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Effectiveness of Anemia Prevention Education with Video Media and Leaflets on Knowledge and Attitudes of Young Women in Consuming Blood-Added Tablets at Senior High School 1 Muara Lawa

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Abstract
Introduction: *One aspect of the cause of nutritional anemia is the lack of iron content in the food consumed every day, which is characterized by a lack of hemoglobin (Hb) levels below normal. This problem occurs because of the tendency of teenagers to have regular menstrual cycles every month and this will be exacerbated if the iron content of daily food is low.* ***Objective:*** *To determine the effectiveness of anemia prevention education with video media and leaflets on the knowledge and attitudes of young women in consuming blood-added tablets at SHS 1 Muara Lawa.* ***Methods:*** *This research is a quasi-experimental study with a two group time series pretest-posttest design which was carried out in April 2022. The population in this study were all young female students at SHS Muara Lawa, as many as 145 people.* ***Results and Discussion:*** *The effect of providing education on anemia prevention with video media and leaflets on the level of knowledge of young women in consuming blood-added tablets with a value of 0.00 then sig.<0.05 or (0.00<0.05) and the effect of providing education on anemia prevention with video media and leaflets on the attitude of young women in consuming blood-added tablets obtained a value of 0.00 then sig.<0.05 or (0.00<0.05).* ***Conclusion****: There is an effect of anemia prevention education with video media and leaflets on the knowledge and attitudes of young women in consuming blood-added tablets at SHS 1 Muara Lawa.*
Keywords*:* ***Anemia; Education; Leaflet; Video;***

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Introduction

One of the health problems in Indonesia is anemia due to iron deficiency (Iron Nutrition Anemia), especially in adolescents who have not been overcome (Rahmawati, 2018). Based on RISKESDAS data in 2018, the prevalence of high anemia rates in adolescent girls is 25% and 17% in WUS (Rikesdas, 2018) in (El Shara et al., 2017). One aspect of nutritional anemia is the lack of iron content in foods consumed every day, which is characterized by a lack of *hemoglobin (Hb)* levels below normal. This problem occurs because of the tendency of adolescents to experience regular menstrual cycles every month and this will be aggravated if the iron content of the daily diet is low. Adolescents with iron nutrition anemia will easily get sick because of low body resistance and have an impact on low work productivity (Ministry of Health, 2016) in (Sudisa &; Rokhanawati, 2017)

Anemia is a public health problem that is still found worldwide, with the prevalence of anemia among adolescents at 27% in developing countries and 6% in developed countries (Sari, 2020). Anemia has a major impact on human health and social and economic development. According to *the World Health Organization* (WHO) (2014), anemia is a condition in which total red blood cells and their oxygen transport capacity are insufficient to meet the physiological needs of the body, this is a condition when total red blood cells are normal (<4.2 million / µl) or hemoglobin (Hb) levels <12 g / dl) in women and <13 in men. Anemia is most susceptible to occur in adolescent girls and is still quite high, this is evidenced in Riskesdas 2013 with a prevalence of anemia as much as 37.1% then increased in Riskesdas 2018 as much as 48.9%, with the proportion of anemia in the age group of 15-24 years

According to WHO (2011), anemia often attacks adolescent girls due to stress, menstruation, or late eating, in addition to family socioeconomic status and traditional eating habits are very important in the development of anemia (Gusriani &; Noviyanti, 2022). In adolescents, fear of gaining weight and dislike, anxiety checks and, irregular eating habits are the main causes of low intake of animal-source foods that cause anemia. Other studies have also stated that monthly household income, family size, intestinal parasitic infections, duration of menstrual flow per each cycle and Body Mass Index (BMI) for age are the main predictors of anemia. Thus, school-based iron folic acid supplementation and regular nutrition and deworming screening programs should be implemented to help adolescent girls at risk of anemia

Adolescent girls are at risk at puberty of iron nutrition anemia. This problem occurs due to the large amount of iron lost during menstruation (Kulsum, 2020). The condition will also be exacerbated if it turns out that iron intake is lacking. In fact, iron in adolescent girls is needed by the body in accelerating growth and development. Iron or Fe supplementation is closely related to a reduced risk of anemia (WHO, 2016) The prevalence of anemia in adolescent girls in Indonesia is still high, which is 22.7% (Ministry of Health, 2019). The impact of anemia on adolescent girls results in lack of achievement and adolescent enthusiasm for learning (Retnaningtyas et al., 2014).

