


DENTAL PHANTOM DOLLS: A MEDIA INNOVATION IN TEACHING BRUSHING TEETH TO PRESCHOOL CHILDREN

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Info Article	Abstract
<p>Article History:</p> <p>Received: 15 Aug 2023 Revised: 18 Sep 2023 Accepted: 3 Oct 2023 Available Online: 19 Oct 2023</p> <hr/> <p>Keywords: Dental phantom dolls, brushing teeth, dental and oral hygiene</p> <hr/>  <p>This is an open access article under the CC-BY-SA license. Copyright © 2023 by Author. Published by Politeknik Kesehatan Kemenkes Jakarta I</p>	<p>Dental health problems that many Indonesian people suffer from are dental caries. Poor dental and oral hygiene is one of the factors causing dental caries or dental and oral health problems. Dental and oral health education demonstration method of brushing teeth with phantom dolls can improve teeth brushing skills and dental and oral hygiene status in preschool children. Objective: to analyze the effectiveness of dental health promotion using dental phantom dolls media on brushing skills and dental hygiene status of preschool children. Method: design of this study was pre-experimental This study used a pre-experimental design with a pretest and posttest with two group design. This research was conducted in preschool children in Pondok Labu Village, Cilandak District, South Jakarta City. The sampling technique used purposive sampling as many as 60 students. The research instrument used an observation sheet to brush teeth to measure teeth brushing skills and dental and oral hygiene status was measured using a plaque free score index. The dental health promotion media used in the intervention group was a dental phantom dolls, while the control group used a flipchart. Data analysis used paired sample test, Wilcoxon and independent t-test. Results: The dental phantom dolls was effective in improving tooth brushing skills ($p < 0.001$) and effective in improving the dental and oral hygiene status of preschool children ($p < 0.001$). Conclusion: The dental phantom dolls is effective as a medium for promoting dental health in an effort to increase the tooth brushing behavior of preschool children.</p>
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Introduction

The prevalence of dental caries in children is higher than adults, so that children are a vulnerable group for dental health problems, especially preschool children (Purnama et al., 2020). In Indonesia, children aged 5-6 years experience dental health problems by 92.6%; with a def-t number of 8.43, meaning that the number of tooth decay in preschool children reaches 8 to 9 teeth per child (Kemenkes RI, 2018). Tooth decay if left unchecked will have several complications such as inflammation of the gums, abscesses, cellulitis, causing difficulty swallowing and unable to open the mouth. Furthermore, it has an impact on the quality of life and child development (Hammel & Fischel, 2019; Kasihani et al., 2021).

The high problem of dental caries in preschool children is caused by many factors, one of which is the behavior of children who are not aware of the importance of maintaining oral health (Ngatemi et al., 2020) The data shows that 2.8% of children aged 3 years are behaving properly to brush their teeth

(Kemenkes RI, 2018). Several studies have shown that preschoolers do not have the independence to brush their teeth at school and that the skills of brushing teeth in preschoolers are in the poor category (Purnama et al., 2020). This will cause poor oral and dental hygiene, which is one of the factors causing dental caries (Perera et al., 2012). Poor oral and dental hygiene can lead to the accumulation of plaque containing various kinds of bacteria, including *Streptococcus mutans* as the main cause of caries (Mazaheri et al., 2017; Patil et al., 2013).

Efforts to improve dental and oral health maintenance are through the educational process (Nakre & Harikiran, 2013). Education is an effort so that humans can develop their potential through the learning process or other methods that are known and recognized by the community (Greenberg et al., 2017). One of the effective dental health promotion efforts in teaching brushing teeth is the demonstration method (Ngatemi & Purnama, 2021). The selection of demonstration methods in dental and oral health

counseling supports increasing children's understanding, by practicing directly children can understand how to brush their teeth correctly. Extension with the demonstration method is more effective when using learning media (Ilyas & Putri, 2012; Prasko et al., 2016). Media delivery that is in accordance with the stage of cognitive development will be more easily accepted by children, so that knowledge of dental and oral health can be improved and the use of teeth and mouth with media aids that can attract children's interest (Hanif & Prasko, 2018; Plowman et al., 2012).

One of the media that can be used for counseling to preschool children is the doll media. Dolls are artificial objects from human or animal forms, in the use of dolls they can be played in the form of puppet plays, in this study using a dental phantom doll because it has a unique and funny character, clothing accessories can be of various colors, there are teeth and holding a toothbrush (Asridiana, 2019; Farichah, 2021). The use of dental phantom dolls can make it easier for preschoolers to understand how to brush their teeth properly. It is hoped that children will be more enthusiastic and actively participate during learning, this is in accordance with the benefits of learning media, namely being able to grow learning motivation, children understand more about the material provided and teaching methods that have variations and are interesting.

