

Effectiveness of Fones Technique Education Using Audiovisual Media of Students' Knowledge

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Abstract

The oral health of children in Indonesia is still worrying and needs serious attention from health workers. In Indonesia, only 2.8% of children brush their teeth the right way. It is recommended for children to brush teeth with fones technique.

The fones technique is a tooth brushing technique at an early age that is easy to do. Interruption with audiovisual media can attract more children's attention in understanding the topics. The aim of the study was to determine the effectiveness of fones technique education using audiovisual media on student's knowledge in maintaining oral health. A quasi experimental study with pre-test and post-test one group was conducted on among students of a primary school at Payakumbuh, West Sumatra, Indonesia. The pre-test and post-test were carried out guided by the studyer using an electronic questionnaire. Students were provided with audiovisual media after being given a pre-test.

The results of this study were tested by SPSS using the Mann Whitney test which showed significant results with a $p < 0.001$. The frequency distribution for each question in the pretest ranges from 21.2% to 97%, increasing to 40.9 to 100% in posttest after intervention with audiovisual media education. There is effectiveness of fones technique education with audiovisual media on students' knowledge.

Clinical article (J Int Dent Med Res 2024; 17(1): 304-309)

Keywords: Fones technique, Knowledge, student, oral health, audiovisual, brushing teeth.

Received date:

Accept date:

Introduction

The problem of children's oral health in Indonesia is still worrying. The oral health of children in Indonesia needs serious attention from health workers. Dental and oral diseases are non-communicable diseases that cause pain, discomfort, disability, and even death. Oral disease affects half of the world's population of 3.58 billion people with dental caries in permanent teeth being the most common condition.¹ In developing countries, where efforts are made to reduce oral health problem because it can constitute serious social and economic problems. Promotive and preventive program are important actions to reduce oral health

problems.² In Indonesia, it is recorded that 57.6% of the Indonesian population have dental and oral problems.³

Seeing the importance efforts to maintain oral health, it is necessary to know the factors that cause dental and oral health problems. One of the factors causing dental health problems is the lack of public knowledge regarding how to brush teeth properly. In previous study reported that in Indonesia only 7.3% of children brush their teeth correctly.⁴ The knowledge about tooth brushing technique is important to prevent oral health problems. It has been reported that training on tooth brushing technique is effective to improve oral health.⁵

The behavior of brushing teeth in children must be carried out in everyday life. The ability to brush teeth can prevent plaque from forming and inhibiting the growth of microorganisms that can disrupt oral health.^{6,7} The fones technique is a minor technique for brushing teeth that is commonly used in children with circular

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movements which are considered effective, simple and do not cause tooth abrasion and gingival irritation.⁸ The Fones technique is a circular movement, which is applied to the entire surface of the teeth, both the front, side and back. The Fones technique is recommended for children because in this age is a mix dentition period. The fones technique is appropriate brushing technique in mix dentition period. Fones technique Education is necessary for student.^{9,10}

Audiovisual media is the media that can help children easier to understand the topics. Audiovisual media shows interesting color and picture therefore, children more interested to learn from audiovisual media.¹¹ The previous study reported that it was effective to use audiovisual media to increase students' knowledge about oral health.¹² This was also supported previous study that education using audiovisual media was effective in increasing students' knowledge about maintaining dental health.¹³

Elementary school age is the appropriate age to provide education about dental and oral health. The previous study reported that 55% of elementary school students in Payakumbuh City, West Sumatra still do not know the correct tooth brushing technique using the fones technique. This illustrates that more than half of the students still do not understand the correct technique for brushing their teeth. Considering that there are still many students who do not really understand yet how to brush their teeth properly using fones technique. The aim of this study was to determine the effect of audiovisual media education using fones techniques to improve the students' knowledge in maintaining oral health.

Materials and methods

Study Design

The design of this study was carried out using an quasi- experimental study method with pre-test and post-test one group design. This study applied intervention with audiovisual media after pre-test section. The intervention followed by post-test section to see the increase of students' knowledge After intervention. This study was conducted from 14 to 21 September 2023 at SD N 1 Lubuak Batingkok, Payakumbuh, West Sumatra, Indonesia.

Participant

The respondents of this study were all of the students in grades 4, 5, and 6. This study was used a total sampling technique which was totaling 66 students.

Sampling

Inclusion criteria of respondents were all students in grade 4, 5, and 6 who had get permission by their parents. The exclusion criteria included the non-cooperative students and not present when the study was conducted. All students and parents had been informed about the purpose of this study. Students who took part in the study were approved by their parents by signing inform consent letter.

