



Effectiveness of Audio-Visual Health Education on Adolescent Sexual and Reproductive Health Awareness in Bengkulu

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ABSTRACT

Background: Adolescent sexual and reproductive health (SRH) remains a major public health concern, particularly due to limited knowledge, negative attitudes, and risky behaviours among adolescents. Innovative educational approaches such as audio-visual media are needed to improve adolescents' awareness and understanding of SRH issues. **Objective:** This study aimed to determine the effectiveness of audio-visual health education in improving adolescents' sexual and reproductive health knowledge, attitudes, and behaviours.

Method: This study employed a quasi-experimental design using a one-group pretest-posttest design without a control group. The study involved 75 tenth-grade students at a senior high school in Bengkulu, Indonesia. Participants received audio-visual-based SRH education over a two-week intervention period. Data were collected using a validated questionnaire assessing knowledge, attitudes, and behaviours related to sexual and reproductive health. Data analysis was performed using descriptive statistics and paired sample t-tests with a significance level of 0.05.

Result: The findings showed significant improvements in all measured variables after the intervention. The mean knowledge score increased from 47.72 to 50.64, attitude score increased from 45.48 to 49.41, and behaviour score increased from 45.48 to 54.53. Statistical analysis indicated that the differences between pre-test and post-test scores were significant for knowledge, attitudes, and behaviours ($p < 0.001$).

Conclusion: Audio-visual health education was effective in improving adolescents' knowledge, attitudes, and behaviours regarding sexual and reproductive health. The findings suggest that multimedia-based educational interventions may serve as an effective strategy for adolescent reproductive health promotion in school settings.

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INTRODUCTION

Adolescent sexual and reproductive health (SRH) has significant effects on long-term socioeconomic development, individual well-being, and educational success, making it a crucial global public health issue. According to estimates from the World Health Organization, 16 million girls between the ages of 15 and 19 give birth annually, with the majority of these births taking place in low- and middle-income nations where access to comprehensive sexuality education and reproductive health services is frequently restricted (Djannah et al., 2020). These early pregnancies, which are often unplanned, increase the risk of mother illness, neonatal problems, and disrupted schooling, all of which contribute to the continuation of poverty and gender inequality cycles. Beyond pregnancy, teenagers have significant rates of HIV and other sexually transmitted infections (STIs), as well as a lack of awareness about safe sexual practices, contraception, and menstrual health. Many teenagers around the world enter puberty with inadequate or inaccurate knowledge about their bodies and reproductive rights, despite the fact that this is a crucial developmental window when accurate, age-appropriate SRH information can shape lifelong health behaviours and outcomes.

The teenage SRH landscape in Indonesia is a reflection of both global trends and context-specific issues that highlight the need for efficient educational interventions. The Ministry of Health and the Indonesian National Population and Family Planning Board (BKKBN) have released national data showing an increase in adolescent unplanned pregnancies, which has prompted policy attention and school-based program initiatives (Djannah et al., 2020). With more than 874,000 adolescents living in urban areas like Jakarta in 2020, these cities are particularly vulnerable to social change, increasing access to digital media, and changing dating and sexual norms (Yulianti et al., 2025). There are widespread gaps in SRH knowledge among Indonesian secondary school students, according to surveys (Wahyudi & Raharjo, 2023; JPPIPA, 2025; Astuti et al., 2024). These gaps include misconceptions regarding menstrual hygiene management, HIV transmission routes, and the health effects of premarital sexual activity. Cultural taboos that prevent families and communities from having frank conversations about sexual matters exacerbate these knowledge gaps, making official SRH instruction primarily provided in schools. Comprehensive sexuality education programs are delivered inconsistently and have a restricted audience in many Indonesian schools due to a lack of qualified teachers, standardised curricula, and interesting teaching resources.

