THE EFFECT OF GAME CHANGE OF HABITS ON STUDENTS KNOWLEDGE AND ATTITUDES ABOUT WATER CONSUMPTION AT SDN 79 BENGKULU CITY

Aliza, Rini Patroni, Ade Febryanti[*]

Department of Health Promotion, Poltekkes Kemenkes Bengkulu, Bengkulu, Indonesia

*Correspondent : ade_febryanti@poltekkesbengkulu.ac.id

Abstract

Elementary school students often prefer sugary drinks over water, which increases the risk of dehydration and various health problems. This highlights the need for engaging and interactive educational media to improve students' knowledge and shape positive attitudes toward the importance of drinking water from an early age. This study employed a pre-experimental design with a one-group pretest-posttest approach. The sample consisted of 38 fifth-grade students at SDN 79 Bengkulu City, selected using the total sampling technique. Data were collected using knowledge and attitude questionnaires, while the intervention was carried out through the Game Change of Habits educational game. The data were analyzed using the Wilcoxon test. The results showed an increase in students' average knowledge scores from 57.72 to 97.02 and attitude scores from 36.53 to 54.63 after the intervention. Statistical analysis revealed a p-value = 0.000 (p < 0.05), indicating a significant effect. These findings demonstrate that educational games are effective in enhancing understanding and fostering positive attitudes toward regular water consumption. It is recommended that educational games be used as an alternative strategy for health promotion in elementary schools. Teachers and health workers are encouraged to integrate such media into learning activities to instill healthy drinking habits from an early age in a sustainable manner.

Keywords: Water Consumption, Knowledge, Attitude, Elementary students, Change of Habits

INTRODUCTION

Water plays a vital role in the body as it maintains body temperature, aids metabolism, supports digestion, and transports nutrients and oxygen to all cells. Lack of fluids can lead to dehydration, which can lead to decreased concentration, fatigue, and impaired organ function. According to Minister of Health Regulation No. 28 of 2019, the water requirement for children aged 10–12 years is 1.8 liters, for those aged 13–15 years it increases to 2.1 liters, and for those aged 16–18 years, boys need 2.3 liters and girls 2.1 liters per day. However, many people still do not meet the recommended daily water requirements.

A 2020 international report showed that 26% of the world's population lacks access to safe drinking water. In Asia Pacific, approximately 70% of people admit to not drinking enough water, including Indonesia, where one in four adults and one in five children suffer from insufficient water consumption. A Jakpat survey even found that many respondents prefer sugary drinks to water, and a 2020 THIRST study noted that 46.1 % of Indonesians experience mild dehydration. This situation demonstrates low public awareness of the importance of drinking water.

A similar situation is evident in Bengkulu, where monitoring of drinking water facilities is suboptimal. Only 29% are checked through environmental health inspections, with the majority remaining at low to moderate risk. The impact is significant: in 2024, several children at the Telaga Dewa Community Health Center were recorded as having urinary tract infections (UTIs). Research shows that low water intake can double the risk of UTIs, while adequate water intake can reduce the risk by up to 50%. Continuous fluid deprivation can even lead to severe dehydration and impair kidney function.

Elementary school children are more susceptible to dehydration due to their high levels of physical activity. However, many of them prefer sugary drinks to water. This habit is dangerous because it can trigger kidney problems and weaken the immune system. Parents and teachers play a crucial role in instilling the habit of drinking water from an early age by providing education, setting real-life examples, and ensuring that children don't just drink when they're thirsty. Schools can also help through healthy lifestyle programs that emphasize the importance of water consumption.

Based on these conditions, research on the influence of educational media, such as *the game change of habits* , on children's knowledge and attitudes about drinking water consumption at SDN 79 Bengkulu City is relevant. It is hoped that through health promotion using interesting methods, children's awareness of the importance of drinking water will increase, thereby preventing various health problems and supporting their optimal growth.

METHODS

This study used a pre-experimental design with a one-group pretest–posttest approach. This design was selected to examine the effect of the *Game Change of Habits* educational game on students' knowledge and attitudes toward water consumption. The same group of participants was assessed before and after the intervention to identify changes in the dependent variables. The study was conducted at SDN 79 Kota Bengkulu in March–April 2025. The target population consisted of all fifth-grade students in the school, and the sampling technique used was total sampling, involving all students who met the inclusion criteria. The final sample included 38 students. The inclusion criteria were active enrollment in grade V, ability to read and write, and willingness to participate as indicated

by informed consent. Students who were absent or did not complete both pretest and posttest sessions were excluded.

