

ANIMATED VIDEOS' IMPACT ON INCREASING ANEMIA KNOWLEDGE

¹Toto Harto, ²Berta Afriani, ³Dimas Ardiyansyah, ⁴Roni Ferdi

^{1,2,3,4}Sekolah Tinggi Ilmu Kesehatan Al-Ma'arif Baturaja
email: totharto27@gmail.com

ABSTRACT

Anemia is a global health problem caused by iron deficiency in adolescent girls. Health education using educational media such as animated videos is an effective method for improving students' understanding of anemia. This study aims to determine the effect of female students' knowledge on the effectiveness of animated videos about anemia. A quasi-experimental design with a pre-test and post-test approach was used. The research sample consisted of 47 people selected through total sampling. Data were collected using questionnaires to measure knowledge levels before and after the animated video intervention. Data analysis was performed using a paired t-test to determine the difference in knowledge levels before and after the intervention. The results showed a significant increase in students' knowledge levels after the animated video intervention (p value = 0.000). This indicates that animated videos are an effective educational medium for improving students' understanding of anemia. These findings also show that audiovisual media can attract students' attention and improve their memory of the material presented. Therefore, it is recommended that health education institutions use animated videos as educational tools to increase students' awareness and knowledge about anemia, and apply them in broader health promotion efforts.

Keywords: Education, Anemia, Teenagers

1. INTRODUCTION

The most common cause of anemia is iron deficiency anemia. Iron deficiency reduces the amount of oxygen to tissues and skeletal muscles, decreases thinking ability, and causes behavioral changes. Fatigue, weakness, dizziness, paleness, shortness of breath, concentration problems, and decreased physical performance are symptoms of anemia in adolescents. Anemia occurs when the body lacks healthy red blood cells or hemoglobin. Some common causes of anemia in adolescents are iron deficiency, vitamin B12 deficiency, folic acid deficiency, rapid physical growth, and loss of menstruation¹.

Anemia is a major worldwide public health issue that mostly affects young children, teenage girls, menstrual women, and women who are pregnant or just gave birth. According to WHO estimates, 30% of women aged 15 to 49, 37% of pregnant women, and 40% of children aged 6 to 59 months worldwide suffer from anemia².

The Indonesian Ministry of Health's 2022 data, adolescent girls who suffer from nutritional

problems such as iron deficiency anemia are at risk of giving birth to stunted children. As many as 32% of adolescents aged 15-24 years in Indonesia suffer from anemia³. Meanwhile, data from the South Sumatra Provincial Health Office in 2022 shows that 9.2% of women suffer from anemia, with the highest prevalence in Ogan Komering Ulu Regency, and in 2023 it decreased to 3.3%^{4,5}.

Anemia is usually caused by a lack of iron in the body, resulting in insufficient iron for erythropoiesis. Erythrocytes, or red blood cells, are a crucial part of blood that carry oxygen from the lungs to the body's other organs. Red blood cells include a protein called hemoglobin, which binds oxygen and transports it to bodily tissues. A person with iron deficiency anemia will experience growth and development disorders, behavioral changes, and motor disorders, which can reduce learning ability and lower academic performance at school⁶. Anemia usually occurs due to a decrease in the number of red blood cells, which cannot fulfill their function of carrying sufficient oxygen to peripheral tissues,

as indicated by a decrease in hemoglobin, hematocrit, and red blood cell counts below normal levels. One component of red blood cells/erythrocytes that binds oxygen and transports it to all cells in the body is hemoglobin. The body needs oxygen to function properly. A lack of oxygen in the brain and muscle tissue causes symptoms such as lack of focus and fitness when performing activities. Hemoglobin consists of a combination of protein and iron to form red blood cells/erythrocytes⁷.

Health promotion media are a means of conveying health messages or information to the target audience. Health promotion media can be print, electronic, or social media. Electronic media include TV, radio, films, videos, cassettes, CDs, and VCDs. When selecting health promotion media, it is necessary to consider the preferences of the target audience, not those of the program managers. Health promotion media must also be able to reach the target audience with a high level of frequency, effectiveness, and credibility⁸.

