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Research Article

Development of the Traditional Engklek Game Model to Improve Dental and Oral Disease Prevention Behavior in Elementary School Children

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Abstract

Background: Maintenance of dental and oral health as well as dental health development, especially in the group of school children, need special attention, at the age of the child is undergoing the process of growth and development and the condition of the previous teeth will affect the development of dental health in adulthood. Efforts that can be made to attract children's attention in learning are new learning methods so that they do not cause boredom, such as the use of traditional games as learning media. The traditional game used is the traditional engklek game which has been modified and is expected to attract children's attention and not cause boredom in learning. **Research Objectives:** To produce a modified game of the Fule's version of the Fule's Traditional Engklek Game as a learning medium to improve the behavior of preventing dental and oral diseases in elementary school children. **Research Methods:** The method used in this research is Research and Development (R&D). There are five stages, namely: information gathering, product/model design, expert validation and revision, product/model trial, and product/model results. The samples used were 27 children in the control group and 27 children in the intervention group. The results of the data obtained were tested using ANOVA, Shapiro Wilk, Wilcoxon test, Mann-Whitney test. **Result:** "Fule's Version of the Traditional Engklek Game" is effective as a medium for behavioral change to prevent dental and oral diseases in elementary school children with a value of 0.000. Knowledge with a value of 0.000, attitudes with a value of 0.000, and actions with a value of 0.000. There is a difference in the effectiveness of the "Fule's Traditional Engklek Game" with flipcharts on behavioral changes in preventing dental and oral diseases in elementary school children.

Keywords: Traditional engklek game, behavioral, preventing dental and oral diseases

INTRODUCTION

Dental and oral health care services are services that are carried out to a person or group, all problems or abnormalities that occur in the oral cavity are carried out with comprehensive care and action and there is a detailed treatment plan. The purpose of dental and oral health services in general is to improve the quality, coverage, efficiency, dental and oral health services in order to achieve optimal dental and oral health status.¹⁻³

The low utilization of dental health services for school-age children is caused by internal and external factors. According to the Pedodontics Treatment Triangle concept, the utilization of children's dental health services is determined by the interaction of three components, namely children as recipients of services, health workers as motivators and service providers, and parents as motivators and decision makers in children's dental care.^{4,5}

According to Lawrence Green's theory, the formation of individual behavior is influenced by three factors, namely predisposing factors which include knowledge, attitudes, traditions, value systems, education level, socio-economic; enabling factors include the availability of health facilities and infrastructure, service access, service quality; and reinforcing factors include attitudes and behavior of community leaders, religious leaders, health workers and laws and regulations related to health.^{6,7}

According to the World Health Organization (WHO) in 2012, that 90% of school children worldwide have suffered from dental caries. The highest prevalence of dental caries is found in Asia and Latin America. The latest data released by the Oral Health Media Center in April 2012, shows that 60-90% of school-age children and almost all adults worldwide have dental problems. According to RISKESDAS data in 2013, the prevalence of dental caries in Central Java province was 25.4%. Meanwhile, the DMF-T Index is 4.3 with respective values: D-T= 1.35; M-T= 2.94; F-T= 0.04; which means that the average tooth decay of the population of Central Java is 5 teeth per person. Meanwhile, WHO expects the Global Goals for Oral Health 2020, targeting Decay, Missing, Filled-Teeth (DMF-T) in children aged 12 years 1. The data above shows that dental and oral health problems are still high in Indonesia.⁸⁻¹⁰ The results of a preliminary study taken from field study practice data for Master of Applied Dental and Oral Therapist students in 2018, it was found that the condition of the teeth at SDN Ketaon 3 Banyudono Boyolali Regency in 2018 as many as 51% of cases were decidui caries cases, and 85% were caries cases. permanent teeth. The total percentage of dental and oral hygiene was found to be 2.4% having poor criteria, and 60.3% having moderate criteria and the level of knowledge about dental and oral health was still low.

One of the dental and oral problems that often occurs in the community is caries. Caries is a disease that causes demineralization, cavitation and destruction of hard tooth tissue

by microbial activity that converts food waste glucose into acid that can damage tooth tissue. Oral health can also have a negative effect on general health. Dental and oral diseases that have serious impact on general health (periodontal disease, root canal infection, cavitation and other diseases of the oral cavity). All dental and oral health problems can affect general health depending on the seriousness of the problem, duration, and number of problem teeth in the oral cavity.^{11,12}

Efforts to maintain oral and dental health as well as dental health development, especially in the group of school children, need special attention at this age children are undergoing a process of growth and development. The state of the previous teeth will affect the development of dental health in adulthood. When viewed from the various efforts to prevent dental caries through the UKGS (School Dental Health Program) activities, elementary school children should have a low caries rate, but judging from the facts and based on research reports that have been carried out most of the data showed a high level of dental caries in school children.^{13,14}

