

The Effect of TikTok-Based Health Education on Adolescents' Knowledge and Attitudes Toward HIV/AIDS

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ABSTRACT

The adolescent phase is considered sensitive because the decision to engage in sexual behavior can arise and potentially lead to the transmission of diseases such as HIV/AIDS. Lack of information and knowledge about HIV/AIDS among adolescents is one of the reasons why the culture of free sex among adolescents can continue to develop and increase the risk of HIV/AIDS transmission. This study aimed to determine the effect of health education delivered through animated videos on social media on adolescents' knowledge and attitudes. Method used Quasi-experimental with pretest-posttest with control design. The research was conducted at SMK 4 Tasikmalaya. Sampling was done using probability sampling, consisting of 21 respondents in each group. Statistical tests using dependent t-test and independent t-test. There were the mean scores of knowledges and attitude, before and after education in the intervention group and for the control group (p-value 0.000). There was a mean increase in the average score after education between the two groups with a p-value of 0.012 for knowledge and a p-value of 0.021 for attitude. Health education using animated video media on social media can increase adolescents' knowledge and attitudes about HIV/AIDS.

Keywords: HIV/AIDS, health education, social media

INTRODUCTION

Adolescence is a transitional period from childhood to adulthood, with characteristics of rapid growth and development, including physical and mental aspects. Adolescence is often considered a period characterized by a higher tendency toward risk-taking behaviors. In today's era, adolescents may engage in behaviors that increase health risks, such as smoking, committing criminal acts, stealing and even engaging in unprotected sexual activity.^{1,2,3} In this phase, there is a process of sexual maturation, biological development, anatomy, physiology, and reproductive ability. This phase is considered sensitive because the decision to engage in sexual behavior can arise, which has the potential to lead to the transmission of diseases such as Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS), and other sexually transmitted diseases.³

HIV is a virus that can reduce the body's defense or immune strength. AIDS is a collection of signs and symptoms that appear as a result of the immune system damage caused by HIV.^{4,5} This disease remains a major global health concern, as no definitive cure is currently available.⁶

According to the United Nations Program on HIV (UNAIDS), in 2021, the number of individuals living with HIV worldwide reached more than 38.4 million people, with about 3.8 million people in the Southeast Asian region (7,8). The high number of people exposed to HIV in Southeast Asia emphasizes the importance for the State of Indonesia to increase awareness of the spread and transmission of the virus. Information on HIV/AIDS cases in Indonesia until March 2021 has been submitted by 34 provinces in Indonesia. As a result of the report, there are 427,201 people

affected by HIV.⁹ Meanwhile, in the West Java region as a whole, the number of HIV cases also shows a fairly high level.¹⁰ In 2022, there are 145 confirmed cases of HIV and AIDS in Tasikmalaya City. The largest increase in HIV and AIDS cases in Tasikmalaya City came from the male risk group. having sex with men was 106 cases, followed by the risk group of tuberculosis patients with 42 cases, and the risk group of sexually transmitted infections (STIs) patients was 17 cases. Meanwhile, the least confirmed patients with HIV and AIDS are the risk group of injecting drug users, which is as many as 13 cases. The addition of HIV cases was dominated by 128 cases of men and 17 cases of women. Based on age, the most cases are in the age group >61 years (1 person), 21–30 years old (65 people) and 31–40 years old (45 people), but it has also been found at the age of ≤20 years (10 people) and even 1–10 years (1 person). This shows that adolescents are also starting to be at risk, so education for vocational school students is important to be carried out as a preventive effort from an early age before entering the productive age which is most affected.¹¹ Since the data shows the 21–30 age group is the most affected, the high school/vocational years (under 20) are the "critical window" for prevention before they enter that highest-risk bracket.

