

Original Article

Improving reproductive health self-efficacy among female adolescents through audiovisual based education: A pre-experimental study

Alim Hidayat^{1*}, Eko Mardiyarningsih²

¹ Bachelor's Degree Program in Nursing, Faculty of Health, Universitas Ngudi Waluyo, Ungaran, Indonesia

² Master's Degree Program in Nursing, Graduate Program, Universitas Ngudi Waluyo, Ungaran, Indonesia

***Corresponding Author:**

Eko Mardiyarningsih

Master's Degree Program in Nursing,
Graduate Program, Universitas Ngudi
Waluyo, Ungaran, Indonesia
Email:
ekomardiyarningsih@unw.ac.id

Keyword:

Female Adolescents; Health Education;
Reproductive Health; Self Efficacy

© The Author(s) 2026

DOI:

<https://doi.org/10.52235/lp.v7i3.880>

Article Info:

Received : June 01, 2026

Revised : June 25, 2026

Accepted : July 10, 2026

Lentera Perawat

e-ISSN : 2830-1846

p-ISSN : 2722-2837



This is an Open Access article distributed
under the terms of the [Creative
Commons Attribution-NonCommercial
4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/).

Abstract

Background: Adolescent girls need reproductive health education that not only provides accurate information but also strengthens confidence in making healthy decisions. School-based audiovisual education may offer an engaging and developmentally appropriate strategy to improve reproductive health self-efficacy among junior high school female.

Objective: This study aimed to examine differences in self-efficacy among female adolescents before and after receiving PERSADA, an audiovisual-based reproductive health education intervention.

Methods: This quantitative study used a pre-experimental one group pretest posttest design. A total of 161 female students from grades VIII and IX at a junior high school located in the Semarang regency were selected through purposive sampling from a population of 269 students. Self-efficacy was measured using a questionnaire administered before and after the intervention. Data were analyzed using descriptive statistics and the paired sample t-test.

Results: The mean self-efficacy score increased from 61.37 before the intervention to 67.32 after the intervention, with a mean difference of 5.95 points. The minimum score increased from 48 to 56, while the maximum score increased from 76 to 79. The standard deviation decreased from 7.921 to 5.664, indicating more homogeneous post intervention scores. The paired sample t-test showed $p = 0.000$, indicating a statistically significant difference in self-efficacy before and after PERSADA.

Conclusion: PERSADA was associated with a significant improvement in reproductive health self-efficacy among female adolescents. These findings suggest that audiovisual-based reproductive health education can be used as a practical school-based health promotion strategy to strengthen adolescents' confidence in understanding and maintaining reproductive health.

Background

Adolescence is a decisive developmental stage characterized by rapid physical, hormonal, psychological, and social transitions that require adequate understanding and adaptive health behavior. For adolescent girls, these transitions are closely connected with reproductive health needs, including menstrual hygiene, adjustment to puberty, body awareness, personal boundaries, and responsible decision-making in social relationships. Early and middle adolescence represent a particularly sensitive period because reproductive maturity may occur before adolescents have fully developed the cognitive, emotional, and social readiness required to manage reproductive health risks. Therefore, reproductive health education during this period is essential to help adolescent girls understand bodily changes, prevent misinformation, and build confidence in maintaining their health, particularly when education is delivered through school-based, adolescent centered, and

developmentally appropriate approaches (Chernick et al., 2021; Jämiä et al., 2023; Ma et al., 2021; Torres-Cortés et al., 2023).

Empirical evidence from Indonesia shows that adolescents' reproductive and sexual health self-efficacy remains a concern and requires structured educational intervention. Ratnasari et al., (2021) found that AViRSex significantly improved self-efficacy among 122 adolescents aged 12–14 years ($p = 0.008$), while no change occurred in the control group ($p = 0.367$). Although differences between groups were not significant ($p = 0.067$), audiovisual education was considered effective. Legiati et al., (2019) also reported that peer education significantly improved knowledge, attitudes, and self-efficacy regarding puberty ($p = 0.000$). Similarly, Kholifah & Utami, (2024) showed that the teach-back method significantly increased adolescents' self-efficacy ($Z = -6.767$; $p = 0.000$). Evidence from Central Java supports the role of self-efficacy in behavior. Winarni (2017) found that higher self-

efficacy reduced premarital sexual behavior ($p = 0.020$).

The urgency of adolescent reproductive health education is supported by global and national evidence indicating persistent gaps in reproductive health knowledge, attitudes, literacy, and protective behavior. Reproductive health outcomes among adolescents are shaped by multiple interrelated factors, including individual knowledge, self-efficacy, family communication, parental supervision, religious understanding, cultural norms, school support, and access to reliable information (Torres-Cortés et al., 2023). In Indonesia, adolescent reproductive health issues remain strongly influenced by social taboos, limited open communication, and uneven implementation of school-based reproductive health education. These conditions may cause female adolescent to rely on informal or digital sources that are not always accurate, developmentally appropriate, or useful for strengthening healthy behavior.

The main research problem addressed in this study is the limited self-efficacy of female adolescent in maintaining reproductive health. Self-efficacy refers to an individual's belief in their ability to organize and perform actions needed to achieve specific goals (Allsop & Anderman, 2022). In the context of reproductive health, self-efficacy is not only a psychological construct but also a practical determinant of whether adolescents feel capable of maintaining hygiene, understanding pubertal changes, seeking help, resisting negative peer influence, and making responsible decisions. Low reproductive health literacy and weak self-efficacy may increase vulnerability to unhealthy behavior, particularly when accurate information is limited and reproductive health remains a sensitive topic in family and school environments.

A broad solution to this problem is comprehensive, theory informed reproductive health education that matches adolescents' developmental characteristics. School-based reproductive health education has been shown to improve knowledge, attitudes, self-efficacy, and protective intentions when designed with clear theoretical foundations and delivered through engaging strategies (Bauman et al., 2021; Ma et al., 2021; Torres-Cortés et al., 2023). However, reproductive health education delivered only through conventional lectures may be less effective for students who are increasingly familiar with visual and digital learning environments. Thus, educational interventions should not merely transfer information but also enhance confidence,

provide behavioral models, and help adolescents internalize practical responses to real-life reproductive health situations.

