Prevention of Premarital Sexual Behavior Among Adolescents Through Game-Based Reproductive Health Education: A Study on Youth in Nias, Indonesia

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Abstract

In a private Islamic senior secondary school serving adolescents in North Nias, reproductive-health education may be more accessible when medically accurate information is presented in a culturally respectful way. The study aimed to examine short-term changes in knowledge, attitudes, and self-reported preventive practices following the educational session. This one-group pretest–posttest evaluation examined changes following counseling, small-group snakes-and-ladders play, and crossword puzzles among 29 purposively selected Islamic Senior high school Lahewa students aged 15–18 years in October 2024. The questionnaire included 10 knowledge, 10 attitude, and 8 reported-practice items. The original analyses used Wilcoxon signed-rank tests for knowledge and practice and a paired-samples t-test for attitude. Knowledge scores rose in 21 students and were unchanged in eight ($Z = -4.094$, $p < 0.001$, $r|=0.76$). Mean attitude scores increased from 36.48 ($SD = 7.16$) to 44.31 ($SD = 4.12$), $t(28) = -5.728$, $p < 0.001$, with a 95% CI for the mean increase of [5.03,10.63]. Reported-practice scores increased in 25 students, decreased in one, and were unchanged in three ($Z = -4.103$, $p < 0001$, $r = 0.76$). Interactive games may facilitate discussion of sensitive subjects, with Islamic principles such as hifz al-nafs and hifz al-nasl offering a compatible ethical perspective. Religious content was not evaluated separately, and conformity and self-efficacy were not measured. The combined session was followed by short-term improvements in questionnaire scores. Without a control group or behavioral follow-up, a reduction in actual premarital sexual activity cannot be inferred.

Keywords: Game-Based Learning, Islamic Reproductive Health Education, Maqashid Shariah, Premarital Sexual Behavior, Adolescents

INTRODUCTION

Premarital sexual behavior among adolescents remains a public health and reproductive health education concern in Indonesia. The Badan Kependudukan dan Keluarga Berencana Nasional (BKKBN) 2018 adolescent survey described patterns of dating and reproductive-health knowledge (BKKBN, 2018). In Indonesia, peer and parental influences have been associated with adolescent premarital sexual behavior (Shakti et al., 2022). Potential consequences of unprotected sexual intercourse include sexually transmitted infections (STIs) and unintended pregnancy, which may also affect educational participation and well-being (World Health Organization [WHO], 2024, 2025). This study did not measure these health outcomes. Reviews of school-based sexuality education emphasize comprehensive, scientifically accurate, and age-appropriate learning rather than assuming that a change in

knowledge immediately translates into improved sexual-health outcomes (Goldfarb & Lieberman, 2021; Haberland & Rogow, 2015).

This issue is compounded by cultural and social barriers that can make reproductive-health discussions uncomfortable. At Islamic Senior High School (MAS) Lahewa, a private Islamic senior secondary school in North Nias Regency, health-risk education can be discussed alongside the school's moral framework. Qur'an 17:32 prohibits approaching zina, and Qur'an 24:30–31 addresses modest conduct. These teachings offer an ethical context for preventive education, but the present study did not directly test students' religiosity or the effects of religious instruction. Educational games may offer a respectful way to introduce sensitive topics through guided, age-appropriate discussion. The 2018 international technical guidance also recommends education that addresses relationships, choices, and health risks in an age-appropriate manner (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2018). This

Previous studies have examined adolescent sexual behavior and associated personal and environmental factors in Indonesia, including peer influence, media exposure, and family context (Asmin & Kistiana, 2021; Hanifah et al., 2022; Shakti et al., 2022). These findings support the importance of accessible reproductive-health education. Educational games such as snakes and ladders and crossword puzzles provide opportunities for interactive learning. In another Indonesian school, a snakes-and-ladders reproductive-health intervention was associated with more favorable prevention attitudes (Risna et al., 2020). Other Indonesian evaluations and reviews have likewise examined reproductive-health learning with snakes-and-ladders games, including madrasah and secondary-school settings (Edi & Taufik, 2019; Khaerina, 2022; Rusni et al., 2020; Sari et al., 2022). These studies used different designs and outcome measures and cannot be pooled with the present 29-person sample.

