

EFFECTIVENESS OF DEMONSTRATION METHOD AND PAGEM (FUN BOARD) GAME ON TOOTH BRUSHING SKILLS OF PRESCHOOL CHILDREN

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ABSTRACT Early childhood often consumes sweet foods or drinks, but is not accompanied by the behaviour of cleaning teeth properly, so that it can cause dental caries. One of the efforts to increase knowledge in maintaining oral hygiene is to conduct counselling using the right method. The problem in this study is that the tooth brushing skills of preschool children at KB-RA Hidayatullah Surabaya are still low. This study aims to determine the effectiveness of counselling using demonstration methods and PAGEM (fun board) games on preschoolers' tooth brushing skills. This type of research is a Quasi Experiment with pretest posttest design, and a population of 58 students. The data collection instrument used was an observation sheet. The data analysis technique used the Wilcoxon test and the Mann Whitney test. The results showed that there was no difference between the demonstration method and the PAGEM (fun board) game on preschoolers' tooth brushing skills at KB-RA Hidayatullah with a significant value of 0.644 ($p>0.05$). The demonstration method and PAGEM (fun board) game are equally effective in improving tooth brushing skills.

Keywords: Keyword Tooth Brushing Skills; Demonstration Method; PAGEM Game.

1 INTRODUCTION

Plaque buildup on the surface of the teeth will convert sugars found in food and drinks into acids, resulting in dental caries (R. E. H. M. Ibrahim et al., 2019). The caries status of preschool children in Southeast Asian countries is worse than that of children in various parts of the world. The dmft score in preschool children in Southeast Asia ranges from 25% to 95%. Dental caries is a common health problem globally and affects all ages including children (M. M. Almoudi et al., 2019). The prevalence of caries in boys and girls is almost the same (52.0% vs 48.8%). Girls' teeth grow faster than boys' teeth, so girls' teeth will be exposed to bacteria longer in the oral cavity and are more at risk of caries (S. Susi et al., 2020)

Caries is a multifactorial disease in which factors beyond brushing such as minimising added sugar intake and the use of dental care are important in disease prevention (D. Jacobson et al., 2019). The habit of brushing at the right time and with the correct technique can maintain a good level of dental health (S. Nurhadisah et al., 2020). In addition, fluoride exposure is important for children during their dental development. Fluoride can be provided through fluoridated water, fluoridated salt, fluoridated milk or fluoridated toothpaste. Fluoride toothpaste contains at least 1000 ppm fluoride, the safe dose for children aged 6-36 months is the size of a rice seed

(about 0.1 mg F), for ages 3-6 years is the size of a pea seed (about 0.25 mg F) (N. Tinanoff et al., 2019)

Based on research by Ibrahim et al. explained that around 15.9% of children brush their teeth twice or more a day, while almost 55.8% brush their teeth only once a day (R. E. H. M. Ibrahim et al., 2019) In addition, in Yustianti and Yusiana's research, it was explained that more than 50% of preschool children had a category lacking the correct way to brush their teeth (E. N. Yustianti and M. A. Yusiana . L, 2018). Green's theory states that knowledge is a trigger factor for behaviour change. Counselling on proper dental care can be an effort to increase knowledge and awareness in maintaining oral health. The right media or tools and methods can support the delivery of counselling material well (A. I. Anwar et al., 2020)

Preschoolers have social-emotional development, they are able to express emotions and have adaptive skills and the ability to focus. The creative field of preschoolers is characterised by an inquisitive attitude and interest in the activity at hand (Kotelianets and Y. Kotelianets, 2020). At this age, children like to find out what they don't know and imitate what they enjoy. When they need help, they often seek help from teachers or peers. The majority of preschoolers tend to be enthusiastic about completing the tasks given. Therefore, character building for preschool children needs to be built by looking at the child's strengths in an area as well as the uniqueness of each child. Such an approach will allow children to discover their personality, identity, and unlock their creative potential (M. Zarra-Nezhad et al.,2023)

Early childhood or preschool children are often said to be in the "Golden Age" or the most potential period, the best time to learn and develop. If this period is not well passed, it can affect the development of the next stage. Preschool children are at a critical period of social, cognitive and intellectual development. Childhood is the beginning of the period to learn how to deal with strong emotions and build skills that support positive interactions with others (M. R. Jalongo, 2021)

Studies show that learning in children can be done with verbal scaffolding techniques, which is applying scaffolding in children's cognitive activation that includes using correct Indonesian language or everyday language to stimulate children's thinking. Scaffolding learning is the provision of assistance to students during the initial learning process and reducing that assistance when students are able to work on their own (L. Schmitt et al., 2023)