The specific intervention proposed in this study is PERSADA, an audiovisual based reproductive health education program. Audiovisual media are considered useful because they combine images, sound, narration, and concrete examples, thereby increasing adolescents' attention, understanding, and retention of health information (Hutomo et al., 2025). Previous studies have shown that video based or audiovisual reproductive health education can improve knowledge, attitudes, practices, and self-efficacy among adolescents (Wulansari et al., 2025). Similar findings have also been reported in video-based sexual and reproductive health education, including AViRSex, which demonstrated the potential of educational video to strengthen adolescent reproductive health self-efficacy (Ratnasari et al., 2021).

However, PERSADA differs from previous audiovisual interventions in several aspects. While earlier video-based interventions such as AViRSex generally focused on sexual and reproductive health self-efficacy, PERSADA was developed specifically as a school based reproductive health education program for female adolescents in junior high school. The content of PERSADA emphasizes puberty, personal and reproductive hygiene, emotional changes, and healthy decision making, which are closely related to the developmental needs of female adolescent. In addition, PERSADA was not delivered only as a video exposure, but was combined with facilitator explanation, discussion, and question and answer activities. Therefore, PERSADA is positioned as a structured audiovisual-based educational strategy that integrates relevant reproductive health content, interactive learning, and school-based implementation to strengthen reproductive health self-efficacy among female adolescents.

Closely related literature supports the potential of school based and audiovisual interventions while also indicating an important research gap. Evidence from school-based sexual and reproductive health education shows improvements in knowledge, attitudes, and self-efficacy among middle-school students (Ma et al., 2021). Other recent studies emphasize that self-efficacy is associated with safer sexual decision-making, negotiation skills, abstinence, and protective behavior among adolescents (Benavides-Torres et al., 2023; Kim et al., 2023). Nevertheless, many previous studies have focused on senior high school students, knowledge

outcomes, or broader sexual health indicators. Evidence on audiovisual reproductive health education specifically targeting self-efficacy among junior high school girls remains limited, even though early adolescence is a formative period for developing reproductive health confidence before unhealthy behavioral patterns become established.

Therefore, this study aims to examine differences in self-efficacy among adolescent girls before and after receiving PERSADA at a junior high school located in the Semarang regency. The novelty of this study lies in its focus on audiovisual based reproductive health education as a strategy to strengthen self-efficacy among female junior high school students, a population that has received relatively limited attention in previous research. Based on recent theoretical and empirical evidence, this study hypothesizes that PERSADA significantly improves adolescent female' self-efficacy in maintaining reproductive health. The scope of the study is limited to female students in grades VIII and IX and evaluates changes in self-efficacy using a one-group pretest-posttest approach.

Methods

Study Design

This study employed a quantitative pre-experimental design using a one-group pretest-posttest approach. This design was selected because the main purpose of the study was to examine whether there was a measurable difference in adolescent female' self-efficacy before and after receiving PERSADA, an audiovisual-based reproductive health education intervention. In this design, the same participants were assessed twice: first before the intervention to identify their baseline self-efficacy, and again after the intervention to determine whether their self-efficacy changed following exposure to the educational program.

Although randomized controlled trials and quasi-experimental designs provide stronger causal evidence for evaluating adolescent sexual and reproductive health education interventions, pre-experimental designs remain useful in early stage intervention evaluation, feasibility testing, and school based studies where randomization may be difficult to implement (Burke & Thomas, 2022; Charron-Prochownik et al., 2023; Vijayaraghavan et al., 2022). Previous literature also indicates that pretest-posttest designs can provide initial

evidence regarding the potential effect of reproductive health education programs before future studies apply more rigorous designs with control groups and longer follow-up periods (Setyaningsih et al., 2022). Therefore, the design used in this study was considered appropriate for identifying preliminary changes in self-efficacy among adolescent girls after receiving an educational intervention in a natural school setting.

Sampling

The population of this study consisted of all female students in grades VIII and IX at a junior high school located in the Semarang regency, with a total population of 269 students. The sample size was determined using the Slovin formula with a 5% margin of error, resulting in 161 respondents. This sample size was considered adequate to describe changes in self-efficacy scores before and after the intervention within the selected school population.

The sampling technique used was purposive sampling. This technique was chosen because the study required participants who met specific criteria relevant to the research objective. The inclusion criteria were female students in grades VIII and IX who were willing to participate in the study. The exclusion criteria were students who were absent during data collection or did not complete the questionnaire properly. The use of purposive sampling allowed the researcher to recruit participants who were directly aligned with the target population and intervention objectives.

In adolescent reproductive health education research, participant selection should consider age, developmental stage, school context, and the relevance of the intervention content. Previous studies have emphasized that junior high school students are an important group for reproductive health education because early adolescence is a formative stage for developing knowledge, attitudes, and self-efficacy before risk behaviors become established (Ma et al., 2021; Osorio & Jaimes, 2022). Therefore, the selection of female students in grades VIII and IX was consistent with the preventive and promotive aims of the study.

Instruments

The main instrument used in this study was a self-efficacy questionnaire designed to measure

adolescent female' confidence in maintaining reproductive health. The questionnaire was administered before and after the PERSADA intervention. The measured construct focused on the respondents' perceived ability to understand reproductive health information, maintain personal and reproductive hygiene, respond appropriately to pubertal changes, and make healthy decisions related to reproductive health.