Research conducted by Syahidah et al., 2023⁹ on 18 to 21 year olds, showed an increase in knowledge about anemia through Instagram. Knowledge about anemia is important for teenagers to prevent anemia. Adolescents who have good knowledge will be more vigilant in preventing anemia. Teenagers with anemia may be less productive at work or perform worse academically in school because they are less motivated to learn and focus. Growth can also be hampered by anemia, leading to stunted weight and height. Additionally, their immunity will decline, leaving them more vulnerable to illness. Reduced energy generation and lactate buildup in the muscles are other consequences of anemia. Based on this, adolescent girls need to be aware of the problems that can arise from anemia, which requires sufficient knowledge about the issue and a positive attitude in dealing with it¹⁰.

Adolescents are a group of people aged 10-24 years. Adolescence begins at the age of 14 for boys and 10 for girls. During this period, adolescents experience many changes, including physical changes such as growth, intellectual changes, changes in socialization, and changes in personality maturity, including emotions⁷. Anemia is a common disease among

school children, especially adolescent girls. Adolescents are a group of people aged 10-24 years. Adolescence begins at the age of 14 for boys and 10 for girls. During this period, adolescents experience many changes, including physical changes such as growth, intellectual changes, changes in socialization, and changes in personality maturity, including emotions. The effects of anemia on adolescents include a decrease in immunity, making them susceptible to disease, a decrease in adolescent activity, academic achievement, and a decrease in adolescent fitness. In addition, anemia in adolescent girls poses a risk of physical and mental dysfunction. Nutritional anemia can disrupt adolescent growth and development and reduce immunity, making them susceptible to disease¹.

Adolescent girls have the highest nutritional needs, with iron requirements higher than those of adolescent boys, as iron is needed to replace iron lost during menstruation. Therefore, the Indonesian Ministry of Health has created a program to combat anemia. The program is implemented by providing iron tablets to adolescent girls as a preventive measure against anemia. The Ministry of Health's strategic plan to reduce the incidence of anemia among adolescents is to target the coverage of Iron Supplement Tablets (TTD). It is hoped that relevant sectors at the central and regional levels will independently implement TTD so that the intervention is effective (Saras, 2023). This preliminary study was conducted on 30 respondents at STIKes Al-Ma'arif to obtain an initial overview of the level of understanding of female students regarding the material provided. Based on the analysis of the tabulated answers, it was found that the average score of participants who answered correctly was 41.70% and the average score of participants who answered incorrectly was 48.30%, indicating that students still lack knowledge about anemia..

Based on the above data, the researcher is interested in studying "The Effect of Animated Videos on Increasing Knowledge About Anemia."

2. METHOD

This study used a quantitative method with a pre-experimental design and a one-group pre-test and post-test design to determine the effect

of animated videos on increasing knowledge about anemia. Samples were collected using total sampling techniques from a total of 77 students. This study was conducted at STIKes Al-Ma'arif on female students aged < 21 years,

carried out in March 2025. The instruments used were audio-visual media in the form of animations containing information about anemia, questionnaires, and writing instruments.

3. RESULTS

Table 1. Knowledge frequency distribution prior to and following health education

Before		
Correct Answer Score	Total	Percentage
30	4	5.2%
40	18	23.4%
50	15	19.5%
60	18	23.4%
70	15	19.5%
80	7	9.1%
After		
70	16	20.8
80	22	28.6
90	22	28.6
100	17	22.1
Total	77	100%

Table 1. Before being shown the animated video about anemia, it was found that four female students had the lowest score (30), while seven students had the highest score (80), and 18 male students each had the most common scores of 40 and 60. After being

shown the animated video about anemia, it was found that 16 female students received the lowest score (70), while 17 received the highest score (100), and 22 students each received the most common scores of 80 and 90.