Educational games can complement conventional lectures by encouraging participation and discussion. Crossword puzzles allow students to practice terms such as contraception, sexually transmitted infections, and teenage pregnancy; the terms should be explained accurately rather than treated as interchangeable risks. Participatory peer-educator activities have been used to deliver adolescent reproductive-health information in Indonesia (Mas'udah et al., 2024). Because physical boards and printed crosswords do not depend on internet access, they may be practicable in resource-limited schools, although their relative cost and feasibility were not measured here. A reproductive-health game application has also been piloted through a student information and counseling center at Senior high school (MAN 2) Yogyakarta, illustrating the feasibility of adapting game-based communication to an Islamic-school context

(Fitriahadi et al., 2022). A recent Indonesian review describes a range of analog and digital game formats, although its summary does not establish comparable effects across all games (Salsabiella & Kusumaningsih, 2026).

Snakes and ladders can link players' turns to questions and preventive messages, allowing adolescents to review health concepts with peers. Crossword puzzles can reinforce reproductive-health vocabulary through recall and discussion. Prior Indonesian research on snakes-and-ladders media found improvements in adolescents' reported attitudes (Risna et al., 2020), while peer-learning studies highlight opportunities for group interaction (Mas'udah et al., 2024). The current program combines both printed games rather than isolating their separate contributions. Studies outside Indonesia have examined interactive sexual-health games and youth-facing digital platforms, showing possibilities for learning while also emphasizing the necessity of careful evaluation (Chu et al., 2015; Guse et al., 2012). A synthesis of 18 serious-game studies reported more consistent knowledge-related than behavior-related evidence (Ilskens et al., 2022). Digital interventions differ substantially from the non-digital games used here.

In North Nias Regency, culturally responsive learning activities may make health information easier to discuss. MAS Lahewa serves Muslim students in a religiously diverse setting, and the research report describes limitations in educational facilities. Small-group play may encourage supportive peer interaction and make sensitive topics easier to approach. However, the present evaluation did not use a conformity scale; peer influence is therefore a contextual explanation, not a measured mediator or statistically tested independent variable. A comparative Indonesian game study from Cilacap found pretest-to-posttest changes using a controlled design; it is informative as external literature but does not substitute for a missing comparison group in this study (Rachmawati et al., 2026).

Recognizing these challenges, this study aimed to examine pretest-to-posttest changes in knowledge, attitudes, and self-reported preventive practices after a combined snakes-and-ladders and crossword-puzzle educational session among students at MAS Lahewa, North Nias Regency. It was hypothesized that scores on these three outcomes would improve after the session. The contribution is an evaluation of inexpensive physical learning media in a private Islamic school in a geographically remote setting. Conformity, religiosity, family support, and self-efficacy were not assessed as moderators or outcomes. International reviews have identified promising but heterogeneous results for adolescent health games, reinforcing the value of documenting intervention components and using stronger comparative designs in future research (Andrew et al., 2023; Franco Vega et al., 2022).

METHODS

This study took place at Madrasah Aliyah Swasta (MAS) Lahewa, North Nias Regency, Indonesia, in October 2024. Field implementation was coordinated with the school. The field report describes the educational activity as participatory action research (PAR), whereas the quantitative evaluation used a one-group pretest–posttest design without a comparison group or randomization. The 29 participating students were aged 15–18 years and were selected purposively. The source report does not state the total eligible school population or sampling fractions; the sample is therefore described as a small, nonprobability school-based group.