Efforts to prevent and overcome HIV/AIDS are not an easy thing, as in Tasikmalaya City, the number of HIV/AIDS cases in Tasikmalaya continues to increase.¹² Based on the results of research in the community, it is shown that information about health and sexually transmitted diseases (STDs), especially HIV/AIDS, is inadequate, resulting in adolescents losing accurate sources of information. Health education efforts given to adolescents about the dangers of HIV/AIDS and its prevention are still less than optimal.¹³ Health education has a very important role in improving adolescents' knowledge and attitudes to prevent the transmission of HIV/AIDS. Good awareness and knowledge of HIV/AIDS, along with a positive attitude, is a very significant factor in HIV/AIDS prevention efforts.¹⁴

The internet and social media provide them with new ways to explore social dynamics. As technology continues to transform how we communicate and interact, it is crucial to comprehend the ways in which young people utilize these online platforms to create connections, disseminate information, and nurture relationships. Prior research has identified the potential dual nature of online social networking tools: they can both increase and decrease risky sexual behaviors. Social media can serve as a venue for

conversations surrounding sexual health and preventive measures, which may help lower the incidence of risky actions. The utilization of the Internet and social media goes beyond just personal communication and entertainment. The wealth of information available to adolescents is extensive and includes topics related to health, such as Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) and methods of prevention.¹⁵

Although several studies have evaluated digital health education, limited research has specifically examined the effectiveness of TikTok-based animated video interventions in improving adolescents' HIV/AIDS knowledge and attitudes in Indonesian vocational school settings. Seeing the current technological advancements, providing health education information to adolescents will be more effective and efficient if provided through social media or online media.¹⁶ Learning methods through audio visuals such as animated videos can make it easier to provide information in conveying the material to be delivered, this animated video also has the advantage of being able to increase the effectiveness and speed in delivering higher material, and also has the ability to make abstract objects or materials concrete with the aim of increasing the knowledge of the recipient of information.¹⁶

Research conducted by kubheka et al ¹⁷, the use of social media also has the potential to be an effective means of health promotion to be applied. In today's technological developments, the social media application TikTok is a striking social media application and is very popular among adolescents. In a survey conducted by Bytedance, TikTok's number of downloads reached 45.8 million times, outperforming other apps such as WhatsApp, YouTube, Facebook, and Instagram.¹⁸ Videos uploaded on TikTok are also an example of audio-visual media. TikTok's algorithm-driven "For You Page" (FYP) and short-form video format align with the shorter attention spans of Gen Z, making it a "micro-learning" tool rather than just an entertainment app.

Results of Sovia et al's research stated that after being given health education about HIV/AIDS through video media, it was able to increase knowledge in adolescents.¹⁹ Rahman's research results It proves that health education not only increases knowledge, but also has a positive impact on changing adolescents' attitudes for the better. At SMKN 4 Tasikmalaya, there have also been people who have conducted research using social media, the research through social media was carried out by Somantri The results of the

study show that the use of social media has proven to be effective in improving student learning outcomes.^{14,20}

The results of a preliminary study by interviewing 6 students of SMKN 4 Tasikmalaya on Friday, September 1, 2023, found that none of the students and students interviewed knew what HIV meant, and three of them were unfamiliar with the term. Based on the preliminary studies that have been carried out, it can be concluded that the students' knowledge about HIV/AIDS at SMKN 4 is still very lacking, therefore, it is necessary to provide targeted health education to students at SMKN 4 Tasikmalaya about HIV/AIDS to prevent the increase in HIV/AIDS cases that occur in Tasikmalaya City.

Based on the description above, judging from the data obtained by HIV/AIDS sufferers in Tasikmalaya are dominated by men and public schools in Tasikmalaya City where most students are boys, namely SMKN 4 Tasikmalaya, considering that the school also has a risk of promiscuity that has an impact on its students. Therefore, it is necessary to provide knowledge in early prevention to the students of SMKN 4 Tasikmalaya. There has been no research on health education through social media to increase adolescents' knowledge about HIV/AIDS at SMKN 4 Tasikmalaya, so the researcher is interested in conducting research on the influence of health education about HIV/AIDS through social media on the knowledge and attitudes of adolescents in grade XI of SMKN 4 Tasikmalaya.

METHOD

This study employed a quantitative quasi-experimental design with a pretest-posttest control group approach that aims to determine the influence of health education about HIV/AIDS through TikTok animated videos on adolescents' knowledge and attitudes, compared to the control group that received education through *leaflets*.