This study used a self-efficacy questionnaire. The questionnaire was developed by the researcher. It consisted of 20 items, including positive statements (items 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19) and negative statements (items 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20) regarding reproductive health self-efficacy, using a Likert scale with the following options: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. Based on the validity test results of the 20 items tested, 16 items were deemed valid based on adequate Corrected Item-Total Correlation values, while the remaining 4 items were invalid. Based on the reliability test results, a value of 0.802 was obtained, indicating that the Cronbach's Alpha value is greater than 0.700, signifying that the research instrument has a good level of internal consistency. This value indicates that the questionnaire is capable of providing stable and consistent measurement results when used at different times and under different conditions. Therefore, this research instrument is deemed reliable and trustworthy for use in further research. In this study, the questionnaire was used consistently in the pretest and posttest to ensure comparability of scores. The same measurement tool allowed the researcher to identify whether there was a change in self-efficacy after the audiovisual educational intervention

Intervention

The intervention in this study was PERSADA, or Audiovisual-Based Reproductive Health Education. PERSADA was designed as a school based educational intervention to improve female adolescent's self-efficacy in maintaining reproductive health. The intervention was conducted at a junior high school located in the Semarang regency over a period of five days and consisted of two educational sessions. The sessions were facilitated by the researcher with assistance from the school staff of junior high school to support the implementation process,

participant coordination, and classroom arrangements.

The educational content of PERSADA focused on reproductive health topics relevant to female adolescent, including puberty, personal and reproductive hygiene, emotional changes during adolescence, and healthy decision making. These topics were selected because they are closely related to the developmental needs of junior high school girls and their confidence in understanding bodily changes, maintaining hygiene, managing emotions, and making responsible decisions in daily life. The intervention was delivered using a lecture method supported by audiovisual media. The video used in the intervention had a duration of more than five minutes and presented reproductive health information through visual and auditory elements, including narration, images, and concrete examples.

Each session included the delivery of material through audiovisual presentation, followed by explanation from researcher and facilitator. In addition, discussion and question and answer activities were conducted to allow students to clarify information, express their understanding, and engage more actively with the topic. This interactive component was intended to strengthen comprehension and support students' confidence in applying reproductive health information. Audiovisual education was selected because adolescents are generally more responsive to learning materials that combine images, sound, narration, and real life examples. Previous studies have shown that audiovisual and video based reproductive health education can improve knowledge, attitudes, practices, and self-efficacy among adolescents (Wulansari et al., 2025).

Data Collection

Data collection was conducted in three main stages. First, respondents completed the pretest questionnaire to measure their baseline self-efficacy before receiving PERSADA. The pretest was administered before the intervention. Second, respondents participated in the audiovisual based reproductive health education intervention. Third, the posttest questionnaire was administered immediately after the completion of the intervention after seven day to measure changes in self-efficacy after receiving PERSADA.

The pretest and posttest procedures were conducted using the same questionnaire to ensure consistency in measurement. Participants were instructed to answer all questions honestly and independently. Because reproductive health is a sensitive topic for adolescents, the data collection process was conducted in an environment that supported privacy, comfort, and concentration. Previous adolescent reproductive health studies recommend self-administered questionnaires or privacy preserving data collection methods to reduce social desirability bias and protect participants when sensitive topics are assessed (Hennegan et al., 2019; Woollett et al., 2021).

Data Analysis

Data were analyzed using descriptive and inferential statistics. Descriptive statistics were used to summarize the respondents' self-efficacy scores before and after the intervention, including mean, minimum score, maximum score, and standard deviation. The pretest and posttest results were then compared to identify the direction and magnitude of change.

Before conducting the paired-samples t-test, the normality assumption was assessed based on the distribution of the difference scores between the pretest and posttest self-efficacy scores. The normality assessment was performed using Q-Q plots. The results showed that the data points were distributed approximately along the diagonal reference line, indicating that the difference scores were normally distributed. Therefore, the assumption of normality was met, and the analysis was continued using a parametric test, namely the paired-samples t-test, to determine differences in self-efficacy scores before and after the PERSADA intervention.

Inferential analysis was conducted using the paired sample t-test because the study compared two related measurements obtained from the same respondents. This test was appropriate for determining whether the mean self-efficacy score after the intervention differed significantly from the mean score before the intervention. The level of significance was set at 0.05. A p-value less than 0.05 indicated a statistically significant difference between pretest and posttest scores.

Reporting pretest–posttest studies should include descriptive statistics and statistical significance to clarify whether observed changes are meaningful.

Literature on adolescent reproductive health intervention research also recommends transparent reporting of mean differences, variability, confidence intervals, and effect estimates when possible to strengthen interpretation and comparability across studies (Burke & Thomas, 2022; Charron-Prochownik et al., 2023).

Ethical Consideration

This study involved adolescent participants in a school setting; therefore, ethical considerations were essential. Participation was voluntary, and respondents were informed about the purpose and procedure of the study. The researcher was required to protect participant confidentiality and ensure that the collected data were used only for research purposes. Students who were unwilling to participate or unable to complete the questionnaire were not forced to continue. This study has been approved by the Ngudi Waluyo University Research Ethics Committee under No. 979/KEP/EC/UNW/2025, dated December 29, 2025.

Ethical standards in adolescent reproductive health education research emphasize ethical approval, informed consent or assent, confidentiality, privacy protection, and culturally appropriate implementation (Charron-Prochownik et al., 2023; Nisman et al., 2022; Woollett et al., 2021). These principles are particularly important because reproductive health education involves sensitive information and minor participants. Accordingly, the intervention and data collection process were conducted in a respectful, nonjudgmental, and age-appropriate manner to protect respondents' wellbeing and rights.

Results

This chapter presents the findings regarding differences in reproductive health self-efficacy among female adolescent before and after receiving PERSADA, an audiovisual-based reproductive health education intervention. The presentation of results is organized sequentially, beginning with baseline self-efficacy, followed by post-intervention self-efficacy, and finally the statistical comparison between the two measurements. This structure provides a logical basis for understanding the direction and magnitude of change after the intervention.