Lack of iron status (Fe) will result in symptoms such as paleness, lethargy / fatigue, decreased appetite and growth disorders (Ministry of Health, 2019) in (Putri et al., 2017). SHS 1 Muara Lawa (formerly SHS 9 Sendawar) is a senior high school located on Jalan Balootn, Kampung Lambing, Muara Lawa District, West Kutai Regency, East Kalimantan Province, Indonesia. Previously this SHS was a private SHS named SMU Purnama 3 Lambing which was established in 1983 under the care of Yayasan Purna Usaha Tama East Kalimantan. While SHS Purnama 3 is still standing today. Furthermore, this school was inaugurated in 2007 under the name SHS 9 Sendawar in Lambing, then changed its name to SHS 1 Muara Lawa.

Based on the above background, the author is interested in examining the Effectiveness of Anemia Prevention Education on the Knowledge and Attitudes of Young Women Consuming Blood Added Tablets at SHS 1 Muara Lawa.

Metode

This study is a *quasi-experimental* research with a two-group time series pretest-posttest design to find the Effectiveness of Anemia Prevention Education with Video mesia and leaflets on the Knowledge and Attitudes of Young Women in Consuming Blood Added Tablets at SHS 1 Muara Lawa. The research pattern according to Sugiyono, (2017) is as follows:

O_1 x O_2

With Video
O1 = pretest value (before treatment)
X = treatment/intervention
O2 = posttest value (after treatment)

O_3 x O_4

With Leaflat
O3 = pretest value (before treatment)
X = treatment/intervention
O4 = posttest value (after treatment)

The research was conducted in April 2022. Sampling technique with *Proportional Random sampling*, which is a sampling technique that pays attention to the consideration of elements or categories in the study population (Notoatmodjo, 2012), the sample size in this study was 60 people

Univariate Analysis

Univariate analysis aims to explain or describe each research variable Notoatmodjo, (2012). In this study, univariate analysis was used to determine the characteristics of respondents as well as research variables.

$$p = \frac{f}{n} x100\%$$

Information:

p = PREsentation
f = category frequency
n = Total sample

Analisa Bivariat

Bivariate analysis is an analysis carried out on two variables that are thought to be related or correlated Notoatmodjo, (2010). In this study, the statistical test used was the *Friedman test*.

The Friedman test is a non-parametric analysis performed to determine differences in more or 2 interconnected sample groups. It can be said to be different from looking at decision making if the sig < 0.05. If the *pvalue* < 0.05, then the hypothesis of Ha is accepted and Ho is rejected.

Results and Discussion

Result

1. Univariate variables

Characteristics of Respondents

Table 1

Characterist Respondents

No.	Characteristic	Video		Leaflet	
		f	%	F	%
1	**Age**				
	Early Teens 11-14 years	9	30.0	7	23.3
	Middle Teens 15-17 years	14	46.7	12	40.0
	Late Teens 18-21 years	7	23.3	11	36.7
	Total	**30**	**100**	**30**	**100**
2	**Class**				
	XII (Twelve)	11	36.7	10	33.3
	XI (Eleven)	10	33.3	12	40.0
	X (Ten)	9	30.0	8	26.7
	Total	**30**	**100**	**30**	**100**

The results of the study based on table 1 on the characteristics of respondents showed that the most age categories were in the Middle Adolescents category 15-17 years as many as 14 people (46.7%) in the video group and 12 people (40.0%) in the leaflet

group. In the most classes were class XII (twelve) students, namely 11 people (36.7%) in the video group and class XI (eleven) as many as 12 people (40.0%) in the leaflet group.

