

Effect Of Health Education Using Animated Video Media And Snakes And Ladders Game On Young Girls' Readiness For Facing Menarche

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Abstract.

Menarche is the first menstruation experienced by teenage girls. This period is a transitional period marked by various physical, emotional and psychosocial changes. Efforts to prevent the negative impact on menarche require knowledge about menstruation, one of which is using animated video media and snakes and ladders games. The aim of this research is to identify the influence of health education using the media game Snakes and Ladders and animated videos on the readiness of young women to face menarche. This type of research is quasi-experimental with pre and post test control group design. The research sample consisted of 40 female students using probability sampling with simple random sampling technique. Data analysis used the Paired T-Test and Independent T-Test. The results of the univariate test showed that the pre-test and post-test mean scores in the intervention group were 47.60 and 69.90 and the pre-test and post-test mean scores in the control group were 47.65 and 59.95. Bivariate analysis using the Paired T-Test in the intervention group and control group obtained a result of 0.000 where the p-value <0.05, meaning that there was an influence of health education using snakes and ladders game media and animated videos as well as powerpoint and leaflet media on the readiness of young women in facing menarche. The Independent T-Test showed a result of 0.000 where the p-value <0.05, meaning that there was a significant difference between the mean value of young women's readiness to face menarche in the intervention and control groups. The conclusion that can be drawn is that health education using the media game snakes and ladders and animated videos has an effect on the readiness of young women to face menarche. Animated video media and snakes and ladders games are more effective than PowerPoint and leaflet media in increasing the readiness of young women to face menarche.

Keywords: Health Education; Menarche and Readiness.

I. INTRODUCTION

Adolescence is a stage of human development characterized by transitions from childhood to adulthood, including physiological, psychological, and social changes (Fadhillah & Wijayanti, 2022). According to the World Health Organization (2017), adolescents are individuals aged 10 to 19 years. This period is marked by puberty—rapid physical and hormonal changes occurring during early adolescence. Adolescents undergo significant transformations during puberty. For girls, increased levels of estrogen lead to noticeable changes such as breast development, widening of hips, growth of body hair in the armpits and pubic areas, and sexual maturity marked by the first menstruation, or menarche (Hidayah, 2020). Menarche is a girl's first menstruation and represents a transitional period marked by various physical, emotional, and psychosocial changes. This stage is especially important as it signifies the maturation of the human reproductive organs (Ministry of Health of the Republic of Indonesia, 2017). Menarche typically occurs between the ages of 10 and 16, with an average age of 12.4 years (Amy E. Lacroix et al., 2022). In Indonesia and other Southeast Asian countries, the average age of menarche is around 12 years (Ministry of Health RI, 2017). According to WHO (2016), around 1,769,425 women worldwide (90%) experience dysmenorrhea, with 10–15% experiencing it severely. This is supported by reports showing that primary dysmenorrhea affects more than 50% of women globally, leading to limited daily activity in about 15% of adolescent girls. Menstrual pain affects daily activities and can cause girls to miss school, work, or other routines for hours or days.

Around 13–51% of women have missed school or work at least once due to menstrual pain, with 5–14% missing repeatedly. According to the Ministry of Education and Culture (2017), 1 in 6 female students misses school for one or more days during menstruation. This often happens because they fear leakage and experience symptoms like fatigue, dizziness, and abdominal pain, leading to reduced school participation. The Ministry of Health (2018) also found that two out of five teenage girls did not talk to anyone about

menstruation before experiencing it, leading to low readiness for menarche. Psychological readiness is especially important; without proper preparation, girls may feel fear or rejection, which can lead to negative behaviors and neglect of menstrual hygiene. Poor menstrual hygiene increases the risk of reproductive tract infections, uterine cancer, and other health issues (Fitriana & Ningrum, 2020). Poor vulvar hygiene can also lead to urinary tract infections (UTIs), which occur 3–4 times more frequently in women than in men (Purwati, 2020). Health education is one of the simplest and most effective methods to improve knowledge and understanding about reproductive health among adolescents (Umboro et al., 2022). Providing health education requires engaging media to influence understanding and change target group behaviors (Maros & Juniar, 2016). Innovative health education using games—such as snakes and ladders—is recommended (Zuriya, 2016) because it aligns with children’s cognitive development, which involves logic and objective reasoning.

