

KELIRU: Promoting Adolescent Reproductive Health Awareness Through an Educational Monopoly Game in Kwadungan Village

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ABSTRACT

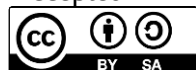
Adolescence is a critical developmental stage marked by physical, psychological, and social changes, including the formation of sexual identity and reproductive health awareness. Limited reproductive health knowledge may increase adolescents' susceptibility to risky sexual behavior and its consequences. This community education program aimed to improve adolescents' understanding of reproductive health and enhance awareness of risky sexual behavior prevention. The KELIRU (Kelompok Edukasi Lingkar Remaja Unggul) program was conducted on August 25, 2026, at Kwadungan Village Hall, involving 35 adolescents. An interactive educational approach was applied through reproductive health education, question-and-answer sessions, an educational Monopoly game, thematic challenges, and a structured quiz. Program implementation was evaluated descriptively based on attendance, engagement, interaction, participation, and performance on a 10-item Quizizz assessment administered at the end of the activity. The program combined direct health education with interactive learning activities. Participants took part in educational sessions, discussions, the Monopoly game, thematic challenges, and the final evaluation. Several challenges were identified, including delayed arrivals, attendance below the expected target, limited discussion participation, restricted implementation time, and a misplaced prize. Although participation levels varied, participants remained engaged throughout the interactive activities. The integration of health education and interactive learning provided a participatory approach for delivering reproductive health information. Future implementation should strengthen participant mobilization, time management, task allocation, and preparation of activity materials to support program sustainability. KELIRU offered an interactive community-based approach to reproductive health education through games, discussions, challenges, and quizzes, supporting the dissemination of reproductive health information and promoting awareness of risky sexual behavior prevention among adolescents.

Keywords : Adolescents, Health Education, Reproductive Health, Risky Sexual Behavior, Youth Health.

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INTRODUCTION

Adolescence is a critical stage of development characterized by physical, psychological, and social changes, including the development of sexual identity and reproductive health awareness (World Health Organization, 2026). During this period, adolescents begin to develop greater independence in making decisions and interacting with peers and their surrounding environment. Adequate reproductive health knowledge is therefore important to support adolescents in making healthy and responsible decisions (UNICEF, 2024). However, insufficient knowledge and awareness may increase adolescents' vulnerability to reproductive health problems and risky sexual behavior. A recent study of Indonesian adolescents reported gaps in sexual and reproductive health knowledge, particularly in areas related to contraception and fertility, highlighting the need for accessible and appropriate reproductive health information (Harjana et al., 2026).

Risky sexual behavior among adolescents remains a global public health concern. A systematic review reported that the prevalence of risky sexual behavior among adolescents varied widely, ranging from 7.6% to 85.1% across different populations and settings (Ndlovu & Moyo, 2026). In Indonesia, an analysis of Indonesian Demographic and Health Survey data reported premarital sexual practices of 5.8% in 2007, 5.4% in 2012, and 5.3% in 2017 (Rosyida et al., 2025). A broader analysis of adolescents in low- and middle-income countries also demonstrated substantial variation in sexual activity and unsafe sexual practices across regions, highlighting the continuing need for adolescent sexual health promotion (Leung et al., 2024). In East Java, a study involving 420 adolescents in Gresik found that more than one-third had poor reproductive health behavior, while low digital health literacy was associated with a higher likelihood of poor reproductive health behavior (Anjeli et al., 2026). In Kediri, research involving 100 adolescent girls found that 27.2% had indicators of unhealthy reproductive health behavior (Nugraheni et al., 2025). A study among adolescents in the Ngasem area of Kediri also examined reproductive health knowledge in relation to HIV/AIDS prevention behavior, emphasizing the relevance of reproductive health education in local adolescent populations (Jayani et al., 2024). These findings demonstrate that adolescent reproductive health remains an important concern and requires continuous preventive and promotive efforts at the community level.

