

# The Effect of Video Learning-Based Anemia Education on Adolescent Girls Knowledge of Anemia Among 10<sup>th</sup> Grade Students at SMK Qamarul Huda

Lia Puspita Sari<sup>1)</sup>, Edy Surya Pratama<sup>2)</sup>, Vera Yulandasari<sup>3)</sup>, Baiq Fitrihan Rukmana<sup>4)</sup>

<sup>1234)</sup> Nursing Department, Faculty of Health, Universitas Qamarul Huda Badaruddin Bagu, Indonesia

## ABSTRACT

Anemia is a common health problem among adolescent girls, particularly due to increased iron requirements during growth and menstrual blood loss. Lack of knowledge about anemia contributes to its high prevalence. This study aimed to determine the effect of video learning-based anemia education on the knowledge of Grade X female students at SMK Qamarul Huda. This study used a quasi-experimental design with a pretest-posttest control group approach. A total of 50 respondents were divided into two groups: 25 students in the intervention group and 25 students in the control group. The intervention group received anemia education through video learning media, while the control group did not receive the intervention. Data were analyzed using the Wilcoxon test and Mann-Whitney test. The results showed that the mean knowledge score in the intervention group increased from 52.20 before the intervention to 97.00 after the intervention ( $p = 0.000$ ). Meanwhile, the control group showed a slight increase from 57.20 to 57.20 ( $p = 1.000$ ). The Mann-Whitney test showed a significant difference between the intervention groups ( $p < 0.000$ ). Therefore, video learning-based anemia education is effective in improving the knowledge of adolescent girls about anemia.

**Keywords:** Adolescents Girl, Anemia, Health Education, Knowledge, Video Learning

## 1. BACKGROUND

Anemia remains a major global public health problem, particularly among adolescent girls. According to the World Health Organization (WHO), anemia continues to be highly prevalent worldwide, especially in developing countries [1,2]. This condition occurs when hemoglobin levels fall below normal, resulting in reduced oxygen delivery to body tissues, which can negatively affect physical growth, cognitive development, and academic performance [3].

Adolescence is a critical period characterized by rapid growth and increased nutritional needs. During this phase, adolescent girls are at higher risk of anemia due to increased iron requirements, menstruation, and

dietary habits that are often inadequate [4]. If not properly addressed, anemia can lead to fatigue, decreased concentration, and poor academic achievement [5].

In Indonesia, anemia among adolescent girls remains a significant public health issue. Based on data from Basic Health Research (Riskesdas), the prevalence of anemia among adolescents is still relatively high and shows that this condition requires serious attention [6,7]. Several factors contribute to this problem, including low intake of iron-rich foods, poor dietary patterns, lack of compliance with iron supplementation programs, and limited access to health education [8,9].

In addition to national data, findings from preliminary studies conducted by researchers

also indicate that anemia-related knowledge among adolescents is still low. Based on the preliminary study conducted at SMK Qamarul Huda, it was found that most students had limited understanding of anemia, including its causes, symptoms, and prevention methods. Some students were unable to differentiate anemia from general fatigue, and many were unaware of the importance of iron intake and balanced nutrition. This indicates that knowledge gaps still exist among adolescents regarding anemia prevention.

Knowledge is one of the key factors influencing health behavior. According to Notoatmodjo, knowledge plays an important role in shaping individual behavior, including dietary habits and preventive actions [10,11]. Adolescents with limited knowledge are more likely to engage in unhealthy behaviors, such as skipping meals, consuming low-nutrient foods, and neglecting iron supplementation [12].

Health education is an effective strategy to improve knowledge and awareness. However, conventional educational methods such as lectures are often less engaging and less effective in improving students' understanding [13]. Therefore, innovative educational approaches are needed to deliver health information more effectively.

With the rapid development of digital technology, video-based learning has emerged as a promising method for health education. Video learning integrates visual and auditory elements, making information easier to understand and retain [14,15]. Adolescents, who are familiar with digital media, are more likely to be engaged in video-based learning compared to traditional methods [16].