The study population consisted of all Grade XI students of SMKN 4 Tasikmalaya (487 people). The sample was calculated using *the Lemeshow formula* and obtained 21 respondents for the intervention group and 21 respondents for the control group, with the inclusion criteria for grade XI students who have gadgets, TikTok accounts, and are willing to be respondents, while exclusion is students who do not attend or do not complete the research. Calculation samples are:

$$n = \frac{487 \cdot 1,96^2 \cdot 0,5 \cdot 0,5}{0,05(487 - 1) + 1,96^2 \cdot 0,5 \cdot 0,5}$$

$$n = \frac{N \cdot Z^2 \cdot p \cdot q}{d(N - 1) + Z^2 \cdot p \cdot q}$$

$$n = \frac{467,71}{25,26} = 18,5 \approx 19$$

The sampling technique used was probability random sampling by lottery via the spinner.id application. All participants had an equal chance of being selected.²¹

The instrument used was a knowledge questionnaire (12 true-false questions) from.²² The results of the validity test *r* calculate > *r* table, with a value of sig. < 0.05. Meanwhile, the attitude questionnaire (14 questions agreed-disagreed) from Yuliyanti (2019) with Cronbach's Alpha > 0.7.

The research was carried out in March–April 2024 at SMKN 4 Tasikmalaya. In the control group, respondents were given a pre-test to measure knowledge and attitude. The day after the pre-test, the control group respondents were given material on HIV/AIDS through a leaflet. The day after, respondents were given a post test. A week later, the study was continued in the intervention group. The Intervention Group was given a pre-test measuring knowledge and attitude. The day after the pre-test, the intervention group respondents were given an intervention to watch a 2D animation video with a duration of 5 minutes and 7 seconds on TikTok, whether participants were instructed to watch the video individually at least twice per day. The researcher can see who saw the video in researcher's tiktok account for 2 times. Then the day after which a post test was carried out.

The steps in the data processing process are asked: *editing*, *coding*, *entry*, data cleansing (*Cleansing*), and tabulation.²⁴ Data analysis included univariate (variable distribution) and bivariate with Shapiro-Wilk normality test. If normal data are used, dependent and independent T tests are used, while if abnormal are used, Wilcoxon and Mann-Whitney tests are used, with a significance limit of *p*<0.05. because the data were normal so dependent and independent T tests are used.

The research has obtained ethical clearance and is carried out according to ethical principles: self-determination, anonymity, confidentiality, as well as beneficence and non-maleficence.

RESULT AND DISCUSSION

Table 1. Distribution of Respondent Characteristics of Control and Intervention Group Based on Adolescent Age Class XI SMKN 4 Tasikmalaya (n1 = n2 = 21)

Age	Frequency (F)	Present (%)
Control group		
16	4	19.0
17	15	71.4
18	2	9.5
N	21	100.0
Intervention groups		
16	4	19.0
17	12	57.1
18	5	23.8
N	21	100.0

Table 1 shows that the majority of respondents were aged 17 years old as many as 15 people (71.4%), and the intervention group was 17 years old as many as 12 people (57.1%).

The most respondents were 17 years old. This finding is consistent with previous studies conducted by (22) that is, making the research subjects with an age range of 16-19 years accompanied by appropriate consideration for the purpose of primary prevention, as well as a means of learning, because the lack of exposure to reproductive health topics, especially HIV/AIDS, is not contained in the school curriculum. Age development can also affect an individual's understanding and mindset. As a person ages, their ability to understand will also increase, so that their knowledge will also develop.²⁵

The most respondents' gender was male. The results of this study are also in accordance with the research conducted by Christopherson and Conner²⁵ Saying that for social factors, adolescent boys tend to be given more freedom in social interactions, while girls are often more obedient to the rules because parents tend to be more protective of them. In addition, other factors that contribute to the risk of sexual behavior are cognitive, psychological, and sexual development. Teenage boys tend to have higher levels of courage and are more likely to take risks in the actions they take. Therefore, there are differences in the development of cognitive, psychological, and sexual aspects between adolescent boys and girls, in addition to the norms that exist in Indonesian society, which support the tendency of adolescent boys to behave in risky behavior more than adolescent girls.