Media is one of the factors that can affect the health education process, because it is a tool to facilitate the delivery of material, as is the case with dental and oral health education media as learning aids that must be packaged properly, attractively and involve many senses to make it easier to understand. remember. The effectiveness and efficiency of the dental and oral health education process is influenced by the accuracy and suitability of the use of learning methods and media, because the media used not only provide information, but must also provide experience.^{15,16}

One of the media that can be used today is learning media using traditional games, where over time traditional games that used to be a favorite of children in the 80-90s era are now increasingly being shifted by the existence of modern games that are growing. The results research show that traditional games can stimulate children to develop cooperation, help children adjust, interact positively with each other, can condition children in self-control, develop empathy for friends, obey rules, and respect others. . Thus, it can be understood that traditional games can have a very good impact in helping to develop children's emotional and social skills.^{17,18}

The learning results show that traditional Javanese games are effective in improving children's social adjustment. This is because in traditional Javanese games, it is possible for children to play more in groups and often interact with peers and teachers who provide direction so that children get to know each other more quickly and can work together with their peers. In addition, children prefer activities in the form of games so that children in participating in activities in the form of Javanese games feel happy, not bored, and not bored".¹⁹

The engklek game is an educational game that contains health education packaged in easy language. In this ecklek game, health information is contained in the game media in the form of boxes, each box contains information about the disease so that it can be understood by elementary school children. The engklek educational game method is a new and unique way of health education, especially for elementary school students. Because children are active and like to play, doing activities related to games, so they can attract attention with the educational game media.²⁰

Engklek Traditional Game is one type of traditional game that uses objects and counts as well as an agreement on

rules that must be obeyed by players with regard to its implementation. The ngklek game can develop cognitive abilities and discipline. In this Engklek game, it provides pictures according to the planned theme and adds activities, imitates motion and others according to indicators. The images used in each city are in accordance with the planned themes and activities in the form of naming objects, imitating movements, counting, and recognizing shapes according to the images shown.¹⁹

In this study, the author intends to develop the traditional engklek game as a medium for dental and oral health education, where the engklek traditional game is modified into a traditional engklek game which can be used as a means of health education which contains dental and oral health materials, which are named engklek traditional games. Fule's version is packaged in such a way that elementary school children can learn while playing. The Fule's version of the engklek game is an educational medium because in each game box there is information about health education, then after the player throws gacuk into the box, in the box there is a mine containing questions about dental and oral health and they are required to answer these questions

This Fule's version of the traditional Engklek game not only trains children's motor strength but trains children's cohesiveness with their group of friends in completing all the challenges given during the game. In addition to increasing the cohesiveness of the Fule's version of the traditional Engklek Game, it can also increase children's dental and oral health knowledge by playing and completing all the challenges in the game.

MATERIALS AND METHODS

The method used in this research is Research and Development (R&D). There are five stages: information gathering, product/model design, expert validation and revision, product/model trial, and product/model results. The samples used were 27 children in the control group and 27 children in the intervention group. The instrument in this study consisted of a questionnaire for assessing dental health models and media, a questionnaire on knowledge and attitudes about maintaining oral health, and a checklist sheet for brushing teeth. The results of the data obtained were tested using ANOVA, Shapiro Wilk, Wilcoxon test, Mann-Whitney test.

RESULT

Table 1. Statistical results of expert validators of the traditional engklek game modification model

Validators	Score
Health promotion expert	70
Education expert	74
Cultural expert	70

Table 1 shows the results of the assessment from the expert validator, it is known that the feasibility score is 71.33% with a decent category, so that the media "Game modification of the Fule's version of the traditional engklek game" can be tested for products in elementary school children.

Table 2. Test the effectiveness of knowledge of the intervention group and control group

Group	Paired Data Test *				p-Value
		N	Mean	SD	
Intervention	Pre-test	27	7.63	2.69	0.000
	Post-test	27	10.56	3.50	
Control	Pre-test	27	6.96	2.55	
	Post-test	27	8.00	2.79	
Unpaired Data Test *					
		Pre-Test		Post-Test	
		Mean	SD	Mean	SD
Intervention		7.63	2.69	10.56	3.50
Control		6.96	2.55	8.00	2.79
<i>p-Value</i>		0.354		0.005	
Advanced Test of Unpaired Data difference (Δ)**					
		Pre-test		Post-test	
		Mean	SD	Mean	SD
Intervention		2.93	1.86		
Control		1.04	1.19		
<i>p-Value</i>		0.000			

Table 2 shows the results of the paired data effectiveness test showing that the p-value of the intervention group is 0.000 ($p < 0.05$) meaning "the game modification of the Fule's version of the traditional engklek game" is effective in increasing children's knowledge. The p-value of the control group was 0.000 ($p < 0.05$), meaning that flipchart media was effective in increasing children's knowledge. The results of the effectiveness of the unpaired data pre-test showed that the p-value of the intervention group and the control group was 0.354, which means there was no significant difference, but in the post-test results the p-value was 0.005 ($p < 0.05$), which means that there is a significant difference. The results of the effectiveness test of unpaired data, the value of the change (Δ) pretest-posttest was significantly significant with a p-value of 0.000 ($p < 0.05$) which means "the game modification of the traditional engklek game version of Fule's" is equally effective in increasing children's knowledge with media flipchart but the "Fule's version of the traditional engklek game modification" is a new innovation as a medium for learning dental and oral health for elementary school children.