Inadequate adolescent SRH knowledge has psychological, social, and economic repercussions in addition to immediate physical concerns. According to Nopyanti et al. (2023), adolescents who lack awareness about SRH are more likely to participate in hazardous sexual behaviours, become pregnant unintentionally, get STIs, and face avoidable reproductive health issues like unsafe abortion difficulties and cervical cancer precursors. According to Cahyati and Bahtiar (2025), low menstrual health literacy among female adolescents is linked to lower quality of life, social stigma, and school absence. Additionally, teenagers may be discouraged from seeking prompt medical attention or using contraceptive services due to negative views regarding SRH themes that are frequently based on false information and cultural stigma, increasing health risks (Astuti et al., 2024). The combined weight of these problems severely strains families, health systems, and educational institutions while limiting young people's ability to fully participate in society. Therefore, addressing teenage SRH awareness is a strategic investment in population health, gender equity, and sustainable development in addition to being an issue of individual health promotion.

The main research issue this study attempts to address is the ongoing disparity between the need for accurate, thorough SRH information among adolescents and the limited efficacy of conventional educational methods in providing such material in formats that are interesting, culturally relevant, and scalable. Despite being widely used in schools, traditional lecture-based health education frequently fails to hold teenagers' attention, accommodate a variety of learning

styles, or get beyond their uneasiness when talking about delicate sexual subjects (Setiyorini et al., 2024). According to adolescents, didactic training can be dull, awkward, or unrelated to their real-world experiences, which results in poor knowledge retention and little influence on attitudes or behaviours (Wilandika et al., 2025). The quality and reach of SRH education programs are further compromised by resource limitations in many educational settings, such as excessive class sizes, inadequate teacher preparation, and a lack of visual or interactive teaching tools. These difficulties are especially severe in environments where cultural norms inhibit candid discussions about sexuality, calling for creative teaching techniques that can present delicate material in an approachable and non-threatening way.

In order to overcome these obstacles, educators and public health professionals are increasingly using multimedia and technology-enhanced educational interventions that include interactive, visual, and aural components to increase student engagement and learning outcomes. Theoretically, audio-visual education—which includes animated short films, multimedia presentations, and video-based lectures—offers a number of advantages over traditional approaches, including the ability to convey complex biological and social information in visually appealing formats, model healthy behaviours through narrative storytelling, accommodate a range of literacy levels, and be delivered consistently across a variety of settings (Jenner et al., 2023). Adolescents' preferences for screen-based media are also in line with digital and multimedia interventions, which may be readily expanded via mobile devices, internet platforms, and classroom projection systems. The use of multimedia learning concepts like dual coding, segmentation, and personalisation to improve knowledge retention and transfer is generally supported by educational psychology research, indicating that well-designed audio-visual SRH education may be able to overcome many of the drawbacks of traditional instruction.

Despite the growing body of research on audio-visual education for adolescent sexual and reproductive health (SRH), evidence regarding its effectiveness among Indonesian adolescents remains limited. Therefore, this study aimed to evaluate the effectiveness of audio-visual health education in improving adolescents' knowledge, attitudes, and behaviours related to SRH. Using a quasi-experimental one-group pretest–posttest design, this study assessed changes in SRH-related outcomes following a standardized audio-visual educational intervention. The findings may support the use of audio-visual media as an effective educational strategy to promote adolescent sexual and reproductive health in school settings.

METHOD

Study Design

This study employed a quasi-experimental design using a one-group pretest–posttest design to evaluate the effectiveness of audio-visual health education on adolescents' sexual and reproductive health (SRH) knowledge, attitudes, and behaviours. Participants were assessed before and after the intervention to determine changes in the study outcomes. This design was selected because the intervention was implemented as a school-based educational program involving all eligible tenth-grade students. The use of a single-group design allowed the researchers to evaluate changes following the intervention while ensuring that all students received the same educational opportunity. In addition, logistical and administrative considerations within the school setting limited the feasibility of establishing a separate control group. Although the absence of a control group limits causal inference, the design was considered appropriate for evaluating the preliminary effectiveness of the intervention in a real-world educational setting. This study was approved by the Health Research Ethics Committee of Sekolah Tinggi Ilmu Kesehatan Tri Mandiri Sakti Bengkulu, Indonesia (Ethical Approval No. 004556/KEPK STIKES TMS BENGKULU/2026).

