

## **Anemia education for adolescents in RW 12, Kramen, Sidoagung, Godean**

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### **Abstract**

Anemia, particularly iron deficiency, remains a public health issue that affects many adolescent girls in Indonesia. This condition is characterized by low hemoglobin levels, which disrupts oxygen distribution to body tissues. Adolescent girls are a vulnerable group due to increased iron requirements during puberty and blood loss due to menstruation. The effects of anemia are not only reduced stamina, pale face, and fatigue, but also implications for concentration, academic achievement, and future reproductive health. Based on the 2023 Sleman Health Office report, the prevalence of anemia in adolescent girls reached 36.8%, thus requiring promotional and preventive efforts. One effective strategy is health education to increase adolescents' knowledge, attitudes, and behaviors regarding anemia. This education activity was carried out by the UNISA Yogyakarta KKN 55 team in RW 12 Padukuhan Kramen, Sidoagung, Godean on Sunday, August 10, 2025, using interactive lectures, discussions, pre-tests, and post-tests with questionnaires sent via WhatsApp. A total of 14 adolescent girls participated, and the evaluation results showed a significant increase in participants' knowledge about anemia, its signs and symptoms, prevention, and compliance with Iron Supplement Tablets (TTD) consumption. Thus, health education has proven to play an important role in increasing adolescent girls' awareness and serves as a strategic step in reducing the incidence of anemia in the community.

**Keywords:** anemia, adolescents, health education

### **1. Introduction**

Anemia is one of the public health problems that is still commonly found in Indonesia. This condition is characterized by hemoglobin levels that are lower than normal, resulting in suboptimal oxygen distribution to body tissues. Among the various types of anemia, iron deficiency anemia is the most common, especially among adolescent girls. Iron deficiency is often triggered by inadequate nutritional intake, an unbalanced diet, or increased bodily needs during puberty or menstruation (Cohen & Powers, 2024). This condition often goes undetected early on, even though anemia can reduce quality of life, decrease activity levels, and impact daily productivity (Arismawati et al., 2022).

According to a 2023 report by the Sleman District Health Office, the prevalence of anemia among adolescent girls remains quite high at 36.8%. This figure indicates that anemia is not merely an individual issue but has become a public health problem requiring serious attention (Dinkes Sleman, 2023). Adolescent girls are a highly vulnerable group because during puberty, there is accelerated growth, increased iron requirements, and monthly iron loss through menstrual blood (Kemenkes & Ri, 2023).

The impact of anemia on adolescents is not limited to physical aspects, such as weakness, fatigue, pale complexion, and decreased stamina. Furthermore, anemia can interfere with adolescents' ability to concentrate, their academic performance, and their productivity. In the long term, adolescent girls with

anemia are at risk of reproductive health problems and complications during pregnancy, such as low birth weight babies and postpartum hemorrhage (WHO, 2022). This means that anemia not only affects individuals but also has implications for the quality of the nation's future generations. Therefore, early preventive interventions are essential to protect the health of adolescent girls.

Adolescence is a crucial phase in human life, marked by significant changes in physical, psychological, and social aspects. This stage is known as a period of transition from childhood to adulthood, during which individuals are required to be able to adapt to various changes. According to the World Health Organization (WHO), adolescents are aged 10-19 years, while the National Population and Family Planning Agency (BKKBN) defines adolescents as individuals aged 10-24 years who are not yet married (WHO, 2022; BKKBN, 2021). This difference in age ranges illustrates that the category of adolescence can be viewed from both a health and a socio-cultural perspective. The adolescent period is not uniform, but is divided into three main sub-stages that reflect the dynamics of physical, cognitive, and social development, namely early adolescence (10-13 years), middle adolescence (14-16 years), and late adolescence (17-19 years) (Hamidah & Rizal, 2022).

Efforts to reduce the incidence of anemia require integrated promotive and preventive strategies. One effective approach is health education. Through education, adolescents can obtain accurate information about the importance of consuming iron-rich foods, balanced nutrition, and adherence to iron supplements (TTD). Education not only increases knowledge but is also expected to change the attitudes and behaviors of adolescent girls in maintaining their health (Kemenkes RI, 2023; WHO, 2022). Thus, health education interventions are a strategic step in efforts to reduce the prevalence of anemia while improving the health quality of adolescents in Sleman Regency. Based on this, iron deficiency anemia education activities for adolescent girls are one of the promotive and preventive efforts to improve the health status of adolescents in Sleman Regency.

