

Effectiveness of Sexual Health Education in Improving Reproductive Health Literacy and Preventive Attitudes among Adolescents

Efektifitas Pendidikan Kesehatan Seksual Dalam Meningkatkan Literasi Kesehatan Reproduksi dan Sikap Preventif Remaja

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Abstract

Adolescence is a developmental period characterized by physical, psychological, and social changes that increase vulnerability to risky sexual behaviors. Low reproductive health literacy and inadequate preventive attitudes among adolescents may contribute to various health problems, including unintended pregnancy and sexually transmitted infections. This study aimed to determine the effectiveness of sexual health education in improving reproductive health literacy and preventive attitudes among adolescents at SMP Negeri 32 Padang in 2026. This study employed a quasi-experimental design with a one-group pretest-posttest approach. The population consisted of 188 eighth-grade students, and 20 respondents were selected using a systematic random sampling technique. Data were collected using knowledge and attitude questionnaires administered before and after the sexual health education intervention and were analyzed using the Wilcoxon test. The results showed that the mean score of reproductive health literacy increased from 12.55 to 14.15, while the mean score of preventive attitudes increased from 8.10 to 9.65. Statistical analysis revealed significant improvements in reproductive health literacy ($p=0.000$) and preventive attitudes ($p=0.000$) following the intervention. In conclusion, sexual health education is effective in improving adolescents' reproductive health literacy and preventive attitudes and can serve as a promotive and preventive strategy to support adolescent reproductive health in the school setting.

Keywords: Sexual health education, Reproductive health literacy, Preventive attitude, Adolescence.

Abstrak

Masa remaja merupakan periode perkembangan yang ditandai dengan perubahan fisik, psikologis, dan sosial yang meningkatkan kerentanan terhadap perilaku seksual berisiko. Rendahnya literasi kesehatan reproduksi dan sikap preventif remaja dapat berdampak pada berbagai masalah kesehatan, seperti kehamilan tidak diinginkan dan infeksi menular seksual. Penelitian ini bertujuan untuk mengetahui efektivitas pendidikan kesehatan seksual dalam meningkatkan literasi kesehatan reproduksi dan sikap preventif remaja di SMP Negeri 32 Kota Padang Tahun 2026. Penelitian ini menggunakan desain quasi experiment dengan pendekatan one group pretest-posttest. Populasi berjumlah 188 siswa kelas VIII dengan sampel sebanyak 20 responden yang dipilih menggunakan teknik systematic random sampling. Data dikumpulkan melalui kuesioner pengetahuan dan sikap sebelum dan sesudah intervensi pendidikan kesehatan seksual, kemudian dianalisis menggunakan uji Wilcoxon. Hasil penelitian menunjukkan rata-rata literasi kesehatan reproduksi meningkat dari 12,55 menjadi 14,15, sedangkan rata-rata sikap preventif meningkat dari 8,10 menjadi 9,65. Hasil uji statistik menunjukkan terdapat peningkatan yang signifikan pada literasi kesehatan reproduksi ($p=0,000$) dan sikap preventif remaja ($p=0,000$) setelah diberikan pendidikan kesehatan seksual. Disimpulkan bahwa pendidikan kesehatan seksual efektif dalam meningkatkan literasi kesehatan reproduksi dan sikap preventif remaja, sehingga dapat dijadikan sebagai strategi promotif dan preventif dalam mendukung kesehatan reproduksi remaja di lingkungan sekolah.

Kata Kunci: Pendidikan kesehatan seksual, Literasi kesehatan reproduksi, Sikap preventif, Remaja.



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Introduction

Adolescence is a critical developmental stage characterized by rapid physical, psychological, and social changes, making adolescents particularly vulnerable to various health-risk behaviors, including risky sexual behavior. The World Health Organization (WHO) defines adolescents as individuals aged 10–19 years and estimates that approximately 1.2 billion adolescents, representing nearly 18% of the global population, are currently living worldwide [1]. Biological changes associated with puberty that are not accompanied by adequate reproductive health knowledge may increase adolescents' susceptibility to engaging in unhealthy sexual behaviors [2]. From a health psychology perspective, inadequate reproductive health literacy and poor preventive attitudes may impair adolescents' ability to make informed decisions regarding their sexual and reproductive health [3].