Adolescent knowledge

Table 2

Knowledge of adolescents before education

Level of Knowledge Before Education	Video		Leaflet	
	f	%	f	%
Good	4	13.3	1	3.3
Enough	26	86.7	25	83.3
Less	0	0.0	4	13.3
Total	**30**	**100**	**30**	**100**

The results of the study based on table 2 on adolescent knowledge before education showed that the most were in the sufficient category, namely 26 people (86.7%) in the video group and 25 people (83.3%) in the leaflet group.

Table 3

Adolescent knowledge after education

Level of Knowledge After Education	Video		Leaflet	
	f	%	f	%
Good	9	30.0	1	3.3
Enough	21	70.0	26	86.7
Less	0	0.0	3	10.0
Total	**30**	**100**	**30**	**100**

The results of the study based on table 3 on Adolescent Knowledge after education showed that the most were in the sufficient category, which was 21 people (70.0%) and there was an increase in the good category, namely 9 people (30.0%) and 26 people (86.7%) in the leaflet group.

Adolescent Attitudes

Table 4

Adolescent attitudes before education

Attitude Before Education	Video		Leaflet	
	f	%	f	%
Positive	16	53.3	17	56.7
Negative	14	46.7	13	43.3
Total	**30**	**100**	**30**	**100**

The results of the study based on table 4 on adolescent attitudes before education showed that in the positive category there were 16 people (53.3%) and the negative category 14 people (46.7%) in the video group and the positive category 17 people (56.7%) and the negative category 13 people (43.3%) in the leaflet group.

Table 5
Adolescent attitudes after education

Attitude After Education	Video		Leaflet	
	f	%	f	%
Positive	24	80.0	22	73.3
Negative	6	20.0	8	26.7
Total	**30**	**100**	**30**	**100**

The results of the study based on table 5 on adolescent attitudes after education showed that the positive category increased to 24 people (80.0%) and the negative category decreased to 6 people (20.0%) in the video group and the positive category increased to 22 people (73.3%) and the negative category decreased to 8 people (26.7%) in the leaflet group.

Summary

Table 6
Univariate *Pre-test and Post-test* Summary

Variable	*Pre-test*				*Post-test*			
	Video		Leaflet		Video		Leaflet	
	f	%	f	%	f	%	f	%
Knowledge								
Good	4	13.3	1	3.3	9	30.0	1	3.3
Enough	26	86.7	25	83.3	21	70.0	26	86.7
Less	0	0.0	4	13.3	0	0.0	3	10.0
Total	**30**	**100**	**30**	**100**	**30**	**100**	**30**	**100**
Attitude								
Positive	16	53.3	17	56.7	24	80.0	22	73.3
Negative	14	46.7	13	43.3	6	20.0	8	26.7
Total	**30**	**100**	**30**	**100**	**30**	**100**	**30**	**100**

2. Bivariate Analysis

In this study, statistical analysis used the *Friedman test* to determine the difference in the level of knowledge and attitudes of adolescents before and after being given anemia prevention education with video media and leaflets.

Table 7
The Effectiveness of Anemia Prevention Education on the Knowledge and Attitudes of Young Women Consuming Blood Added Tablets

Variabel	N	*Pre-test*			*Post-test*			
		Mean	***Std. Dev***	***Mean Rank***	***Mean***	***Std. Dev***	***Mean Rank***	**p-*value***
Video								
Knowledge	30	43.33	3.294	1.00	45.67	3.942	2.00	0.00
Attitude	30	24.60	4.753	1.00	30.10	5.429	2.00	
Leaflet								
Knowledge	30	41.87	3.928	1.07	43.00	3.591	1.93	0.00
Attitude	30	23.77	2.956	1.00	27.77	4.790	2.00	

Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the mean *rank value of* adolescent knowledge before education 1.00, then increased to 2.00 after being given education with video media, the mean value before education 43.33 increased to 45.67 after being educated with video media. So it was concluded that Ho was rejected, while Ha was accepted meaning that there was an influence on the level of knowledge of adolescents before and after being given educational measures to prevent anemia using video media.

Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the *mean rank* value of adolescent attitudes before education 1.00, then increased to 2.00 after being given education with video media, the mean value before education 24.60 increased to 30.10 after being educated with video media. So it was concluded that Ho was rejected, while Ha was accepted means that there was an influence on the attitude of adolescents before and after being given anemia prevention education using video media.

Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the *mean rank* value of adolescent knowledge before education 1.07, then increased to 1.93 after being given education with leaflet media, the mean value before education 41.87 increased to 43.00 after being educated with leaflet media. So it was concluded that Ho was rejected, while Ha was accepted means that there was an influence on the level of knowledge of adolescents before and after being given educational measures to prevent anemia using leaflet media.

Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the mean *rank value of* adolescent attitudes before education 1.00, then increased to 2.00 after being given education with leaflet media, the mean value before education 23.77 increased to 27.77 after being educated with leaflet media. So it was concluded that Ho was rejected, while Ha was accepted means that there was an influence on the attitude of adolescents before and after being given educational measures to prevent anemia using leaflet media.

Thus, it can be concluded that there is an influence of providing anemia prevention education with video media and leaflets on the level of knowledge of adolescent girls in consuming blood-added tablets at SHS 1 Muara Lawa.

From the discussion above, it can be concluded that Education with the Video method is more effective than Education using Leafleat.

Discussion

1. Characteristics of Respondents

The results of the study based on table 1 on the characteristics of respondents showed that the most age category was in the category of age category the most was in the category of Middle Adolescents 15-17 years as many as 14 people (46.7%) in the video group and 12 people (40.0%) in the leaflet group. One of the factors that influence the level of knowledge and attitude of a person is age. The more mature a person's age, the better his thinking power, this refers to the increasing age, the level of development is also getting closer to maturity (Azwar, 2013). In the most classes were class XII (twelve) students, namely 11 people (36.7%) in the video group and class XI (eleven) as many as 12 people (40.0%) in the leaflet group, in line with the conditions in SHS 1 Muara Lawa school, the most batch in this period were students who were studying at level XI (eleven) due to the total students when registering for school, The total is indeed more than other classes.

2. Adolescent knowledge

The results of the study based on table 2 on adolescent knowledge before education showed that the most were in the sufficient category, namely 26 people (86.7%) in the video group and 25 people (83.3%) in the leaflet group. The results of the study based on table 4.3 on Adolescent Knowledge after education showed that the most were in the sufficient category, which was 21 people (70.0%) and there was an increase in the good category, namely 9 people (30.0%) and 26 people (86.7%) in the leaflet group.

This result is in line with research (Fuaidah, 2019) showing that there is a significant effectiveness of providing counseling with audio-visual methods on knowledge of anemia prevention in adolescent girls. Attitude is a reaction or response that is still closed from a person to a stimulus or object. The manifestation of attitude cannot be seen directly but can only be interpreted in advance from closed behavior. Knowledge is the result of "knowing" and this happens after people have sensed a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Knowledge is very closely related to education, where it is expected that with higher education, the person will be more knowledge-widened. However, it should be emphasized, it does not mean that someone who is poorly educated is absolutely low knowledge.

Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the mean *rank* value of adolescent knowledge before

education 1.00, then increased to 2.00 after being educated with video media, the mean value before education 43.33 increased to 45.67 after being educated with video media.

So it was concluded that Ho was rejected, while Ha was accepted meaning that there was an influence on the level of knowledge of adolescents before and after being given educational measures to prevent anemia using video media. Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the *mean rank* value of adolescent knowledge before education 1.07, then increased to 1.93 after being given education with leaflet media, the mean value before education 41.87 increased to 43.00 after being educated with leaflet media. So it was concluded that Ho was rejected, while Ha was accepted means that there was an influence on the level of knowledge of adolescents before and after being given educational measures to prevent anemia using leaflet media.

A person's knowledge of an object contains two aspects, namely the positive aspect and the negative aspect. These two aspects will determine a person's attitude, the more positive aspects and objects known, the more positive attitudes towards certain objects will cause. According to the theory of WHO *(word health organization*), one form of health objects can be described by knowledge gained from one's own experience (Notoatmodjo, 2012).