## 2. Method

This community service activity was held on Sunday, August 10, 2025, from 10.00 to 11.00 a.m. Western Indonesia Time. Targeting unmarried girls aged 14-24 years. The method used was a health education approach on anemia, accompanied by discussions and question-and-answer sessions to improve participants' understanding. The material was delivered interactively using leaflets as visual aids so that the information was easier to understand and could be taken home by the participants. The anemia education program for adolescents in RW 12 Padukuhan Kramen, Sidoagung, Godean was conducted. The methods used were as follows:

- a. Introduction
  - 1) The moderator opened the event, greeted the participants, and explained the purpose of the activity.
  - 2) Light ice-breaking activities, questions about "What is Anemia?"
  - 3) A questionnaire about anemia was distributed via WhatsApp before the education session
- b. Presentation of Material
  - 1) Definition of anemia
  - 2) Signs and symptoms of anemia
  - 3) The impact of anemia on adolescents
  - 4) How to prevent anemia
  - 5) Proper consumption of Iron Supplement Tablets (TTD)
- c. Discussion and Q&A
  - 1) Giving adolescents the opportunity to ask questions
  - 2) The KKN team answers in simple and interactive language
  - 3) Providing examples of anemia symptoms: frequent dizziness during menstruation, pale face, pale nails, pale lips, quick fatigue, and weakness
- d. Closing
  - 1) Summarizing the material briefly about anemia: "Anemia is a condition of low blood count, which occurs when the body lacks red blood cells or iron, resulting in reduced oxygen supply to the entire body, causing the body to become easily fatigued, dizzy, pale, and have difficulty concentrating.

- 2) Sending a questionnaire via WhatsApp about anemia after the material presentation is complete
- 3) Distributing leaflets for participants to take home
- 4) Group photo and documentation: Anemia education for adolescents was held in RW 12 Padukuhan Kramen. Sidoagung, Godean on Sunday, August 10, 2025, with 14 female adolescents in attendance. The activity lasted for approximately one hours and used interactive lectures, discussions, question and answer sessions, pre-tests, and post-tests via WhatsApp questionnaires.

### 3. Results and Discussion

Based on the results of the questionnaire filled out before the counseling session, most of the adolescents did not have a good understanding of anemia, its signs and symptoms, or how to prevent it. However, after the presentation of the material, discussion, and distribution of the leaflet, followed by a post-test, there was an increase in the adolescents' knowledge about anemia, its signs and symptoms, the effects of anemia, and how to prevent anemia.

The evaluation results showed a significant increase in adolescents' knowledge after the counseling session. Additionally, adolescents also stated that they were more aware of the importance of consuming TTD regularly and maintaining a nutritious diet.

Anemia is a condition in which there is a decrease in the number of red blood cells or hemoglobin levels in the circulation, thereby reducing the blood's ability to transport oxygen to body tissues. This condition remains a global health problem, including in Indonesia. The most common type of anemia is iron deficiency anemia. During adolescence, especially among adolescent girls, the risk of anemia is higher than in boys due to physiological changes, increased iron requirements, and blood loss due to menstruation. Menstruation causes adolescent girls to lose approximately 30 ml of blood per day and approximately 1.3 mg of iron per day. Adolescent girls need an iron intake of approximately 14.8 mg per day to prevent anemia (Siauta et al., 2020). Adolescent girls are considered anemic if their Hb level in the blood is 12 g/dl. Hemoglobin is useful for binding oxygen and transporting it to all body tissue cells, including muscles and the brain, so that they can function properly (Siauta et al., 2020).

Anemia in adolescent girls arises due to various interrelated factors. Direct factors include nutritional status, an unbalanced diet such as strict dieting or consumption of UPF/junk food, low intake of iron-rich foods (especially heme iron), menstruation, and parasitic infections that can increase the risk (Wiafe et al., 2023). Meanwhile, indirect factors include knowledge levels, attitudes, socioeconomic conditions, parental education, and living environment. Several studies also show a correlation between Body Mass Index (BMI) and the incidence of anemia (Ningsih et al., 2023).

Some contributing factors include low compliance with iron supplementation, an unbalanced diet, lack of physical activity, and the habit of consuming tea or coffee, which contain tannins and caffeine that can inhibit the absorption of iron-rich foods. In addition, limited nutritional knowledge, low socioeconomic status, and health status also increase the risk. The impact of anemia on adolescent girls is quite serious, including decreased reproductive health, delayed motor and mental development, decreased academic achievement, reduced physical fitness, and suboptimal height growth. Therefore, the compliance of adolescent girls and women of childbearing age in consuming TTD is an important indicator of the success of anemia prevention and control programs (Rahmawati et al., 2024).

Efforts to prevent and control anemia can be carried out through three main strategies, namely health education, administration of iron supplements in the form of blood-boosting tablets (TTD), and a combination of both. The administration of TTD accompanied by the consumption of iron-rich foods has been proven to significantly increase hemoglobin levels. In addition, improving eating habits, food fortification, and increasing the consumption of nutritional sources play an important role in reducing the risk of anemia (Surtimanah, 2023).