Table 1. Characteristics Respondents

Characteristics	Frequency (n)	Percentage (%)
Age		
12-14 years (early adolescence)	80	49.7
15-18 years (middle adolescence)	81	50.3
Grade		
VIII	83	51.6
IX	78	48.4

A total of 161 adolescent girls participated in this study. Based on age, the respondents were almost equally distributed between early and middle adolescence. There were 80 respondents aged 12–14 years, representing 49.7% of the sample, while 81 respondents were aged 15–18 years, representing 50.3%. This distribution indicates that the study involved adolescent girls across relevant developmental stages for reproductive health education.

Regarding grade level, 83 respondents, or 51.6%, were in grade VIII, while 78 respondents, or 48.4%, were in grade IX. This relatively balanced distribution shows that the respondents

represented both grade levels included in the study. In terms of sex, all respondents were female, with 161 respondents, or 100%, identified as adolescent girls. This is consistent with the focus of the study, which examined the effect of audiovisual-based reproductive health education on self-efficacy among adolescent girls. Overall, the respondent characteristics indicate that the study sample was appropriate for the research objective, as all participants were female adolescents in junior high school who were in a developmental stage closely related to puberty, reproductive health needs, and the formation of self-efficacy in maintaining reproductive health.

Table 1. Characteristics Respondents

Variable	Mean	SD	Confidence Interval 95%		p-value
			Lower	Upper	
Pretest	61.37	7.921			
Posttest	67.32	5.664	-6.750	-5.138	0.000

The same respondents completed the self-efficacy questionnaire twice: once before the intervention as a pretest and once after the intervention as a posttest. Because this study used a one-group pretest–posttest design, the findings mainly describe changes within the same group of participants over time. Although this design does not provide the same level of causal inference as randomized controlled or quasi-experimental studies, it remains useful for preliminary evaluation of school based educational interventions, especially when the purpose is to identify whether an intervention is followed by measurable improvement in the target outcome (Setyaningsih et al., 2022).

Baseline Self-Efficacy Before PERSADA

Before receiving PERSADA, the respondents' self-efficacy score had a mean of 61.37, with a minimum score of 48, a maximum score of 76, and a standard deviation of 7.921. These results indicate that the female adolescents had a

moderate but not yet optimal level of confidence in maintaining reproductive health. The relatively broad score range also shows variation among respondents, suggesting that some students had stronger confidence while others still had lower confidence in understanding and managing reproductive health issues.

This baseline condition is important because self-efficacy is a key psychological factor that influences adolescents' ability to transform reproductive health knowledge into protective behavior. In the context of female adolescents, self-efficacy may include confidence in maintaining reproductive hygiene, understanding pubertal changes, seeking accurate information, making healthy decisions, and resisting negative social influence. The finding that baseline self-efficacy was not yet optimal is consistent with previous studies showing that adolescent reproductive health self-efficacy varies according to age, prior educational exposure, cultural context, family

communication, and school-based reproductive health programs (Ma et al., 2021; Marandu & Mauki, 2023; Mzingwane et al., 2020).

Self-Efficacy After PERSADA

After receiving the audiovisual-based reproductive health education intervention, the respondents' mean self-efficacy score increased to 67.32. The minimum score increased from 48 to 56, while the maximum score increased from 76 to 79. The standard deviation decreased from 7.921 at pretest to 5.664 at posttest. These findings indicate not only an improvement in the average level of self-efficacy but also a more homogeneous distribution of scores after the intervention.

The increase in the minimum score is particularly relevant because it suggests that respondents with lower initial self-efficacy may have gained benefit from the intervention. The decrease in standard deviation indicates that the variation among respondents became smaller after PERSADA, suggesting that audiovisual education may have helped reduce the gap between students with lower and higher levels of confidence. In educational intervention research, changes in both the mean and dispersion of scores are important because they indicate whether improvement occurs broadly across participants rather than only among selected individuals.

The posttest findings are consistent with literature indicating that audiovisual or video-based reproductive health education can improve adolescent self-efficacy and related psychosocial outcomes. Several studies have shown that school-based, video-based, or theory-informed reproductive health interventions may increase confidence in protective behaviors, risk avoidance, refusal skills, and reproductive health decision-making (Marandu & Mauki, 2023; Mzingwane et al., 2020). In school-based settings, reproductive health education has also been reported to improve knowledge, attitudes, and self-efficacy among middle-school students (Ma et al., 2021). These findings support the interpretation that audiovisual learning is a relevant approach for strengthening self-efficacy among adolescent girls.

Difference in Mean Self-Efficacy Scores

The comparison between pretest and posttest scores showed an increase of 5.95 points in the mean self-efficacy score, from 61.37 before

PERSADA to 67.32 after PERSADA. This positive mean difference indicates that respondents reported higher confidence in maintaining reproductive health after receiving the audiovisual intervention. The increase is in line with the expected direction of change because PERSADA was designed to deliver reproductive health information in a format that is engaging, concrete, and easier for adolescents to understand.

The observed improvement may be interpreted as an educationally meaningful outcome because self-efficacy is not limited to knowledge acquisition. It reflects adolescents' confidence in applying knowledge to real-life situations. Literature on adolescent reproductive health education suggests that improvement in self-efficacy is important when it supports knowledge, attitudes, intentions, or protective skills that contribute to healthier reproductive health behavior (Bauman et al., 2021; Ma et al., 2021). In this study, the increase in self-efficacy suggests that PERSADA may have strengthened students' perceived ability to understand reproductive health, maintain hygiene, and make healthier decisions.

Statistical Test of Pretest–Posttest Difference

The paired sample t-test was used to determine whether the difference between pretest and posttest self-efficacy scores was statistically significant. This test was appropriate because the study compared two related measurements from the same respondents. The analysis showed a p-value of 0.000, which was lower than the significance level of 0.05. Therefore, the result indicates a statistically significant difference in self-efficacy before and after the PERSADA intervention.

