



The Effectiveness of Health Education Using Video and Leaflet Media on Improving Knowledge and Attitudes toward HIV/AIDS Prevention among Adolescents at SMA Technical Vocational Railako in 2025

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ABSTRACT

Adolescents represent a population group that is particularly vulnerable to HIV/AIDS transmission due to limited knowledge, attitudes, and appropriate preventive behaviors. Health education using engaging and easily understood media, such as videos and leaflets, is considered an effective strategy to improve adolescents' knowledge and attitudes toward HIV/AIDS prevention, especially in school settings. This study aimed to analyze the effectiveness of health education delivered through video and leaflet media in improving knowledge and attitudes toward HIV/AIDS prevention among adolescents at SMA Technical Vocational Railako, Ermera District, Timor-Leste, in 2025. This study employed a quasi-experimental design with a pretest-posttest control group approach. The study sample consisted of 70 second-grade students who were divided into two groups: an intervention group receiving video-based education and a control group receiving leaflet-based education, with 35 respondents in each group. Data were collected using structured questionnaires to assess levels of knowledge and attitudes toward HIV/AIDS prevention before and after the intervention. Data analysis was conducted using univariate and bivariate analyses with the Wilcoxon Signed Rank Test at a significance level of 0.05. The results showed a significant increase in knowledge and attitudes toward HIV/AIDS prevention in both groups after the health education intervention. In the video group, the proportion of respondents with good knowledge increased from 22.9% to 91.4%, while in the leaflet group it increased from 17.1% to 60.0%. Preventive attitudes also improved significantly in both groups. The Wilcoxon test results indicated p-values < 0.05 for all variables, demonstrating that health education using video and leaflet media had a significant effect on improving adolescents' knowledge and attitudes toward HIV/AIDS prevention.

Health education using video and leaflet media is effective in improving adolescents' knowledge and attitudes toward HIV/AIDS prevention. Video-based education demonstrated higher effectiveness compared to leaflet-based education. Audiovisual and printed media-based educational interventions are recommended for sustained implementation in school settings as part of promotive and preventive HIV/AIDS efforts.

Keyword: *HIV/AIDS; health education; video; leaflet; knowledge; attitudes; adolescents.*

INTRODUCTION

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) remain serious global public health problems, particularly among adolescents. Adolescence is a transitional period characterized by significant biological, psychological, and social changes, which increase vulnerability to risk-taking behaviors, including unsafe sexual practices and substance abuse (Arianto, 2020). Biologically, HIV progressively attacks the immune system and may advance from the acute and latent phases to AIDS, leading to severe complications such as opportunistic infections and neurological disorders (Adler, 2020). Adolescents often underestimate the risk of HIV transmission due to limited knowledge and the persistence of myths within communities, such as the belief that HIV can be transmitted through casual social contact (Adler, 2020). These conditions contribute to delays in early detection and prevention of HIV/AIDS among young populations. The World Health Organization (WHO) has identified adolescents as a priority group in HIV control efforts due to the long-term impact of HIV on quality of life and future productivity (World Health Organization, 2015). Therefore, HIV/AIDS among adolescents constitutes a critical issue that requires scientific attention and evidence-based interventions. Research on effective health education strategies is essential to reduce the risk of HIV transmission starting at school age.

From a health policy perspective (political concern), HIV/AIDS prevention among adolescents has become a focus of both national and international policies. Through the Global Health Sector Strategy on HIV, WHO emphasizes the importance of health education, promotion of safe sexual behaviors, and improved access to adolescent-friendly information as key components in ending the AIDS epidemic (World Health Organization, 2016). Global commitment has also been reinforced through the United Nations Declaration of Commitment on HIV/AIDS, which places education and youth empowerment at the center of prevention strategies (United Nations, 2001; United Nations, 2021). At the national level, the Ministry of Health and the Ministry of Education encourage the integration of HIV/AIDS content into school health education programs and the School Health Unit (UKS) (Kemendikbud RI & Kemenkes RI, 2022). These policies highlight the use of educational media tailored to adolescents' characteristics, including audiovisual and printed materials. However, despite the availability of policies,

implementation at the school level remains challenging, particularly in selecting educational media that are both effective and engaging for adolescents. Consequently, empirical evidence is needed to evaluate the effectiveness of educational media in school contexts. This study is therefore relevant in supporting evidence-based policy implementation in educational settings.

