

Snakes and ladders media can help prevent risky sexual behaviour in teenagers

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ABSTRACT

Background: In Indonesia, on average, adolescent boys and girls have their first sexual experience when they are 15 and 19 years old, which triggers risky sexual behaviors resulting in sexually transmitted diseases (STDs), HIV/AIDS, unwanted pregnancies, abortions, and even death. Therefore, educational media is needed to increase positive behavior in adolescents.

Objectives: This study aims to determine the influence of snake and ladder game media on adolescent sexual behavior.

Methods: The research design was a quasi-experimental pretest and posttest group with a control group. The treatment group is teenagers who are given education with snake and ladder game media while the control group is teenagers who are given education through monopoly games. A total of 100 samples were selected using the propolition stratified random sampling technique. The data were analyzed by wilcoxon and mann whitney tests.

Results: As a result, there was an influence of education with snake and ladder game media on the average knowledge score of $p=0.000$, attitude $p=0.000$, behavior $p=0.000$. The results of the statistical test also showed that there was an influence of monopoly game media on the average knowledge score $p=0.00$, attitude $p=0.00$, behavior $p=0.00$. The snake and ladder game media is more effective in increasing knowledge $p=0.00$, attitude $p=0.002$ compared to monopoly game media.

Conclusions: the snakes and ladders game media is more effective in increasing adolescents' knowledge about risky sexual behaviour than the monopoly game media. Health care providers must take advantage of snake and ladder educational media to increase knowledge, attitudes and prevent risky sexual behavior.

KEYWORD: game; risky; sexual; snake ladder

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INTRODUCTION

Adolescence is a very vulnerable period because of the transition from childhood, so it has a personality that tends to be unstable and easily influenced. In the adolescent stage, the development of personality and individual character begins, so changes occur as a manifestation of self-development, one of which is the beginning of attraction to the opposite sex, the development of the reproductive organs and the feeling of falling in love. During this time, adolescents are susceptible to promiscuity, putting them at risk of premarital sex, which can lead to physical and mental health problems. Previous research has shown that sexual, emotional urges and needs are at the root of sexual behaviour. In addition, sexual factors are also influenced by internal factors and the external environment(1).

In Indonesia, young people have their first sexual intercourse between the ages of 15 and 19. This applies to both adolescent boys and girls (2). Sexual intercourse before marriage usually begins with dating, currently the age of dating begins in early adolescence between the ages of 15-17, which increases risky sexual behaviour, this is consistent with research 84.5% of adolescents have sexual intercourse before the age of 20 (3). Risky sexual behaviour leads to unintended pregnancies and unsafe abortions, which carry the risk of haemorrhage, infection and maternal death. UNFH data show that unintended pregnancies account for 60% of all pregnancies, of which 30% result in

abortion and 80% in unsafe abortion. In Indonesia, 15.5% of unintended pregnancies occur among women who have never married, in the 15-19 age group. Therefore, there is a need for education that can improve young people's knowledge and attitudes towards risky sexual behaviour through gaming media. Educational games are perfect for teens because they provide a fun and interactive learning experience, increase motivation and memory, and develop cognitive and social skills. Learning games can make learning more active and fun, so teens are more motivated to learn without feeling overwhelmed(46).

The BKKBN has issued a GenRe kit, which is an educational medium containing tools and game cards, illustrated manuals to facilitate socialisation and education of adolescents in the form of snakes and ladders and monopoly, but it is still rarely used, although this game is packed with themes (communication, information, education) that are relevant to adolescents. The BKKBN Snakes and Ladders game is important for teenagers because it is a fun and effective way to educate them about population and family planning programmes, especially the GenRe (Planned Generation) initiative. This game helps young people understand sensitive issues such as sexuality, drugs, HIV/AIDS and family planning in a more interactive and memorable way (7). Therefore, structured education using interactive media such as snakes and ladders games is needed to improve adolescents'

