

# The Effect of Pharmacy Information Media Through Animation Video Using Fe Tablet on The Knowledge Level of Gudo Jombang Vocational School Students; A Quasy-Experimental

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**Abstract:** The prevalence of non-adherence among young women in consuming iron (Fe) tablets remains high, despite the government program providing free Fe tablets. Increased knowledge about taking Fe tablets is associated with improved adherence, making it crucial to develop and enhance adolescents' knowledge. This study aimed to assess the effectiveness of a pharmacy's information media, specifically animated videos, on the knowledge level of students at SMKN Gudo Jombang regarding the use of Fe tablets. The research design was using a quasi-experimental post-test-only control group design. The sampling technique was using a simple random sampling, with a total of 68 respondents divided equally into the control and intervention groups. The research instrument consisted of animated videos and questionnaires, which were validated ( $p\text{-value} < 0,05$ ), and reliability value of 0,835. The Mann-Whitney test used to statistically analyze the intervention's effect. The results showed that the intervention group (64,7%) had a good knowledge, higher than the control group (32,35%). The statistical test showed a significance value of  $p = 0.008$  ( $p < 0,05$ ). Therefore, this study concludes that using animated videos as the pharmacy's information media effectively increases knowledge about Fe tablet usage among female students at SMKN Gudo Jombang. The practical implication of the research is animated videos can be a choice of educational technology media included in the government's program of giving free Fe tablets to students. This research has theoretical implications for innovative educational animated videos that support visual and multimedia learning theory, causing students to be cognitively stimulated in processing information and motivated to increase their knowledge of Fe tablet. Future research should consider using a pretest-posttest control group design and investigate the respondents' attitudes or behaviors.

**Keywords:** Knowledge, Animation Videos, Fe tablets.

## 1. Introduction

Knowledge is crucial for adolescent girls in improving their compliance in correctly consuming Fe tablets. According to the research conducted by Wahyuningsih & Qoyyimah (2019), there is a correlation between knowledge and the level of compliance in medication consumption [1]. The prevalence of non-compliance among female students in consuming iron supplementation remains high at 82.8%, while only 17.2% are compliant. This can be attributed to the lack of knowledge among adolescent

girls regarding the importance of iron supplementation and the underestimation of the government's program providing free iron tablets.

Insufficient knowledge about the importance of Fe tablet consumption leads to low compliance, thereby increasing the risk of anemia and other detrimental effects. Compliance in consuming Fe tablets is measured by the accuracy in the number of tablets consumed, the correct method of consuming iron tablets, and the frequency of consumption per day. Iron supplementation or Fe tablet provision is a vital effort in preventing and addressing anemia, particularly iron deficiency anemia [2].

Anemia in adolescent girls has repercussions such as delayed physical growth, behavioral and emotional disturbances, decreased immune system function, fatigue, hunger, disrupted concentration, decreased academic achievement, and low work productivity. Adolescent girls who marry at a young age, suffer from anemia and malnutrition and are at risk of delivering low birth weight babies with various complications<sup>1</sup>. Based on the Riskesdas data in 2018, the prevalence of anemia in Indonesia among the adolescent age group of 15-24 years was 32.0%, with a higher prevalence among females [3].

Improving the knowledge of adolescent girls can be achieved through health promotion activities, including education delivered through various learning media, such as text, audio, visual, or a combination of audiovisual formats. Education through audiovisual media can be more effective and quicker in delivering messages compared to text media, and it can demonstrate procedural steps [4]. Studies have shown that knowledge and attitude improvement among adolescents using video media are higher compared to using leaflets, with a 20.45% increase in knowledge and a 14.28% increase in attitude for video media, compared to a 13.47% increase in knowledge and an 11.03% increase in attitude for leaflets [5].

Previous studies have utilized animated videos featuring adolescent girls and pregnant women as characters [6][8]. However, in this research, the animated video features a pharmacist as the character. The use of characters in delivering information can help avoid offensive behaviors, protect privacy and data confidentiality, and make the information more appealing and easily accepted by individuals [9]. The provision of education through animated videos to the female students of SMK is because of the low compliance in consuming Fe tablets within the government's program. Additionally, the implementation of the government's Fe tablet provision program in the school is not yet optimal. This research aims to minimize the potential for anemia and its impact on health and academic performance, as well as to prepare the health of adolescent girls before they become mothers.

## **2. Research Method**

This type of research used quantitative research with a cross-sectional approach to research design quasi-experimental design (Posttest Only Control Group Design). This quasi-experimental definition has a control group, so it cannot function fully to control

outside variables that affect the implementation of the experiment. This method was developed to overcome the difficulty in determining the control group in research [10]. The Post-test Only Control Group Design scheme is shown in Table 1.