Table 2. The Impact of Animated Videos in Raising Anemia Knowledge

	Mean	95% Confidence Interval of the Difference		t	df	p Value
		Lower	Upper			
Pre-test competence	55.58	-31.574	-27.647	-30.033	76	0.000
Knowledge after the test	85.19					

Table 2. The descriptive results of the pre- and post-test scores show that the average knowledge score before the educational video intervention was given to students was 55.58, while the average score after the intervention was 85.19. The mean paired difference value was -29.61, which shows the difference between the average pre-test and post-test knowledge scores of $55.58 - 85.19 = -29.61$ and the difference between these scores ranging from -31.574 to -27.647. The t-value from the research results is negative, namely -30.033.

The t-value is negative because the average pre-test knowledge score is lower than the average post-test knowledge score. The t-value can be positive, so that the t-value becomes 30.033. The value of t table based on the df value and significance value ($\alpha/2$; $0.05/2 = 0.025$) is known to be 76, with a t table value of 1.99. Because the t count value is $> t$ table, it can be concluded that there is a difference in the average pre-test and post-test knowledge scores, which means that animated videos have an effect on increasing knowledge about

anemia. The research results also obtained a p-value of $0.000 < 0.05$, indicating that there is a difference in the mean between knowledge before and after the intervention, meaning that the animated video has an effect on increasing knowledge about anemia.

The research conducted in line with the research by Riani et al., (2023)¹¹ found that there is an effect of TikTok videos on adolescent knowledge with a p-value of 0.000. The research by Syahidah et al. (2023)⁹ showed an increase in the average knowledge of respondents with a p-value of 0.000. Similarly, the research by Fitriani Dwiana et al. (2019)¹² found that nutritional anemia counseling using motion video media had an effect on the knowledge ($p=0.000$) of adolescent girls. This study is in line with the research by Sasmita et al. (2022)¹³, It discovered that schoolchildren's average knowledge and attitude scores in the post-test evaluation had significantly increased. The average knowledge score increased by 51.2% overall, whereas the average attitude score increased by 20.7% overall ($P < 0.05$).

A person's knowledge is usually obtained from experiences derived from various sources, such as mass media, electronic media, instruction manuals, health workers, posters, close relatives, friends, and so on. This knowledge can reinforce certain beliefs, causing a person to behave in accordance with the knowledge they believe in¹⁴. Knowledge is what people or respondents know about health and illness, for example: about diseases (causes, transmission, prevention), nutrition, sanitation, health services, environmental health, family planning, and so on¹⁵. Media or visual aids in health promotion can be defined as tools for health promotion that can be seen, heard, touched, felt, or smelled, to facilitate communication and dissemination of information. Visual aids are usually used in combination, for example, using a whiteboard with photos and so on⁸. The types of media commonly used are real objects, which are actual objects, both living and non-living. Replicas, which are different in size from the actual objects. Images/graphic media, such as posters, leaflets, caricatures, paintings, etc. Optical images such as photos, slides, films, animations, etc⁸. Innovation in the creation of instructional media can be found in the usage of video, particularly when cutting-edge

technologies like animated videos are employed. In addition to giving viewers satisfaction and enjoyment, animated videos provide eye-catching visuals that enhance memory recall of the information presented¹⁶. It is important to note that today's generation has a preference for advanced technology, especially animated videos featuring cute and unique characters¹⁷.

Based on research conducted on the implementation of health education using animations about anemia, most students have low to moderate knowledge about anemia. This can be seen from the pre-test and post-test results, which show that many students do not yet understand the definition, causes, effects, and foods that can prevent anemia. After being shown an animated video about anemia, there was a significant increase in students' knowledge levels. The use of animated media proved to be effective. This medium was able to attract students' attention and help them remember the information provided well. Thus, animated videos about anemia have a significant effect on increasing students' knowledge.

4. CONCLUSION

From the results of research conducted on female students, in general there is a significant influence between the level of student knowledge and counseling using animated videos about anemia. Audiovisual media has been proven to attract attention, facilitate understanding, and improve students' memory of health information, especially regarding the prevention and treatment of anemia. This research can be used as a basis for developing further studies that not only measure knowledge improvement but also observe changes in attitudes and behavior. It is also recommended to check the hemoglobin (HB) levels of several respondents to determine whether there are any cases of anemia in the institution.

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