understanding of sexuality education. Previous research has shown that snakes and ladders games are effective in increasing adolescents' knowledge (8,9). According to data from the BKKBN of Bengkulu Province 2023, in Bengkulu City itself, there are still young pregnancies under the age of 20 in the coverage area of Kampung Melayu sub-district (2 persons) and Muara Bangkahulu sub-district (1 person) (10). As well as the number of marriages of girls in the age group of 10-14 years as many as 5 people in the sub-districts of Selebar, Gading cempaka, Muara Bangkahulu, Ratu Samban and Sungai Serut, and in the vulnerable age group of 15-19 years in the city of Bengkulu as many as 80 people, with the 3 highest areas being Selebar 25 people, Kampung Melayu 18 people and Muara Bangkahulu 17 people (11). Initial survey Based on data from BKKBN Bengkulu Province, there will still be child marriages and young pregnancies under the age of 20 in Bengkulu City in 2023. Selebar sub-district is the first area with 25 child marriages.

The results of the pre-liminary survey showed that the number of school drop-outs is higher in Selebar sub-district, which has never been educated on sexuality education, reproductive health or similar education. Therefore, it is important to provide appropriate premarital sexual education to adolescents to prevent the effects of free sexual behaviour. This study aims to determine the effectiveness of snake power media on knowledge, attitudes and risky sexual

behaviour among adolescents in Bengkulu City.

MATERIALS AND METHODS

This is a quantitative study using a quasy experiment design with a two-group pretest-posttest design. The intervention group was high school students who received sexuality education using the snakes and ladders game media, while the control group received sexuality education using the Monopoly game media. The Monopoly media and the Snakes and Ladders game used were obtained from the BKKBN kit. The independent variable is the snakes and ladders game and the dependent variable is knowledge, attitude and risky sexual behaviour. The sample of this study were high school students of X and XI grade in Selebar district totalling 100 people who were taken by proportional stratified random sampling technique using spin the wheel based on the order of attendance.

RESULTS AND DISCUSSION

RESULTS

The characteristics of the study's respondents were measured based on their age, gender, and participation in intraschool organisations (OSIS). An overview of these characteristics can be seen in **Table 1**.

Table 1 shows data on the characteristics of adolescent respondents at SMAN 10 Bengkulu City, it can be seen that based on age, almost all 45 (98%) adolescents are aged 15-16 years, this is the middle

adolescent age group (12). The characteristics of adolescents based on gender showed that the majority were female 30 (60%), which means that there are differences in the growth and development of adolescents based on gender (13). Based on the participation of extracurricular activities OSIS, it shows that almost some 15 (30%) adolescents are active in OSIS activities, this means that adolescents have the opportunity to improve better academic performance because organisational experience helps adolescents improve time management skills, discipline and cooperation (14).

Table 1. Characteristics of young people by age, gender and participation in extracurricular activities OSIS

Variabel	f	%
Age		
< 15 years	0	0
15-16 years	45	98
17-18 years	1	2
Gender		
Male	20	40
Female	30	60
Extracurricular activities OSIS		
Active	15	30
Pasive	35	70

Table 2. Effect of snakes and ladders media Monopoly media on knowledge, attitudes and risky sexual behavior.

Variable	n	Min-Max	Mean	SD	Mean diffrence	p value*
Snake Ladder						
Knowledge						
Before	50	8-Feb	4.76	1.302	4.8	0
After	50	10-Jul	9.24	0.981		
Attitude						
Snake Ladder	50	31-50	42.02	3.982	13.36	0
Monopoly	50	49-60	55.38	3.374		
Behavior						
Snake Ladder	50	0-15	1.16	2.368	0.92	0
Monopoly	50	0-7	0.24	1.021		
Monopoly						
Knowledge						
Before	50	8-Jan	4.94	1.284	3.52	0
After	50	10-Jun	8.46	1.281		
Attitude						
Snake Ladder	50	36-50	44.66	2.797	8.9	0.002
Monopoly	50	49-60	53.56	3.072		
Behavior						
Snake Ladder	50	0-15	0.96	2.364	0.68	0.001
Monopoly	50	0-8	0.28	1.179		

*wilcoxon test

Table 2 above presents the results of the bivariate analysis investigating the impact of the Snakes and Ladders game on adolescents' knowledge, attitudes, and risky sexual behaviour. **Table 2** also shows the results of the analysis of the effect of Monopoly game media on knowledge, attitudes, and risky sexual behaviour in adolescents.