Risky sexual behavior may develop from curiosity and sexual exploration that are not accompanied by adequate reproductive health knowledge and decision-making skills. This vulnerability may be influenced by peer relationships, dating, social environments, and exposure to digital media. Although social media can provide adolescents with opportunities to access health information, it may also expose them to inaccurate information, inappropriate sexual content, and interactions that compromise personal privacy. These factors can influence adolescents' decision-making and increase their vulnerability to risky sexual behavior. Therefore, adolescents need not only factual knowledge but also practical skills to support informed decision-making and safer sexual health behaviors (Ilskens et al., 2022).

If risky sexual behavior is not prevented, adolescents may face various short- and long-term consequences. Risky sexual behavior is associated with an increased risk of sexually transmitted infections (STIs), including HIV infection, and unintended pregnancy, as well as psychological and social consequences that may affect adolescents' education, relationships, and future opportunities. STIs are an important adolescent health concern, with recent evidence emphasizing their occurrence and the importance of preventive behaviors among adolescents (Tremblay et al., 2024). In addition to physical health consequences, unintended pregnancy and STI-related stigma may contribute to emotional and social difficulties and may interfere with adolescents' educational and future opportunities. Educational interventions are therefore needed to help adolescents understand the consequences of risky behavior and develop protective

decision-making skills. Previous research indicates that sexual health education can contribute to improvements in adolescents' attitudes, behavioral intentions, and perceived control related to the prevention of risky sexual behavior (Putri et al., 2024). This demonstrates that reproductive health education should not only transfer information but also encourage adolescents to develop skills and confidence to protect themselves.

Despite the importance of reproductive health education, conventional delivery methods may not always provide sufficient engagement for adolescents. Adolescents are more likely to participate actively when learning involves interaction, discussion, and activities that are relevant to their experiences. A systematic review of digital gaming interventions found that game-based approaches can improve adolescents' knowledge and attitudes toward sexual and reproductive health, including contraception, STI prevention, and healthy relationships (Cahyani et al., 2025). Another systematic review and meta-analysis reported that gamified sexual health interventions had positive effects on knowledge, attitudes, contraceptive use, and delaying sexual initiation (Sierra-Yagüe et al., 2025). These findings suggest that educational games can be used as an alternative approach to make reproductive health education more participatory and engaging.

Game-based education represents an innovative approach to adolescent reproductive health education by combining health information with interactive activities that encourage participation, discussion, and decision-making. A recent scoping review identified game-based interventions as one of the approaches used to improve adolescents' reproductive health knowledge and attitudes (Putri et al., 2025). Evidence from a randomized controlled trial of a reproductive health mobile game among adolescent girls also demonstrated significant improvements in contraception knowledge and several reproductive health agency outcomes, including confidence in negotiating contraception use and the ability to refuse sex when not ready (Raj et al., 2025). These findings support the use of game-based learning as a complementary approach to conventional reproductive health education, particularly for delivering sensitive topics through engaging and participatory activities.

Interactive education is particularly relevant for reproductive health topics because adolescents may feel reluctant or uncomfortable discussing sexuality directly. A learning environment that combines education with games can provide opportunities for adolescents to ask questions, discuss situations, and practice decision-making in a less formal setting. Recent evidence from a systematic review indicates that serious games have potential in child and adolescent health education and can support learning, health literacy, and healthy behaviors (Ancona et al., 2024). Therefore, interactive games can complement direct health education by transforming reproductive health messages into questions, challenges, and situations that encourage adolescents to think and respond actively.

In Kwadungan Village, adolescent reproductive health was identified as a relevant community health concern requiring accessible education on reproductive health and the prevention of risky sexual behavior. However, specific local data on risky sexual behavior among adolescents in Kwadungan Village were not available. Previous studies have reported the potential of game-based interventions in adolescent reproductive health education, but the integration of direct education with a locally developed Monopoly game, thematic challenges, question-and-answer sessions, and group-based quizzes in a community setting has been less described. This context encouraged the implementation of KELIRU as an interactive community-based reproductive health education program for adolescents in Kwadungan Village.

Based on this approach, KELIRU (Kelompok Edukasi Lingkar Remaja Unggul) was implemented as a community-based reproductive health education program for adolescents in Kwadungan Village. The innovation of KELIRU lies in integrating direct reproductive health education with the Monopoly KELIRU game, question-and-answer sessions, thematic

challenges, and quizzes within a single community-based educational activity. The educational content focused on reproductive health, risky sexual behavior and its consequences, STI and HIV prevention, unintended pregnancy, personal boundaries, the ability to say “no,” and wise social media use and privacy protection. Through this combination of education and interactive play, KELIRU was designed to create a participatory learning environment that supports adolescents in understanding reproductive health issues and developing preventive awareness toward risky sexual behavior.