The documented sequence comprised a pretest, counseling by a resource person, small-group snakes-and-ladders play, crossword-puzzle activities, group discussion, and a posttest. In snakes and ladders, participants answered questions about premarital sexual intercourse, consequences of sexually transmitted infections (STIs), and prevention when landing on designated squares. Crossword activities addressed reproductive-health terms, adolescent pregnancy, STI risks, and related preventive information. Students were invited to exchange what they had learned. The report does not state the session length or number of educational meetings. Islamic moral norms provided the school context; specific Qur'anic verses, hadith, or maqashid concepts are treated as interpretive background rather than as game content established by the source report.

A questionnaire included 10 knowledge items, 10 attitude items, and eight self-reported practice items. Knowledge questions addressed pregnancy and STI risks, puberty, privacy, and norms relating to physical contact. Attitude items used response categories from strongly agree to strongly disagree. Practice items used often, rarely, and never categories and addressed physical boundaries, discussions with parents or teachers, earlier sex-education exposure, and religious participation. The research report presents item-frequency distributions before and after the activity. Conformity, religiosity, self-efficacy, and family support were not separately assessed. The recorded analysis used Shapiro–Wilk tests of marginal scores, followed by Wilcoxon signed-rank tests for knowledge and practices and a paired-samples t-test for attitudes (two-sided $\alpha = 0.05$). The normality of within-student paired differences was not independently verifiable from the aggregate tables.

RESULTS

A total of 29 students at MAS Lahewa, North Nias Regency, completed the pre-test and post-test assessments following reproductive health education using snakes-and-ladders and

crossword-puzzle activities. The analyses examined changes in knowledge, attitudes, and reported preventive practices.

Normality Test Results

The normality of the pre-test and post-test scores was assessed using the Shapiro–Wilk test. The results are presented in Table 1.

Table 1. Shapiro–Wilk Normality Test Results (n = 29)

Variable	Assessment	p-value	Distribution
Knowledge	Pre-test	< 0.001	Not normally distributed
	Post-test	< 0.001	Not normally distributed
Attitudes	Pre-test	0.188	Normally distributed
	Post-test	0.055	Normally distributed
Practices	Pre-test	0.164	Normally distributed
	Post-test	0.003	Not normally distributed

Table 1 shows that knowledge scores did not follow a normal distribution at either assessment point. Attitude scores were reported as normally distributed at both assessments, whereas practice scores were normally distributed at pre-test but not at post-test. The primary report used these results to determine the paired-comparison procedures shown in Table 2.

Bivariate Analysis

Table 2. Statistical Tests Used for Paired Comparisons

Variable	Statistical test
Knowledge	Wilcoxon signed-rank test
Attitudes	Paired-samples t-test
Practices	Wilcoxon signed-rank test

The Wilcoxon signed-rank test was used to compare knowledge and reported preventive-practice scores before and after the intervention. A paired-samples t-test was used to compare attitude scores, following the analytical approach documented in the research report.

Changes in Knowledge

The effect of snakes-and-ladders and crossword-puzzle education on students' knowledge was evaluated using the Wilcoxon signed-rank test. Table 3 presents the rank changes between the two assessments.

Table 3. Wilcoxon Signed-Rank Test Results for Knowledge (n = 29)

Comparison	Rank category	n	p-value
Post-test vs. pre-test	Negative ranks	0	<0.001
	Positive ranks	21	
	Ties	8	
	Total	29	

Knowledge scores increased for 21 students, remained unchanged for eight students, and decreased for none. The Wilcoxon signed-rank test identified a statistically significant pre-test to post-test difference ($Z = -4.094$, $p < 0.001$). These findings indicate an improvement in questionnaire-assessed knowledge following the educational activities.

Table 4. Correct responses to selected knowledge items before and after education (n = 29)

Questionnaire topic	Pretest		Posttest	
	n	%	n	%
Holding hands, hugging, and kissing are classified as premarital behavior	15	51.7	29	100.0
Risk of pelvic infection and reproductive problems	21	72.4	29	100.0
Risk of pregnancy outside marriage	22	75.9	29	100.0
Sexually transmitted infections as a consequence of intercourse	26	89.7	29	100.0

Changes in Attitudes

The change in attitudes related to the prevention of premarital sexual behavior was examined using a paired-samples t-test. The descriptive statistics and significance level are shown in Table 5.