Globally, adolescent reproductive health remains a major public health concern. WHO estimates that approximately 21 million girls aged 15–19 years in developing countries become pregnant each year, with nearly 12 million pregnancies resulting in childbirth [4]. Furthermore, risky sexual behaviors among adolescents contribute substantially to the increasing incidence of sexually transmitted infections (STIs), including Human Immunodeficiency Virus (HIV), which adversely affect both physical and psychological well-being [5]. These conditions emphasize the importance of implementing effective health promotion and preventive interventions to improve adolescents' ability to access, understand, evaluate, and apply reproductive health information appropriately.

In Indonesia, adolescent reproductive health continues to present significant challenges. The Indonesian Demographic and Health Survey (IDHS) reported that 2% of female adolescents and 8% of male adolescents aged 15–24 years had experienced premarital sexual intercourse [6]. In addition, the 2022 IDHS indicated that approximately 17% of pregnancies were unintended, with adolescents accounting for the largest proportion of these cases [7]. Previous studies have identified inadequate reproductive health knowledge, peer influence, inappropriate sources of information, and limited access to comprehensive sexual health education as major factors contributing to risky sexual behavior among adolescents [8].

Sexual health education is widely recognized as an effective health promotion strategy for improving reproductive health literacy and fostering preventive attitudes among adolescents. According to Notoatmodjo, health education is a systematic process aimed at enhancing individuals' capacity to understand health-related information and adopt healthier behaviors [9]. Within the framework of health psychology, increased knowledge serves as the cognitive foundation for developing positive attitudes, which subsequently influence health-related behaviors [10]. Previous studies have demonstrated that sexual health education significantly improves adolescents' knowledge and positive attitudes toward reproductive health. Likewise, Sitorus reported that health education delivered through school counseling services effectively enhanced students' understanding of reproductive health [11].

In West Sumatra Province, the prevalence of unintended pregnancy remains approximately 14–15% of total pregnancies, while in Padang City the prevalence ranges from 13% to 15%, with most cases occurring among young couples [12]. These findings indicate that adolescent reproductive health remains a significant issue requiring greater attention from multiple stakeholders, particularly educational institutions. Schools play a strategic role in providing comprehensive sexual health education to strengthen adolescents' reproductive health literacy and encourage the development of preventive attitudes.

A preliminary survey conducted among 15 students at SMP Negeri 32 Padang revealed that most students had limited understanding of sexual health education, including reproductive health, sexually

transmitted infections, and risky sexual behavior. Interviews with school counseling teachers further indicated that the school had never implemented a structured sexual health education program. Moreover, students were found to have been exposed to potentially harmful online content, including pornography, and demonstrated inadequate understanding of appropriate boundaries in relationships with the opposite sex. These findings suggest that reproductive health literacy among students remains insufficient and highlight the need for interventions that strengthen preventive attitudes through structured sexual health education. Based on these findings, this study aimed to examine the effectiveness of sexual health education in improving reproductive health literacy and preventive attitudes among adolescents at SMP Negeri 32 Padang in 2026.

Methods

Materials and Method

This study employed a quantitative approach using a quasi-experimental one-group pretest–posttest design to evaluate the effectiveness of sexual health education in improving adolescents' reproductive health literacy and preventive attitudes. This design enabled the assessment of changes in participants' cognitive and affective outcomes before and after the educational intervention within the same group.

The study population consisted of all eighth-grade students enrolled during the 2025/2026 academic year at SMP Negeri 32 Padang (N = 188). The minimum sample size was initially estimated using the Lemeshow formula, which indicated that at least 96 participants were required. However, because this study was designed as a school-based quasi-experimental pilot intervention involving repeated measurements before and after the educational program, the final sample comprised 20 participants who completed the entire study protocol. Participants were selected using a systematic random sampling technique by determining a sampling interval from the student roster.