The statistical finding supports the conclusion that female adolescent' self-efficacy improved significantly after receiving audiovisual based reproductive health education. In pretest–posttest intervention studies, paired comparison is commonly used when continuous scores are collected from the same participants at two time points. In addition, transparent reporting of pretest and posttest means, standard deviations, confidence intervals, and p-values strengthens the clarity and interpretability of educational intervention results (Charron-Prochownik et al., 2023; Setioputro et al., 2025).

The confidence interval reported in the original analysis ranged from -6.750 to -5.138, and p value = 0.000. The negative value reflects the direction of calculation when pretest scores were compared with posttest scores. Substantively, this result means that posttest scores were higher than pretest scores. Thus, the statistical evidence shows a significant increase in self-efficacy after the intervention.

Overall, the results show that female adolescents' self-efficacy increased after receiving PERSADA. The mean score increased from 61.37 to 67.32, the minimum score improved from 48 to 56, and the standard deviation decreased from 7.921 to 5.664. The paired sample t -test produced a p -value of 0.000, indicating a statistically significant difference between pretest and posttest scores.

These findings demonstrate that PERSADA was associated with improved reproductive health self-efficacy among female adolescent. The results are consistent with previous research showing that audiovisual and school-based reproductive health education can improve self-efficacy and related adolescent health outcomes (Ma et al., 2021; Wulansari et al., 2025). However, because this study used a one-group pretest-posttest design, the findings should be interpreted as evidence of significant within group improvement rather than definitive causal proof. Future studies using control groups, randomized allocation, longer follow-up, and broader outcome measures are needed to confirm the effectiveness and durability of PERSADA.

Discussion

The findings of this study indicate that audiovisual based reproductive health education through PERSADA was associated with a significant improvement in self-efficacy among adolescent girls. Rather than interpreting this improvement merely as a numerical increase in post intervention scores, the finding should be understood as evidence that audiovisual education may support the psychological processes required for adolescents to feel more capable of managing reproductive health issues. In early and middle adolescence, reproductive health topics such as puberty, personal hygiene, emotional changes, and healthy decision-making are often perceived as sensitive, unfamiliar, or difficult to discuss openly. Therefore, an intervention that presents these topics in a

structured, concrete, and developmentally appropriate format may help reduce uncertainty and increase confidence.

The improvement in self-efficacy can be explained through Social Cognitive Theory, particularly the concept that self-efficacy develops through observational learning, mastery experience, verbal persuasion, and emotional regulation. Audiovisual media can facilitate observational learning by showing adolescents examples of situations, behaviors, and responses related to reproductive health. When students observe modeled behaviors through images, narration, and real-life examples, they may be more able to imagine how similar actions can be applied in their own lives. This mechanism is important because adolescents may not develop self-efficacy from information alone; they also need examples of how to act, how to respond, and how to make decisions in situations relevant to their developmental stage (Shegog et al., 2021; Torres-Cortés et al., 2023).

Audiovisual education may also strengthen self-efficacy by making abstract reproductive health concepts more concrete and easier to internalize. Topics such as puberty, reproductive hygiene, emotional changes, and decision making require not only factual understanding but also personal interpretation. Video based learning allows information to be delivered through both visual and auditory channels, which can increase attention, improve comprehension, and support memory retention. This multimodal process may explain why audiovisual interventions are often more engaging than conventional lecture-only approaches, especially for young adolescents who are familiar with digital and visual learning environments (Chernick et al., 2021; Jämiä et al., 2023; Scull et al., 2022). Another possible mechanism is the reduction of psychological discomfort when discussing reproductive health. In many adolescent settings, reproductive health remains a sensitive topic and may be associated with embarrassment, fear, or social taboo. Audiovisual media can create a more neutral learning space because the message is first delivered through media rather than direct personal questioning. This may help students process sensitive information with less anxiety. When audiovisual delivery is followed by discussion and question-and-answer sessions, students are given opportunities to clarify

misunderstandings, receive reinforcement, and build confidence in expressing their concerns. This combination of media exposure and facilitated interaction may be particularly important in strengthening self-efficacy, because confidence is formed not only by receiving information but also by having the opportunity to confirm and apply that information.

The content of PERSADA may also have contributed to the improvement in self-efficacy because it addressed domains that are directly relevant to female adolescent's daily experiences. The materials covered puberty, personal and reproductive hygiene, emotional changes, and healthy decision-making. These topics are closely related to situations that adolescent girls may encounter during early and middle adolescence. When educational content is relevant to students' lived experiences, it is more likely to be perceived as useful and applicable. This relevance may increase perceived competence, which is one of the essential components of self-efficacy. Previous studies have similarly shown that audiovisual and video based reproductive health education can improve adolescents' knowledge, attitudes, and self-efficacy when the content is age-appropriate and related to real-life reproductive health concerns (Ma et al., 2021; Ratnasari et al., 2021; Wulansari et al., 2025).

However, the findings should also be interpreted critically. The increase in self-efficacy after PERSADA does not necessarily mean that audiovisual media alone caused the improvement. The intervention included audiovisual presentation, lecture, discussion, and question and answer activities. Therefore, the observed change may have resulted from the combined effect of visual exposure, facilitator explanation, peer learning, and interactive clarification. This is important because effective reproductive health education is rarely dependent on one medium alone. Systematic reviews suggest that successful adolescent sexual and reproductive health education commonly involves theory-based content, participatory learning, adequate delivery time, and opportunities for communication and (Jämiä et al., 2023; Torres-Cortés et al., 2023). Thus, PERSADA may be more accurately understood as a structured educational strategy supported by audiovisual media rather than merely a video intervention.

The findings also need to be interpreted within the school context. Schools provide an accessible setting for reaching adolescents, but school-based education is influenced by classroom environment, teacher support, peer norms, and institutional readiness. In this study, the intervention was implemented at a junior high school located in the Semarang regency with assistance from the school. This support may have helped create an organized and acceptable learning environment. Nevertheless, reproductive health self-efficacy is also influenced by factors beyond school, including family communication, cultural values, religious norms, prior information exposure, and access to trustworthy health information. Therefore, although PERSADA improved self-efficacy in the short term, sustainable improvement may require reinforcement through school health programs, parental involvement, and continuous access to accurate reproductive health education (Ma et al., 2021; Torres-Cortés et al., 2023).