METHOD

KELIRU (Kelompok Edukasi Lingkar Remaja Unggul) was conducted as a community-based health education activity for adolescents in Kwadungan Village. The activity was held on Tuesday, August 25th, 2026, at Kwadungan Village Hall, starting at 7:00 p.m. until completion. The program involved 35 adolescents from Kwadungan Village. The available participant data consisted of the total number of participants and group division; age and sex characteristics were not recorded during the activity. Participants were divided into five groups to facilitate active participation and enable all participants to participate in the interactive activities and evaluation, particularly because not all participants had a smartphone available during the activity.

KELIRU used an interactive health education approach that combined direct education with game-based learning. The main educational medium was the Monopoly KELIRU game, which facilitated the delivery of reproductive health information through questions, challenges, and interactive activities. The educational materials focused on adolescent reproductive health, risky sexual behavior and its consequences, sexually transmitted infections (STIs), HIV prevention, unintended pregnancy, personal boundaries, the ability to say “no,” and wise use of social media and privacy protection.



Figure 1. Monopoly KELIRU as an Educational Media

Source: Developed by the KELIRU Team, 2026.

The implementation consisted of four stages: preparation, implementation, evaluation, and follow-up. During the preparation stage, the team coordinated with village representatives and relevant parties, determined the adolescent target group, prepared educational materials, developed the Monopoly media and challenges, and prepared the equipment required for the activity.

The implementation stage began with an opening and introduction, followed by reproductive health education and a question-and-answer session. Participants were then divided into five groups and participated in the Monopoly game, which included questions and challenges related to the educational material. The activity continued with a 10-item Quizizz assessment

completed in groups because some participants did not have smartphones available during the activity. The session concluded with messages encouraging adolescents to maintain reproductive health, establish healthy boundaries, avoid risky sexual behavior, and use social media responsibly, followed by documentation.

The evaluation instrument consisted of a 10-item Quizizz assessment developed by the KELIRU team based on the educational materials delivered during the activity. The questions were not adapted from a standardized questionnaire but were prepared specifically for the activity to assess participants' responses to the material presented. The question blueprint covered seven topics: (1) the main message of sexual education for adolescents; (2) ways to maintain reproductive health; (3) personal boundaries and the right to refuse unwanted physical contact; (4) characteristics of healthy relationships; (5) maintaining personal boundaries in relationships; (6) consequences of risky sexual behavior, including pregnancy and sexually transmitted infections; and (7) protection of personal privacy and appropriate responses to intimate images and unsolicited sexual messages through social media. Each item was presented in multiple-choice format and administered once at the end of the activity.

Program evaluation was conducted descriptively using an observation sheet and a 10-item group-based Quizizz assessment. The observation sheet was developed by the activity team and was used to record participant attendance, engagement, interaction, participation during discussions and games, and the implementation of the planned activities. The Quizizz assessment was completed by the five groups at the end of the activity to assess their responses to questions related to the reproductive health material delivered during the program. The evaluation results were reviewed descriptively based on participant involvement, observations during the activity, and group responses to the Quizizz questions. Because no pre-test was administered, the Quizizz assessment was not used to measure changes or increases in participants' knowledge.

The evaluation also identified implementation constraints, including delayed participant arrival, attendance below the initial invitation target, limited participation during some discussion sessions, restricted activity time, and a misplaced prize. These findings were used to identify areas for improvement in future program implementation.

Follow-up activities focused on reinforcing reproductive health messages and preventing risky sexual behavior. Participants were encouraged to apply the information obtained in their daily lives, while educational materials were provided as additional references. Coordination with relevant community parties was also encouraged to support the continuity of adolescent reproductive health promotion activities in Kwadungan Village.