From the perspective of public concern, HIV/AIDS affects not only physical health but also has profound psychosocial, economic, and social stigma-related consequences. Adolescents living with HIV/AIDS are at risk of experiencing discrimination, mental health problems, and limited access to education and healthcare services (Limalvin et al., 2020; Khasanah, 2016). HIV-related stigma often discourages adolescents from seeking information or accessing HIV prevention and testing services (Aspiawati, 2018). In schools and communities, discussions about HIV/AIDS are frequently considered taboo, resulting in misinformation or incomplete knowledge among adolescents. Studies indicate that low levels of knowledge are associated with inadequate HIV prevention attitudes among adolescents (Maimaiti et al., 2018). These conditions increase the risk of HIV transmission at a young age and contribute to a sustained disease burden within communities. Therefore, society has a direct interest in effective health education efforts to protect adolescents from HIV/AIDS. School-based education represents a strategic approach, as schools provide a structured and accessible environment for reaching adolescents (Kemendikbud RI & Kemenkes RI, 2022).

In terms of problem manageability, HIV/AIDS among adolescents is an issue that can be scientifically studied and addressed. The availability of epidemiological data, validated instruments for measuring knowledge and attitudes, and diverse educational media enables systematic research to be conducted (Notoatmodjo, 2020). Health education using video and leaflet media represents a relatively simple, cost-effective, and feasible intervention within school settings. Video media can convey messages through visual and auditory elements, thereby enhancing adolescents' attention and comprehension (Kemp, 2021; Wijnker et al., 2019). Meanwhile, leaflets function as concise reinforcement tools that are easy to read and can be revisited repeatedly (Ramadhini, 2021). Previous studies have demonstrated that both media are effective in improving knowledge and health-related attitudes across various topics (Setiani & Warsini, 2020). Given limitations in time, funding, and resources, educational approaches using video and leaflet media constitute realistic and applicable options. Thus, this issue is appropriate for investigation, as it is manageable through scientific inquiry and offers practical solutions.

This study is important due to the limited availability of local empirical evidence regarding the effectiveness of HIV/AIDS health education media among adolescents in vocational school settings, particularly in the Railako area. Prior studies have shown that before receiving education, most

adolescents exhibit inadequate knowledge and preventive attitudes toward HIV/AIDS (Maimaiti et al., 2018). Research conducted at SMA Technical Vocational Railako also reported significant improvements in knowledge and attitudes following education using video and leaflet media; however, these findings require systematic analysis (Veftisia, 2023). Video media are considered more engaging for adolescents due to their alignment with digital generation characteristics, while leaflets remain valuable as supporting educational tools (Kemp, 2021). By conducting this study, scientific evidence regarding the most effective educational media can be generated. The findings may serve as a foundation for developing sustainable school-based health education programs. Consequently, this study holds strategic value in strengthening HIV/AIDS prevention efforts among adolescents.

The aim of this study was to analyze the effectiveness of health education using video and leaflet media in improving knowledge and attitudes toward HIV/AIDS prevention among adolescents at SMA Technical Vocational Railako in 2025. Specifically, the study sought to measure adolescents' knowledge and attitudes before and after receiving health education through video and leaflet media. This objective aligns with WHO recommendations emphasizing the importance of school-based education to enhance adolescent health literacy (World Health Organization, 2015). Through this objective, the study is expected to provide practical contributions for schools and healthcare professionals.

This study is closely related to existing literature. Previous studies have demonstrated that health education using video and leaflet media is effective in improving knowledge and attitudes toward HIV/AIDS prevention (Setiani & Warsini, 2020; Winarti et al., 2019). However, most prior research has been conducted in university settings or urban areas. This study complements existing literature by focusing on a vocational high school context in the Railako region. Thus, the study extends understanding of the effectiveness of educational media within a more specific and localized setting.