Population and Sample

The study was conducted at Senior High School X in Bengkulu, Indonesia, during the 2025/2026 academic year. The target population consisted of all tenth-grade students enrolled at the school. Total sampling was applied, whereby all eligible students were invited to participate in the study. A total of 75 students met the inclusion criteria and completed all stages of data collection. The inclusion criteria were: (1) being registered as a tenth-grade student at Senior High School X, (2) willingness to participate in the study, (3) providing informed consent, (4) obtaining permission from the school, and (5) completing both pretest and posttest assessments. Students who were absent during the intervention period or failed to complete the questionnaires were excluded from the final analysis.

Research Instrument

Data were collected using a structured Sexual and Reproductive Health (SRH) questionnaire adapted from the instrument developed by Yesnita Rambu Pati based on the Summary of Sexual and Reproductive Health framework developed by Dwi Ernawati et al. (2018). The questionnaire assessed three domains: knowledge, attitudes, and behaviours related to adolescent sexual and reproductive health. Prior to data collection, the instrument underwent validity and reliability testing. Item validity was assessed using item-total correlation analysis, while internal consistency reliability was evaluated using Cronbach's alpha coefficient. The instrument demonstrated acceptable psychometric properties and was considered suitable for measuring adolescents' SRH-related knowledge, attitudes, and behaviours.

Intervention Procedure

The study was conducted in three phases. During the first phase, participants completed a pretest questionnaire to assess baseline levels of knowledge, attitudes, and behaviours regarding sexual and reproductive health. The second phase involved the implementation of audio-visual health education over a two-week period. Educational materials were delivered through videos and multimedia presentations covering reproductive anatomy and physiology, puberty, menstrual health, prevention of sexually transmitted infections, consequences of risky sexual behaviour, and healthy reproductive practices. The intervention was conducted in a structured classroom setting and facilitated by the researchers. Participants were exposed to audio-visual learning materials and actively engaged in discussion and question-and-answer sessions to enhance understanding and encourage participation. The educational activities were implemented according to the planned intervention schedule, and participant attendance and involvement were monitored throughout the study period to ensure consistency in the delivery of the intervention. During the final phase, participants completed a posttest questionnaire using the same instrument administered during the pretest. The posttest was conducted immediately after completion of the intervention to evaluate changes in SRH-related knowledge, attitudes, and behaviours.

Data Analysis

Descriptive statistics were used to summarize participant characteristics and study variables, including frequencies, percentages, means, standard deviations, minimum values, and maximum values. Data normality was assessed using the Kolmogorov-Smirnov test. Differences between pretest and posttest scores were analyzed using the paired-samples t-test. Statistical significance was determined at a 95% confidence level with a significance threshold of $p < 0.05$.

RESULTS AND DISCUSSION

Results

The demographic characteristics of the respondents, including age and gender distribution, are presented in Table 1.

Table 1. Demographic Characteristics of Respondents (N = 75)

Characteristics	Category	n	%
Age	15 years	28	37.3
	16 years	39	52.0
	17 years	8	10.7
Gender	Male	31	41.3
	Female	44	58.7

Based on Table 1, most respondents were aged 16 years (52.0%), followed by 15 years (37.3%) and 17 years (10.7%). Female students accounted for 58.7% of participants, while male students accounted for 41.3%.