Instrument

Respondents were given questionnaire that conducted 10 questions which will be given a value of 1 if correct and 0 if incorrect. The questions of questionnaire were taken from previous study and modified to make it suitable for this study.¹⁴ Validity and reliability questionnaire were previously tested by SPSS version 16.0 and the result was valid and reliable to be applied to respondent.

Data Collection

The pre-test was held from 14 to 15 September 2023. The researches guided each respondent to answers the questions. The pre-test questions consist of 10. Intervention of education by audiovisual media was conducted from 18 September. Respondents had to do a post-test from 19 to 21 September 2023 with electronic questionnaires to see the increase in students' knowledge. All the respondents attended the study and there were no dropouts. All respondents who took part in the research were approved by their parents by signing informed consent.

Intervention

The intervention with audiovisual media was applied video animation which was created by team researchers. The video animation showed how to brush teeth with fones technique based on previous studies.^{15,16} The duration of this video was 3 minutes. The video played once for each class using projector and sound system on the same day.

Statistical Analysis

Data of this study processed and analyzed by editing, coding, entry and cleaning data used statistical analysis of SPSS version 16.0. Data analysis was carried out using

univariate method to describe the characteristic respondents. The data normality test was analyzed by Kolmogorov Smirnov test. The bivariate analysis used the Mann Whitney test.

Ethical aproval

This study was ethically approved by School of Medicine Ethics Committee Universitas Andalas in Indonesia with the letter number 478/UN.16.2/KEP-FK/2023.

Results

Characteristic of Respondents

Characteristic of respondent for this study was attended by 66 respondents in grades 4, 5 and 6. There were no obstacles in this study. All respondent participated this study cooperatively. The distribution of respondent characteristics in this study can be seen in table 1.

Respondent characteristics	n	%	
Gender	Female	36	54.5
	Male	30	45.5
Class	4	25	37.9
	5	18	27.3
	6	23	34.8
Age (years)	9	15	22.7
	10	18	27.3
	11	28	42.4
	12	3	4.5
	13	2	3.0

Table 1. Distribution of study respondent characteristics (n=66).

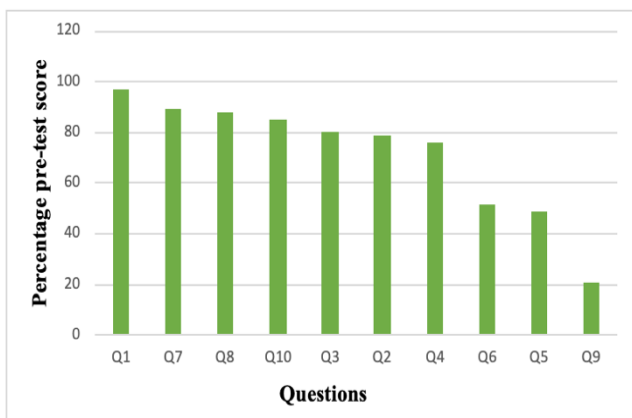


Chart 1. Pre-test frequency distribution of respondents' knowledge.

Based on Table 1. It can be seen that the largest number of respondents was female at 54.5% a, grade 6 was the class with the largest number of respondents at 34.8% and 42.4 % respondents was 11 years old.

Distribution of frequency on respondents knowledge

Pre-test result described the prior knowledge of respondents about fones technique. Distribution of frequency on respondents' knowledge can be seen from the pre-test result in chart 1.

Based on chart 1. Pre-test frequency distribution of respondents' knowledge about fones technique concluded that most of respondents answered correctly and obtained the highest score of 97% in question number 1. It is also showed that the lowest score was obtained in question number 9 of 21.2%.

Efektiveness of fones technique education using audiovisual media

No.	Question	Pre-test		Post test		Increase %
		Correct	%	Correct	%	
Q1.	Brush your teeth at least 2 times a day after eating and before go to sleep	64	97	65	98.5	1.5
Q7.	The tip of the brush bristles is positioned horizontally touching the surface of the teeth	59	89.4	63	95.5	6.1
Q8	Brush the upper teeth with a downward and rotating movement of the toothbrush lower teeth by rotating the toothbrush upwards	58	87.9	64	97	9.1
Q10.	Brush the inside teeth on the right and left sides in a circular motion	56	84.8	66	100	15.2
Q3.	Brushing your teeth should be done quickly and vigorously	53	80.3	66	100	19.7
Q2.	The correct toothbrush has a small and flat tip so it can reach the back of the teeth	52	78.8	66	100	21.2
Q4.	Brush the chewing part of your teeth with a back and forth motion	50	75.8	54	81.8	6
Q6.	Brush your teeth in a circular motion in a biting position	34	51.5	35	53	1.5
Q5.	Toothbrushes do not need to be replaced regularly	32	48.5	46	69.7	21.2
Q9.	Brush your teeth with left and right movements	14	21.2	27	40.9	19.7

Table 2. Pre-test and post-test frequency distribution of respondents' knowledge.