Table 5. Paired-Samples t-Test Results for Attitudes (n = 29)

Assessment	Mean	SD	p-value
Pre-test	36.48	7.155	< 0.001
Post-test	44.31	4.115	

Mean attitude scores increased from 36.48 (SD = 7.155) before the education session to 44.31 (SD = 4.115) afterward, representing an average increase of 7.83 points. The paired-samples t-test indicated a statistically significant change ($t(28) = -5.728$, $p < 0.001$; the test was calculated as pre-test minus post-test).

Changes in Preventive Practices

Changes in students' reported preventive-practice scores were evaluated using the Wilcoxon signed-rank test. Table 5 summarizes the rank changes after the educational intervention.

Table 6. Wilcoxon Signed-Rank Test Results for Practices (n = 29)

Comparison	Rank category	n	p-value
Post-test vs. pre-test	Negative ranks	1	< 0.001
	Positive ranks	25	
	Ties	3	
	Total	29	

Reported-practice scores increased in 25 students, decreased in one, and remained unchanged in three (Wilcoxon $Z = -4.103$, $p < 0.001$; approximate $r = 0.76$ using all 29 matched

participants). Item-level results provide additional context: 9 of 29 students (31.0%) reported frequent discussion about sexuality with parents or teachers at pretest, compared with 14 (48.3%) at posttest. Frequent religious participation was reported by 23 (79.3%) and 22 (75.9%) students, respectively. Thus, not every reported practice item shifted in the same direction. These figures reflect questionnaire answers, not directly observed changes in sexual activity, and the report does not present a total mean practice score for either assessment.

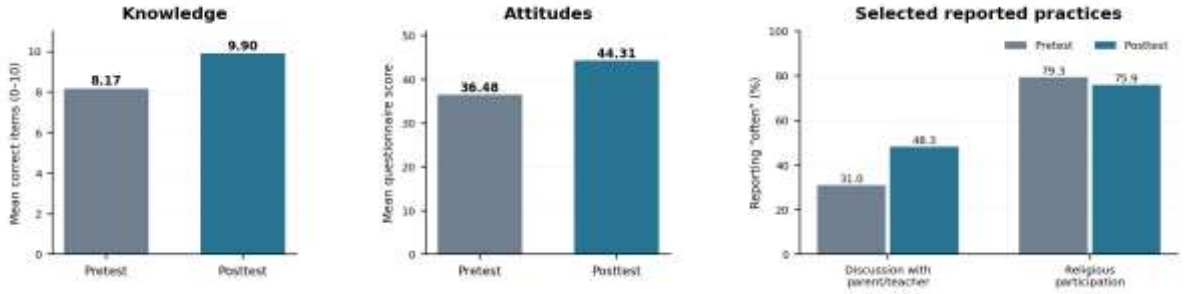


Figure 1. Pretest–posttest knowledge and attitude means and selected reported practices (n = 29), presented on different scales.

DISCUSSION

The increase in knowledge after the combined snakes-and-ladders and crossword-puzzle session is consistent with the potential usefulness of interactive learning. A previous Indonesian snakes-and-ladders study reported improved adolescent prevention attitudes (Risna et al., 2020), while a game-based peer-educator program emphasized active youth participation (Mas'udah et al., 2024). The Health Belief Model (HBM) provides a possible explanation in terms of perceived risks and benefits; the Theory of Planned Behavior (TPB) highlights attitudes, subjective norms, and behavioral control; and Social Learning Theory highlights learning through observation and peer interaction (Ajzen, 1991; Bandura, 1977; Rosenstock, 1974). These mechanisms remain interpretations because the underlying constructs were not measured independently. Meta-analyses of serious-game instruction suggest potential benefits for learning, particularly when game activities are paired with other teaching methods; these reviews address heterogeneous settings and should not be read as an estimate of this intervention's specific effect (Sitzmann, 2011; Wouters et al., 2013).