Eligible participants were students aged 13–15 years who voluntarily agreed to participate and completed both the pretest and posttest assessments. Students who were absent during the intervention, had health conditions preventing participation, or failed to complete the questionnaires were excluded from the study. Although the sample size was smaller than the initially estimated minimum, it was considered appropriate for evaluating the feasibility and preliminary effectiveness of the intervention within the available research setting. The independent variable was sexual health education, whereas the dependent variables were reproductive health literacy and preventive attitudes among adolescents. Reproductive health literacy was operationally defined as adolescents' ability to obtain, understand, evaluate, and apply reproductive health information to support informed health-related decision-making. Preventive attitudes referred to adolescents' favorable evaluations and intentions toward preventing risky sexual behaviors and maintaining reproductive health.

The educational intervention consisted of a single 30-minute face-to-face educational session delivered by the researcher using interactive lectures, guided discussions, Microsoft PowerPoint presentation slides, and printed educational leaflets. The educational materials were developed based on the Indonesian Ministry of Health's adolescent reproductive health guidelines, recommendations from the National Population and Family Planning Agency (BKKBN), and health promotion principles proposed by Notoatmodjo. The session began with a brief introduction explaining the objectives of sexual health education and encouraging participants to share their existing knowledge and misconceptions regarding puberty and reproductive health. The core educational session addressed physical and psychological changes during puberty, anatomy and function of the male and female reproductive systems, reproductive health and personal hygiene, risky sexual behaviors and their consequences—including sexually transmitted infections (STIs) and unintended pregnancy—and practical strategies for maintaining reproductive health through healthy behaviors and responsible decision-making. Interactive discussions were subsequently conducted to encourage students to analyze hypothetical situations involving peer pressure, risky sexual behaviors, and reproductive health decision-making.

The researcher facilitated the discussion by providing feedback and clarifying misconceptions to reinforce participants' understanding. At the end of the session, the key educational messages were summarized, and each participant received a printed educational leaflet containing the main concepts discussed during the session. Participants were encouraged to review the leaflet after the intervention as reinforcement of the educational content. The intervention was designed to improve adolescents' reproductive health literacy by strengthening their ability to obtain, understand, evaluate, and apply reproductive health

information, while simultaneously fostering positive preventive attitudes toward avoiding risky sexual behaviors and maintaining reproductive health. To ensure intervention fidelity and consistency, the same researcher delivered the educational session to all participants using standardized teaching materials, identical instructional procedures, and the same duration of instruction.

Data were collected using two standardized self-administered questionnaires administered immediately before and after the intervention. Reproductive health literacy was assessed using the Sexual Health Literacy Scale (SHLS) developed by Üstgörü (2022). The instrument consists of 15 items distributed across two dimensions: Sexual Knowledge (10 items) and Sexual Attitude (5 items). The SHLS has demonstrated excellent internal consistency, with a reported Cronbach's alpha coefficient of 0.97, indicating high reliability for measuring sexual health literacy among adolescents.

Preventive attitudes among adolescents were measured using the Asking Young People About Sexual and Reproductive Behaviours: Illustrative Core Instruments, developed by the World Health Organization (WHO, 2021). The questionnaire consists of 10 items evaluating adolescents' attitudes toward reproductive health, sexual risk prevention, and healthy reproductive behaviors. Previous psychometric evaluation reported satisfactory internal consistency, with a Cronbach's alpha coefficient of 0.87, supporting its reliability for assessing preventive attitudes in adolescent populations.

Data processing included editing, coding, data entry, cleaning, and tabulation prior to statistical analysis. Statistical analyses were performed using IBM SPSS Statistics for Windows (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize participants' demographic characteristics and calculate means, standard deviations, minimum values, and maximum values for each study variable. Data normality was assessed using the Shapiro–Wilk test because the sample size was fewer than 50 participants. As the data were not normally distributed ($p < .05$), differences between pretest and posttest scores were analyzed using the Wilcoxon Signed-Rank Test with a significance level of $\alpha = .05$.

The study findings were presented using descriptive and analytical tables showing changes in reproductive health literacy and preventive attitudes before and after the intervention. Ethical principles involving informed consent, confidentiality, anonymity, justice, beneficence, and non-maleficence were strictly observed throughout the study. Prior to participation, all respondents received detailed information regarding the study objectives, procedures, potential benefits, and their right to withdraw from the study at any time without consequences.