According to Atria (2020), interactive learning media such as animated videos combining text, images, illustrations, photos, video, and animation—can significantly increase students' interest and learning motivation. A preliminary study conducted in November 2022 at SDN 11 Sungai Pinyuh, Mempawah Regency, involving 69 female students from grades 4 to 6, found that 63 had not yet experienced menarche. Short interviews were conducted in each class: 20 students from grade 4 revealed that 16 had never heard of menarche; 26 students from grade 5 showed that 11 lacked knowledge; and 17 students from grade 6 revealed that 14 were unaware. Overall, 41 out of 63 students did not know about menarche, mostly due to embarrassment or fear. Others had only heard about it from their mothers or older sisters, identifying it as a sign of puberty in girls. Based on this, the researcher was interested in studying the effect of using snakes and ladders games and animated videos on the readiness of adolescent girls in facing menarche, aiming to provide menstrual health information to students at SDN 11 Sungai Pinyuh. Providing reproductive health education to adolescents is expected to improve their readiness to face menarche.

II. METHODS

This research is a quantitative study with a quasi-experimental design using a pre-test and post-test control group design. In this study, respondents were divided into 2 groups. One group is the treatment group, while the other is the control group as a comparison. The treatment group was given health education using animated video media and the snakes and ladders game, while the control group was given health education using PowerPoint and leaflets. The research design compares pre-test and post-test scores in both groups. This design is used to determine the effect of health education using the snakes and ladders game and animated video media on the readiness of adolescent girls to face menarche at SD Negeri 11 Sungai Pinyuh. This research was conducted at SD Negeri 11 Sungai Pinyuh, Mempawah Regency. The population in this study consisted of female students in grades III, IV, V, and VI aged 9-12 years who had not menstruated at SD Negeri 11 Sungai Pinyuh, Mempawah Regency. Population is the entire object of research or the object to be studied (Notoatmodjo 2018). According to Dharma (2015), a study is considered ideal if conducted on the population so that we can see an overview of the entire population as a unit where the research results will later be determined. The population of this study was 69 female students from grades III, IV, V, and VI. The sample is a part of the population selected as the object of the research (Dharma, 2015). The sample used by the researcher was a sample that met the inclusion criteria.

The sampling technique used in this study was probability sampling (random sampling) with a simple random sampling method taken according to inclusion criteria with a total sample of 63 female students. Inclusion criteria in this study were female students aged 9-12 years who had not menstruated, were willing to be respondents, and attended the research until completion, while exclusion criteria were students who refused to be respondents and students who were absent or sick. The formula used to determine the sample size in this study was the formula for the difference in means for independent groups, with a total sample of 40 female students, with each group consisting of 20 students. The instrument used in this study was a readiness questionnaire for facing menarche adopted from Koyyimatus (2018) which had been tested for validity and reliability. The validity test results were declared valid because the r results $> r$ table 0.396, and the reliability test results were declared reliable with an alpha r value of $0.936 > r$ table 0.369. The

research instrument used to measure the level of readiness was through a questionnaire consisting of 20 questions with a checklist model that provided several answers, and respondents only chose one that matched their opinion. The way to fill out the questionnaire was by ticking the answer considered correct. The scoring for readiness answers was SS=4, S=3, TS=2, STS=1 for positively worded questions and SS=1, S=2, TS=3, STS=4 for negatively worded questions.

Data analysis in this study used univariate and bivariate analysis. Univariate analysis was done by arranging the variables in this study descriptively through percentage tables to identify characteristics of age and class. The mean table contained scores of readiness to face menarche. Before conducting bivariate tests, the researcher performed normality tests using Shapiro-Wilk and found the data to be normally distributed. Bivariate analysis used Paired Sample T-test to compare scores before and after being given health education because the data were normally distributed, then a parametric mean difference test, namely Independent T-test, was used to test the mean difference between 2 independent groups (2 different groups). Before conducting the study, an ethics test was carried out by the ethics commission of Poltekkes Kemenkes Pontianak. After the ethics test results stated that this research passed and was feasible to be conducted, the researcher submitted a research permit letter to SD Negeri 11 Sungai Pinyuh. The research plan and objectives were conveyed to the students. Then the respondents were given full rights to agree or refuse to be respondents by signing an informed consent or a statement letter of willingness to be respondents prepared by the researcher. If the respondents refused to participate in this study, the researcher must respect that decision. The research ethics guaranteed that the benefits gained by the researcher far outweighed the side effects caused.