Understanding reproductive-health risks may support more informed decision-making. The measured knowledge topics covered STIs, pregnancy, puberty, bodily privacy, and sexual-behavior boundaries. WHO (2024, 2025) identifies unintended adolescent pregnancy and STIs as important public-health concerns; however, knowledge of these outcomes is not itself evidence that participants developed stronger refusal skills or self-efficacy. A separate Indonesian study examined associations between adolescent knowledge, self-efficacy, and

prevention actions (Nurdianna, 2022). Beyond individual risk facts, a broad sexuality-education evidence base supports attention to communication, relationships, equality, and decision-making (Goldfarb & Lieberman, 2021; Haberland, 2015). These dimensions were not comprehensively evaluated in the current questionnaire.

The questionnaire also contained items classifying holding hands, hugging, and kissing as premarital sexual behavior and recognizing religious and sporting activities as possible preventive supports. Such content combines medical information with school-based moral standards. Importantly, holding hands and hugging are not medically equivalent to unprotected sexual intercourse in terms of STI transmission or pregnancy. The item-level increase is therefore evidence of greater agreement with the questionnaire's classification, not a demonstrated reduction in medical risk. Learning can depend on motivation, available information, and the social environment. In the present setting, adolescents participated in counseling and small-group games, which may have encouraged practice and recall. Community reproductive-health education and peer participation are relevant approaches, but this evaluation cannot separate the effect of the lecture, puzzles, group discussion, or repeated questionnaire exposure (Gani et al., 2021; Mas'udah et al., 2024). A broader review of digital-media sexual-health interventions points to opportunities for adolescent engagement, but the delivery mechanism and rigor of studies vary markedly (Guse et al., 2012).

Age-appropriate reproductive-health information can help adolescents understand risks and where to seek guidance. Unintended adolescent pregnancy has medical, social, and educational consequences, although the magnitude and pathways vary by context (WHO, 2024). These outcomes were neither observed nor prospectively followed in the present study, so the education session should not be interpreted as evidence of fewer pregnancies, abortions, or school dropouts.

Attitude Scores After Game-Based Education

The higher attitude scores after the session are compatible with active learning and reflection. TPB suggests that behavioral attitudes interact with perceived social norms and control beliefs in shaping intentions (Ajzen, 1991). A game format may provide a less confrontational way to discuss reproductive health, particularly where direct conversations are socially sensitive. Nevertheless, neither psychological resistance nor intentions were measured here, and the design does not establish that games alone caused the score change. The behavior change wheel also suggests that information alone need not be sufficient when adolescents' opportunity and motivation to act are not addressed (Michie et al., 2011). Its components were not assessed in the present evaluation.

Snakes and ladders prompted adolescents to answer questions about STI prevention and the consequences of premarital intercourse during group play. The research report also gives preventive messages such as protecting one's future and maintaining reproductive health. These messages may support reflection on decisions and norms; their independent effect cannot be distinguished from the counseling and group discussion. Results from another snakes-and-ladders study provide relevant, though not directly comparable, support for this learning format (Risna et al., 2020). Earlier Indonesian work on snakes and ladders as a sexuality-education medium and a controlled study of the same game type on reproductive-health knowledge suggest that play can structure discussion and recall (Edi & Taufik, 2019; Rusni et al., 2020). These are contextual comparisons, not replications of the combined intervention.

Crossword puzzles covered vocabulary related to adolescent pregnancy, STIs, and reproductive health. Searching for and discussing the answers requires active recall rather than passive listening. This educational mechanism may have supported knowledge and attitude scores, but separate contributions of the crossword activity were not experimentally estimated. A review of Indonesian snakes-and-ladders education reported encouraging knowledge and attitude patterns, while another trial involving anemia-prevention education found within-group gains but no statistically significant advantage over a booklet comparison on several outcomes (Hisanah et al., 2023; Sari et al., 2022). The second topic differs from reproductive health and is relevant only to evaluating the delivery medium.