Table 2 shows that of the 50 respondents who received training using the snakes and ladders game media, the mean pre-test knowledge score was 4.76, while the mean post-test knowledge score increased to 9.24. This shows an increase in average knowledge of 4.48 between pretest and posttest. The table above also shows that of the 50 respondents who were educated using the snakes and ladders game media, the mean pretest attitude was 42.02, while the mean posttest attitude was 55.38, and the average increase in attitude between pretest and posttest was 13.36. Table 2 also shows that of the 50 respondents who were educated using snakes and ladders media games, the mean score for behaviour was 1.16, while the posttest score for behaviour was 0.24, there was an increase in positive behaviour of 0.92.

The results showed that of the 50 respondents who received education using monopoly media, the pretest mean of knowledge was 4.94, while the posttest mean was 8.46, there was an increase in mean knowledge of 3.52. Table 2 shows that of the 50 respondents who were given education with monopoly media, the average pretest

attitude score was 44.66, then for the average posttest attitude score was 53.56, this shows an increase in the average attitude of 8.9. The results also showed that of the 50 respondents who were given education with monopoly media, the average pretest value of adolescent behaviour was 0.96, then for the average posttest behaviour was 0.28, in this case there was an increase in positive behaviour of 0.68.

Table 2 shows that there is a difference in the mean attitude before and after education with snakes and ladders media games with a value of $p = 0.000$ with a mean difference of 13.36. This means that Snakes and ladders education has an effect on adolescents' attitudes towards risky sex. Snakes and ladders media education has the potential to increase attitudes by 13.36 times. Table 2 also shows the difference in mean behaviour before and after the Snakes and ladders education, with a p -value of 0.00 and a mean difference of 0.92.

Table 2 also shows that there is a difference in the average attitude before and after monopoly media education with a value of $p = 0.000$ with a mean difference of 8.9, which means that monopoly media education has an effect on attitudes towards sexual risk. Table 2 also shows that there is a difference in average behaviour before and after monopoly game media education, with a p -value of 0.001 and a mean difference of 0.68. This means that there is an effect of monopoly game media on risky sexual behaviour. This study also examined the effectiveness of

media by comparing the impact of Snakes and Ladders and Monopoly on adolescents' knowledge, attitudes, and risky sexual

behaviour. The results can be seen in **Table 3** below:

Table 3. Effectiveness of snake and ladder media on knowledge, attitudes and risky sexual behaviour among adolescents

Variable	n	Min-Max	Mean	SD	Mean difference	p value
Knowledge						
Snake Ladder	100	10-Jul	9.24	0.981	0.78	0.002
Monopoly		10-Jun	8.46	1.281		
Attitude						
Snake Ladder	100	49-60	55.38	3.374	1.82	0.002
Monopoly		49-60	53.56	3.072		
Behavior						
Snake Ladder	100	0-7	0.24	1.021	0.04	0.971
Monopoly		0-8	0.28	1.179		

*mann whitney test

The results of the statistical tests in **Table 3** show that there is an effect of snakes and ladders game media on knowledge, attitudes and risky sexual behaviour among adolescents with a p-value = 0.002 (<0.05). Table 3 also shows that there is an effect of the snakes and ladders media on the average attitude of the adolescents with a p-value = 0.002, a mean difference of 1.82, so it can be concluded that the snakes and ladders media is more effective in improving attitudes than the Monopoly games.

