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SIMULATION GAME TO IMPROVE KNOWLEDGE AND ATTITUDE OF FEMALE STUDENTS REGARDING PERSONAL HYGIENE DURING MENSTRUATION

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ABSTRACT

Personal hygiene during menstruation is crucial and should be carefully considered by every female student since poor personal hygiene can lead to disorders of the reproductive tract and organs. According to the 2020 Population Census results, Indonesia's population in 2020 was 270,203,917 (as of September 2020), with female adolescent aged 10 to 19 years by 22.73 million, or 48.49 percent of the overall youth population. This study aims to recognize the impact of simulation game approach to female adolescents' knowledge and attitudes regarding personal hygiene during menstruation. This study is Quasi Experiment with Pretest-Posttest Nonequivalent Control Group Design. The participants were all female students in that number of samples was 64 respondents selected by purposive sampling. Snakes and ladders online games and true-false games are among the simulation games applied. The results of statistical tests obtained p = 0.000 (p<0.05) for knowledge variable and p = 0.000 (p<0.05) for attitude variable, indicated that there was a significant difference in the average score of respondents' knowledge and attitudes before and after they participate in a simulation game. It concluded that health education regarding personal hygiene during menstruation for female adolescent through simulation game (Persimu) may improve the knowledge and attitudes of female students at SMPN 12 Makassar so that they can behave in excellent menstrual hygiene. It is encouraged to school to provide frequent health education concerning personal hygiene during menstruation so that students can practice adequate menstrual hygiene.

Keywords: attitude; knowledge; menstruation; personal hygiene; simulation game

INTRODUCTION

Given the significant number of teenagers and the long-term consequences of adolescent sexual and reproductive health difficulties, the topic of adolescent sexual and reproductive health becomes critical for national development. Teenagers, which are persons aged 10 to 19, account for 16 percent of the global population, according to data from The Population of the World (2019) (Pison Gilles, 2019). According to the 2020 Population Census findings, Indonesia's population will reach 270,203,917 people in 2020 (as of September 2020). The people of adolescents aged 10 to 19 years in Indonesia totalled 46.87 million, or about 17.35 percent of the overall population. In comparison, female adolescents aged 10 to 19 years totalled 22.73 million, or approximately 48.49 percent of the total youth (Badan Pusat Statistika, 2021). It is critical to be prepared to preserve reproductive health; therefore, having a solid understanding of personal hygiene during menstruation is essential.

The responsibility to maintain menstrual health and cleanliness is sometimes overlooked. Ignorance or a lack of attention to what should be conducted contributes to this. Furthermore, suitable facilities must be supported, particularly in public locations such as schools, mosques, tourist sites, hospitals, stations, marketplaces, and other public places (Sinaga et al., 2017).

According to UNICEF research on Menstrual Health Management in Indonesia, barely two-thirds of female adolescents in urban areas and fewer than half (41%) of female adolescents in rural areas replace sanitary napkins every 4-8 hours or whenever they get dirty. The remaining

46% of female adolescents only replace their sanitary napkins once or twice daily. More than 90% of females wash their hands after changing sanitary napkins, even though only 59% of urban females and 48% of rural females wash their hands before and after changing hygienic napkins. Meanwhile, 2016 Plan International Indonesia research found that just 25% of females were taught to properly dispose of sanitary pads (Unicef, 2017).

During menstruation personal hygiene is a component that plays a significant role in a person's health behaviour, including preventing abnormalities in the reproductive organs' function. The blood veins in the uterus are particularly readily infected during menstruation. As a result, genital hygiene must be improved since bacteria are simple to penetrate and can cause Reproductive Tract Infections (RTI). Menstruation is a procedure in which a woman's vaginal discharge is combined with blood (Unicef, 2017).

According to the findings of Ningsih et al. (2021), before receiving health education, many female adolescents in Kumbung Hamlet had a level of knowledge in the excellent category, namely 18 people (60%). Still, after receiving health education, adolescents had a group of experts in the perfect class, namely 18 people (60%). Many women in Kumbung Hamlet, as many as 29 persons, have an excellent degree of knowledge (97%). Many female adolescents in Kumbung Hamlet had favorable views before being offered education, as many as 19 individuals (63%), and many female adolescents in Kumbung Hamlet had positive attitudes after being given health instruction, as many as 27 people (90%) (Ningsih et al., 2021).