Table 2 Characteristics of control and intervention group respondents based on gender Adolescents in grade XI SMKN 4 Tasikmalaya (n1 = n2= 21)

Gender	Frequency (F)	Present (%)
Control group		
Men – men	13	61.9
Women	8	38.1
N	21	100
Intervention groups		
Men – men	11	52.4
Women	10	47.6
N	21	100

Table 2 illustrates that the majority of respondents in this study were men, namely 13 respondents (61.9%) in the control group and 11 respondents (52.4%) in the intervention group.

Table 3. Average score of knowledge and attitude before health education in Adolescents in Grade XI SMKN 4 Tasikmalaya

Variable		Red
Knowledge	Intervention group	46.48
	Control group	45.56
Attitude	Intervention group	43.16
	Control group	42.82

Based on table 3, the average knowledge score before being given health education in the intervention group was 46.48 and, in the control, group was 45.56. Meanwhile, the average attitude before intervention in the intervention group was 43.16 and, in the control, group was 42.82.

According to Aspiawati²⁶, taking into account that experiences have the power to influence individuals, and observing that respondents have reached adolescence, it can be concluded that during their life journey, adolescents have experienced a number of diverse experiences. It emphasizes that everyone has experiences, which can shape their views and understanding of the world around them. The lack of information received by adolescents is one of the factors causing low knowledge and attitudes about HIV/AIDS.²³ Therefore, to prevent additional HIV/AIDS cases, health education about HIV/AIDS in adolescence must be carried out.

Digital technology is reshaping health promotion, enhancing the availability and effectiveness of conventional health services and public health initiatives across the globe. An increasing amount of research backs this assertion, detailing the rise of mobile apps, wearable gadgets, social media platforms, and AI-driven chatbots as practical instruments for health promotion. There are particularly numerous digital

health promotion strategies aimed at younger audiences. By tackling health challenges early on, reducing exposure to harmful factors such as tobacco, alcohol, and violence, and increasing positive influences like exercise, nutritious diets, and sound mental and sexual health, overall wellness can be sustained into adulthood. This approach will not only benefit young people today but will also foster a healthier adult population in the future. Consequently, the World Health Organization and other global health organizations have advocated for the use of these tools to broaden health services and enhance worldwide health.^{27,28,29}

Health education is a series of educational and learning activities that aim to improve the welfare of the community by expanding the knowledge, attitudes, and practices of individuals, ethnic groups, or communities in terms of health behavior.¹⁴ The more health information provided will increase adolescents' knowledge and attitudes about HIV/AIDS.²⁵ Attitude is an individual's response to a social stimulus that has been conditioned. Thus, it can be concluded that the better knowledge a person has, the more positive his attitude is. This confirms that knowledge has a strong influence on a person's attitude and also on certain situations or topics.²³ The school-centered program framework, and outline the approaches, areas, and actions that constitute the framework for averting HIV/STDs, unplanned pregnancies, and associated risky behaviors in adolescents. Lastly, we provide suggestions for health practitioners focusing on adolescents collaborating with and within schools, who aim to apply these approaches to enhance health and wellness among their pupils.³⁰

Animation media serves as a means of communication that is able to convey information from a single source to participants with the aim of inspiring them to engage in the learning process.³¹ In today's era, to facilitate the dissemination of information, you can use social media. One of the social media that can be used for health education is TikTok. TikTok is an example of an electronic audio-visual media that is very popular around the world today. The implementation of social media utilization activities through TikTok as a means of health promotion has proven to be appreciated by education participants, because they just found out that this social media is not only a place to pour out their hearts but can also be a means of health education.¹⁶ Students who were respondents to the study also said that the animated video used as a medium for health education was very interesting, the discussion was easy to understand

and very clear. The animated video uploaded on the Tiktok platform also facilitates the dissemination of information, as evidenced by the span of 1 week of health education videos about HIV/AIDS there have been 355 people who have seen the animated video. Counseling or education through videos uploaded on the TikTok platform can improve the degree of public health, high school adolescents will eventually become agents who can pass on the information that has been received through education with TikTok media health education videos will be easily disseminated to the community and finally the information provided is useful for themselves and others around them.¹⁸

Table 4. Average knowledge and attitude score after health education in adolescents in grade XI SMKN 4 Tasikmalaya

VARIABLE		mean
Knowledge	Group	73.80
	Intervention	
Attitude	Control	65.08
	Group	72.72
	Intervention	
	Control	66.60

From table 4, the average knowledge score after intervention in the intervention group was 73.80, while in the control group the average was 65.08. Then, it was known that the average attitude after intervention in the intervention group was 72.72, while in the control group the average was 66.60.