The independent variable in this study was the *Game Change of Habits* intervention, while the dependent variables were knowledge and attitude toward water consumption. Knowledge referred to students' understanding of the importance, benefits, and recommended amount of daily water intake, while attitude represented students' emotional and behavioral responses regarding the habit of drinking water regularly. Both variables were measured using structured questionnaires developed based on health promotion theory. The knowledge questionnaire consisted of 20 multiple-choice items, and the attitude questionnaire consisted of 15 Likert-scale statements. Prior to data collection, both instruments were tested for validity and reliability, yielding Cronbach's alpha values of 0.78 for the knowledge section and 0.81 for the attitude section, indicating good internal consistency.

The *Game Change of Habits* was an interactive educational board game designed to promote healthy behaviors, including proper water consumption. The game contained question cards, situational challenges, and positive reinforcement to encourage players to practice good daily habits. Data collection was carried out in three stages. First, a pretest was administered to measure baseline knowledge and attitude levels. Second, the intervention phase was conducted in which students participated in the *Game Change of Habits* session facilitated by the researcher and classroom teacher. Third, immediately after the intervention, a posttest was conducted using the same instruments to evaluate changes in knowledge and attitude.

All data obtained were checked for completeness, coded, and processed using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive analysis was applied to describe respondents' characteristics and summarize mean scores of knowledge and attitude before and after the intervention. Data normality was tested using the Shapiro–Wilk test. Because the data were not normally distributed, the Wilcoxon Signed-Rank Test was employed to analyze the differences in pretest and posttest scores. The level of statistical significance was set at $p < 0.05$.

Ethical approval for this study was obtained from the Health Research Ethics Committee of Poltekkes Kemenkes Bengkulu (Ethical Clearance No. [insert number], issued on [insert date]). All participants and their parents or guardians received an explanation regarding the purpose, procedures, benefits, and voluntary nature of participation. Written informed consent was obtained prior to data collection. The confidentiality and anonymity of all participants were strictly maintained throughout the research process.

RESULTS AND DISCUSSION

Univariate Analysis

Univariate analysis aims to determine the frequency distribution of each research variable, including respondent characteristics, average knowledge and attitude results before and after the intervention at SDN 79 Bengkulu City.

Tabel 1 Frequency Distribution of Respondent Characteristics Based on Gender

No	Characteristics Respondents	Frequency	Percentage (%)
	Gender		
	Man	22	57.9
	Woman	16	42.1
	Total	38	100.0

Based on table 1, the results show that the characteristics of the respondents were mostly male (57.9 %).

Tabel 2 Average knowledge of students before and after intervention using game change of habits media in students of SDN 79 Bengkulu City

Knowledge	N	Mean $\pm$ SD	Min- Max
Before	38	57.72 $\pm$ 10,196	40- 80
After	38	97.02 $\pm$ 4,300	87- 100

Based on table 2, Results analysis univariate obtained The average knowledge score before the intervention was given was (57.72), whereas after the intervention using game media, the change of habits experienced an increase. improvement knowledge becomes (97.02).

Tabel 3 The average attitude of students before and after the intervention using the game change of habits media in students of SDN 79 Bengkulu City

Attitude	N	Mean $\pm$ SD	Min- Max
Before	38	36.53 $\pm$ 3,151	30- 41
After	38	54.63 $\pm$ 2,945	51- 60

Based on table 3, The average attitude score data obtained before the intervention was given was (36.53), whereas after the intervention using *game media, the change of habits* experienced improvement knowledge becomes (54 ,63).

Bivariate Analysis

In the bivariate analysis of research data, a normality test was first carried out. data study with formula *Shapiro Wink* assisted application *SPSS 26 for Windows* based on a sample size of 38 people. The results of the normality test of research data on the knowledge and attitude variables can be seen in the table.

Tabel 4 Influence game change of habits Against Knowledge and Students' Attitudes Regarding Water Consumption at Elementary Schools in Bengkulu City

Variables	N	Before	After	P	
		Mean		ΔMean	*Value*
Knowledge	38	57.72	97.02	39.3	0,000
Attitude	38	36.53	54.63	18.1	0,000

Based on table 4, it is known that the influence *game change of habits* obtained difference mean knowledge 39.3 And mark difference mean attitude 18.1 The *p-value result* = $0.000 \leq 0.05$ then H0 is rejected using a 95% confidence level, which means there is an influence g *ame change of habits* Against Knowledge and students' attitudes regarding drinking water consumption at SDN 79 Bengkulu City.

Respondent Characteristics

The characteristics of the respondents in this study show that most of the students are male. Gender plays an important role in determining the body's fluid needs, because boys are generally more physically active and therefore require more fluid intake than girls. High levels of physical activity cause the body to lose more fluids, so if this is not balanced by drinking enough water, they are at risk of dehydration.