III. RESULT AND DISCUSSION

Univariate Analysis

Table 1. Frequency distribution based on age and class

Demographic Data	Intervention	Control
	N	%
Age		
9	7	35%
10	3	15%
11	6	30%
12	4	20%
Class		
III	4	20%
IV	6	30%
V	5	25%
VI	5	25%
Total	20	100%

Based on the table above, it can be concluded that the majority age of respondents in the intervention group was 9 years old, while the majority age of respondents in the control group was 12 years old. Based on the table above, it can be concluded that the majority class of respondents in the intervention group was class IV, while the majority class of respondents in the control group was class V.

Table 2. Average Readiness Score of Adolescent Girls in Facing Menarche

Variable	n	SD	Min-Max	Mean
Pre-Test Intervention Group	20	5.915	39-58	47.60
Post-Test Intervention Group	20	3.684	63-77	69.90
Pre-Test Control Group	20	5.669	39-57	47.65
Post-Test Control Group	20	4.651	50-68	59.95

Based on Table 2 above, the intervention group at pre-test obtained an average score of 47.60 with a median of 47.50, highest value 58, lowest 39, and standard deviation of 5.91. The intervention group at post-test obtained an average score of 69.90 with a median of 70.00, highest value 77, lowest 63, and standard deviation of 3.68. The control group at pre-test obtained an average score of 47.65 with a median of 47.50, highest value 57, lowest 39, and standard deviation of 5.66. The control group at post-test obtained an average score of 59.95 with a median of 59.95, highest value 68, lowest 50, and standard deviation of 4.65.

Bivariate Analysis

Table 3. Normality Test Results

Variable	p value
Pre-test Readiness Intervention Group	0.254
Post-test Readiness Intervention Group	0.897
Pre-test Readiness Control Group	0.357
Post-test Readiness Control Group	0.883

Based on the table above, the normality test results show that the pre-test and post-test score data in the intervention group have p-values of 0.254 and 0.879 respectively, while the control group has p-values of 0.357 and 0.883 respectively. Based on the table above, since $p\text{-value} > 0.05$, the data is normally distributed. Because the data is normally distributed, parametric statistical tests were used.

Table 4. Paired T-Test Results

Variable	SD	Mean	Sig (2-tailed)
Intervention Group	6.47	22.30	0.000
Pre-Test and Post-Test			
Control Group	4.66	12.30	0.000
Pre-Test and Post-Test			

Based on the table above, the results of the Paired T-Test between pre-test and post-test readiness levels in facing menarche for both intervention and control groups show mean differences of 22.30 and 12.30 respectively, with significance values of $0.000 < 0.05$. This means there is an effect of health education using animated video and snakes and ladders game media as well as PowerPoint lecture and leaflet methods on the readiness of adolescent girls to face menarche.

Table 5. Independent T-Test Results

Variable	Mean Difference	Sig (2-tailed)
Pre-Test	Intervention Group	0.50
	Control Group	
Post-Test	Intervention Group	9.950
	Control Group	

The table above shows that the pre-test scores for the intervention and control groups on the Independent T-Test yielded a p-value of $0.978 > 0.05$, indicating no significant difference in readiness scores between the two groups at pre-test. However, the post-test scores between the intervention and control groups on the Independent T-Test showed a p-value of $0.000 < 0.05$, indicating a significant difference in readiness scores between the two groups after being given health education using animated video and snakes and ladders game media and PowerPoint and leaflet media.

The Effect of Readiness of Adolescent Girls in Facing Menarche Before and After Being Given Health Education in the Intervention and Control Groups

Based on the research results in the intervention group, it shows that there is an effect of health education using animated video media and snakes and ladders game on the readiness of adolescent girls in facing menarche. The results show that there is an increase in the average readiness score of adolescent girls before and after being given health education using animated video media and snakes and ladders game. One effort that can be made to prepare girls to face menarche is providing health education about menstruation and its care in order to achieve reproductive health (Risna Dewi Yanti, 2018). According to Anwar & Febrianty (2022), the higher the knowledge and understanding of adolescent girls about menstruation, the more prepared they will be to face their first menstruation; knowledge about menstruation has a very close relationship with readiness in facing menarche. According to Zuhriya et al. (2018), their research states that innovative and interesting health education while playing, such as the snakes and ladders game, can attract students' interest to learn. Children can also learn while playing and be stimulated to engage in group activities, creating an enjoyable atmosphere so that it is easier to accept the information provided. This aligns with the results of research conducted by Fitriana & Ningrum (2020) which states that there is an influence of edutainment with the snakes and ladders game on the readiness of adolescent girls in facing menarche.