Based on the above rationale, the research question of this study is: Is health education using video and leaflet media effective in improving knowledge and attitudes toward HIV/AIDS prevention among adolescents at SMA Technical Vocational Railako in 2025? This research question provides clear and systematic direction for the study. By addressing this question, the study is expected to offer scientific evidence to strengthen adolescent health education programs in school settings.

METHODOLOGY

This study employed a quasi-experimental design with a pretest–posttest control group approach. This design was selected because it allows researchers to evaluate changes in respondents' knowledge and attitudes before and after the implementation of a health education intervention without conducting full randomization of study subjects (Notoatmodjo, 2020). The quasi-experimental approach is appropriate for school-based public health research, as it considers

ethical and administrative constraints that limit the feasibility of complete random assignment. In this design, respondents were divided into two groups: an intervention group that received health education using video media and a control group that received health education using leaflet media. Both groups underwent baseline measurements (pretest) to assess levels of knowledge and attitudes toward HIV/AIDS prevention prior to the intervention. Each group then received the assigned educational intervention. After the intervention was completed, follow-up measurements (posttest) were conducted to assess changes in knowledge and attitudes. Comparisons between pretest and posttest results were used to determine the effectiveness of each educational medium.

The study population consisted of all second-grade students at SMA Technical Vocational Railako in 2025. A total sampling technique was applied, whereby all students who met the inclusion criteria were included as research participants. The total number of respondents was 70 students, who were subsequently divided into two groups of 35 students each. Inclusion criteria comprised students who were actively enrolled as second-grade students, willing to participate in the study, and able to complete all stages of the research. Exclusion criteria included students who were absent during the pretest or posttest phases and those who declined participation. Group allocation was based on existing class structures to prevent information contamination between groups. One group received health education through video media, while the other group received health education through leaflet media. Group assignment considered equivalency in terms of students' age range and educational level.

The research instruments consisted of structured questionnaires designed to measure adolescents' knowledge and attitudes toward HIV/AIDS prevention. The knowledge questionnaire included multiple-choice items covering the definition of HIV/AIDS, modes of transmission, risk factors, prevention strategies, and common misconceptions related to HIV/AIDS (Notoatmodjo, 2020). The attitude questionnaire was developed using a Likert scale to assess respondents' attitudes toward HIV/AIDS prevention practices. All instruments were developed based on indicators used in previous studies and were adapted to the characteristics of secondary school adolescents (Setiani & Warsini, 2020). Prior to data collection, the instruments underwent validity and reliability testing. Validity testing ensured that each item measured the intended construct, while reliability testing ensured consistency of measurement. Only instruments that met validity and reliability criteria were used in the data collection process.

Data collection procedures began with obtaining research approval from the school and informed consent from all respondents. Participants were provided with detailed explanations regarding the study objectives, procedures, and their rights and responsibilities during the research process. The first stage involved administering the pretest, during which all respondents completed the knowledge and attitude questionnaires prior to receiving the intervention. The second stage consisted of the health education intervention.

The intervention group received education using video media containing HIV/AIDS-related content with a predetermined duration, while the control group received leaflet-based education containing the same material. Education sessions were conducted by the researcher using a brief lecture method accompanied by video presentation or leaflet distribution. After the intervention, respondents were given equal time to review and understand the educational material. The final stage involved administering the posttest using the same questionnaires as the pretest to evaluate changes in knowledge and attitudes.

Data analysis was conducted in several stages. Initially, collected data underwent editing, coding, and data entry to ensure completeness and consistency. Univariate analysis was performed to describe frequency distributions and percentages of respondent characteristics, as well as levels of knowledge and attitudes toward HIV/AIDS prevention. Bivariate analysis was conducted to examine differences in knowledge and attitudes before and after the intervention within each group. The Wilcoxon Signed Rank Test was used because the data were ordinal and not normally distributed. A significance level of 0.05 was applied. The results of the analysis were presented in tables and narrative form to facilitate interpretation. This analytical approach was chosen because it aligns with the study objective of evaluating the effectiveness of health education interventions on changes in adolescents' knowledge and attitudes.