Iron plays an important role in the formation of hemoglobin, which transports oxygen throughout the body via the blood. Iron deficiency can cause anemia, especially in adolescent girls who lose blood during menstruation, with an average of 20-25 cc per month (Khobibah et al., 2021). As a preventive strategy, the WHO recommends WIFAS (Weekly Iron-Folic Acid Supplementation), which involves taking iron tablets containing approximately 60 mg of elemental iron and 0.2 mg of folic acid (WHO, 2016) regularly, one tablet per week and one tablet per day during menstruation (Novendy et al., 2023).

Adherence to taking these tablets significantly impacts hemoglobin levels and anemia prevention, although the taste, color, and side effects of the medication can influence adherence rates (Alifia Fatika Rahma, Muhammad Ridwanto, Noor Hidayah, Indanah, 2024). Iron absorption in the body is optimized when consumed with vitamin C, such as from citrus fruits, which are rich in antioxidants and also function to strengthen the immune system, fight infections, aid in red blood cell formation, and accelerate healing. The water-soluble vitamin C content also plays a role in collagen formation, protects cells from damage caused by free radicals, and helps maintain overall health (Wilda, 2020).

According to (Hamidah & Rizal, 2022), there are three stages of adolescent development in the process of adjusting to adulthood, namely early adolescence (ages 10-13), middle adolescence (ages 14-17), and late adolescence (ages 18-21).

### **3.1. Early Adolescence**

Early adolescence is a stage in which physical growth occurs rapidly, and changes in certain parts of the body, both in males and females, are referred to as puberty. At this stage, adolescent girls usually experience physical changes faster than adolescent boys. During this period, children tend to be selfish and feel that their thoughts are always correct. Therefore, advice should be accompanied by clear reasons or arguments.

At this stage, children often want to do everything themselves without their parents help and begin to understand the concept of privacy. The role of parents is very important in providing information about puberty so that children do not feel anxious when experiencing physical changes. Teenagers often feel confused and surprised by the changes that occur in their bodies and the urges that arise along with these changes.

During this period, they develop new ways of thinking, become quickly attracted to the opposite sex, and are more easily stimulated emotionally and physically. Their high sensitivity to ego makes adolescents at this early stage often difficult for adults to understand.

### **3.2. Middle Adolescence**

Middle adolescence is a stage in which boys experience voice changes, weight and height increases, and the appearance of acne. Meanwhile, girls experience more mature physical changes, coupled with increasingly regular menstrual cycles. At this stage, adolescents begin to be interested in romantic relationships with the opposite sex, and often argue with their parents because of their desire to learn independence. In fact, juvenile delinquency begins to emerge.

Teenagers at this stage prefer to spend time with their peers and tend to act without thinking things through first. They crave recognition from their peers and feel happy when accepted into that social circle. There is a tendency toward narcissism, which is loving oneself and liking friends who are similar to oneself. Teenagers are often confused because they do not know whether to choose to be sensitive or indifferent, prefer crowds or solitude, be optimistic or pessimistic, idealistic or materialistic, and so on.

### **3.3. Late Adolescence**

In the late adolescent stage, emotional development has reached maturity, where emotions are more controlled and adolescents begin to consider the consequences of their actions. They tend to be wiser in making decisions, more focused on their goals, and begin to seek advice from parents or others regarding the steps to take, especially those related to their future and life goals.

This stage is a phase of consolidation towards maturity, marked by the achievement of five important aspects: a growing interest in intellectual functions, an ego drive to connect with others and seek new experiences, a stable sexual identity, a shift from egocentricity to a balance between self-interest and the interests of others, and the formation of a "wall" that separates private life (private self) from society.

Overall, in early adolescence, they still feel confused and awkward about the physical and psychological changes taking place within themselves. In middle adolescence, they begin to feel comfortable with these changes and start to build relationships and experiences similar to those of other adolescents. In late adolescence, a positive attitude and maturity become more established, and this needs to be supported positively by parents and the surrounding environment.

#### 4. Conclusion

The anemia education program for adolescent girls in RW 12 Padukuhan Kramen, Sidoagung, Godean had a positive impact on increasing participants' knowledge about the definition, signs and symptoms, risk factors, effects, and prevention of anemia. The results of the pre-test and post-test evaluations showed a significant increase in understanding after the education program. This confirms that health education is an effective promotive and preventive strategy in reducing the incidence of anemia in vulnerable groups such as adolescent girls, especially through the promotion of nutritious food consumption and compliance with iron supplementation. Therefore, similar education activities need to be carried out on a massive and sustainable basis in order to have a broader impact on improving the nutritional status and health of adolescents, while contributing to the achievement of a better quality of the younger generation in the future.

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