According to Miftahul Reski (2020), in their research, health education using animated videos will be more meaningful and interesting, easier to accept, understand, and more motivating. The use of animation is very good and effective in attracting children's attention during learning situations. This aligns with research by Hartati et al. (2019), which shows that there is an effect of health education through animated videos on the level of knowledge of female students in facing menarche. Based on research results in the control group, it also shows that there is an effect of health education using PowerPoint media and leaflets on the readiness of adolescent girls in facing menarche.

The results show that there is an increase in the average readiness score of adolescent girls before and after being given health education using PowerPoint media and leaflets. According to Ariesta (2022), in their research, the lecture method using PowerPoint is easier to prepare and implement, the material presented can be adjusted to the objectives of the counseling, capable of displaying multimedia programs attractively, and can be summarized in several slides so that the audience can better understand the explanation. This aligns with Ariesta's (2022) research results which state that there is an effect of health education using PowerPoint media on the readiness of adolescent girls in facing menarche. According to Utari & Novayelinda (2018), in their research, they also state that health education using leaflet media is expected to be reread at home so the information can support changes in readiness in facing menarche. This aligns with Utari & Novayelinda's (2018) research which states that providing health education using leaflet media influences adolescent knowledge in facing menarche. Based on the above explanation, the researcher assumes that lack of information and knowledge about menstruation can affect adolescents' perceptions of menarche which will impact psychological rejection and unpreparedness of adolescents in facing menarche. One factor that influences knowledge is the use of counseling media, so health education must be given to adolescents. With this increase in knowledge, adolescents will be better prepared to face menarche.

Differences in the Effect of Health Education on the Readiness of Adolescent Girls in Facing Menarche in the Intervention Group and Control Group

Based on the research results, it shows that there is no significant difference in the pre-test of health education on the readiness of adolescent girls in facing menarche between the intervention group and the control group, and there is a significant difference in the post-test of health education on the readiness of adolescent girls in facing menarche between the intervention group and the control group. This can be concluded that the media of animated videos and the snakes and ladders game are more effective compared to PowerPoint and leaflet media. This aligns with research conducted by Avifah (2019), who states that there is a significant difference in knowledge scores between the intervention and control groups, concluding that health education using the snakes and ladders game method is more effective than the lecture method using PowerPoint in increasing the readiness of adolescent girls in facing menarche.

This also aligns with research conducted by Nelwatri (2021), who states that there is a difference in the effect of health education using animated video media and leaflet media on the readiness of adolescent girls in facing menarche. Animated video media is more effective than leaflets in increasing the readiness of adolescent girls in facing menarche. Based on the above explanation, the researcher assumes that the use of targeted health education media can increase knowledge. The use of effective media can make the counseling atmosphere less rigid and more interesting for the audience, and it is hoped that the delivery of information will be effective and efficient so that the information delivered is not boring. The more effective the media used, the more and clearer the knowledge obtained, for example animated video media and snakes and ladders game media.

IV. CONCLUSION

Based on the results of the research conducted at SD Negeri 11 Sungai Pinyuh on June 13, 2023, the following conclusions can be drawn:

1. There is an effect of health education using the snakes and ladders game and animated video media on the readiness of adolescent girls in facing menarche with a p-value of 0.000.
2. There is an effect of health education using PowerPoint and leaflet media on the readiness of adolescent girls in facing menarche with a p-value of 0.000.

3. There is a difference in the effect of health education between the intervention and control groups on the readiness of adolescent girls in facing menarche at SD Negeri 11 Sungai Pinyuh with a p-value of 0.000. It can be concluded that animated video media and the snakes and ladders game are more effective than PowerPoint and leaflet media in increasing the readiness of adolescent girls in facing menarche.

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