Learning using the demonstration method can create a pleasant and not boring learning atmosphere. The advantages of the demonstration method can make learning clearer and more concrete, so as to achieve good learning outcomes (A. Thahir et al, 2019). The demonstration method is a demonstration of how to do something, through the demonstration method it can help children develop precise recognition abilities and can improve children's thinking, especially in improving the ability to recognise, remember, and think critically (C. Cecep et al., 2022)

Extension using the demonstration method makes it easier for students to understand a lesson, the learning process becomes more interesting, students are motivated to observe, and demonstrations can be repeated and tried by students (L. Alfitrasari et al., 2019) . The purpose of the demonstration method is to provide learning experiences through sight and hearing followed by imitating the movements demonstrated (D. Rangkuti and D. E. S. Rangkuti, 2020)

Counselling using games for children is also effective in increasing knowledge, if guided by the process of learning and playing (S. Fitriyah and A. Rahmawati, 2021).

Learning in the form of games and songs can improve musical intelligence and motor intelligence, thus playing an important role in the development of psychomotor, cognitive, and emotional abilities (A. Novitasari et al., 2023). The effect of game-based learning on students can increase motivation, attention, enjoyment and learning achievement. In addition, game-based learning can stimulate educators and game designers to create games with optimised features according to learning topics, thus having a positive influence on learning . Games about tooth brushing have the potential to improve the quality of tooth brushing in children in terms of the method and total time of tooth brushing (D. Jacobson et al., 2019). The results of an initial survey conducted by researchers at KB-RA Hidayatullah on 15 children showed that their tooth brushing skills were low. This is because of the 15 children observed, only 1 child (6.7%) has good tooth brushing skills. Based on this background, researchers are interested in conducting research on the effectiveness of counselling using demonstration methods and PAGEM (fun board) games on tooth brushing skills in preschool children at KB-RA Hidayatullah Surabaya.

2 RESEARCH METHOD

This study uses experimental research methods with a Quasi Experiment approach and uses total sampling techniques. The population in this study were kindergarten B students of KB-RA Hidayatullah Surabaya aged 5-6 years with a total of 58 students. Primary data collection instruments on the variable of tooth brushing skills of preschool children in this study used observation sheets. Research was conducted on all students who had obtained approval from parents / guardians through signed informed consent. Respondents were divided into 2 groups, namely group A with the treatment of demonstration methods using dental phantoms, while group B with treatment using a fun board game where each board contained material about brushing teeth. Pre-test on respondents was taken at the first meeting before being given counselling. Each group will be given counselling twice, three days after the last counselling in both groups, a post-test is carried out by assessing tooth brushing skills using an observation sheet. Observation is done by practicing tooth brushing. Each respondent who can perform the tooth brushing movement correctly is given a score of 1 and the wrong movement is given a score of 0. The assessment criteria are, good if 3-5 movements are correct and bad if 0-2 movements are correct. The data analysis technique used was the Wilcoxon test to determine the score of tooth brushing skills before and after counseling in each group, and using the Mann-Whitney test to determine differences in the improvement of tooth brushing skills in the two groups.

3 RESULT

This research was conducted at KB-RA Hidayatullah Surabaya, Indonesia from January to February 2023.

Table 1. Characteristics of Preschool Age Children at KB-RA Hidayatullah Surabaya in January - February Year 2023

Variable	Characteristics	Frequency	Percentage (%)
Age (years)	5	7	12,1
	6	51	87,9

Total		58	100
Gender	Male	26	44,8
	Female	32	55,2
Total		58	100

Based on table 1, it is known that most of the respondents of this study were female as many as 32 students, namely 55.2% and the average age of respondents was 6 years, namely 51 students with a percentage of 87.9%.

Table 2. Frequency Distribution of Tooth Brushing Skill Levels of Preschool Children at KB-RA Hidayatullah Surabaya 2023 Before and After Counselling with Demonstration Method

Skill Levels	Before		After	
	N	%	N	%
Good	1	3,4	29	100
Bad	28	96,6	0	0
Total	29	100	29	100

Based on table 2, it is known that tooth brushing skills in 29 respondents have increased after being given counselling using the demonstration method, which initially only 1 respondent (3.4%) had good tooth brushing skills to 29 or all respondents (100%).