Table 2. Comparison of Knowledge, Attitude, and Behaviour Scores Before and After Audio-Visual SRH Education Among Adolescents (N = 75)

Dimensions		Mean	Min	Max	SD	P value
Knowledge	Pre	47.72	34	58	5.906	0.000
	Post	50.64	34	60	5.069	
Attitude	Pre	45.48	27	56	5.887	0.000
	Post	49.41	36	60	5.262	
Behaviour	Pre	45.48	14	61	3.14	0.000
	Post	54.53	22	72	4.149	

According to Table 2, the mean knowledge score increased from 47.72 ± 5.91 (range: 34–58) at pretest to 50.64 ± 5.07 (range: 34–60) at posttest. Similarly, the mean attitude score increased from 45.48 ± 5.89 (range: 27–56) to 49.41 ± 5.26 (range: 36–60). For behaviour, the mean score increased from 45.48 ± 3.14 (range: 14–61) before the intervention to 54.53 ± 4.15 (range: 22–72) after the intervention. Paired-sample analysis demonstrated statistically significant improvements in knowledge, attitude, and behaviour following the audio-visual SRH education intervention (all $p < 0.001$).

Discussion

According to this study, the teenage attitude variable increased by 3.93 from mean score 45.48 (pretest) to score 49.41 (posttest), whereas the average pretest score for the knowledge score increased by 2.92 from mean score 47.72 (pretest) to score 50.64 (posttest). Adolescent behaviour's mean pretest score increased by 9.05 from 45.48 to 54.53 on the posttest. The knowledge, attitude, and behaviour variables in the intervention group showed statistically significant differences (all $p < 0.001$). Knowledge, attitudes, and behaviours about sexual and reproductive health varied significantly before and after the intervention group received audiovisual-based health education.

Due to a number of issues and obstacles, adolescents may choose not to get essential SRH services (Decker et al., 2021). For a variety of reasons, including social stigmas, information gaps, misconceptions, and cultural norms, SRH demands are frequently undervalued (Havaei et al., 2021). A total of 81.4% of the 668 respondents in a survey conducted in West Java, Indonesia, had inadequate understanding about reproductive health. The majority of respondents were female (57.6%), between the ages of 10 and 14 (50.1%), Muslim (96.7%), Sunda (90.1%), and had completed junior high school (50.3%). Additionally, 93.75% of respondents were found to have a positive viewpoint. Most teenagers in the survey knew very little about SRH (Benton et al., 2020). The uneven distribution of SRH-related data in Indonesia may be the cause of this issue.

Accessing information and care for reproductive health is difficult for many teenagers. When it comes to talking about sexuality and SRH with parents and teachers, young people in Indonesia

frequently experience feelings of guilt and taboo. Furthermore, parents think that talking about reproductive health will promote sexual experimentation because teenagers are too immature to comprehend the subject. In most Muslim nations, including Indonesia, it is culturally inappropriate to provide sexual education to young people who are not married. Teenagers typically rely on friends and the media as their main information sources as a result. Nevertheless, thorough information about SRH may not always be available through this channel. Health professionals should undertake assessments and encourage SRH among teenagers in the community, including in schools (Solehati et al., 2022).

According to a survey conducted on college students in Bangladesh, 62% of older adolescent girls were accurately aware of the physical and psychological changes that take place during this stage. Furthermore, 36% of respondents correctly characterised menstruation as a sickness. About thirty percent of the girls were aware of the negative impact birth control had on a couple's sexual relationship. In addition, 54.8% of older teenage girls demonstrated thorough awareness regarding the spread of sexually transmitted illnesses (STIs) (Zakaria et al., 2020).

A thorough analysis of the literature on the topic indicates that educating teenagers about SRH improves their attitudes. Comprehensive sex education has been shown to improve the quality of sexual experiences and is regarded as a fundamental human right (Havaei et al., 2021).

Gender had a major impact on the several assessed attitudinal aspects. Women scored lower on sexism, which encompasses ambivalent, hostile, and benign attitudes, and higher on attitudes toward sexuality in general than men. For men, these forms of sexism had a significant impact. Except for aggressive sexism, there were no significant relationships between age and any of the assessed attitudes. Adolescents between the ages of 14 and 16 scored somewhat higher on favourable attitudes toward sexuality for the remaining characteristics. Benevolent and ambivalent sexist attitudes were marginally higher among younger and older adolescents, respectively (Fernandez-Garcia et al., 2022). Nevertheless, there was no correlation found in this study between these factors and SRH-related attitudes.