Group	n	Mean	SD	SE	Min-max	P value
Pre-Test	66	7.15	1.304	0.160	4 -7	< 0.001
Post-Test	66	8.36	1.047	0.129	10-10	

Table 3. Average increase in knowledge of study respondents.

*Analysis was carried out using Mann Whitney test. Results were considered significant with p < 0,05.

Based on the frequency distribution table for each of the questions above, it can be concluded that there was an increase the score between 1.5-1.2 %. In the pre-test questionnaire, only 21.2% respondents answered correctly in question number 9 and it increased in the post-test to 40.9%. It also can be seen on the table 2, the frequency distribution for each question in the pretest ranges from 21.2%- 97%, increasing to 40,9-100% in the posttest after the intervention of education with audiovisual media.

From the table 3, it can be seen that there was an increase in the average knowledge of respondents by 1.21 from pre-test 7.15 \pm 1.304, which increased to 8.36 \pm 1.047 at post-test. The statistical results were tested by Mann Whitney Test which obtained a p-value < 0.001, it means that there is a significant relationship exists between pre-test and post-test knowledge after intervention. It proves that there is effectiveness of fones technique education using audiovisual media to increase students' knowledge in maintaining oral health.

Discussion

The characteristic of the respondents were consist of the student in grade 4, 5, and 6. The most students took part in this study was female. Students in grade 4 was the most presented in this study. Meanwhile, mostly student were 10 years old. According to previous study, 10 year olds child who are mostly in the 4th grade of elementary school need more education for maintaining oral health because they were still in the sufficient category and need to obtain more information about oral health.¹⁷

This study conducted pre-test section to know the prior knowledge of the students about fones technique. This pre-test result was only half of the students answered correctly regarding the phone technique movement of 51.5%. According to previous study, children usually brush their teeth improperly therefore they need to gain more education about maintain oral health.¹⁸

The result of this study showed that pre-test score increased in post-test score. The pre-test question number 9 showed most students brushed their teeth with left and right movement. This left and right movements are incorrect brushing teeth technique. According to previous studies, the suitable brushing teeth technique for

children is circular movement just like the fones technique. These studies also reported that fones technique suitable for mix dentition period in 9 to 13 years old.^{5,8}

Fones technique is important to maintain oral health for students from an early age. Maintaining oral health is an important factor for growth and development. The previous study reported that problems that can arise if there are dental and oral health problems in children are dental caries and gingivitis.¹⁹ It is also declared by other previous studies that reported that carries and gingivitis also have an impact on the child's chewing process which will affect the child's intake and finally influences growth and development of children.^{20,21}

Effectiveness of fones technique education using audiovisual showed a significant relationship on student's knowledge with value < 0,001. The results of students' knowledge increased after being given intervention. It can also be related to the characteristics of the respondents who took part in the study. In this study, there was more female than male of 54.5%: 45.5%. According to a previous study, female students can understand about the topics their learned faster than male because they are more focused on receiving directions.²² It also found that female students are also better able to maintain their oral health than male students.

Students' knowledge increased after being given education using audiovisual media. The audiovisual media in this study provided an animated video that explains the procedures for brushing teeth using the fones technique. According previous study, video was a teaching tool that can be listened and seen which can help students in teaching and learning which functions to clarify or make it easier to understand the language that being studied.²³ It is also supported by other previous studies which reported that education with videos, especially animated videos, makes it easier for students to understand educational material. The animation video also effective in increasing students' understanding because it gained positive responses from student.^{11,24,25}

Maintaining oral health can be achieved by brushing your teeth with the right technique. The fones technique is a tooth brushing technique that is suitable for elementary school age children. The Fones technique for brushing

teeth emphasizes cleaning plaque in areas on the teeth and on the gingiva with circular movements that tend to be smooth and continuous over the entire surface of the teeth.²⁶ Children's tooth brushing behavior must be carried out in everyday life with the correct technique.^{27,28,29}

Conclusions

From this study, it can be concluded that there is an effectiveness of fones technique education using audiovisual media on students' knowledge. It is expected that further education on fones techniques using audiovisual media become a promotive and preventive efforts in maintaining oral health in children.

Declaration of Interest

The authors report no conflict of interest.

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