Table 3. Frequency Distribution of Tooth Brushing Skill Level of Preschool Children at KB-RA Hidayatullah Surabaya 2023 Before and After Counselling with PAGEM (Fun Board) Game

Skill Levels	Before		After	
	N	%	N	%
Good	1	3,4	29	100
Bad	28	96,6	0	0
Total	29	100	29	100

Based on table 3, it is known that tooth brushing skills in 29 respondents have increased after being given counselling using the demonstration method, which initially only 1 respondent (3.4%) had good tooth brushing skills to 29 or all respondents (100%).

Table 4. Wilcoxon Test Results of Preschool Children's Tooth Brushing Skills at KB-RA Hidayatullah Surabaya 2023 Before and After Counseling with Demonstration Method

Skill Levels	Category		<i>p Value</i>
	Bad	Good	
Before Intervention	28	1	0,000
After Intervention	0	29	

Based on table 4, the significance value before and after being given counseling on how to brush teeth is 0.000 (<0.05), meaning that there is a difference in the level of

brushing skills before and after being given counseling on how to brush teeth using the demonstration method. The demonstration method is effectively used as a method of delivering counselling on how to brush teeth in preschool children.

Table 5. Wilcoxon Test Results of Preschool Children's Tooth Brushing Skills at KB-RA Hidayatullah Surabaya 2023 Before and After Counselling with PAGEM (Fun Board) Games

Skill Levels	Category		ρ Value
	Bad	Good	
Before Intervention	28	1	0,000
After Intervention	0	29	

Based on table 5, the significance value before and after being given counseling on how to brush teeth is 0.000 (<0.05), meaning that there is a difference in the level of brushing skills before and after being given counseling on how to brush teeth using the PAGEM play method. The PAGEM play method is effective as a method of delivering counselling on how to brush teeth in preschool children.

Table 6. Mann-Whitney Analysis Test Results The Effectiveness of Demonstration Methods and PAGEM (Fun Board) Games on Preschoolers' Tooth Brushing Skills at KB-RA Hidayatullah Surabaya 2023

Method	Skill Levels				ρ Value
	Good		Bad		
	N	%	N	%	
Demonstration	29	100	0	0	0,643
Playing PAGEM (fun board)	29	100	0	0	

Based on table 6 shows that the results of the Mann-Whitney statistical test obtained the value of Asymp. Sign. (2- tailed) of $0.643 > 0.05$. So it can be concluded that H0 is accepted and H1 is rejected. This means that there is no difference in counselling between the demonstration method and the PAGEM (fun board) game on preschoolers' tooth brushing skills at KB-RA Hidayatullah Surabaya. The demonstration method and fun board game are equally effective in improving preschoolers' tooth brushing skills.

4 DISCUSSION

Early childhood or preschool age is a time when children are in the process of developing in all aspects of their lives. In their development, they need proper support and guidance from their environment such as parents, teachers or other educators. Therefore, educators must understand the characteristics of early childhood so that they can provide the right education according to the needs of each child (S. Watini, 2020).

At preschool age, skill development is important. Children's skills can be seen since infancy, babies understand with their senses, explore their environment, and even solve problems through experiments. The length of preschool education is also one of the factors that affect children's skills in addition to the home environment (C. Yildiz and T. Guler Yildiz, 2021)

Children generally like foods that contain sugar. If they consume too much sugar and rarely clean it, it will cause dental caries. The World Health Organization (WHO) (2007) states that the incidence of dental caries in children increases by 60-90%. Tooth brushing behaviour affects the incidence of dental caries in early childhood. The formation of attitudes and behaviour in early childhood can be influenced by the immediate environment (C. Rahayu, F. Mulyadi, H. I. Robbihi, and Y. Sopianah, 2022)

Based on the results of the study, it is known that the tooth brushing skills of preschool children at KB-RA Hidayatullah Surabaya, Indonesia are in the poor category. This is in line with research by Sobiech, et al that early childhood or preschool age is prone to dental caries which can be caused by several factors. For example, drinking formula milk with a bottle (pacifier), but not accompanied by proper tooth cleaning behaviour (P. Sobiech et al., 2022). This proves that the baseline of children's knowledge about cavities and tooth brushing behaviour for oral health is currently low (L. Andayasari, I. Nurlinawati, and S. Maulia, 2020). Therefore, implementing counseling on how to brush teeth properly can increase knowledge and stimulate children's behaviour to maintain oral health. Conducting counselling using the right method will facilitate children's understanding when given counselling.

