a young age is associated with a high-salt diet, lack of physical activity, and increased food consumption, these data show the importance of healthy lifestyle education from adolescence as a non-communicable disease prevention strategy.

In the adolescent group, the increase in blood glucose levels can be influenced by a variety of factors, such as a diet high in simple sugars, excessive consumption of sugary foods and drinks, lack of physical activity, and a family history of diabetes mellitus. Consumption of fast food, sugary drinks, and an increasingly sedentary lifestyle in adolescents can contribute to increased blood glucose levels [19]. If this regulation is disrupted, there can be an increase in blood glucose levels which has the potential to develop into metabolic disorders such as diabetes mellitus [20].

Hemoglobin is a protein found in red blood cells that serves to bind and transport oxygen from the lungs to all body tissues and carry carbon dioxide back to the lungs for excretion. Sufficient hemoglobin levels are essential to maintain metabolic function and cell activity of the body. If the hemoglobin level is below normal values, then the condition is called anemia, which can cause symptoms such as fatigue, dizziness, decreased concentration, and decreased immunity [21] [22]. On the other hand, high hemoglobin levels can also occur in certain conditions, such as dehydration, smoking habits, or the body's adaptation to an environment with low oxygen levels, too high hemoglobin levels can affect blood viscosity and potentially increase the risk of circulatory disorders, such as the formation of thrombus (blood clots) to blockages in arterial blood vessels that trigger cardiovascular disease [20] [23] [24].

Hematocrit is the percentage of red blood cell volume in the blood to the total volume of blood. In adolescents, the condition of low hematocrit is often associated with insufficient intake of nutrients, especially iron, folic acid, and vitamin B12 which play a role in the process of red blood cell formation [18].

On the other hand, high hematocrit levels can also occur due to some conditions such as dehydration, increased red blood cell production, or the body's adaptation to higher oxygen needs. Increased hematocrit levels can cause the blood to become thicker, potentially affecting blood circulation if it occurs excessively [20]. The findings of the screening results are not only used as data for mapping adolescent health, but are also followed up through individual counseling to participants and parents/guardians. Adolescents with poor nutritional status are given education about a balanced diet and increased protein and iron intake.

Adolescents with low hemoglobin and hematocrit levels are given anemia prevention counseling and are encouraged to follow the blood supplement tablet supplementation program according to the government program. Meanwhile, adolescents who are identified as having high blood glucose levels or the prehypertensive category are given education about physical activity, limiting sugar and salt consumption, and regular health monitoring through collaboration with village health cadres and local health centers.

The involvement of health cadres and village officials is an important component in the sustainability of the program because it allows monitoring the condition of adolescents after the activities end. Community-based approaches have been proven to support the sustainability of reproductive health education and the strengthening of healthy living behaviors in adolescents.

In the results of the pre and post test of Reproductive Health, there was an increase in knowledge, this shows that health counseling is one of the effective methods of health education in improving adolescent knowledge. Health counseling is carried out through a structured information delivery process that aims to improve knowledge, attitudes, and attitudes, as well as individual behaviors in maintaining their health. Through an interactive learning process, adolescents can obtain correct information about reproductive health so that they can understand physical, hormonal, and appropriate changes in reproductive health [6] [15]

Adolescence is a period of transition from childhood to adulthood characterized by biological, psychological, and social changes. In this phase, adolescents begin to experience the maturation of the reproductive organs as well as significant hormonal changes. Therefore, adolescents need correct and comprehensive information about reproductive health in order to understand the changes that occur in their bodies and be able to maintain optimal reproductive health [4] [25].

IV. CONCLUSION

Integrated health screening and community-based reproductive health education activities in Trenceng Hamlet, Mrican Village, succeeded in improving adolescent reproductive health knowledge, which was shown by 88.2% of participants obtaining perfect scores in the post-education evaluation. The results of health screening showed that 17.7% of adolescents were in the prehypertensive category, 17.7% had undernourished status, 17.7% had high blood glucose levels, 11.8% had low hemoglobin levels, and 29.4% had low hematocrit levels. The findings show the need for early detection and sustainable adolescent health coaching. Community-based adolescent health programs involving health cadres, families, schools, and health centers are recommended to strengthen reproductive health education, monitoring nutritional status, anemia prevention, and control of non-communicable disease risk factors in adolescents. translite dalam bhs Indonesia

V. THANKS

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