RESULTS

KELIRU (Kelompok Edukasi Lingkar Remaja Unggul) program was conducted on August 25th, 2026, at Kwadungan Village Hall and involved 35 adolescents. The activity consisted of reproductive health education, prevention of risky sexual behavior, a question-and-answer session, the KELIRU Monopoly educational game, interactive challenges, and a final evaluation.



Figure 2. Implementation of the KELIRU Health Education Program

Source: KELIRU Activity in Kwadungan, 2026 (personal documentation).

Participants engaged in the educational presentation, discussions, the KELIRU Monopoly game, and thematic challenges. The Monopoly game served as an interactive medium for reinforcing key messages concerning adolescent reproductive health, risky sexual behavior and its consequences, sexually transmitted infections (STIs), HIV prevention, unintended pregnancy, personal boundaries, assertive refusal, and responsible social media use.



Figure 3. KELIRU Monopoly Educational Game and Interactive Activities

Source: KELIRU Activity in Kwadungan, 2026 (personal documentation).

Participants immediate learning responses were evaluated using a 10-item Quizizz assessment completed in five groups. The overall class accuracy was 100%, indicating that all questions were answered correctly by the participating groups. Based on the Quizizz leaderboard, Group 3 achieved the highest score (8,000), followed by Group 1 (7,700), Group 2 (7,500), and Groups 4 and 5 (7,200 each) (Table 1). Because the assessment was conducted only at the end of the activity, these results describe participants' final performance and cannot be used to determine changes in knowledge from baseline.

Table 1. Results of the Quizizz-Based Evaluation

Rank	Group	Quizizz Score
1	Group 3	8,000
2	Group 1	7,700
3	Group 2	7,500
4	Group 4	7,200
5	Group 5	7,200

Participant engagement was observed throughout the interactive activities. However, participation was not uniform, particularly during the question-and-answer and discussion sessions. Several implementation constraints were also identified, including delayed participant arrival, attendance below the initial target, limited discussion participation, restricted activity time, and a misplaced prize. These factors required adjustments to the activity schedule and provided practical considerations for improving future program implementation.

DISCUSSION

KELIRU community education program was successfully implemented through a combination of reproductive health education, discussion, the Monopoly KELIRU game, thematic challenges, and a final quiz. The integration of these activities provides adolescents with opportunities to participate actively and interact with the educational content. Participatory methodology is considered an important component of effective adolescent sexuality education because it encourages active involvement during the learning process (Torres-Cortés et al., 2023). A similar approach was reported by Aniarthi et al. (2023), who implemented reproductive health education using an educational Monopoly game and demonstrated that game-based education can be used to engage adolescents in reproductive health learning. This finding supports the use of

interactive methods when delivering reproductive health information to adolescents.

The final Quizizz assessment showed 100% overall accuracy, with all five groups answering the 10 questions correctly. This finding indicates that participants demonstrated good collective performance in responding to the questions presented at the end of the KELIRU community education program. Interactive and gamified learning approaches have been associated with increased learner engagement, motivation, and social interaction in educational settings (Zainuddin et al., 2020). This result is consistent with Rahmadhani & Hamidah (2024), who reported that reproductive health education using Monopoly media was associated with improved adolescent knowledge regarding the TRIAD KRR. However, because the assessment in the present activity was conducted only after the intervention and used a group-based format, the 100% accuracy cannot be interpreted as evidence of increased individual knowledge. Evaluation based on post-intervention assessment alone provides limited evidence for determining changes attributable to an educational intervention (Garzón-Orjuela et al., 2021).

Monopoly KELIRU game supported the delivery of reproductive health messages through questions and thematic challenges. Game-based learning can make educational content more interactive and provide adolescents with opportunities to learn through active participation. A systematic review of gamification in K–12 education reported that gamified learning can support learning experiences and outcomes when game elements are appropriately integrated with instructional objectives (Dehghanzadeh et al., 2024). Anjaly et al. (2025) similarly found that the ReproQuest board game was feasible as an interactive medium for introducing adolescent reproductive health and was able to support students understanding of the topic. The use of Monopoly media has also been reported as an alternative approach to adolescent health education. Aini (2025) found that health education using a Monopoly game was effective in improving adolescents knowledge about marriage-age maturation. These findings support the application of game-based media in the delivery of reproductive health messages within KELIRU community education program. A systematic review and meta-analysis specifically examining digital game interventions for adolescent reproductive health found evidence supporting their potential to improve reproductive health-related knowledge, attitudes, and self-efficacy (Setiyorini et al., 2024).