**Table 1.** Quasy Experimental (Posttest Only Control Group Design)

Group	Treatment	Posttest
Experiment	X	O <sub>1</sub>
Control	-	O <sub>2</sub>

Description:  
O<sub>1</sub> = Results after treatment  
O<sub>2</sub> = Results without treatment

The population in this study were 183 grade XI students at SMKN Gudo Jombang. The sample calculation using the unpaired categorical analysis formula resulted in 34 female students as controls who were only given posttest questions without being given treatment (providing Fe tablet education through animated videos), and 34 female students as the treatment group. The inclusion criteria in this study were students of class XI Banking 1 and XI Banking 2 who were able to attend and were willing to be respondents during the study; Class XI Banking 1 and XI Banking 2 students who have Android. While the exclusion criteria were students in class XI Banking 1 and XI Banking 2 at SMKN Gudo Jombang who were sick and unable to attend the study and students in class XI Banking 1 and XI Banking 2 who did not have an android. The sampling method used in this study is probability sampling using the simple random sampling method. Simple random sampling is a sampling technique by giving each member of the population the same opportunity to become a sample member [10].

**3. Result and Discussion**

The research is about the level of knowledge of female students at SMKN Gudo Jombang regarding the use of Fe tablets, supported by an instrument in the form of a questionnaire that has been tested for validity and reliability. The questionnaire is considered valid and reliable. The valid questionnaire consists of 23 questions with a p-value of < 0.05, and the reliability test yielded a value of 0.835 (highly reliable). The posttest questionnaire in this research includes questions about the definition of Fe tablets, their benefits, anemia, obtaining Fe tablets, usage instructions, side effects, storage methods, disposal methods, and signs of damaged Fe tablets.

The respondents in this research are 34 participants who voluntarily agreed to participate from both the control group and the intervention group. The participants who agreed to participate then proceeded to complete the posttest questions for the control group and watched an animated video followed by the posttest for the intervention group. The posttest questions were given to analyze the difference in knowledge between female students at SMKN Gudo Jombang with and without the use

of the pharmacy's information media, in this case, an animated video about the use of Fe tablets.

The analysis results presented in Table 4.1 indicate that there is a difference in knowledge between the intervention group and the control group. In the control group (without the intervention of the animated video), 11 respondents (32.35%) were categorized as having good knowledge, while in the intervention group (given education through the animated video), there were 22 respondents (64.7%) with good knowledge. On the other hand, in the control group, 25 respondents (67.65%) had sufficient knowledge, while in the intervention group with the animated video, there were 12 respondents (35.3%) with sufficient knowledge.

This is in line with the research of Khoirunnisa et al (2022) that this animated video makes a difference in increasing nutritional knowledge in respondents, both those with good knowledge of 11 respondents (73.3%) and those with good knowledge in the comparison group, namely 10 people (66.7%) [11]. Meanwhile, respondents who were moderately knowledgeable in the experimental group were 4 respondents (26.7%) and the comparison group was 5 people (33.3%)<sup>11</sup>. The results of research related to the level of knowledge in the experimental group had good knowledge (100%) while the comparison group had good knowledge (98.3%) which showed that the provision of animated video education treatment in the experimental group could increase the knowledge of respondents [12].

The Mann-Whitney test analysis on the posttest results in this research shows a significant difference in knowledge about the use of Fe tablets between the control group and the intervention group, with a p-value of 0.008 ( $p < 0.05$ ). This means that the alternative hypothesis ( $H_1$ ) is accepted. It indicates that the pharmacy's information media, through the animated video, is effective in improving knowledge about the use of Fe tablets among female students at SMKN Gudo. The difference in knowledge between the intervention group and the control group is attributed to the information provided to the intervention group being effectively conveyed to the female students at SMKN Gudo through the animated video. As a result, more students in the intervention group, who had good knowledge, benefited from the treatment compared to the control group.

This research is in line with the research of Widyanti et al (2023) that powtoon video learning media is effective for students related to increasing social studies knowledge. which is proven using the mann-whitney test  $p = 0.000$  ( $p < 0.05$ ) [13]. Also supported by research conducted at SMAN 2 Jember shows that the use of animated video media is effective on student learning outcomes with a value of  $p = 0.0044$  ( $p < 0.05$ ) [14]. It was also found that the animated video had a positive effect on the cognitive learning outcomes of fourth grade students of SD Negeri Kepuh Kiriman I Waru Sidoarjo with the results of mann-whitney hypothesis analysis shown with a value of  $p = 0.000$  ( $p < 0.05$ ) which means that the animated video is proven effective in improving student learning outcomes [15].