Method

This research is a pre-experimental research with pretest and posttest with two group design. The study was conducted in August-September 2021. The research sample was preschool aged 5-6 years in Sekar Bangsa Kindergarten, Aisyiyah Kindergarten and Bina Insan Karimah Foundation, Pondok Labu Village, Cilandak District, South Jakarta City. The research sample was taken using a total purposive sampling technique, as many as 60 respondents. It consisted of 30 students in the intervention group and 30 students in the control group. The research instrument used an observation sheet brushing teeth which was tested for validity and reliability by the same previous researcher who examined teeth brushing skills and dental hygiene status was measured by standard dental hygiene examinations

using a free plaque score index measuring instrument (Ngatemi & Purnama, 2021) The dental health promotion media used in the intervention group was a dental phantom doll, while the control group used a flipchart.

Data analysis was carried out using the SPSS statistical program. The data normality test used the Shapiro-Wilk test, the paired sample test and the Wilcoxon test to determine the difference before and after the intervention and the t-test to test the difference between the intervention and control groups. The study was conducted after obtaining approval from the Ethics Committee of the Health Polytechnic of Jakarta I No. 178/KEPK/VIII/2021.

Result

Table 1. Distribution of respondent characteristics in the intervention group and control group

Variabel	Intervention group		Control group	
	n	%	n	%
Age				
5 years	10	33.3	15	50.0
6 years	20	66.7	15	50.0
Gender				
Man	13	43.3	14	46.7
Women	17	56.7	16	53,3
Parents job				
Private	6	20.0	5	16.7
Entrepreneur	4	13,3	1	3.3
Housewife	20	66,7	24	80.0
Parents education				
Junior high school	3	10.0	11	36.7
Senior High School	16	53.3	13	43.3
Bachelor	11	36.7	6	20.0

Table 1 shows that the respondents in this study amounted to 60 preschool children, the age of children in the intervention and control groups had the same proportion, most of them were 6 years old. Gender in the intervention and control groups had the same proportion, mostly women. The work of mothers in the intervention and control groups had the same proportion of work as housewives. Mother's education in the intervention and control groups had the same proportion of high school education.

Table 2. The average value of brushing skills and dental and oral hygiene status in the intervention group and the control group

Variabel	Intervention group		Control group	
	Pre-test	Post-test	Pre-test	Post-test
Brushing skills				
Mean	5.03	9.23	4.67	4.77
SD	0.928	0.817	0.802	0.935
Min – Max	3 - 7	7 - 10	3 - 6	3 - 7
Dental and oral hygiene status				
Mean	52.80	91.23	47.20	47.40
SD	8.256	3.702	4.021	4.461
Min – Max	40 - 72	81 - 96	40 - 58	40 - 60

Table 2 shows that the average value of tooth brushing skills and dental and oral hygiene status showed that the average value of tooth brushing skills for preschoolers had increased, in the intervention group it increased from 5.03 to 9.23 and the control

group increased from 4.67 to 4.77 . The mean value of the dental and oral hygiene status of preschool children also increased, in the intervention group it increased from 52.80 to 81.23 and the control group increased from 47.20 to 47.40.

Table 3. Data normality test

Group	p-value	
	Pre-test	Post-test
Intervention		
Brushing skills	0.044	0.035
Dental and oral hygiene status	0.707	0.157
Control		
Brushing skills	0.033	0.175
Dental and oral hygiene status	0.262	0.539

Table 3 shows that the results of the normality test for the dental hygiene status and brushing skills of the control group, as well as the dental hygiene status of the intervention group were normally distributed because the p-value >0.05 then proceeded with

parametric testing, while for the brushing skills of the intervention group the distribution was not normal because the p-value <0.05 so that the non-parametric test was continued.

Table 4. Test the effectiveness of skills and dental hygiene status before and after intervention

Group		Brushing skills*		Dental and oral hygiene status **	
		Mean+ SD	p-value	Mean+ SD	p-value
Intervention	Pre-test	5.03+0.928	0.001	52.80+8.256	0.001
	Post-test	9.23+0.817		91.23+3.702	
Control	Pre-test	4.67+0.802	0.184	47.20+4.021	0.415
	Post-test	4.77+0.935		47.40+4.461	

* Wilcoxon

** Paired Sampel Test

Table 4 shows that results of the effectiveness test of the data before and after being given dental health promotion with a dental phantom doll showed that the skill of brushing teeth, the p-value of the intervention group was 0.001 (p<0.05) and the p-value of the dental and oral hygiene status was 0.001 (p<0.05), This means that the doll's dental phantom media is effective in improving teeth brushing skills

and dental and oral hygiene status in preschool children. The p-value in the control group on brushing skills was 0.184 (p>0.05) and the p-value for dental and oral hygiene status was 0.415 (p>0.05), meaning that dental health promotion with flipchart media was not effective in improving teeth brushing skills and dental and oral hygiene status in preschool children.