Adolescents can benefit from health education strategies that include interactive and interested media. One of the health teaching strategies utilized with adolescents is simulation games (Persimu). This strategy encourages adolescents to participate in activities to amplify the message they get. The media used in this game can be online games that offer information on avoiding organ skin allergies, items that are banned during menstruation, and images of illnesses that can arise if menstrual hygiene is not followed. In addition, there is a true-false game that offers facts about excellent personal hygiene and menstruation.

Based on early observations, it was discovered that many female adolescents still performed lack of basic health knowledge regarding personal hygiene menstruation and are reluctant to ask questions about it. Their parents, in particular, appear to feel that talking about menstruation is taboo. Based on this, the researchers intend to assess how the simulation game approach affects female adolescents' knowledge and attitudes on personal hygiene during menstruation at SMPN 12 Makassar.

METHOD

The study used Quasi Experiment with a Pretest-Posttest Nonequivalent Control Group Design to assess how practical the simulation game approach improves female adolescents' knowledge and attitudes about personal hygiene during menstruation. Snakes and ladders online games and true-false games are among the simulation games available. The simulation game approach was applied in this study on one group while the control group was not.

The participants were all female students from SMPN 12 Makassar. The sample was selected by purposive sampling, which involves selecting participants based on research criteria, such as those aged 10 to 19 who were willing to participate and were active students at SMPN 12 Makassar. The sample size was 64 students, separated into two groups: the simulation game group and the control group, which did not receive the intervention. Data analysis applied The paired sample T-test, Mann-Whitney test, and Independent Sample T-Test.

RESULT

This study was conducted in SMPN 12 Makassar. The research sample of 64 students was separated into two groups: one that received the simulation game technique intervention on personal hygiene during menstruation, and another that did not get it, with each group consisting of 32 students. The information on menstruation, the menstrual cycle, symptoms that occur during menstruation, menstrual hygiene, things that affect menstrual hygiene, ways to avoid allergies to intimate organs during menstruation, infections related to menstrual hygiene, and items that are prohibited during menstruation is provided. Because there were still students who had not played the simulation game, particularly the snake and ladder online game and the true-false game, the intervention in the simulation game group lasted two days. The control group's intervention results are measured four weeks after the pre-test, whereas the intervention group's results are four weeks after the intervention.

Characteristics of Respondents

The following table shows the characteristics of research respondents for the two groups:

Table 1.
Distribution of Characteristics of Respondents in the Simulation Game Group and Control Group at SMPN 12 Makassar in 2021

Variables	Group			
	Intervention		Control	
	n	%	n	%
Age				
12	3	9.4	7	21.9
13	21	65.6	19	59.4
14	5	15.6	6	18.8
15	3	9.4	0	0
Age of First Menstruation				
10	4	12.5	0	0
11	9	28.1	9	28.1
12	15	46.9	17	53.1
13	3	9.4	5	15.6
14	1	3.1	1	3.1
Parental Education				
Senior High School	9	28.1	12	37.5
Diploma	0	0	2	6.2
Bachelor Degree	14	43.8	12	37.5
Master Degree	9	28.1	5	15.6
Doctoral Degree	0	0	1	3.1
The First Source of Menstrual Personal Hygiene Information				
Electronic Media	3	9.4	2	6.2
Friend	3	9.4	5	15.6
Medical Personnel	2	6.2	2	6.2
Teacher	5	15.6	5	15.6
Parent	19	59.4	18	56.2

Table 1 shows that both the simulation game and control groups had a maximum age of 13 years old, with the intervention group by 21 respondents (65.6%) and the control group by 19 respondents (59.4%). Regarding the age of first menstruation, both the intervention group and the control group had the majority of their first menstruation at the age of 12 years, with 15 respondents (46.9%) in the intervention group and 17 respondents in the control group (53.1%).

When it comes to the education of the respondents' parents, it can be seen that the intervention group's education level was highest at the bachelor degree of education, with 14 people (43.8%), while the control group's education level was highest at the high school education level and bachelor, with 12 people (37.5%). Parents provided the first source of knowledge, with 19 people (59.4%) in the intervention group and 18 people (56.2%) in the control group responding to questions on personal hygiene during menstruation.