The questionnaire addressed physical closeness, dating expectations, and premarital sexual relationships as matters of personal and religious judgment. These items help explain how the program can be situated within a madrasah setting. The resulting attitude scores should be interpreted as responses to a normative and health-related scale; they are not direct indicators of future abstinence. The influence of peers and the family is a relevant context in Indonesian research (Asmin & Kistiana, 2021; Shakti et al., 2022).

In an Indonesian study, knowledge and self-efficacy were examined alongside adolescents' prevention actions (Nurdianna, 2022). Peer conformity may help explain how group discussions shape perceived norms, whereas negative peer pressure may encourage risk-taking. In this study, neither conformity nor self-efficacy was tested, so no mediation or moderation effect should be inferred. The madrasah, families, peers, and religious leaders can provide mutually reinforcing messages about respect, bodily autonomy, and responsible decision-making. Community engagement in reproductive-health education has been described in Indonesia (Gani et al., 2021). Although the school setting offers an Islamic moral framework, religiosity and family support were not measured, and the findings do not demonstrate that

religious internalization caused the improvement. The Islamic school in Yogyakarta game-education initiative similarly illustrates how reproductive-health communication may be situated within an Islamic educational institution without proving that moral or religious values caused a measured change (Fitriahadi et al., 2022).

School-based reproductive-health education may combine accurate medical information with a local ethical framework. TPB explains how attitudes and perceived norms may relate to intentions, while the Qur'anic prohibition against approaching zina (17:32) and guidance on modesty (24:30–31) provide a contextual basis for discussing boundaries (Ajzen, 1991). In Islamic jurisprudential terms, sadd al-dhara'i (preventing pathways to harm) is conceptually compatible with risk avoidance, and maqashid shariah concepts—hifz al-din, hifz al-nafs, and hifz al-nasl—frame the protection of faith, life, and progeny. Such frameworks can guide a respectful program that supports akhlak karimah, but the present data neither quantify religious learning nor establish that these concepts were taught explicitly during gameplay.

Reported Preventive Practices After Game-Based Education

The increase in reported practice scores may reflect improved recognition of preventive actions. HBM proposes that risk perceptions and perceived benefits influence health-related decisions (Rosenstock, 1974). However, the study did not measure HBM constructs, actual sexual behavior, or sustained adoption of safer practices. Immediate self-report scores can also be sensitive to students' desire to provide socially acceptable answers. Reviews of school-based sexual-health interventions caution that improved classroom outcomes do not consistently translate into reduced biological outcomes, such as STIs or adolescent pregnancy (Mason-Jones et al., 2016; Sani et al., 2016).

The board game exposed students to preventive information through questions and discussion. For example, participants were asked about reproductive-health risks and STI prevention when they reached designated spaces. This structure may help students rehearse responses in a supportive group, but no direct assessment of refusal skills was recorded. Its practical advantage is that the board and prompts can be delivered offline, subject to appropriate facilitator training. In a randomized trial, a theory-based middle-school program using game-oriented learning components delayed reported sexual initiation relative to a comparison group; its controlled, multicomponent design differs substantially from this brief one-group evaluation (Tortolero et al., 2010).

Crosswords reinforced the vocabulary of contraception, STIs, pregnancy, and sexual health. The distinction between medical risks of intercourse and social or religious boundaries is important to maintain. Because the source report did not measure participant experience or

satisfaction separately, claims that the puzzles reduced embarrassment or ensured behavioral change remain tentative. A rapid review of video game interventions likewise found mixed outcome results, showing why the precise features of a game and longer-term behavior assessment are important (Franco Vega et al., 2022).