Table 5. Different test of brushing skills and dental hygiene status in the intervention and control groups

Group		Brushing skills*		Dental and oral hygiene status *	
		Mean± SD	p-value	Mean± SD	p-value
Intervention	Pre-test	9.23±0.817	0.001	91.23±3.702	0.001
	Post-test				
Control	Pre-test	4.77±0.935		47.40±4.461	
	Post-test				

* *Independen Sampel Test*

Table 5 shows that the results of a different test using an independent sample test showed that the brushing skills of the teeth showed the p-value between the intervention group and the control group was 0.001 ($p < 0.05$), meaning that the dental phantom doll media was more effective in improving teeth brushing skills than the control group. Meanwhile, the dental and oral hygiene status showed that the p-value between the intervention and control groups was 0.001 ($p < 0.05$), meaning that the doll's dental phantom media was more effective in improving the dental and oral hygiene status than the control group.

Discussion

The results of the study on dental and oral hygiene status before being given dental health promotion with dental phantom doll media obtained an average value of dental and oral hygiene status of 52.80 including the medium category. This result is in study which showed that the mean value of plaque index before dental health education was 1.53 in the medium category. This is because preschool children do not yet have the skills to brush their teeth properly, it is proven that the average value of children's brushing skills is 5.03 including the less skilled category, so that it affects the cleanliness of their teeth and mouth. The skill of brushing teeth properly and correctly can affect the status of dental and oral hygiene (Arianto et al., 2014; Pantow et al., 2014).

Furthermore, respondents were given an intervention, the first stage was to provide an introduction to brushing equipment along with its storage area which is stored in the school environment. The respondent's response in starting was more enthusiastic and enthusiastic, meaning that the stimulus given to the child was successful in showing the child's ability to take and store the brushing utensils easily. The provision of a toothbrush storage model at school in the form of a toothbrush and toothpaste as well as a personal mouthwash so that it is easier for children to take and store

toothbrushes without the help of others (Purnama et al., 2020).

The researcher conducted an intervention to promote dental health on the media of the doll's dental phantom with the method used as a demonstration of brushing teeth. For preschoolers, how to brush their teeth needs to be given an example of a good model and with as simple a technique as possible. The delivery of dental and oral health education to children must be made as attractive as possible, including through attractive counseling without reducing the content of education, direct demonstrations. The selection of demonstration methods in dental and oral health education supports increasing children's understanding, by practicing directly how to brush their teeth correctly. Furthermore, respondents carried out daily brushing exercises for 5 consecutive days, this is in the practice of brushing teeth for 5 days can increase the independence of brushing teeth in early childhood at school (Purnama et al., 2020). It is also reinforced by the that the method of brushing teeth can be applied to teach brushing skills of preschool children (Makuch et al., 2011).

Dolls are imitation objects from human or animal. Dental phantom doll is a product that is packaged with the concept of fun playing with dolls, so this product will color the psychology of child development, in maximizing the five senses: seeing and touching. This media is able to stimulate multiple intelligences about dental and oral health, so that this media is able to convey dental health messages to the maximum. The advantages of phantom dolls are that they can foster language intelligence when playing with their dolls, children learn to imagine and speak, improve social skills in their development, train motor skills, foster empathy, and foster independence (Sigaud et al., 2017; Sulistyowati, 2021).

The results of the effectiveness test for brushing teeth showed that the p-value between the

intervention group and the control group was 0.001 ($p < 0.05$), meaning that the doll dental phantom media was more effective in improving teeth brushing skills than the control group. This also confirms the opinion expressed that the demonstration method in dental and oral health education supports increasing children's understanding, by practicing directly how to brush their teeth correctly (Ilyas & Putri, 2012).

This success is also seen in the improvement of the dental and oral hygiene status of preschool children. The results of the effectiveness test on oral hygiene status showed that the p-value between the intervention and control groups was 0.001 ($p < 0.05$), meaning that the doll's dental phantom media was more effective in improving dental and oral hygiene status than the control group. The score for dental and oral hygiene status has decreased because they have been given treatment in the form of dental health promotion using the demonstration method with dental phantoms that can attract the attention of preschoolers, so that children will increase their knowledge and be able to practice brushing their teeth properly. Through the practice of brushing your teeth properly, you will be able to remove plaque. Brushing teeth with the correct technique will improve brushing skills and oral hygiene. Dental and oral health counseling with the demonstration method is effective in reducing dental and oral hygiene scores (Ilyas & Putri, 2012; Purnama et al., 2019).

Conclusions

The conclusion of this study is that dental phantom doll is effective as a medium for promoting dental health in an effort to increase the tooth brushing behavior of preschool children.

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