However, the results of the statistical test in table 3 show that there is no statistically significant difference in the education of risky sexual behaviour in adolescents through the use of snakes and ladders games with a value of p = 0.97. This means that there is no difference in the education of risky sexual behaviour in adolescents through the use of snakes and ladders games. This means that

there is no difference in effectiveness between snakes and ladders and monopoly games on adolescent sexual behaviour. Both snakes and ladders and Monopoly can be used to increase positive sexual behaviour in adolescents.

DISCUSSION

This study examined the characteristics of respondents based on their age, gender, and participation in intraschool organisations, as shown in **Table 1**. Almost all respondents were in the middle teenage age group. This demonstrates the suitability of age for the education pursued. Middle adolescence indicates a readiness to accept new knowledge (12). The gender-based characteristics of adolescents were mostly female, indicating different adolescent development based on gender. In females, puberty begins earlier, with signs such as the first menstrual period

(menarche) and breast growth, while in males, puberty is characterised by facial and body hair growth and deepening of the voice (13). Participation in extracurricular student council activities shows that almost all adolescents are active in these activities. This means that adolescents have the opportunity to improve both their academic and non-academic achievements. There are many benefits to student councils for adolescents, such as developing leadership, organizational abilities, social skills, and a sense of responsibility. Additionally, student councils can help students to develop their talents and interests, improve their academic performance and prepare for life outside of school (14,15).

This study found that there was a difference in knowledge before and after being given the snakes and ladders game media as in **Table 2**. This supports previous findings that the snakes and ladders game media can increase the knowledge of the target group. The snakes and ladders game media has validity test results from media experts of 86%, material experts 98% and users of 90.27% with a very good rating category. This proves that the snake and ladder board, question cards, game rules, dice and pawns are suitable for use as health promotion media (16). The results of the study showed that there was an effect of snakes and ladders media games on adolescents' knowledge, attitudes and behaviours about risky sex. These results are in line with previous research that has found that the use

of snakes and ladders media can improve learning outcomes (17). The same study also showed that students who played the Snakes and Ladders game achieved higher average scores (18).

This shows that Snakes and ladders education has a significant effect on risky sexual behaviour as in **Table 2**. Adolescents who are taught using the Snakes and Ladders game have a 92% chance of improving their behaviour. This supports the results of previous studies which found that average knowledge increased and adolescent behaviour scores became more positive after receiving Snakes and Ladders-based education (19). Another study found the same results, with a change in adolescents' attitudes to more positive (20). Snakes and ladders game can change adolescents' views on sexuality to be more positive (9).

This study supports previous findings that educational games can improve knowledge, attitudes and positive behaviour change according to specific learning objectives. Educational games are an innovative medium that can be used for character education in this century because they can help participants to be more active and responsive. Games have a warm-up function, relieving boredom from a lot of tiring material (21).

Furthermore, the results of the study in **Table 2** show that there is a difference in the average knowledge before and after education with monopoly game media with a value of $p = 0.000$ with a mean difference of

3.52. This means that education with monopoly game media has an effect on adolescents' knowledge about risky sex. Adolescents who receive Monopoly education have the opportunity to increase their knowledge 3.52 times.

This study found that there was a difference in knowledge before and after being given the monopoly game media as in **Table 2**. This supports the results of previous research that monopoly educational media is effective in increasing adolescents' awareness about HIV/AIDS with a value of $p = 0.00$. The results of the study suggest that the monopoly game is useful in increasing adolescent awareness of HIV/AIDS because it is easy to use and engaging, uses the four senses to help adolescents understand HIV/AIDS, and increases the interactive nature of the learning process.