Peer interaction and group discussion were part of the intervention. Peer-educator work in other Indonesian communities suggests one approach to supporting youth participation (Mas'udah et al., 2024). The present questionnaire also asked about physical interactions, discussions of sexuality with parents or teachers, prior exposure to health education, and religious participation. These items were self-reported and should not be treated as independently verified behaviors.

Social Learning Theory allows for the possibility that observation and encouragement from peers support learning (Bandura, 1977). Self-efficacy, however, is a separate belief about one's capability and was not assessed as a specific outcome. Improvements in practice scores therefore cannot be presented as proof of increased self-efficacy or greater resistance to peer pressure. Health education has been associated with improved prevention questionnaire scores in other Indonesian studies, including education about HIV/AIDS (Witriyani & Palupi, 2024) and snakes-and-ladders activities (Risna et al., 2020). Contrasting evidence also exists: a pilot game-based reproductive-health study found no significant associations between gameplay duration or score and adolescents' knowledge, attitudes, or skills (Polwandari, 2025). This difference cautions against assuming identical effects across interventions, measures, and populations. In MAS Lahewa, frequent religious participation did not increase at the item level (23/29 versus 22/29), despite the significant combined practice-score change. Reviews that included controlled school-based programs also report considerable variation in effectiveness, depending on setting, implementation, and outcome (Shangase et al., 2021). Local Indonesian research on snakes-and-ladders in other health topics offers some supportive learning evidence, yet does not establish a preventive effect on sexual behavior (Hisanah et al., 2023; Khaerina, 2022).

Parents, teachers, local health personnel, and religious leaders may be valuable partners in age-appropriate reproductive-health education. Peer and parental influences have been examined in Indonesian epidemiological work (Shakti et al., 2022). No measures of family support, conformity, or religious leadership were collected here; their role remains a subject for future research.

These findings have practical implications for madrasah leaders, the local Ministry of Religious Affairs, health offices, primary care centers, BKKBN, and religious extension

services: physical learning games could be adapted for combined factual reproductive-health education and culturally acceptable discussions of moral boundaries. Such use requires medically accurate content, suitable facilitators, and attention to privacy. Limitations include one school, a purposive sample of 29 pupils, no control group or randomization, immediate self-reports, no direct observations of actual sexual behavior, and no measures of conformity, religiosity, self-efficacy, or family support. Moreover, the recorded Shapiro–Wilk results do not check the paired-difference normality required for the t-test. Future research should test controlled designs, including a randomized trial where feasible, with 3–6 months of follow-up, direct behavioral outcomes, the proposed psychosocial measures, and qualitative assessments of cultural acceptability. International guidance favors curriculum-based, age-appropriate, and evidence-informed health teaching, and systematic reviews emphasize the importance of robust outcome measurement and appropriate comparators (UNESCO, 2018; Mason-Jones et al., 2016).

In summary, games and counseling were followed by short-term improvements in measured scores in this sample. This supports further study of interactive, culturally responsive reproductive-health education but not a causal conclusion about reductions in premarital sexual behavior. Printed 'fun learning' approaches may be especially useful in schools with limited digital resources if accurate health information and local ethical values are integrated carefully.

CONCLUSION

Educational sessions using snakes and ladders and crossword puzzles were followed by statistically significant short-term improvements in questionnaire-assessed knowledge, attitudes, and self-reported preventive practices among 29 students at MAS Lahewa (all $p < 0.001$). The study did not demonstrate a reduction in premarital sexual activity or measure conformity, religiosity, or self-efficacy. Health and moral education can be discussed together within the school context, but the effect of Islamic value integration itself was not tested.

Madrasah administrators, primary healthcare services, the district health office, BKKBN, and religious education facilitators may consider locally adapted interactive lessons combining medically accurate messages with appropriate ethical discussion. Controlled studies with 3–6-month follow-up and measures of actual behavior, peer conformity, family support, religiosity, and self-efficacy are recommended.

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