Results and Discussion

A total of 20 eighth-grade students from SMP Negeri 32 Padang who met the study inclusion criteria participated in this research. The demographic characteristics of the participants, including age, sex, and grade level, are presented in Table 1.

Table 1. Demographic Characteristics of the Participants (N = 20)

Characteristics	<i>f</i>	%
1. Age (Years)		
13	1	5,0
14	15	75,0
15	4	20,0
2. Sex		
Male	10	50,0
Female	10	50,0
3. Grade		
VIII	20	100,0
Total	20	100

As shown in Table 1, most participants were 14 years old (75.0%), followed by 15-year-old students (20.0%) and 13-year-old students (5.0%). The distribution of participants by sex was balanced, with an equal proportion of male and female students (50.0% each). These findings indicate that the majority of respondents were in early adolescence. The descriptive statistics of reproductive health literacy and preventive attitudes before and after the sexual health education intervention are presented in Table 2.

Table 2. Descriptive Statistics of Reproductive Health Literacy and Preventive Attitudes Before and After the Intervention (N = 20)

Variables	Mean	SD	Min	Max
Reproductive health literacy (Pretest)	12,55	0,95	10	14
Reproductive health literacy (Posttest)	14,15	0,59	13	15
Preventive attitudes (Pretest)	8,10	0,64	7	9
Preventive attitudes (Posttest)	9,65	0,49	9	10

As presented in Table 2, the mean reproductive health literacy score increased following the sexual health education intervention. Participants demonstrated higher levels of understanding regarding reproductive health, puberty, sexually transmitted infections, risky sexual behaviors, and preventive strategies after receiving the educational program. Likewise, preventive attitudes showed improvement after the intervention, suggesting that participants developed more positive attitudes toward maintaining reproductive health and avoiding risky sexual behaviors. The effectiveness of the sexual health education intervention was further examined using the Wilcoxon Signed-Rank Test. The results are presented in Table 3.

Table 3. Effectiveness of Sexual Health Education on Reproductive Health Literacy and Preventive Attitudes (N = 20)

Variables	Mean Pretest	Mean Posttest	Mean Differences	P-Value
Reproductive health literacy	12,55	14,15	1,60	0,000
Preventive attitudes	8,10	9,65	1,55	0,000

The Wilcoxon Signed-Rank Test demonstrated a statistically significant improvement in reproductive health literacy following the sexual health education intervention ($p < .001$). The increase in mean scores indicates that the intervention effectively enhanced adolescents' ability to understand and utilize reproductive health information.

Similarly, preventive attitudes improved significantly after the intervention ($p < .001$). These findings indicate that sexual health education contributed to the development of more positive preventive attitudes toward reproductive health and the avoidance of risky sexual behaviors among adolescents. Multivariate analysis was not performed because the primary objective of this study was to evaluate changes in reproductive health literacy and preventive attitudes before and after the intervention within the same group of participants.

Discussion

The findings of this study demonstrate that sexual health education effectively improved adolescents' reproductive health literacy. This finding suggests that structured educational interventions tailored to adolescents' developmental characteristics can strengthen adolescents' ability to acquire, understand, evaluate, and apply reproductive health information in making informed health-related decisions. From the perspective of health psychology, health literacy is recognized as a key cognitive determinant of health behavior because it influences individuals' ability to recognize health risks, critically evaluate health information, and adopt appropriate preventive actions [9].

The improvement in reproductive health literacy may be attributed to the structured educational content delivered during the intervention. The educational session systematically introduced participants to puberty, reproductive health, risky sexual behaviors, sexually transmitted infections, and practical strategies for maintaining reproductive health through interactive lectures and guided discussions. In addition, visual learning materials presented through PowerPoint slides and reinforced by printed educational leaflets facilitated information retention and encouraged participants to review the material after the session.

These findings can be further explained by Cognitive Learning Theory, which proposes that newly acquired information expands existing cognitive structures and promotes knowledge development. During adolescence, cognitive maturation enables individuals to think more abstractly and understand the causal relationships between behaviors and their health consequences [2,14]. Consequently, the educational

strategies implemented in this study not only enhanced adolescents' knowledge but also strengthened their capacity to process and apply reproductive health information when making health-related decisions..