The success in improving the knowledge of the female students is closely related to the media used, which is the animated video. This media was chosen to avoid boredom and to facilitate the respondents in remembering the given material. The use of animated videos is based on Edgar Dale's theory of learning, known as "Edgar Dale's Cone of Experience." According to this theory, an individual's learning experience is achieved through processes such as observing, understanding, or seeing for oneself what is being learned [16]. The evidence or facts of effectiveness in the learning process and improvement of the respondents' learning outcomes are demonstrated in this research through the use of animated videos on the usage of Fe tablets. The information provided in the form of fiction, visuals, sound, and video content is considered highly important. Based on the research conducted by Khoirunnisa et al. (2022), it shows a higher increase in knowledge compared to nutrition education using Twitter threads, indicating that nutrition education using animated video advertisements has a greater impact [11]. This is also consistent with the study by Purniawan (2016), which found that providing informational media in the form of animated videos is effective in enhancing knowledge compared to using other media such as text. The difference in standard deviation values in the group given posters was 2.882, while in the group given audiovisual media (video), it was 4.474. This indicates that the video media is more effective, with a difference of 1.592, which is larger than text media (poster) [17].

Information media in the form of animated videos falls under the category of audiovisual motion media, which possesses the characteristics of enhancing understanding, improving memory retention, and expanding insights. Therefore, the use of animated videos in this research can enhance knowledge by leveraging these abilities of audiovisual media [18]. That would align with Notoatmodjo (2012), who states that human understanding gives rise to knowledge, as knowledge occurs when humans perceive things through their senses such as sight, hearing, smell, and others [19]. According to previous research, approximately 75% to 87% of human knowledge is acquired or conveyed through the sense of sight, while about 13% is obtained through the sense of hearing. The remaining 12% comes from other senses [20].

This research demonstrates that effective information media has an impact on increasing an individual's knowledge. The pharmacy's information media, in the form of an animated video about the use of Fe tablets in this study, is effective in improving the respondents' knowledge, as evidenced by the Mann-Whitney test analysis and the administration of posttest questionnaires to both the intervention and control groups. The use of an animated video as a medium for providing information about Fe tablet usage is also suitable for teenagers as it is engaging and easy to understand. The more effective the information, the greater the ability of the media to enhance an individual's knowledge. The increased knowledge among the respondents has an impact on their compliance in consuming Fe tablets, supported by the government's program of providing free Fe tablets. The improvement in compliance with Fe tablet consumption is expected to reduce the prevalence of anemia in Indonesia [21].

This statement is in accordance with other studies that found that learning with video learning media is more effective and produces higher learning outcomes than learning using traditional media [22]. The study of Runiari & Hartati (2020) shows that the level of knowledge is not good, the category of compliance is low, on the other hand, the level of knowledge is good, the category of compliant consumption is also high. This shows that there is a relationship between the level of knowledge and the level of compliance with the consumption of iron tablets [23]. Based on previous research also shows that the level of knowledge of adolescent girls about anemia is generally quite good (63.3%) and adherence to taking iron supplements of adolescent girls is in the lowest category (84.5%), which means that the level of knowledge is related to adherence to iron tablet consumption [24].

The limitation of this study is that it only measures the level of knowledge among the female students and does not assess changes in their attitudes and behaviors following the provision of information through the animated video. Another limitation is the lack of measurement of the students' knowledge before the intervention of the animated video in the intervention group. Therefore, future research is expected to utilize a pre-test post-test control group design. This type of research design includes both a control group and an intervention group, with an initial pretest using the same set of questions for both groups. Subsequently, the intervention group receives the intervention in the form of information provided through the animated video, while the control group receives the usual treatment, such as verbal instruction. The administration of a pretest helps measure an individual's knowledge before the intervention, allowing for a better understanding of the effectiveness of a specific media by conducting a posttest. This type of design is expected to provide a more accurate measurement of the effectiveness of the media compared to the design used in this study.

**Table 2.** Respondent Knowledge Results

Knowledge	Control Group		Intervention Group	
	n	%	n	%
Good	11	32,35	23	64,7
Fair	23	67,65	12	35,3
Less	0	0	0	0
Total	34	100	34	100

**Table 3.** Mann-Whitney Test Results

	Knowledge Level						p value
	Good		Fair		Less		
	n	%	N	%	n	%	
Control	11	32,35	23	67,65	0	0	0,008
Sample	22	64,7	12	35,3	0	0	
Total	33	97,05	35	102,95	0	0	

Source: Primary Data, 2023

## 4. Conclusion

The level of knowledge among the female students of SMKN Gudo Jombang in the intervention group showed the highest percentage of good knowledge, with 64.7%, while the control group had the highest percentage of insufficient knowledge, with 67.65%. This proves that the pharmacy's information media, through the animated video, is effective in improving knowledge about the use of Fe tablets among the female students of SMKN Gudo ( $p = 0.008$ ).

## 5. Suggestions

1. Animated videos can be a choice of educational technology media included in the government's program of giving free Fe tablets to students.
2. Innovative educational animated videos that support visual and multimedia learning theory, causing students to be cognitively stimulated in processing information and motivated to increase their knowledge of Fe tablet.
3. Future research should consider using a pretest-posttest control group design and investigate the respondents' attitudes or behaviors.

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