The Snakes and Ladders game can be optimised as an educational tool to provide information on population and family planning programmes, as well as other strategic issues such as reproductive health, sexuality, age at marriage and adolescent health issues. Due to its interactive and entertaining features, the game is effective in capturing participants' attention and increasing their motivation to learn. In addition, the game facilitates social interaction between participants and contributes to the development of communication, cooperation and problem-solving skills. With its fun approach, Snakes and Ladders can create a more dynamic learning atmosphere and reduce boredom (22). Adolescents who

receive monopoly media education have the opportunity to increase the positive attitude of adolescents by a factor of 8.9. In line with other studies, it is also known that monopoly media can change adolescents' positive attitudes towards anaemia in adolescent girls (20). Monopoly game media can improve students' knowledge and behaviour about healthy living (23). Teenagers who are educated with monopoly game media can change positive behavior for the better. The use of monopoly media can increase students' motivation to learn about the coordination system and sensory organs. This is indicated by the fact that students who are taught using monopoly media have a higher average motivation score 84 than students who are not taught using monopoly media 42. Therefore, it can be suggested that teachers use monopoly media to increase students' enthusiasm for learning in the new normal period (24).

This study also found that Snakes and Ladders media were more effective in increasing knowledge and positive attitudes about risky sexual behaviour among adolescents as in **Table 3**. This means that the snakes and ladders game media is more effective in increasing adolescents' knowledge about risky sexual behaviour than the monopoly game media. The results of this study are consistent with other studies that have shown an improvement in knowledge and attitudes about sexuality. The snakes and ladders game is a useful tool in health education as it can change adolescents'

perceptions and beliefs (9). The snakes and ladders game media is a game that is familiar to teenagers, this increases their interest in learning something new because it is not boring (9,25). The snakes and ladders game media is an effective media to be used as a health promotion media on maturation of marriage age, where the game is played in groups that increase adolescents' interest in learning, this is also proven effective in the positive attitude of adolescents with an increase from score 20 to 46(25).

Games can be used as an educational tool with a special design with learning content, thus increasing students' interest in learning. Teenagers who receive education through games will interact actively, making the learning process more relaxed, less monotonous and more interesting for the students. The interaction that takes place during education through games makes students actively involved by seeing, observing, listening individually or in groups. Games can be used as educational tools with special designs with learning content, thus increasing students' interest in learning. Young people who receive education through games will interact actively, making the learning process more relaxed, less monotonous and more interesting for the students. The interaction that takes place during game-based education makes students actively involved by watching, observing, listening individually or in groups (26). The game can be modified with a package containing visualization and educational content.

Players will complete the educational package provided because a game is packed with missions and objectives that require players to complete the mission. This improves the learning outcomes according to the desired objectives (27,28). Based on previous findings, educational games improve learning outcomes when there is a difference between the average score before education and an increase after education through games (29).

Learning through educational games improves the positive results of character education, so it can help to overcome some problems in the learning process quickly and more accurately (30). The development of game media in health promotion can improve social and emotional aspects so that players feel happy because of the interactions formed during the game, this builds interpersonal and intrapersonal intelligence. Apart from that, educational games encourage improvements in cognitive aspects, reciprocal communication, focused attention and changes in behavior. Therefore, health practitioners must develop game-based health promotion media to increase knowledge, positive attitudes and beneficial behavior for the target group(31).

However, there are some weaknesses in this study, which did not take confounding factors into account. Thus, the observed increase in knowledge and change in positive attitudes may not be entirely due to the intervention, as the results of the study may be influenced by other factors outside the variables studied. Therefore, further research

is needed to confirm the effect of the snakes and ladders and monopoly media, and to confirm the effectiveness of the snakes and ladders media by controlling for external or confounding variables.

CONCLUSION AND RECOMMENDATION

There is an effect of snakes and ladders game media on knowledge, attitudes and risky sexual behaviour in adolescents. There is an effect of snakes and ladders game media on knowledge, attitudes and behaviour of the intervention group after the intervention. snakes and ladders and monopoly are different in terms of knowledge, attitude and behaviour. There is no more effective game media for improving behaviour between snakes and ladders and monopoly compared to snakes and ladders game media for improving knowledge and attitude. It is recommended that health practitioners use appropriate media in providing education to teenagers. The use of the snakes and ladders game media can be considered to increase appropriate perceptions and prevent risky sexual behavior in adolescents.

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