Knowledge and Attitude About Personal Hygiene during Menstruation

Table 2.
The Knowledge and Attitude Scores of Respondents in the Intervention Group and the Control Group

Groups		Knowledge Score		Attitude Score	
		Pre Test	Post Test	Pre Test	Post Test
Intervention	Minimum	6	7	27	32
	Maximum	13	17	39	45
	Mean	10.62	13.66	34.78	41.22
	SD	1.792	2.266	2.697	2.697
Control	Minimum	6	6	26	27
	Maximum	12	16	39	42
	Mean	9.72	12.09	34.00	37.00
	SD	2.083	3.258	3.243	3.672

The average knowledge score of respondents in the intervention group during the pre-test was 10.62, with a standard deviation of 1.792. In contrast, it grew by 28.6% to 13.66 with a standard deviation of 2.286 during the post-test. The lowest pre-test score was six, the highest was 13, the lowest post-test score was seven, and the best score was 17. The average score of respondents' knowledge during the pre-test was 9.72 with a standard deviation of 2.083 in the control group but improved by 24.3% to 12.09 with a standard deviation of 3.258. At the pre-test, the lowest score was six, the highest was 12, whereas the lowest score at the post-test was six, and the best was 16.

After the pre-test, the average score of respondents' attitudes about personal menstrual hygiene in the intervention group was 34.78, with a standard deviation of 2.697. In contrast, it improved 18.5 % to 41.22 with a standard deviation of 2.697 during the post-test. At the pre-test, the lowest score was 27, the highest was 39, the lowest score was 32, and the highest was 45. The average attitude score of the respondents in the control group during the pre-test was 34.00, with a standard deviation of 3.243. In contrast, it improved 8.8% to 34.00 with a standard deviation of 3.672 during the post-test. At the pre-test, the lowest score was 26, while the highest by 39. Otherwise, the lowest score at the post-test was 27, while the highest by 42. Because the researchers continued to provide information regarding personal hygiene during menstruation to be read by respondents after the pretest, the control group's knowledge and attitude variables increased by several percent at the post-test.

Effect of Simulation Game Method (Persimu)

Because the knowledge score data and attitude scores in the simulation game group were normally distributed ($p>0.05$), the paired sample T-test was employed to analyze the effect of the simulation game method (persimu) on knowledge scores and attitude ratings in the intervention group. Furthermore, because the data was not normally distributed ($p>0.05$), the Mann-Whitney test was used to analyze the knowledge score between the intervention group and the control group for the pre-test and post-test scores and to analyze the attitude scores

between the intervention group and the control group, the Mann-Whitney test was used for the pre-test because the data was not normally distributed (p0.05), and for the post test scores which were normally distributed (p> 0.05) using the Independent Sample T-Test test.

The Effect of the Simulation Game Method (Persimu) on Knowledge Improvement

Table 3.
Knowledge Scores and Attitudes of Respondents in the Simulation Game Group

	Knowledge		Attitude	
	Pre Test	Post Test	Pre Test	Post Test
n	32	32	32	32
Mean	10.62	13.66	34.78	41.22
SD	1.792	2.266	2.697	2.697
Mean Rank	0.317	0.401	0.477	0.477
p value	0.000		0.000	

The average post-test knowledge score (M = 13.66; SD = 2.266 is higher than the average pre-test knowledge score (M = 10.62; SD = 1.792), as seen in the table above. The simulation game method (Persimu) succeeded in increasing respondents' knowledge about personal menstrual hygiene, as evidenced by statistical test results of p-value = 0.000 (p>0.05). This indicates that there is a significant difference in the average knowledge score of respondents before and after the intervention, so it concluded that the simulation game method (persimu) succeeded in increasing respondents' knowledge about personal hygiene during menstruation. The table above also shows that respondents' attitudes toward personal hygiene during menstruation improved; the average post-test attitude score (M = 41.22; SD = 2) is higher than the average pre-test attitude score (M=34,78; SD=2,697). The p-value for the statistical test was 0.000 (p<0.05), indicating a significant difference in the average attitude score of respondents before and after the intervention, implying that the simulation game method successfully improved respondents' attitudes toward personal hygiene during menstruation.

Differences in Knowledge Scores and Respondents' Attitude Scores Between the Intervention Group and the Control Group

Table 4.
Knowledge Scores of Respondent in the Intervention Group and the Control Group

	Pre Test		Post Test	
	Intervention	Control	Intervention	Control
n	32	32	32	32
Mean Rank	36.23	28.77	36.50	28.50
p value	0.102		0.081	

According to the table above, the pre-test statistical test obtained a value of p = 0.102 (p>0.05), indicating no statistically significant difference in the average score of respondents' knowledge between the intervention and control groups. The difference in respondents' knowledge scores between the intervention and control groups during the post-test obtained a p-value of 0.081 (p>0.05), indicating no significant difference in respondents' knowledge scores between the intervention and control groups.