Three-quarters of older adolescent girls in Bangladesh have certain attitudes and customs that believe the younger group can access the kitchen during the menstrual cycle. Furthermore, almost 75% of people believed that they could touch anyone while they were menstruating. Over 75% of students said that teenage girls can attend college and go outside when they are menstruating. A total of 77.7% of older females believe that using birth control is not sinful (Zakaria et al., 2020). On the other hand, 54% of Ethiopian teenagers who responded disagreed with the idea that a girl can stay a virgin until marriage, citing a variety of difficulties. Peer pressure accounted for 40.6% of these, followed by intense sexual desire (6.1%), limited academic aptitude (3.1%), economic dependency, and kidnapping. Risky sexual behaviour was seen favourably by 51.5% of respondents overall and negatively by 48.5% of respondents (Keto et al., 2020).

Sexual health education is one strategy to stop adolescents from engaging in abnormal sexual behaviour. Adolescents who get sexuality education can learn how to prevent harmful sexual behaviour, which can result in issues like unintended pregnancy, unsafe abortion, HIV, STDs, and maternal and newborn mortality (Manalu, 2020).

The majority of respondents reported benefits following audiovisual-based teaching interventions on reproductive health and the risks associated with pornography. After receiving reproductive health education, teenagers' knowledge and attitudes significantly changed, according to research by Ichwan et al. (2021). SRH helps deter teenage sexual offences (Rahmadani & Ahmed, 2026). The choice of media and the level of information delivery are two factors that affect health education and can lead to increased understanding. The target audience's knowledge can be increased through the selection of educational media, which is ultimately anticipated to result in favourable behavioural changes. Audiovisual education increases respondents' interest in the subject matter, making it less dull and simpler to comprehend. This is due to the fact that audiovisuals incorporate both visual (picture) and audio (sound) components. According to the

Centers for Disease Control and Prevention (CDC, 2022), instruction utilising audiovisual materials improves students' comprehension, boosts their motivation to study, and helps them retain the information for longer. While a recent study published in JPPIPA found that video-based interventions increased awareness of the risks associated with premarital sexual behaviour, Wahyudi and Raharjo (2023) showed that video media health education significantly improved adolescent reproductive health knowledge among Indonesian secondary school students (JPPIPA, 2025).

In a similar vein, Djannah et al. (2020) found that in a controlled educational environment, audio-visual media significantly improved teenagers' understanding of sexual and reproductive health. Animated videos, which employ cartoon or graphic animation to demonstrate SRH concepts, have demonstrated special potential for capturing the attention of younger teenagers and tackling delicate subjects like HIV prevention, managing dysmenorrhea, and sexual health risks (Wilandika et al., 2025; Cahyati & Bahtiar, 2025). While Cahyati and Bahtiar showed improved knowledge about managing dysmenorrhea after video animation-based health education, Wilandika et al. found that animated videos significantly increased adolescent awareness of sexual health risks and HIV prevention (Wilandika et al., 2025; Cahyati & Bahtiar, 2025).

More complex multimedia and interactive interventions, such as digital games, interactive animated modules, and entertainment-education narratives that include health messages into captivating plots, have been developed and evaluated in addition to basic video presentations. Setiyorini et al.'s systematic review and meta-analysis of data from digital game interventions aimed at adolescent reproductive health revealed moderate-to-large effect sizes for knowledge (SMD = 0.74, 95% CI 0.11–1.38) and attitudes (SMD = 0.95, 95% CI 0.03–1.88), but small and non-significant effects on self-efficacy (Setiyorini et al., 2024). Additional evidence comes from randomised controlled trials, though these are still scarce. For example, Jenner et al. (2023) conducted a rigorous trial of a sexual health video intervention among Black and Hispanic adolescent females in the United States and found significant improvements in contraceptive knowledge and some behavioural indicators at three-month follow-up.