The demonstration method is a form of method that can control and observe each respondent's development, such as the development of his/her attention and motor skills. In addition, demonstration of how to brush teeth using dental phantoms causes respondents to directly practice exactly the intervention that has been given, so that the material delivered is more easily accepted by respondents. This is in line with the research of Subekti, et al. that the demonstration method can affect changes in tooth brushing behaviour and the level of dental hygiene in kindergarten children for the better (A. Subekti, I. H. Siregar, E. Aryati, and L. Sunarjo, 2018). Likewise, research conducted by Ngatemi and Purnama stated that kindergarten students' tooth brushing skills improved after being given counselling with tooth brushing demonstrations (N. Ngatemi and T. Purnama, 2021). All demonstration methods are instructions on the process of occurrence of an event or object until the emergence of exemplified behaviour, so that it can be known and understood by students in real terms. Dental health programmes provided by counseling in the form of demonstrations are effective in supporting the improvement of oral health in children (P. RE and S. N. Tauchid, 2019). However, the demonstration method also has disadvantages, namely, requiring supporting tools or materials and the results will be less effective in quiet or inactive children. This is in line with the results of research by Aulyah, et al. that the smart toothbrush method is more effective than the demonstration method in improving toothbrushing skills in blind children (D. R. Aulyah et al., 2019)

In addition to counselling with the demonstration method, the stimulus provided in this study was in the form of counselling on how to brush teeth with the PAGEM (fun board) game. PAGEM (fun board) is a game adapted from the snakes and ladders game, easy to play, very practical and fun. On the fun board does not fully adapt the snakes and ladders game, where there is no snake picture as a symbol of negative value that causes the player to go down or back to the previous box, in the fun board game

all players will continue to play forward to the next box to complete the game, there is no term losing or winning in the fun board game, but emphasises the experience of the learning process as a whole and completely.

In children, play can develop their self-confidence and social skills. Play activities supported by a conducive environment will be a means of optimising all aspects of children's development and growth, such as cognitive, language, social-emotional, moral, physical-motor and artistic and creative aspects. Play as a tool for learning and as part of the educational process (P. RE and S. N. Tauchid, 2019).

Play is a natural way for children to improve their future skills starting from an early age. When they play, they use their many senses to capture and acquire diverse information and expand their knowledge. In addition, children will develop new skills and abilities (e.g. speaking, thinking, etc) through play (R. Lamrani and E. H. Abdelwahed, 2020)

Learning with play methods can increase students' interest in learning, the learning process becomes fun and not boring. PAGEM (fun board) games can develop students' emotional activities in learning activities, create a comfortable, orderly and energetic classroom atmosphere. The play method can help students develop thinking skills, motor skills and trigger creativity, and can make it easier to remember learning material (M. F. Tiwow et al., 2021) According to Fjaellingsdal and Klockner, board games are very effective in illustrating and visualising learning materials (K. S. Fjaellingsdal and C. A. Klockner, 2020)

Board games are an excellent tool for stimulating interaction for both children and adults. Board game players exhibit many social signals, related to decisions made in the game, game outcomes, and game progress (M. Doyran et al, 2021). Emotional competence (EC) is important for creating a positive life. To stimulate intrinsic motivation, board games can be an efficient learning tool in promoting socio-emotional development in children (L. Dell'Angela et al., 2019)

Based on the results of this study, it is known that there is no significant difference in effectiveness between counselling using the demonstration method and PAGEM (fun board) games. The demonstration method and fun board game are equally effective in improving preschool children's tooth brushing skills at KB-RA Hidayatullah Surabaya, Indonesia. This is because the demonstration method and the fun board game can both stimulate children's motor skills.

The results of this study are in line with the research of Rahayu, et al that there was an increase in tooth brushing skills in students from the category of less able to be very capable, after being given counselling with the demonstration method [34]. In addition, in the research of Tiwow, et al stated that there was an increase in the ability to recognise the letters A- Z after being given counselling using fun board games (W. N. . Rahayu, A. Marsidi, and Syamsudin, 2022)

5 CONCLUSION

Based on the results of the research and discussion, it is known that the demonstration method and the PAGEM (fun board) game are very effective in improving the teeth brushing skills of preschool children. In this study, there was no difference in effectiveness between the demonstration method and the fun board game. Demonstration methods and fun board games are equally effective in improving preschoolers' tooth brushing skills. For future research, the development of counselling

using demonstration methods and PAGEM (fun board) games is needed, so that counselling becomes more interesting and the audience is more focused, using different variations and longer research time. So that it can be further identified which extension method is more effective.

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