Several previous studies have demonstrated the effectiveness of video-based education in improving knowledge. Sari and Putri (2022) reported that video-based health education significantly increased students'

knowledge compared to conventional methods [17]. Rahmawati et al. (2021) also found that adolescents who received video-based education showed better comprehension and retention of information. In addition, other studies have shown that audiovisual media can improve learning motivation and outcomes [18,19].

Despite the evidence supporting the effectiveness of video-based education, its implementation in school settings is still limited. Many schools continue to rely on traditional teaching methods, which may not effectively improve students' understanding of health-related topics, including anemia [20]. This indicates a gap between research findings and their application in real-world settings.

Based on the problems identified from global data, national data (Risikesdas), and preliminary studies, it is necessary to develop innovative and effective educational interventions to improve adolescent knowledge about anemia. Therefore, this study aims to analyze the effect of video learning-based education on adolescent girls' knowledge about anemia. The results of this study are expected to provide evidence for the effectiveness of video-based education and contribute to the development of more effective school-based health promotion programs.

## 2. RESEARCH METHODS

This study used a quasi-experimental design with a pretest-posttest control group approach. The study was conducted at SMK Qamarul Huda.

The population consisted of Grade X female students, with a total sample of 50 respondents divided into two groups: 25 students in the intervention group and 25 students in the control group. The sampling technique used was total sampling.

The intervention group received health education about anemia using video learning media, while the control group did not receive any intervention. Data were collected using a questionnaire measuring knowledge about anemia.

Data analysis was performed using the Wilcoxon test and the Mann-Whitney test with a significance level of  $p < 0.05$ .

### 2.1 Research Design Addition

This study used a quasi-experimental design with a pretest-posttest control group approach. This design aims to determine the effect of video learning-based anemia education on the knowledge of adolescent girls.

### 2.2 Population and Sample

The population in this study consisted of all Grade X female students at SMK Qamarul Huda. The total sample was 50 respondents, divided into two groups: 25 respondents in the intervention group and 25 respondents in the control group. The sampling technique used was purposive sampling, in which the selection of samples was determined based on specific characteristics relevant to the research objectives, namely selected Grade 10 female students who met the predetermined inclusion criteria.

### 2.3 Variables of the Study

The independent variable in this study was video learning-based anemia education. The dependent variable was the knowledge of adolescent girls about anemia.

### 2.4 Research Instrumen

The instrument used in this study was a questionnaire designed to measure the level of knowledge about anemia, including its definition, causes, symptoms, prevention, and management.

### 2.5 Data Collection Procedure

Data collection was conducted in several stages. First, respondents were given a pretest to measure their baseline knowledge.

Subsequently, the intervention group received anemia education through an animated educational video presenting information on the definition, causes, symptoms, prevention, and management of anemia in a simple and engaging manner, with a duration of approximately 2 minutes. The video was played twice to ensure participants' understanding, followed by a discussion session between the researcher and the respondents. This intervention was conducted over 3 consecutive days.

Meanwhile, the control group did not receive any intervention during the study period. After all procedures were completed and the posttest was administered to assess changes in knowledge, the control group was provided with a brief explanation about anemia to ensure they received basic information. However, this provision was not considered part of the research intervention as given to the intervention group.

### 2.6 Data Analysis

Data were analyzed using the Wilcoxon test to determine differences before and after the intervention, and the Mann-Whitney test to analyze differences between groups. A significance level of  $p < 0.05$  was used.

## 3. RESULTS AND DISCUSSION

### 3.1 Result

Table 1.

Demographic Characteristics of Respondent

Demographic Characteristics	Frequency (n)	Percentage (%)
<b>Age</b>		
15 years	27	54.0
16 years	18	36.0
17 years	5	10.0
<b>Total</b>	50	100.0

Based on Table 1. the majority of respondents were aged 15 years, accounting for 54% (27 respondents), followed by 16 years at

36% (18 respondents), and 17 years at 10% (5 respondents). This indicates that most participants were in the early adolescent stage.