The present findings are consistent with previous studies reporting that sexual health education significantly improves adolescents' knowledge of reproductive health and risky sexual behaviors. Rabiah demonstrated that reproductive health education effectively increased adolescents' understanding of risky sexual behaviors [15]. Similarly, Misrawati reported that health education significantly enhanced students' knowledge regarding reproductive health and the prevention of free sexual behavior [16]. Likewise, Setiawati et al. found that reproductive health education interventions effectively improved adolescents' understanding of reproductive health as part of health promotion and disease prevention programs [17]. Collectively, these findings reinforce the important role of sexual health education in strengthening adolescents' reproductive health literacy.

In addition to improving cognitive outcomes, sexual health education also contributed to the development of adolescents' preventive attitudes. According to the Knowledge–Attitude–Practice (KAP) model, knowledge acquisition represents the first stage of behavioral change, whereby increased knowledge facilitates the development of favorable attitudes that subsequently influence health-related practices [10]. In the present study, improved reproductive health literacy enabled adolescents to better understand the causes, consequences, and prevention of risky sexual behaviors. This enhanced understanding likely strengthened their behavioral beliefs regarding the benefits of maintaining reproductive health and avoiding risky sexual practices, thereby contributing to more positive preventive attitudes.

These findings can be further interpreted using the Theory of Planned Behavior (TPB), which proposes that health behavior is determined by behavioral intention, and that intention is influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control [3]. The educational intervention provided scientifically accurate information regarding reproductive health and the consequences of risky sexual behaviors, which may have positively influenced participants' behavioral beliefs and subsequently their attitudes toward engaging in preventive behaviors. Furthermore, increased reproductive health literacy may have enhanced adolescents' perceived behavioral control by improving their confidence in recognizing risky situations, making informed health decisions, and refusing behaviors that could jeopardize their reproductive health. Although subjective norms were not directly measured in this study, interactive discussions may also have encouraged positive peer norms by allowing participants to exchange views and reinforce healthy behavioral expectations. These mechanisms are consistent with TPB and provide a theoretical explanation for the observed improvement in preventive attitudes following the intervention.

The present findings are consistent with those reported by Debbiyantina et al. (2024), who found that sexual health education significantly improved adolescents' attitudes toward the prevention of risky sexual behaviors [13,25]. Similarly, Natalia et al. (2023) demonstrated that reproductive health education positively influenced adolescents' attitudes toward premarital sexual prevention and reproductive health maintenance [26,27]. These studies provide additional evidence that educational interventions represent an effective strategy for promoting positive health attitudes among adolescents.

Although statistically significant improvements were observed, the magnitude of change was relatively modest. One possible explanation is that participants had already acquired basic reproductive health knowledge before the intervention. SMP Negeri 32 Padang has implemented adolescent health promotion activities through the Youth Information and Counseling Center (PIK-R), allowing many students to receive preliminary information regarding reproductive health. Consequently, the educational intervention may have functioned primarily as reinforcement and clarification rather than introducing entirely new concepts.

Furthermore, adolescents' attitudes are shaped not only by knowledge but also by multiple psychosocial and environmental factors, including family influences, peer relationships, cultural norms, media exposure, and social interactions [20,22]. Within the Indonesian sociocultural context, discussions related to sexuality remain relatively sensitive, which may limit adolescents' access to accurate and evidence-based reproductive health information. As a result, the development of preventive attitudes is likely to occur gradually and requires continuous support from families, schools, healthcare professionals, and communities to ensure long-term behavioral change [28,30,31].

The sociocultural context should also be considered when interpreting the findings of this study. In Indonesia, discussions concerning sexuality are often influenced by religious values, cultural norms, and social expectations that emphasize modesty and discourage open communication about sexual and reproductive health. Consequently, adolescents frequently rely on peers, social media, or other informal sources that may provide inaccurate or misleading information. These sociocultural factors may affect both

adolescents' willingness to participate actively in sexual health education and the extent to which educational messages are accepted and translated into preventive attitudes and behaviors.