Table 5.
Attitude Pre-Test Scores of Respondents in the Intervention Group and the Control Group

	Pre Test	
	Intervention	Control
n	32	32
Mean Rank	34.88	30.12
p value	0.303	

According to the table above, the pre-test statistical test obtained a p-value of 0.303 (p>0.05), indicating no significant difference in the average attitude score of respondents between the intervention and control groups.

Table 6.
Attitude Post-Test Scores of Respondents in the Intervention Group and the Control Group

	Post-Test	
	Intervention	Control
n	32	32
Mean	41.22	37.00
SD	2.697	3.672
SE	0.477	0.649
p value	0,000	

The findings of the statistical test during the post-test, namely p = 0.000 (p0.05), revealed a significant difference in the average attitude knowledge score following the intervention, as shown in the table above. The intervention group's attitude score grew by 18.5%, while the group that did not get the intervention or the control group only climbed by 8.8%. As a result, it can be stated that health education via the simulation game method (persimu) influences respondents' attitudes toward personal hygiene during menstruation.

DISCUSSION

Personal hygiene during menstruation enhances someone's health by implementing hygiene measures that may be carried out during menstruation to preserve individual cleanliness and health to achieve physical and psychological well-being and boost one's level of well-being (Rosyida, 2019). Students can utilize the simulation game method in learning activities to emulate an action necessary for their regular job or connected to their duties. Simulation games are a learning experience that uses imitation events to help students acquire specific concepts, principles, or abilities. The simulation game is designed to teach knowledge and insight that may help students overcome the problem of low self-control that exists among junior high school students (Majid, 2013).

The Effect of the Simulation Game Method (Persimu) on Female adolescents' Knowledge of Personal Hygiene during Menstruation

Education, social-cultural information/mass media, environment, experience, and age all impact a person's degree of knowledge. Respondents with an average age of 13 years have a greater desire to learn more about their surroundings and develop themselves. Understanding the information collected is also affected by a person's experience with the information obtained or how frequently a person is exposed to information (Budiman & Riyanto, 2013). Adolescents enjoy the convenience of getting information in today's globalized world; they can readily access information through the internet, television, smartphones, and social media. The impact

of increasingly advanced and expanding technical innovations impacts how simple it is for teens to access knowledge about numerous topics (Dewi, 2018).

According to the findings of a study on the effect of the simulation game approach (Persimu), after the intervention, the average score of respondents' knowledge of menstrual hygiene behavior increased. The average knowledge score at the post-test (M=13.66) was higher than the average knowledge score at the pre-test (M=10.62). The statistical test resulted in p=0.000 (p0.05), indicating a significant difference in the average score of respondents' knowledge before and after health education on menstrual hygiene is conducted using the simulation game method.

Meanwhile, based on the results of statistical tests, when the pre-test was obtained, the value of p = 0.102 (p>0.05) was obtained for the respondents' knowledge score between the intervention group and the control group, indicating that there is no significant difference in the average score of respondents' knowledge between the intervention group and the control group. Based on the results of statistical tests conducted during the post-test, the difference in respondents' knowledge scores between the intervention and control groups during the post-test, p-value = 0.081 (p>0.05), indicating that there is no significant difference in the average score of respondents' knowledge between the intervention and control groups. This is due to the students' strong desire to learn about health issues; thus, even if they are merely provided reading material on personal hygiene, they are eager to understand it. Nnennaya et al. (2021) reported that 69.7% of respondents performed good knowledge of menstruation, and 57.58 % showed good attitudes toward menstrual hygiene management, with a strong association between understanding of menstruation good attitudes. As a result, every female adolescents has to be educated with the necessary knowledge and assistance to properly manage her menstrual hygiene.