Participant engagement was observed throughout the interactive activities, although participation was not uniform, particularly during the question-and-answer and discussion sessions. This variation indicates that the use of interactive media does not automatically ensure equal participation among all adolescents. Although gamification may improve motivation and engagement, its effects can vary across learners and learning contexts (Li et al., 2023). Differences in confidence, interest, communication ability, and familiarity with group discussion may influence the extent to which adolescents participate. Interactive reproductive health education therefore needs to be accompanied by facilitation strategies that encourage adolescents to express their opinions and ask questions. This consideration is important when discussing sensitive topics such as sexual behavior, personal boundaries, and reproductive health.

KELIRU community education program also encountered several implementation barriers, including delayed participant arrival, attendance below the initial target, limited discussion participation, restricted activity time, and a misplaced prize. These findings indicate that participant mobilization, time management, and logistical preparation remain important components of community-based adolescent education. Program implementers have reported that scheduling constraints, curriculum considerations, and participant needs can influence the implementation of adolescent sexual and reproductive health programs (Parekh et al., 2019). The implementation experience suggests that future activities should strengthen coordination with local stakeholders before the activity, provide clearer information regarding the schedule, and allocate sufficient time

for discussion and game activities. Such preparation is particularly important because adolescent community activities require active participation from both participants and supporting stakeholders (Komuhangi et al., 2026).

The absence of a pre-test and individual assessment limits the interpretation of the Quizizz results. The evaluation also does not determine whether the information provided was retained or translated into preventive behavior. This limitation is important because educational activities should ideally assess participants conditions before and after an intervention to identify measurable changes in knowledge or other outcomes. Pre-test and post-test assessments are commonly used to determine changes in adolescent sexual health knowledge following educational interventions (Haruna et al., 2021). Aniarti et al. (2023), for example, used a pre-test to assess adolescents reproductive health knowledge before the Monopoly-based education activity. Similarly, Rahmadhani & Hamidah (2024) evaluated reproductive health knowledge using measurements conducted before and after the Monopoly intervention. Therefore, future implementation of the KELIRU community education program should incorporate individual pre-test and post-test assessments to provide stronger evidence of educational outcomes.

Overall, the KELIRU community education program provides a feasible interactive approach to adolescent reproductive health education. The 100% final Quizizz accuracy and observed participant engagement indicate good collective performance during the activity, although these findings do not establish an increase in knowledge or a reduction in risky sexual behavior. Comprehensive sexuality education has demonstrated significant effects on adolescent cognitive outcomes, supporting the importance of structured reproductive health education during adolescence (Kim et al., 2023). The findings are in line with Anjaly et al. (2025), who demonstrated the feasibility of board-game media for introducing reproductive health concepts to adolescents. The experience of the KELIRU community education program also shows that the effectiveness of interactive education depends not only on the educational medium but also on participant mobilization, facilitation, time management, and evaluation design. Future activities should therefore maintain the interactive game-based approach while strengthening implementation planning and incorporating individual pre-test and post-test measurements to obtain more objective evidence of learning outcomes.

CONCLUSION

KELIRU provided an interactive approach to adolescent reproductive health education through the integration of health education, discussion, a Monopoly game, thematic challenges, and quizzes. The implementation facilitated participant involvement in learning activities and delivered key information related to reproductive health and the prevention of risky sexual behavior, including sexually transmitted infections, HIV, unintended pregnancy, personal boundaries, assertive refusal, and responsible social media use.

The descriptive evaluation indicated that KELIRU was implemented according to the planned activity stages, although several implementation barriers were identified, including delayed participant arrival, attendance below the initial target, variation in discussion participation, limited activity time, and incomplete preparation of activity materials. These findings highlight the importance of strengthening participant mobilization, time management, task allocation, and equipment preparation in subsequent activities. Further implementation of community-based reproductive health education should maintain interactive learning strategies while incorporating systematic pre- and post-intervention assessments to objectively evaluate changes in adolescents' knowledge, attitudes, and preventive behaviors.

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