The study contributes to existing knowledge by focusing on self-efficacy as an outcome of audiovisual reproductive health education among junior high school girls. Many reproductive health education studies emphasize knowledge improvement, whereas self-efficacy reflects a deeper behavioral readiness: the belief that adolescents can apply what they know. This distinction is important because knowledge may not automatically lead to healthy behavior if adolescents do not feel confident to act. By showing improvement in self-efficacy, this study supports the argument that audiovisual based education can help bridge the gap between reproductive health information and adolescents' confidence to use that information in daily life.

The results also support previous evidence that audiovisual and video-based educational approaches are effective for adolescent reproductive health promotion. Audiovisual media combine visual and auditory channels, making information more engaging, understandable, and memorable for younger learners. This is especially relevant for junior high school students, who may be more responsive to concrete and media-supported learning than to conventional lecture-based delivery. Prior studies have shown that video-based or audiovisual reproductive health interventions can improve knowledge, attitudes, behavioral intentions, and

self-efficacy among adolescents (Ma et al., 2021; Marandu & Mauki, 2023; Wulansari et al., 2025). In the present study, the increase in the mean score and the reduction in standard deviation after the intervention suggest that PERSADA may have helped raise confidence among students with lower baseline self-efficacy and made the overall distribution of scores more homogeneous.

The baseline findings showed that respondents had a moderate but not optimal level of self-efficacy before receiving PERSADA. This condition is important because self-efficacy is a central determinant of whether adolescents feel capable of maintaining reproductive health, resisting negative influence, and seeking appropriate information or support. Previous literature has emphasized that adolescent reproductive health outcomes are influenced by multiple factors, including knowledge, attitudes, self-efficacy, parental supervision, family communication, religious understanding, cultural norms, school context, and access to reliable information (Torres-Cortés et al., 2023). In Indonesia, reproductive health remains a sensitive issue in many school and family settings, which may limit adolescents' opportunities to obtain comprehensive and developmentally appropriate information. Thus, the moderate pretest score in this study confirms the need for structured reproductive health education that addresses not only knowledge but also confidence and decision-making capacity.

The post intervention improvement is also consistent with studies showing that self-efficacy is linked to healthier reproductive health behaviors. Higher self-efficacy has been associated with safer decision-making, better communication, refusal skills, risk avoidance, and stronger intention to engage in protective behaviors (Bauman et al., 2021; Kim et al., 2023; Marandu & Mauki, 2023). Although this study measured self-efficacy rather than actual behavior, the improvement remains meaningful because self-efficacy is commonly viewed as an important pathway between health education and behavior change. Adolescents who believe they are capable of maintaining reproductive health are more likely to act responsibly when facing social pressure, misinformation, or uncertainty. Therefore, strengthening self-efficacy through PERSADA may contribute to broader promotive and preventive goals in adolescent reproductive health.

Compared with traditional educational approaches, audiovisual reproductive health education offers several advantages. It can simplify complex information, present sensitive topics in a less threatening manner, and provide models of appropriate behavior. Systematic reviews and contemporary studies indicate that effective sexuality and reproductive health education programs commonly include theory-based content, participatory strategies, adequate learning exposure, and culturally appropriate messages (Jämiä et al., 2023; Torres-Cortés et al., 2023). Audiovisual education can support these principles when it is integrated with teacher or health-worker facilitation, discussion, and opportunities for reflection. Therefore, PERSADA should not be understood merely as a media tool but as a structured educational strategy that can be incorporated into school health programs.

The practical implication of this study is that schools, nurses, and health educators may use audiovisual reproductive health education as a feasible strategy to improve adolescent female' self-efficacy. In school settings, PERSADA can support health promotion activities by providing standardized, attractive, and age-appropriate material. For nursing education and community health practice, the intervention may serve as a promotive and preventive approach to strengthen adolescents' reproductive health literacy and confidence. However, the implementation of audiovisual education should remain sensitive to cultural values, language, students' developmental stage, and the school environment. Previous literature emphasizes that digital and audiovisual interventions are more effective when supported by contextual factors such as family communication, school climate, peer norms, and access to reliable health information (Ma et al., 2021; Shegog et al., 2021).

Despite these contributions, several limitations should be acknowledged. The one-group pretest-posttest design limits causal interpretation because it does not include a comparison group. This design is vulnerable to threats to internal validity, including history, maturation, testing effects, and other external factors that may occur between the pretest and posttest (Bierer et al., 2025). The improvement in self-efficacy may also have been influenced by respondents' familiarity with the questionnaire or social desirability when responding to sensitive reproductive health

questions. In addition, self-efficacy was measured immediately after the intervention, so the durability of the improvement remains unknown. Future studies should use a quasi-experimental or randomized controlled design, include a control group, measure long-term follow-up outcomes, and examine whether increased self-efficacy leads to actual reproductive health behaviors, such as improved hygiene practices, healthier decision-making, and better communication about reproductive health.

Overall, the findings suggest that PERSADA is associated with a significant improvement in reproductive health self-efficacy among female adolescent. The results are theoretically plausible, empirically consistent with previous studies, and practically relevant for school-based adolescent health promotion. Nevertheless, future research should use stronger designs, such as quasi-experimental or randomized controlled studies with comparison groups, larger and more diverse samples, longer follow-up periods, and additional outcomes such as knowledge, attitudes, hygiene practices, communication skills, and actual reproductive health behaviors. Such studies would strengthen causal interpretation and clarify whether the improvement in self-efficacy can be sustained and translated into healthier reproductive health practices.