An animated interactive multimedia intervention on early adolescent understanding of TRIAD KRR (the three dangers to adolescent reproductive health) was assessed in Indonesia by Manash (2025), who reported notable increases in knowledge. Similarly, Sary et al. (2025) discovered that audio-visual health promotion increased teenage HIV/AIDS knowledge, whereas Naqzi et al. (2025) showed that audio-visual treatments improved adolescent knowledge on HIV/AIDS prevention. An animation-based comprehensive sexuality education package provided sustained knowledge increases at one-year follow-up, according to Zhou et al.'s (2024) two-year repeated intervention trial in China. However, attitude effects gradually decreased with time.

According to research by Merdikawati et al. (2025), statistical analysis revealed that adolescent understanding was impacted by audiovisual education about reproductive health and the risks associated with pornography ($p = 0.000$). After receiving video instruction, 103 respondents had increased knowledge, 40 respondents had decreased knowledge, and 69 respondents' scores stayed the same.

Implications

The findings of this study have important practical and theoretical implications for adolescent sexual and reproductive health promotion programs, particularly in school settings. The significant improvements in knowledge, attitudes, and behaviours following the audio-visual educational intervention suggest that multimedia-based learning can serve as an effective strategy for enhancing adolescent reproductive health awareness. By combining visual and auditory stimuli, audio-visual media can improve students' attention, comprehension, and retention of health information, making it a valuable complement to conventional teaching methods (Mayer, 2009). The results also support the integration of structured audio-visual reproductive health education

into school curricula and highlight the need for collaboration among educational institutions, healthcare professionals, and policymakers to develop comprehensive health promotion programs that address cognitive, attitudinal, and behavioural aspects of adolescent reproductive health. Furthermore, these findings provide empirical evidence to support the incorporation of multimedia educational approaches into broader adolescent health promotion and reproductive health policies.

Research Contribution

This study contributes to the existing literature on adolescent sexual and reproductive health education by providing empirical evidence on the effectiveness of audio-visual educational interventions among senior high school students in Bengkulu, Indonesia. The findings demonstrate that multimedia-based health education can significantly improve adolescents' knowledge, attitudes, and behaviours related to reproductive health, thereby supporting the application of multimedia learning and health behaviour theories, including Mayer's Cognitive Theory of Multimedia Learning and Bandura's Social Cognitive Theory. Furthermore, this study offers methodological evidence regarding the use of a quasi-experimental pretest–posttest design in evaluating school-based educational interventions and provides practical insights for researchers, educators, and healthcare professionals in developing evidence-based adolescent reproductive health promotion programs.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the study employed a one-group quasi-experimental design without a control group, limiting the ability to establish causal relationships and isolate the exclusive effect of the audio-visual intervention. External factors such as peer interactions, social media exposure, and other educational sources may have influenced the observed changes in knowledge, attitudes, and behaviours. Second, the study was conducted among 75 students from a single senior high school in Bengkulu, which may limit the generalizability of the findings to adolescents from different sociocultural and educational backgrounds. Third, the use of self-reported questionnaires may have introduced response and social desirability biases, particularly given the sensitive nature of sexual and reproductive health topics. Finally, outcomes were measured immediately following the two-week intervention period, preventing the assessment of the long-term sustainability of behavioural and attitudinal changes. Future studies should employ randomized controlled designs, involve larger and more diverse populations, and incorporate longer follow-up periods to evaluate the enduring impact of audio-visual reproductive health education.

CONCLUSION

Audio-visual sexual and reproductive health education significantly improved adolescents' knowledge, attitudes, and behaviours regarding sexual and reproductive health. The intervention effectively enhanced reproductive health awareness through an engaging multimedia learning approach. These findings support the use of audio-visual media as a potentially effective strategy for promoting adolescent reproductive health in school settings. However, the study was limited by the absence of a control group, the relatively small sample size, and the short observation period. Future studies are recommended to involve larger and more diverse populations, employ more rigorous research designs, and include longer

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