**Table 2.**

Level of Knowledge Before Intervention

Knowledge	Intervention (n=25) (%)	Control (n=25) (%)
<b>Pre-test</b>		
Good	2 (8%)	4 (16%)
Fair	8 (32%)	9 (36%)
Poor	15 (60%)	12 (48%)

Based on Table 2. the majority of respondents in the intervention group had poor knowledge (60%), followed by fair (32%) and good (8%). Similarly, in the control group, most respondents also had poor knowledge (48%), followed by fair (36%) and good (16%). This indicates that the level of knowledge before the intervention was generally low in both groups.

**Table 3**

Level of Knowledge After Intervention

Knowledge	Intervention	Control
<b>Pos-test</b>		
Good	25 (100%)	4 (16%)
Fair	-	9 (36%)
Poor	-	12 (48%)

Based on Table 3. it can be seen that all respondents in the intervention group achieved a good level of knowledge (100%) after receiving the video-based education. In contrast, the control group did not receive any educational intervention, and most respondents still had poor knowledge (48%), followed by fair (36%) and good (16%). This indicates that the improvement in knowledge occurred only in the intervention group as a result of the video-based education.

**Table 4.**

Analysis of Knowledge Improvement (Wilcoxon Test)

Group	Mean Before	Mean After	P-value
<b>Intervention</b>	52.20	97.00	0.000
<b>Control</b>	57.20	57.20	1.000

Based on Table 4. the results of the Wilcoxon test showed a significant increase in knowledge in the intervention group, with the mean score increasing from 52.20 before the intervention to 97.00 after the intervention ( $p = 0.000$ ). Meanwhile, the control group showed no significant change ( $p = 1.000$ ), indicating that the improvement occurred only in the intervention group.

**Table 5.**

Mann-Whitney Test Results

Group	Mean	Std. Deviasi	Mean Rank	P-value
<b>Intervention</b>	97.00	3.536	38.00	0.000
<b>Control</b>	57.20	15.551	13.00	1.000

Based on Table 5. the results showed that the intervention group had a statistically significant improvement in knowledge with a p-value of 0.000 ( $p < 0.05$ ), while the control group showed no significant change with a p-value of 1.000 ( $p > 0.05$ ). This indicates that the increase in knowledge occurred only in the intervention group, while the control group, which did not receive any educational intervention, did not experience any improvement. Therefore, video learning-based education was proven to be effective in improving adolescent girls' knowledge about anemia.

## 3.2 Discussion

The results of this study indicate that video learning-based anemia education significantly improves adolescent girls' knowledge. This finding confirms that audiovisual-based education is an effective method for delivering health information [16,18].

The effectiveness of video learning can be explained by multimedia learning theory, which states that individuals learn better when information is presented through both visual and auditory channels [14]. This enhances understanding and memory retention.

This study is consistent with previous research. Sari and Putri (2022) reported that video-based education significantly increased students' knowledge compared to lecture-based methods [17]. Similarly, Rahmawati et al. (2021) found that adolescents who received video-based health education demonstrated better comprehension and retention [11].

According to Notoatmodjo (2014), knowledge plays an important role in shaping health behavior [10]. Increased knowledge can lead to positive behavioral changes, including improved dietary habits and anemia prevention practices [8].

Interactive educational media such as video can also increase attention and motivation because it involves multiple senses [15,16]. Susanti (2020) found that audiovisual media significantly improves learning outcomes due to higher engagement levels [18].

In contrast, the control group did not show any significant improvement, indicating that without educational intervention, knowledge tends to remain unchanged. This finding is supported by Hidayat (2021), who emphasized the importance of structured health education [13]. Therefore, integrating video learning into school-based health promotion programs is highly recommended as an effective

strategy to improve adolescent knowledge and prevent anemia [1,2].

## 4. CONCLUSION

Video learning-based anemia education has a significant effect on improving the knowledge of adolescent girls about anemia and is recommended for school-based health education programs. It is suggested that schools and health professionals implement video-based educational media as a regular health promotion strategy and develop more interactive and engaging content to further enhance students' understanding and retention.

## 5. THANKS

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