Conclusion and Recommendation

This study found an increase in reproductive health self-efficacy among female adolescents after receiving PERSADA, an audiovisual based reproductive health education intervention. The improvement reflected greater confidence in understanding reproductive health, maintaining reproductive hygiene, responding to pubertal changes, managing emotions, and making healthier decisions. However, because the study used a one group pretest posttest design without a control group, the findings should be interpreted as observed improvement after the intervention, not definitive causal evidence.

PERSADA may be used as a promotive and preventive educational tool in school-based reproductive health programs, especially through the School Health Unit, in collaboration with teachers, nurses, parents, and primary health care providers. Its implementation should include age appropriate audiovisual learning, discussion, and question and answer sessions. Future studies are recommended to use stronger designs with

control groups, involve more diverse settings, and assess long-term outcomes.

Acknowledgement

The authors would like to express their sincere gratitude to all respondents who willingly participated in this study. The authors also extend their appreciation to SMP Negeri 4 Ungaran for granting permission and facilitating the implementation of the research. Appreciation is also given to the Faculty of Health and Graduate Program Universitas Ngudi Waluyo, for its academic support during the preparation and completion of this study.

Funding Source

This research received no external funding.

Declaration of conflict of interest

The authors declare no competing interests.

Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

Data Availability Statement

Data sharing is not applicable to this article.

References

- Allsop, Y., & Anderman, E. M. (2022). Developing Sexual Self-Efficacy Beliefs During Adolescence: Do Health Teachers Really Matter? *Journal of Youth and Adolescence*, 51(11), 2061–2076. <https://doi.org/10.1007/s10964-022-01646-w>
- Bauman, L. J., Watnick, D., Silver, E. J., Rivera, A., Sclafane, J. H., Rodgers, C. R. R., & Leu, C. (2021). Reducing HIV/STI Risk Among Adolescents Aged 12 to 14 Years: A Randomized Controlled Trial of Project Prepared. *Prevention Science*, 22(8), 1023–1035. <https://doi.org/10.1007/s11121-021-01203-0>
- Benavides-Torres, R. A., Meneses-Tirado, M. de los Á., Ramírez-Calderón, A. J., & Champion, J. D. (2023). Personal, Interpersonal, and Sociocultural Factors of Condom Use in Rural Indigenous Nahuas Adolescents in Mexico. *Children*, 10(6), 921. <https://doi.org/10.3390/children10060921>
- Bierer, S. B., Dallaghan, G. B., Borges, N. J., Brondfield, S., Fung, C. C., Huggett, N., Teal, C. R., Thammasitboon, S., & Colbert, C. Y. (2025). Moving Beyond Simplistic Research Design in Health Professions Education : What a One-Group Pretest-Posttest Design Will Not Prove. *The AAMC Journal of Teaching and Learning Resources*, 21(May), 1–9. https://doi.org/10.15766/mep_2374-8265.11527

- Burke, H. M., & Thomas, R. (2022). Thematic Analysis and Mapping of Reproductive Empowerment Scales: A Tool for Family Planning Self-Care Programming and Research. *Global Health Science and Practice*, 10(3), e2100794. <https://doi.org/10.9745/ghsp-d-21-00794>
- Charron-Prochownik, D., Moore, K., Stotz, S., Akers, A. Y., Beirne, S., Brega, A. G., Chalmers, L. J., Fischl, A., Garrow, H., Gonzales, K., Nadeau, K. J., O'Banion, N., Powell, J., Seely, E. W., Powell, B., Abujaradeh, H., & Sereika, S. M. (2023). Comparing American Indian/Alaska Native Adolescent Daughters' and Their Mothers' Awareness, Knowledge, Attitudes, and Behaviors Regarding Risk for Gestational Diabetes: Implications for Mother-Daughter Communication on Reproductive Health. *The Science of Diabetes Self-Management and Care*, 49(4), 267–280. <https://doi.org/10.1177/26350106231178837>
- Chernick, L. S., Santelli, J., Stockwell, M. S., Gonzalez, A. E., Ehrhardt, A. A., Thompson, J. L., Leu, C., Bakken, S., Westhoff, C., & Dayan, P. S. (2021). A Multi-media Digital Intervention to Improve the Sexual and Reproductive Health of Female Adolescent Emergency Department Patients. *Academic Emergency Medicine*, 29(3), 308–316. <https://doi.org/10.1111/acem.14411>
- Hennegan, J., Brooks, D. J., Schwab, K. J., & Melendez-Torres, G. J. (2019). Measurement in the Study of Menstrual Health and Hygiene: A Systematic Review and Audit. <https://doi.org/10.31235/osf.io/n8j5w>
- Hutomo, W. M. ., Idris, I., & Kambu, F. (2025). Pengaruh Pendidikan Kesehatan Reproduksi Dengan Metode Audiovisual Terhadap Peningkatan Pengetahuan Risiko Kehamilan Remaja. *Journal of Innovative Midwifery Practice*, 1(1), 9–16.
- Jämiä, L., Piispanen, N., Kylmä, J., Haavisto, E., & Harju, E. (2023). Contents, Methods, and Outcomes of Adolescent Sexual Health Promotion in School Environments: A Scoping Review*. *Journal of School Health*, 94(2), 184–199. <https://doi.org/10.1111/josh.13393>
- Kholifah, S., & Utami, R. (2024). Peningkatan Pengetahuan Dan Self Efficacy Remaja Pada Situasi Kesiapsiagaan Bencana Sosial Melalui Edukasi Kesehatan Reproduksi Dengan Metode Teach Back. *Ilmiah Keperawatan*, 10(2), 276–283. <https://doi.org/https://doi.org/10.33023/jikep.v10i2.2069>
- Kim, S., Jemmott, L. S., Icard, L. D., Teitelman, A. M., Kelly, T.-A., O'Leary, A., Ngwane, Z., Bellamy, S. L., & Jemmott, J. B. (2023). Long-Term Mediation of a Sexual Risk-Reduction Intervention for South African Adolescents. *Health Psychology*, 42(11), 810–821. <https://doi.org/10.1037/hea0001325>
- Legiati, T., Hidayanti, D., & Diyan, I. (2019). Pengaruh Peer Education Terhadap Pengetahuan , Sikap, Dan Efikasi Diri Remaja Putri Tentang Pubertas. *BIMTAS*, 3(1), 1–11.
- Ma, X., Yang, Y., Chow, K. M., & Zang, Y. (2021). Chinese Adolescents' Sexual and Reproductive Health Education: A Quasi-experimental Study. *Public Health Nursing*, 39(1), 116–125. <https://doi.org/10.1111/phn.12914>
- Marandu, D. F., & Mauki, C. (2023). Vicarious Experience as a Predictor of Self-Efficacy in Condom Use Among Adolescents in Tanzania: Reflections From Media, Peers and Adults. *Huria Journal of the Open University of Tanzania*, 28(2). <https://doi.org/10.61538/huria.v28i2.1145>
- Mzingwane, M. L., Mavondo, G. A., Mantula, F., Mapfumo, C., Gwatiringa, C., Moyo, B., Dube, P., & Chaibva, C. N. (2020). HIV Knowledge, Risky Behaviours and Public Health Care Services Attendance Among Adolescents From the Grassroot Soccer Zimbabwe Programme. *BMC Health Services Research*, 20(1). <https://doi.org/10.1186/s12913-020-05305-3>
- Nisman, W. A., Parmawati, I., Lailatussa'adah, L., Larasati, N., & Krismonita, W. (2022). The Effect of the Commander Application (Gender Equality-Based Adolescent Reproductive Health Education) on Knowledge, Attitudes, and Self-Efficacy of High School Students in Yogyakarta City. *Open Access Macedonian Journal of Medical Sciences*, 10(E), 1476–1482. <https://doi.org/10.3889/oamjms.2022.10041>
- Osorio, M. L. V., & Jaimes, E. L. (2022). Psychometric Properties of the Sexual Self-Concept Inventory for Early Adolescent Girls. *Aquichan*, 22(2), 1–16. <https://doi.org/10.5294/aqui.2022.22.2.4>
- Ratnasari, E., Hartini, S., Wasityastuti, W., Mada, U. G., Mada, U. G., & Mada, U. G. (2021). Pengaruh Edukasi AViRSex (Aid Video for Reproduction and Sexuality) terhadap Efikasi Diri Remaja Terkait Kesehatan Seksual dan Reproduksi di Kecamatan Ngemplak The Effect of AViRSex (Aid Video for Reproduction and Sexuality) Education Toward Adolescen. *Jurnal Keperawatan Klinis Dan Komunitas*, 5(November), 124–133. <https://doi.org/https://doi.org/10.22146/jkkk.57386>
- Scull, T. M., Dodson, C. V, Geller, J. G., Reeder, L. C., & Stump, K. N. (2022). A Media Literacy Education Approach to High School Sexual Health Education: Immediate Effects of Media Aware on Adolescents' Media, Sexual Health, and Communication Outcomes. *Journal of Youth and Adolescence*, 51(4), 708–723. <https://doi.org/10.1007/s10964-021-01567-0>
- Setioputro, B., Nabilah, W. R., Apriliani, N. E. P., Yunanto, R. A., & Haristiani, R. (2025). School-Based Program for Improving Disaster Preparedness Among Indonesian Adolescents in Earthquake Risk Area: A