RESULTS AND DISCUSSION

Based on the study conducted among 70 adolescent respondents at SMA Technical Vocational Railako in 2025, the video media group and the leaflet media group each consisted of 35 respondents (50.0%). All respondents completed all stages of the study, and all collected data were deemed complete and eligible for analysis. The results are presented based on the highest categories for each measured variable, namely knowledge and attitudes toward HIV/AIDS prevention, both before and after the health education intervention.

In the pre-intervention (pretest) assessment of knowledge levels, the highest category in the video media group was moderate knowledge, accounting for 62.9% (22 respondents). Similarly, in the leaflet media group, the highest pretest category was also moderate knowledge, with a proportion of 60.0% (21 respondents). Thus, moderate knowledge was the dominant category in both groups prior to the implementation of health education.

In the post-intervention (posttest) assessment of knowledge levels, the highest category in the video media group was good knowledge, with a proportion of 91.4% (32 respondents). In contrast, in the leaflet media group, the highest posttest category remained moderate knowledge, accounting for 60.0% (21 respondents). These categories represent the primary post-intervention knowledge outcomes for each group following health education.

Regarding attitudes toward HIV/AIDS prevention prior to the intervention (pretest), the highest category in the video media group was

moderate attitude, with a proportion of 57.1% (20 respondents). Likewise, in the leaflet media group, the highest pretest category was also moderate attitude, comprising 54.3% (19 respondents). Therefore, moderate attitude was the dominant category in both groups before the intervention.

In the post-intervention (posttest) assessment of attitudes toward HIV/AIDS prevention, the highest category in the video media group was good attitude, accounting for 85.7% (30 respondents). In the leaflet media group, the highest posttest category was also good attitude, with a proportion of 68.6% (24 respondents). Good attitude emerged as the dominant category in both groups after the health education intervention.

Based on the results of the Wilcoxon Signed Rank Test, p-values of less than 0.05 were obtained for both knowledge and attitude variables in the video media group as well as in the leaflet media group. These statistically significant p-values constitute the primary statistical findings used in the discussion of this study.

Based on Table 1, the study findings indicate that following the health education intervention, the level of knowledge regarding HIV/AIDS prevention in the video media group was predominantly classified as good knowledge, accounting for 91.4% (32 of 35 respondents). In contrast, in the leaflet media group, as shown in Table 1, the highest post-intervention category remained moderate knowledge, comprising 60.0% (21 of 35 respondents). This finding demonstrates a difference in the highest level of knowledge achieved between the two educational media. From a theoretical perspective, video media are able to present information through a simultaneous combination of visual and auditory elements, thereby enhancing adolescents' comprehension and information retention (Kemp, 2021; Wijnker et al., 2019). This finding is consistent with the study by Setiani and Warsini (2020), which reported that audiovisual media are more effective in improving health-related knowledge compared to printed media. In the researchers' view, the high proportion of respondents achieving good knowledge in the video group reflects the suitability of this medium for adolescents as a visually oriented and digitally engaged generation. The presentation of HIV/AIDS material through video allows information to be conveyed more concretely and clearly. Therefore, based on Table 1, video media demonstrated superior effectiveness in achieving the highest level of knowledge.

Still referring to Table 1, in the leaflet media group, although an improvement in knowledge was observed after the educational intervention, the highest category achieved remained moderate knowledge at 60.0%, while the proportion of respondents with good knowledge reached only 40.0% (14 respondents). This finding indicates that the majority of respondents had not yet attained an optimal level of knowledge despite receiving health education through leaflets. Theoretically, leaflets are static educational media that rely heavily on respondents' reading ability and independent comprehension (Notoatmodjo, 2020). Setiani and Warsini (2020) suggested that printed media are more effective as supportive tools rather than primary educational media

for adolescents. According to the researchers' perspective, the dominance of moderate knowledge in the leaflet group reflects the limitations of leaflets in attracting attention and sustaining adolescents' focus. While leaflets remain useful as written sources of information, they are less effective in promoting higher levels of knowledge attainment. Thus, based on Table 1, leaflets function primarily as reinforcing media rather than as main educational tools.