Table 3. Test the effectiveness of the attitude of the intervention group and control group

Group	Paired Data Test *				p-Value
		N	Mean	SD	
Intervention	Pre-test	27	14.85	2.19	0.000
	Post-test	27	17.00	2.38	
Control	Pre-test	27	14.19	2.39	
	Post-test	27	15.00	2.51	
Unpaired Data Test *					
		Pre-Test		Post-Test	
		Mean	SD	Mean	SD
Intervention		14.85	2.19	17.00	2.38
Control		14.19	2.39	15.00	2.51
<i>p-value</i>		0.290		0.004	
Advanced Test of Unpaired Data difference (Δ)**					
		Pre-test		Post-test	
		Mean	SD	Mean	SD
Intervention		2.11	1.89		
Control		1.81	1.88		
<i>p-value</i>		0.566			

Table 3 shows the results of the paired data effectiveness test showing that the p-value of the intervention group was 0.000 ($p < 0.05$) meaning "the game modification of the Fule's version of the traditional engklek game" was effective in improving children's attitudes. The p-value of the control group was 0.007 ($p < 0.05$), meaning that flipchart media was effective in improving children's attitudes.

The results of the unpaired data effectiveness test of the attitude pre-test showed that the p-value of the intervention group and the control group was 0.290, which means there was no significant difference, but in the attitude post-test the p-value was 0.004 ($p < 0.05$). which means that there is a significant difference so that it can be concluded that the "Fule's version of the traditional engklek game modification game" is equally effective in increasing children's knowledge with flipchart media but the "Fule's version of the Fule's version of the traditional engklek game modification" is a new innovation as a dental and oral health learning media elementary school children. The results of the effectiveness test of unpaired data, the value of change (Δ) pretest-posttest was not significantly significant with a p-value of 0.566 ($p > 0.05$).

Table 4. Test the effectiveness of the action of the intervention group and control group

Group	Paired Data Test *				p-Value
		N	Mean	SD	
Intervention	Pre-test	27	16.89	2.69	0.000
	Post-test	27	21.30	3.15	
Control	Pre-test	27	16.85	2.30	
	Post-test	27	19.56	2.53	
Unpaired Data Test *					
		Pre-Test		Post-Test	
		Mean	SD	Mean	SD
Intervention		16.89	2.69	21.30	3.15
Control		16.85	2.30	19.56	2.53
<i>p-value</i>		0.957		0.030	
Advanced Test of Unpaired Data difference (Δ)**					
		Pre-test		Post-test	
		Mean	SD	Mean	SD
Intervention		4.41	2.21		
Control		2.70	2.85		
<i>p-value</i>		0.018			

Table 4 shows the results of the effectiveness test of paired data showing that the p-value of the intervention group is 0.000 ($p < 0.05$) meaning "the game modification of the Fule's version of the traditional engklek game" is effective in improving children's actions. The p-value of the control group was 0.007 ($p < 0.05$), meaning that flipchart media was effective in increasing children's actions.

The results of the unpaired data effectiveness test of the pre-test of the action showed that the p-value of the intervention group and the control group was 0.957, which means that there was no significant difference, but in the post-test results the p-value of the action was 0.030 ($p < 0.05$). which means that there is a significant difference so that it can be concluded that the "Fule's version of the traditional engklek game modification game" is equally effective in increasing children's knowledge with flipchart media but the "Fule's version of the Fule's version of the traditional engklek game modification" is a new innovation as a dental and oral health learning media elementary school children. The results of the unpaired data effectiveness test the value of change (Δ) pretest-posttest was significantly significant with a p-value of 0.018 ($p < 0.05$).