Despite these challenges, culturally sensitive sexual health education can be successfully implemented when educational content is delivered in a manner that respects local values and developmental needs. Collaboration among schools, parents, healthcare professionals, school counselors, and community or religious leaders may increase the acceptability of sexual health education while reducing misconceptions that such programs encourage risky sexual behavior. Instead, emphasizing reproductive health, personal responsibility, self-protection, and healthy decision-making within culturally appropriate frameworks may facilitate greater community support and improve the effectiveness and sustainability of school-based sexual health education programs.

From a health psychology perspective, the present study highlights that sexual health education functions not merely as a means of information dissemination but also as a behavioral intervention capable of influencing important psychological determinants of reproductive health. Improved reproductive health literacy provides adolescents with a stronger cognitive foundation for making informed health decisions, while enhanced preventive attitudes increase their psychological readiness to avoid risky sexual behaviors. Therefore, integrating comprehensive sexual health education into school-based health promotion programs may contribute substantially to improving adolescents' reproductive health outcomes.

Several limitations should be considered when interpreting the findings of this study. First, the study employed a one-group pretest–posttest quasi-experimental design without a control group. Consequently, the observed improvements in reproductive health literacy and preventive attitudes cannot be attributed solely to the sexual health education intervention, as alternative explanations such as history effects, maturation, testing effects, and other uncontrolled external factors may also have contributed to the observed changes. Therefore, the present findings should be interpreted as preliminary evidence regarding the effectiveness of the intervention rather than definitive proof of causality.

Second, although the minimum sample size calculated using the Lemeshow formula was larger, only 20 participants completed the intervention because of practical constraints associated with implementing a school-based educational program. While this sample size was considered feasible for evaluating the preliminary effectiveness of the intervention, it inevitably reduced the statistical power of the study and limited the generalizability of the findings to broader adolescent populations. Consequently, caution should be exercised when interpreting and extrapolating the results beyond the study setting.

Another limitation concerns the absence of effect size estimation. The present study focused primarily on determining statistical significance using the Wilcoxon Signed-Rank Test. Although statistically significant improvements were observed, the practical magnitude of the intervention's effect could not be quantified. Future studies are therefore encouraged to report effect size measures, such as Cohen's *d*, rank-biserial correlation, or effect size (*r*) for non-parametric analyses, to facilitate a more comprehensive interpretation of intervention effectiveness.

Future research should employ randomized controlled or quasi-experimental designs incorporating comparison groups, larger and more representative samples, and longer follow-up periods to strengthen causal inference and improve external validity. In addition, incorporating psychological variables such as self-efficacy, perceived susceptibility, subjective norms, perceived behavioral control, and social support would provide a more comprehensive understanding of the determinants of adolescents' reproductive health behaviors.

Conclusions

This study provides preliminary evidence that sexual health education can improve reproductive health literacy and preventive attitudes among adolescents at SMP Negeri 32 Padang. The intervention contributed to strengthening adolescents' cognitive understanding of reproductive health and fostering more positive attitudes toward preventing risky sexual behaviors. However, the findings should be interpreted with caution because the study employed a one-group pretest–posttest design without a comparison group and involved a relatively small sample, thereby limiting causal inference and the generalizability of the results. Further studies using more rigorous experimental designs with larger and more representative samples are required to confirm the effectiveness of sexual health education interventions among adolescents.

Schools are encouraged to integrate comprehensive sexual health education into student development programs through school counseling services, Youth Information and Counseling Centers (PIK-R), and routine school-based health promotion activities. Interactive educational approaches that are developmentally appropriate should be implemented collaboratively by teachers, school counselors, and healthcare professionals to enhance adolescents' reproductive health literacy and preventive attitudes. Future studies are recommended to employ randomized controlled trials or quasi-experimental designs incorporating comparison groups, larger and more representative samples, and longer follow-up periods to improve internal and external validity. Researchers are also encouraged to report effect size measures in addition to statistical significance and to examine additional psychological determinants, including self-efficacy, perceived susceptibility, subjective norms, perceived behavioral control, and social support, in order to obtain a more comprehensive understanding of adolescent reproductive health behaviors.

Conflict of Interest Statement

The authors declare that there is no potential conflict of interest regarding the research, authorship, and/or publication of this article. No financial support or personal relationships that could have influenced the objectivity or outcomes of this research are reported.

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