Based on Table 2, the study results show that following the intervention, the highest category of attitudes toward HIV/AIDS prevention in the video media group was good attitude, accounting for 85.7% (30 respondents). Similarly, in the leaflet media group, as presented in Table 2, the highest post-intervention category was also good attitude, with a proportion of 68.6% (24 respondents). This finding indicates that both educational media were effective in fostering positive HIV/AIDS prevention attitudes among adolescents. Theoretically, attitudes are formed through the internalization of knowledge influenced by learning experiences and emotional stimuli (Notoatmodjo, 2020). Maimaiti et al. (2018) reported that positive preventive attitudes toward HIV/AIDS can develop even when knowledge levels are not yet optimal. In the researchers' opinion, the high proportion of good attitudes in both groups suggests that HIV/AIDS prevention messages were normatively accepted by adolescents. This finding indicates that health education was able to influence the affective domain of adolescent behavior. Therefore, based on Table 2, both video and leaflet media were effective in shaping positive HIV/AIDS prevention attitudes.

The difference in the proportion of good attitudes between the video media group (85.7%) and the leaflet media group (68.6%), as shown in Table 2, suggests that video media exerted a stronger influence on attitude formation. From a theoretical standpoint, audiovisual media have a greater capacity to stimulate the affective domain because they present messages in a visual, narrative, and emotional manner (Kemp, 2021). Winarti et al. (2019) reported that health messages delivered through emotionally engaging media are more effective in shaping preventive attitudes. In the researchers' view, the difference in the proportion of good attitudes indicates that video media not only enhance cognitive understanding but also foster adolescents' internal awareness of the importance of HIV/AIDS prevention. Video media enable adolescents to visualize the real-life consequences of HIV/AIDS more vividly. Consequently, based on Table 2, video media demonstrated superior effectiveness in shaping HIV/AIDS prevention attitudes.

Based on Table 3, the results of the Wilcoxon Signed Rank Test showed p-values < 0.05 for both knowledge and attitude variables in the video media group as well as in the leaflet media group. These statistical findings indicate significant differences in scores before and after the educational intervention in both groups. Theoretically, statistically significant changes in scores reflect the effectiveness of health education interventions in influencing adolescents' cognitive and affective domains (Notoatmodjo, 2020). These findings are consistent with the study by Setiani and Warsini (2020), which reported

significant improvements in knowledge and attitudes following HIV/AIDS education. According to the researchers' perspective, the statistical significance observed in this study demonstrates that the educational interventions produced measurable and meaningful effects. Schools were shown to be effective settings for the implementation of adolescent health education. Therefore, based on Table 3, health education using video and leaflet media had a significant effect on improving adolescents' knowledge and attitudes toward HIV/AIDS prevention.

CONCLUSION

This study demonstrates that health education delivered through video and leaflet media is effective in improving adolescents' knowledge and attitudes toward HIV/AIDS prevention at SMA Technical Vocational Railako in 2025.

Video-based education achieved the highest level of knowledge improvement, with the proportion of respondents in the good knowledge category reaching 91.4%, while leaflet-based education resulted in the highest proportion in the moderate knowledge category at 60.0%. Regarding attitudes, both media were effective in fostering positive HIV/AIDS prevention attitudes, with higher proportions observed in the video media group compared to the leaflet media group. These findings confirm that audiovisual-based educational media are more effective in enhancing adolescents' understanding and preventive attitudes toward HIV/AIDS. Therefore, video media are recommended as the primary educational tool in school-based HIV/AIDS education programs, with leaflets serving as complementary supporting media. Based on the findings and limitations of this study, future research is recommended to employ more robust research designs, such as randomized controlled trials, to improve the internal validity of study outcomes. Subsequent studies are also encouraged to involve larger sample sizes and cover broader school areas to enhance the representativeness of the results. In addition, future research may combine video and leaflet media simultaneously to evaluate the effectiveness of a multimodal approach in HIV/AIDS education. Longitudinal studies are needed to assess the sustainability of changes in adolescents' knowledge and attitudes over time. Integrating qualitative approaches, such as in-depth interviews or focus group discussions, may provide deeper insights into adolescents' experiences and perceptions of HIV/AIDS education. Through such research development, HIV/AIDS prevention efforts among adolescents are expected to become more effective, comprehensive, and to contribute meaningfully to the improvement of public health outcomes.

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