Table 5 Average difference in knowledge and attitude scores before and after health education in the intervention and control group in grade XI adolescents of SMKN 4 Tasikmalaya

Variabel		mean	P. Value
Knowledge	Pretest	46.48	0.000
	Posttest	73.80	0.000
Intervention group	Pretest	43.16	0.000
	Posts	72.72	0.000
Knowledge Control group	Pretest	45.56	0.000
	Posttest	65.08	0.000
Attitude Control group	Pretest	42.82	0.000
	Posttest	66.60	0.000

Statistical results were obtained that each p-value of 0.000 means that it is smaller than the

significance level of 5% (pvalue $0.000 < 0.05$). Thus, it showed a significant difference between the average knowledge score and attitude before and after the intervention in the intervention group and the control group in grade XI adolescents at SMKN 4 Tasikmalaya.

Table 6. Average difference in knowledge and attitudes after health education between intervention group and control group in grade XI adolescents of SMKN 4 Tasikmalaya

VARIABLE	mean	Std. Deviation	P. Value	N
Knowledge				
Intervention	73.80	9.60	0.012	21
Controls	65.08	11.66		21
Attitude				
Intervention	72.72	7.70	0.021	21
Controls	66.60	8.82		21

Based on the results of the statistical test, p-values of 0.012 and 0.021 were obtained, meaning that it was smaller than the significance level of 5% (p-value $0.012 < 0.05$ and p-value $0.021 < 0.05$). Thus, it shows that there is a significant difference in the average knowledge and attitude scores between the intervention group and the control group after being given an intervention to grade XI adolescents at SMKN 4 Tasikmalaya.

Based on the results of the univariate analysis in table 5, after providing health education to the intervention group and the control group, there was an increase in the average value of knowledge and attitude. The results of this study are in line with research conducted by Asfar & Ode³² With the results of the leaflet media proven to be effective in changing knowledge and attitudes, as evidenced by the P-value of knowledge of 0.000 and the P-value of attitude of 0.035 which means < 0.05 .

Leaflet is a written medium used to convey health messages through a sheet of paper folded into two or more. The content of the message or information can be text, images, or a combination of the two.³³ In this leaflet media, the information conveyed tends to be shorter and focuses on the main points. This is what causes leaflet media to be effective as a dissemination of information³⁴

In this study, the researcher argues that leaflet media has several disadvantages in that it only presents images and writings that can make readers feel bored, while in animated videos there are interesting images, explanations in the form of writing, and there are explanations delivered through voice that make the audience interested and not feel bored. In addition, the health

information about HIV/AIDS conveyed in the animated video is more complete than that conveyed in the leaflet. In the media leaflet, the explanation of the stages and symptoms of HIV/AIDS is not fully explained.

Videos have a more concrete level of experience than leaflets because with videos one can use the two senses, not just vision, making it possible to imagine actions more completely. In other words, videos can present information in a more tangible way than words or writing. This advantage makes the audiovisual approach more interesting and does not make you bored in delivering health education.^{34,35} This research also follows the development of the times by posting animated videos on TikTok social media, by posting health education videos to social media accounts will facilitate the dissemination of information, besides that adolescents can also use social media for positive things, namely by learning and seeking information and knowledge related to health, especially HIV/AIDS.

CONCLUSION

This study shows that health education influences improving adolescents' knowledge and attitudes about HIV/AIDS in both intervention and control groups. There was a significant difference in average scores after the intervention, where animated videos via social media were shown to be more effective than leaflets in improving adolescents' knowledge and attitudes. These findings confirm that TikTok animation is more effective than leaflet. Effective school health promotion requires collaboration with health professionals and community services. Schools can provide referral systems for students needing health promotion.

For further research, it is recommended to develop more varied and interactive social media-based educational media according to adolescent usage trends, with a larger sample number and considering additional variables such as behavior and the level of engagement of respondents in accessing educational content.

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