Randomized Control Trial. Iranian Journal of Public Health.

<https://doi.org/10.18502/ijph.v54i5.18632>

Setyaningsih, W. H., Yudianti, I., & Mansur, H. (2022). Perceived Susceptibility, Barriers, and Cues to Action as Determinant Factors of Reproductive Health Behavior. *International Journal of Public Health Science (Ijphs)*, 11(3), 884. <https://doi.org/10.11591/ijphs.v11i3.21576>

Shegog, R., Armistead, L., Markham, C., Dube, S., Song, H.-Y., Chaudhary, P., Spencer, A., Peskin, M. F., Maria, D. S., Wilkerson, J. M., Addy, R. C., Emery, S. T., & McLaughlin, J. (2021). A Web-Based Game for Young Adolescents to Improve Parental Communication and Prevent Unintended Pregnancy and Sexually Transmitted Infections (The Secret of Seven Stones): Development and Feasibility Study. *Jmir Serious Games*, 9(1), e23088. <https://doi.org/10.2196/23088>

Torres-Cortés, B., Leiva, L., Canenguez, K. M., Olhaberry, M., & Méndez, E. (2023). Shared Components of Worldwide Successful Sexuality Education Interventions for Adolescents: A Systematic Review of Randomized Trials. *International Journal of Environmental Research and Public Health*, 20(5), 4170. <https://doi.org/10.3390/ijerph20054170>

Vijayaraghavan, J., Vidyarthi, A., Livesey, A., Gittings, L., Levy, M., Timilsina, A., Mullings, D., & Armstrong, C. J. (2022). Strengthening Adolescent Agency for Optimal Health Outcomes. *BMJ*, 379, e069484. <https://doi.org/10.1136/bmj-2021-069484>

Winarni, W. (2017). Efikasi diri dan perilaku seksual pranikah remaja SMA. *Gaster*, XV(2), 232-240. <https://doi.org/https://doi.org/10.30787/gaster.v15i2.209>

Woollett, N., Bandeira, M., Marunda, S., Mudekanye, L., & Ebersöhn, L. (2021). Adolescent Pregnancy and Young Motherhood in Rural Zimbabwe: Findings From a Baseline Study. *Health & Social Care in the Community*, 29(6). <https://doi.org/10.1111/hsc.13362>

Wulansari, I., Fatimah, S., & Arsad, M. (2025). E fektivitas Media Video Dalam Peningkatan Self- Efficacy Kesehatan Seksual Dan Reproduksi Remaja Di Gorontalo. *Jurnal Pengabdian Masyarakat Farmasi*, 4(3), 243-250. <https://doi.org/https://doi.org/10.37905/phar.soc.v4i3.34442>