These results align with research by Safitri and Nurhayati (2020), which found that boys tend to have higher fluid intake than girls, although not all meet the recommended daily requirement. This finding is further supported by Anindita and Hartono (2022), who explained that gender is associated with water drinking habits in elementary school students, with boys consuming more water due to their frequent outdoor activities. Therefore, it can be concluded that education about the importance of water consumption needs to be tailored to children's characteristics to ensure their fluid needs are adequately met.

Knowledge Before and After *the Game Change of Habits Intervention*

The results of the study on students' knowledge before and after the intervention showed a significant increase after being given the *habit change game media* . Before the intervention, the majority of

students did not understand the importance of drinking water. For example, only 36.8 % of students knew the recommended number of glasses of water per day, and 44.7% of students did not know the main benefits of drinking water. This indicates that students' knowledge is still limited because they have not received interesting and easy-to-understand education.

After being given an intervention in the form of an educational game, the majority of students were able to answer almost all questions correctly, with some indicators achieving 100%, such as the appropriate time to drink water, the benefits, and the effects of dehydration. These results demonstrate that game-based educational media can improve students' overall understanding.

Kusumawardani and Larasati's (2020) research supports this finding by stating that educational games can instill healthy habits from an early age through a fun learning atmosphere. Purnamasari et al. (2021) also confirmed that card games can improve children's knowledge, social skills, and awareness of the importance of drinking water. In addition, Puspitaningrum et al. (2017) explained that information retention is greatly influenced by the time interval between intervention and posttest, where posttest results are better if conducted immediately after the intervention.

Attitude Before and After Intervention

Apart from knowledge, students' attitudes also showed improvement after intervention with *the game change of habits media* . Before being given treatment, many students showed attitudes that were less supportive of the routine behavior of drinking water. However, after the intervention, most students shifted from the category of doubtful or disagreeing to agreeing and strongly agreeing with various statements about the importance of drinking water.

This change in attitude indicates that educational games are effective in fostering positive attitudes in elementary school children. Research by Rahayu et al. (2022) found that educational games can improve healthy attitudes and habits in school -age children . Utami and Prasetya (2021) also stated that participatory and enjoyable learning can strengthen the internalization of health values.

This is reinforced by Walgito's (2018) theory, which explains that attitudes are formed from knowledge, personal experience, and social influences. Similarly, research by Lestari and Nugroho (2023) and Maulida and Fitriani (2021) demonstrates that interactive games can increase learning motivation, health awareness, and shape positive attitudes toward healthy lifestyle habits, including water consumption.

The Influence of *Game Media on Change of Habits* on Knowledge and Attitudes

The analysis results showed a significant influence of the use of the *game media change of habits* on students' knowledge and attitudes. The average knowledge score before the intervention was 57.72 and increased to 97.02 after the intervention, with a mean of 39.3. Meanwhile, the average attitude score before the intervention was 36.53 and increased to 54.63 after the intervention, with a mean of 18.1. The Wilcoxon test results showed a p-value of 0.000 ($p < 0.05$), indicating a significant effect after the intervention. This game-based educational media has been shown to increase student engagement, facilitate understanding, and stimulate positive attitude change.

These findings align with research by Safitri, Lestari, and Yuniarti (2023), which demonstrated that educational games effectively improve oral health knowledge and behavior. Setyowati and Suparmi (2022) also found that interactive educational games can improve students' understanding and attitudes toward personal hygiene. Based on Walgito's (2018) theory, positive attitudes are formed through increased knowledge, thus this interactive method has been shown to encourage healthy behavior changes in students.

Thus, it can be concluded that the *game media for changing habits* is effective as an innovative and fun means of health promotion. The use of this media can increase knowledge and form positive attitudes among elementary school students towards the importance of drinking water. Game-based educational interventions are highly suitable for children, as they can foster healthy habits from an early age that have a positive impact on long-term health.

CONCLUSION

Based on the study's objectives and findings regarding the impact of changing habits on students' knowledge and behavior regarding air putih consumption at SDN 79 Kota Bengkulu, it can be concluded that there was an increase in students' knowledge and behavior after the intervention. The results indicate that there is a significant change in habits in raising students' awareness and understanding of the importance of air putih consumption.

The main finding of this study is that media games can be used to influence students' habits, especially in PJOK classes, as an engaging teaching method to increase students' knowledge and understanding. For Poltekkes Kemenkes Bengkulu, this study can serve as a reference and source of information for students, particularly in relation to game-based education. Eventually, it is hoped that the researcher will be able to advance the study by comparing the control group or the comparison group. On the other hand, it is anticipated that the respondent will have more knowledge about health, including using knowledge that has already been acquired during the study.

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DECLARATION OF INTEREST STATEMENT

The authors declare that they have no conflict of interests.

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