DISCUSION

The use of "the game modification of the traditional engklek game version of Fule's" is carried out to change the behavior of preventing dental and oral diseases. Knowledge is the result of knowing after people have sensed a certain object. Meanwhile, attitude is a response or reaction of someone who is still closed to objects and stimuli. Attitude is a readiness to act on the object and an appreciation of the object. Attitudes do not reflect an activity or action, but attitudes form for the occurrence of an action.²¹

The high prevalence of dental caries can be caused by children not applying knowledge of dental and oral health in their daily dental health behavior or maybe after eating chocolate or the like they don't brush their teeth. Knowledge of children in maintaining dental and oral health is very important to maintain oral hygiene and prevent caries. The role of parents and teachers is very much needed in educating and fostering children to maintain their dental health.²²⁻²⁴

Knowledge and attitudes can be obtained naturally or through the educational process. Health education is a process of change in a person with a view to achieving a healthy degree. The goal of health education is to change unhealthy behaviors into healthy ones for individuals, groups, and society. Increased knowledge occurs after people sense a certain object.^{25,26}

The results of the effectiveness test of the paired knowledge variable data showed that the p-value was <0.05 , meaning "the game modification of the Fule's version of the traditional engklek game" was effective in increasing children's knowledge. Age 3-6 years is a sensitive period or sensitive period in children, which is a period where a certain function needs to be stimulated, directed so that its development is not hampered.

The number of children who have problems with cavities and lack of knowledge. Therefore, it is necessary to increase efforts to educate children on dental health. One of the health education efforts is through counseling efforts to increase knowledge and attitudes in maintaining dental health. Success in efforts to educate children on dental health cannot be separated from the method of education and the important role of the media.²⁷

The results of the effectiveness of the unpaired data pre-test showed that the p-value of the intervention group and the control group was 0.354, which means that there was no significant difference, but in the post-test results the p-value was 0.005 ($p < 0.05$), which means that there is a significant difference between the use of the modified game of traditional engklek game version of Fule's" and flipchart so that it can be concluded that the "modified game of traditional engklek version of Fule's" is more effective in increasing children's knowledge than flipchart media. Knowledge is a very important domain for the formation of one's actions. Knowledge of children is very important in underpinning the formation of behaviors that support dental and oral hygiene. Knowledge of dental and oral health is very important for the formation of actions to maintain dental and oral hygiene. Maintaining dental and oral hygiene at school age is one way to improve health at an early age.²⁸⁻³⁰

The results of the paired data effectiveness test showed that the p-value of the intervention group was 0.000 ($p < 0.05$) meaning "the game modification of the Fule's version of the traditional engklek game" was effective in improving children's attitudes. The p-value of the control group was

0.007 ($p < 0.05$), meaning that flipchart media was effective in improving children's attitudes. An increase in attitude occurs if there is a person's response after being given information and then considering taking action in accordance with the information provided. Attitudes can be formed when someone obtains information, provides feedback and will take action after being given the information.³¹

The results of the unpaired data effectiveness test of the attitude pre-test showed that the p-value of the intervention group and the control group was 0.290, which means there was no significant difference, but in the attitude post-test the p-value was 0.004 ($p < 0.05$), which means that there is a significant difference so that it can be concluded that the "Fule's version of the Fule's version of the traditional game modification game" is more effective in increasing children's knowledge compared to flipchart media.

The process of health education to achieve educational goals requires a change in attitude. Attitudes are influenced by many factors such as methods and media, educators or officers who do it, and educational aids or teaching aids. In order to achieve optimal results, these factors must work together in harmony.³² The same result was also obtained by Sitanaya that health counseling using audio-visual media was better than health counseling using printed media/flipcharts, which was seen from the average value of audio-visual media.³³

The results of the paired data effectiveness test showed that the p-value of the intervention group was 0.000 ($p < 0.05$) meaning "the game modification of the Fule's version of the traditional engklek game" was effective in improving children's actions. The p-value of the control group was 0.007 ($p < 0.05$), meaning that flipchart media was effective in increasing children's actions.

The results of the effectiveness test of the unpaired data of the pre-test of the action showed the p-value of the intervention group and the control group was 0.957, which means there was no significant difference, but in the post-test results the p-value of the action was 0.030 ($p < 0.05$). which means that there is a significant difference so that it can be concluded that the "Fule's version of the traditional engklek game modification game" is equally effective in increasing children's knowledge with flipchart media but the "Fule's version of the traditional engklek game modification game" is a new innovation as a dental and oral health learning media. primary school children.

Flipchart is a practical print media that contains sheets of images that can be flipped. However, flipchart is a conventional medium. Based on previous research by Nurhidayat et al showed the results of flipchart media were not effective in improving the maintenance of children's oral and dental health.³⁴

Flipchart is a medium that is often used in dental health education. The media is starting to be considered less attractive because of the times so it is necessary to develop interesting dental health education media and utilize technology. This is in accordance with the opinion that the provision of health education will look attractive if it is conveyed in an attractive media as well. Another opinion also says that learning that is suitable in technological developments in the world of education is to use interactive learning media.^{35,36}

CONCLUSION

Based on the results of the study, it can be concluded that the modification of the traditional engklek game model is effective in increasing knowledge, attitudes and actions in preventing dental and oral diseases in elementary school children

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CONFLICT OF INTEREST

The author declared that don't have conflict of interest

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