Purnama's research (2021) found that female adolescents who have had a good education on menstruation have good menstrual hygiene, whereas a lack of awareness among adolescents indicates that menstrual hygiene habits are similarly poor (Purnama, 2021). Again, Pemiliana et al. (2019) found that young women with less knowledge do not practice personal hygiene during menstruation. The respondents' lack of knowledge caused by respondents not reading personal hygiene books and receiving less personal hygiene information and counseling from health workers. This supports the theory that health education is primarily an activity or endeavor to communicate health information to the general public, groups, or people. To put it another way, the expansion is intended to result in changes in knowledge (Pemiliana, 2019).
The findings of this study are consistent with those of Sari et al. (2017), who compared adolescent knowledge on developing age maturation using the facilitation technique and the simulation game method for junior high school students in Jatinangor (Sari et al., 2017). The improvement in respondents' knowledge can occur because the snake and ladder game approach is entertaining, which boosts excitement for learning and motivates respondents to stick with the learning process. As a result, respondents will become more focused on the game's subject (Azizah et al., 2018).

The Effect of the Simulation Game Method (Persimu) on the Improvement of Female adolescents' Attitudes About Personal Hygiene during Menstruation

Attitude is a judgment of numerous things in the social environment, and it is the regularity of feelings, ideas, and a person's conduct in social contact. According to social psychology experts, attitudes are crucial in social interactions since attitudes may impact many aspects of conduct and are a significant problem that might alter a person's behavior (Elisa, 2017). According to this study, the average score of respondents' views towards personal hygiene during

menstruation increased following the intervention. The average attitude score during the post-test (M=41.22) was higher than the average attitude score during the pre-test (M=34.78), and the statistical test yielded a value of p=0.000 (p0.05), indicating that there is a significant difference in the average attitude score of respondents before and after the intervention. Thus, it can be concluded that the simulation game method successfully improved respondents' attitudes about menstrual hygiene.

Furthermore, when the pre-test was achieved, the value of p = 0.303 (p>0.05), indicating no significant difference in the average attitude score of the respondents between the intervention group and the control group, was obtained based on the findings of statistical testing. When the post-test was different, the value of p = 0.000 (p<0.05) revealed a significant difference in the average attitude score of the respondents between the intervention and control groups. The intervention group's attitude score improved by 18.5%, whereas the control group improved by 8.8%. As a result, it can be stated that health education through the simulation game method boosts respondents' attitudes on personal hygiene during menstruation.

Interventions in the form of health education for adolescents should be delivered through techniques or media that are appropriate for adolescents. Other strategies can be used in addition to the simulation game method for providing health education. According to Kasma and Ayumar (2020) research, there was an increase in the average score of respondents' knowledge about menstrual hygiene behavior after implementing health education via the brainstorming method. The statistical test results for the score knowledge obtained a value of p = 0.000 (p>0.05), indicating a significant difference in the average score of respondents' knowledge before and after the intervening period. As a result, the brainstorming approach may be inferred to influence respondents' knowledge and attitudes towards menstrual hygiene behavior (Kasma & Ayumar, 2020).

Due to the rising number of adolescents, a study done in Addis Ababa, Ethiopia, discovered that female adolescents in urban areas who constantly discuss menstruation hygiene with their parents or family had higher attitudes and positive behaviors in conducting menstrual hygiene than their friends. Females who communicate about menstruation hygiene and other reproductive health concerns are more likely to be confident. It is also simpler for them to acquire information about menstrual hygiene without feeling ashamed or upset because of their family support (Biruk et al., 2018).

This study shows that female adolescents learn about personal menstrual hygiene for the first time from various sources. Parents were the most common first source of information, with 59.4% in the intervention group and 56.2 % in the control group. However, the information on menstruation acquired from female adolescents' parents is restricted to the usage of sanitary napkins to prevent blood from seeping into their garments. There is no information regarding the need to maintain personal hygiene during menstruation. As a result, it is critical to give female adolescents at SMPN 12 Makassar health education regarding personal hygiene during menstruation.

In this study, all respondents took part in the games, including an online snake and ladder game and a true-false game. Therefore, none of the students appeared to be impressed by only watching or being spectators during the intervention activities. Students are motivated to think actively and develop their talents and critical powers and their experiences linked to personal hygiene during menstruation through health education using the simulation game approach (Persimu). As a result, female adolescents' knowledge and attitudes improve.

CONCLUSION

Based on the findings, it concluded that the simulation game method (Persimu) affects the increasing of knowledge and attitudes of female adolescents at SMPN 12 Makassar concerning personal hygiene during menstruation, implying that the simulation game method is effective in increasing female adolescents' knowledge and attitudes regarding personal hygiene during menstruation. As a result, it is essential to provide frequent health education on personal hygiene during menstruation in every schools so that female adolescents may behave appropriately and correctly about menstrual hygiene.

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