Anemia is caused by a lack of iron in the body so that the need for iron for erythropoesis is not enough which is characterized by a picture of red blood cells that are hypochrome microcytic, serum iron levels and transferrin saturation (saturated) decrease, will play an important role in binding total iron (TIBC) elevated and iron reserves in the bone marrow and other places are very less or none at all. The adolescent phase which is characterized by physiological maturity such as tissue enlargement to body organs makes adolescents need special nutritional needs (Pramitya &; TD, 2013)

3. Adolescent attitudes

The results of the study based on table 4 on adolescent attitudes before education showed that in the positive category there were 16 people (53.3%) and the negative category 14 people (46.7%) in the video group and the positive category 17 people (56.7%) and the negative category 13 people (43.3%) in the leaflet group. The results of the study based on table 5 on adolescent attitudes after education showed that the positive category increased to 24 people (80.0%) and the negative category decreased to 6 people (20.0%) in the video group and the positive category increased to 22 people (73.3%) and the negative category decreased to 8 people (26.7%) in the leaflet group. This result is in line with research (Sulistyowati et al., 2019) that there are differences in the attitudes of adolescent girls from before and after education. It is also supported by the results (Rahmiati et al., 2019) that nutrition education interventions can improve attitudes in taking blood-added tablets in adolescent girls. Increase iron intake into the body by taking Blood Add Tablets (TTD).

Based on table 7 shows that a significant value is obtained 0.00. So the value of sig.<0.05 or (0.00<0.05) and the *mean rank* value of adolescent attitudes before education 1.00, then increased to 2.00 after being given education with video media, the mean value before education 24.60 increased to 30.10 after being educated with video media. So it was concluded that Ho was rejected, while Ha was accepted means that there was an influence on the attitude of adolescents before and after being given anemia prevention education using video media. Based on table 7 shows that a significant value is obtained 0.00.

So the value of sig.<0.05 or (0.00<0.05) and the *mean rank* value of adolescent attitudes before education 1.00, then increased to 2.00 after being given education with leaflet media, the mean value before education 23.77 increased to 27.77 after being educated with leaflet media. So it was concluded that Ho was rejected, while Ha was accepted means that there was an influence on the attitude of adolescents before and after being given educational measures to prevent anemia using leaflet media. Attitude clearly shows the connotation of the appropriateness of reactions to certain stimuli which in everyday life are reactions of an emotional nature to social stimuli. From some of the above understandings, it can be concluded that attitude is a response to a person's reaction to certain objects that are positive or negative which are usually manifested in the form of likes or dislikes, agree or disagree with a particular object (Azwar, 2013).

Blood tablets are iron folate tablets where each tablet contains 200 mg of ferrous sulfate or 60 mg of elemental iron and 0.25 mg of folic acid. Women and young women need to take blood-added tablets because women menstruate so they need iron to replace lost blood. Blood tablets are able to treat people with anemia, improve learning ability, work ability and the quality of human resources and the next generation. The recommended drink is to take one tablet to add blood once a week and it is recommended to take one tablet every day during menstruation. Drink blood tablets with water, do not drink with tea, milk or coffee because it can reduce iron absorption in the body so that the benefits are reduced (Rifani, 2020)

The use of video as a means of education is now starting to be developed along with technological advances. Education through video media has advantages in terms of providing good visualization so as to facilitate the process of absorbing knowledge and applying good attitudes. Video is included in audio-visual media because it involves the sense of hearing as well as the sense of sight. This audio-visual media is able to produce better learning results to improve the knowledge and attitudes of adolescent students. Another advantage is that videos can complement students' basic experiences when discussing, reading, and practicing. Then the video can show objects normally that cannot be seen, such as the work of the heart when beating. Video media can encourage and increase student motivation and instill attitudes and other affective aspects and videos contain positive values that can invite thoughts and discussions in student groups (Arrahim &; Saleh, 2021)

Conclusion

Based on the results of research and discussion in the previous chapter, it can be concluded that there is an influence of anemia prevention education with video media and leaflets on the knowledge and attitudes of adolescent girls in consuming blood-added tablets at SHS 1 Muara Lawa. Provide additional knowledge about the importance of taking blood-added tablets for female students to avoid symptoms of anemia.

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