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Enhancing Preschool Children's Toothbrushing Independence through Video Tutorial Education: A Study on Knowledge and Practices

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ABSTRACT Preschoolers are children aged between 3-6 years who like to imagine and begin to develop their curiosity. There are 94.7% of children aged ≥ 3 years who brush their teeth every day, but only 2.8% brush their teeth correctly. The impact of this problem is that children have poor dental and oral hygiene. One effort that can be made is to provide counseling about brushing teeth using video tutorial media. The problem in this research is the low knowledge and practices of brushing preschool children's teeth. This research aims to determine enhancing preschool children's toothbrushing independence through video tutorial education. The type of research is pre-experiment with a pre-test and post-test control group design, with a population of 38 preschool children. The data collection instrument uses an observation sheet. The data analysis technique uses the Wilcoxon test and the Mann Whitney test. The results of the research showed that there was a difference in enhancing preschool children's toothbrushing independence through video tutorial education in preschool children at Putra Harapan Kindergarten and Dewi Sartika Kindergarten Tuban after 21 days of observation. It can be concluded that there is an enhancing preschool children's brushing their teeth independence before and after counseling using video tutorial media.

INDEX TERMS Video tutorial media; knowledge of brushing teeth; brushing teeth practice; preschool children; knowledge and practices

I. INTRODUCTION

Dental and oral health are parts of body health that cannot be separated from one another. If someone has a toothache, it will interfere with activities, starting from working, eating and drinking c. So, maintaining healthy teeth and mouth is very important to be free from dental and oral diseases such as gum disease, tooth decay, tooth loss and other diseases [1].

Based on data from Basic Health Research (Riskesdas, 2018), the prevalence of caries in children aged 3-4 years in Indonesia is 81.1%, while in children aged 5-9 years, it is 92.6%. One of the causes of caries is a lack of knowledge about proper tooth brushing [2]. The prevalence of dental and oral problems is 57.6% with the proportion of daily tooth brushing behavior in people aged ≥ 3 years of 94.7% and the prevalence of correct and appropriate tooth brushing behavior in people aged ≥ 3 years of 2.8% [2]. This is in line with the findings of a preliminary survey that was carried out by researchers at Putra Harapan Kindergarten. The survey revealed that, on average preschool children still lack knowledge about and practices for brushing their teeth.

Children usually can't brush their teeth well and effectively, this happens because it is not easy, especially on sticky food and hard-to-reach surfaces. Good and correct brushing behavior must be done seriously, which means brushing the entire surface of the teeth, brushing the teeth twice a day [3]. Brushing teeth in preschool children is very important because it can develop their motor practices such as how to hold a toothbrush, put toothpaste on the bristles of the toothbrush, rinse their mouth, brush their teeth part by part, and clean and keep the toothbrush equipment as before [4]. Providing special training on how to clean teeth properly and improving the quality of health is influenced by improving dental health practices [5].

Preschoolers' emotions can form their own behavior. During development, children begin to learn important

things such as taking initiative, making decisions independently and doing things on their own without help [6]. Preschool children aged 3-6 years in child growth and development are an important age. This period is also called the critical period because currently children begin to develop their ideas. Preschool children are a group that is still easily given an understanding related to knowledge, attitudes, and actions which can later be influenced as they get older or become adults [7].

One of the things that can be done is by providing education, such as dental health education. Individuals or communities aim to achieve a high level of health through dental health education. Dental health education consists of various things, namely checking dental hygiene for plaque, brushing teeth with the right technique, and choosing foods that are good for teeth and mouth. Dental health education can be done by providing counseling to children using video tutorial media [8].

Video is a medium for delivering knowledge and can be used as a learning process. Video media is also called audio-visual media, which means teaching aids that can be heard and seen that can help in dental and oral health education [9]. Meanwhile, video tutorials are shows that describe the steps to do something. This is the same as what was put forward by Chawla et al. A video tutorial is a guide on how to explain something, whether learning material or training, which is packaged in the form of a video that is shown to students. Tutorial videos can be watched or played repeatedly to help someone's understanding [10].

According to research by Ismail et al, it is stated that video tutorial media is very effective in learning so that it can improve knowledge and practices in brushing teeth. Video tutorials can develop thoughts, imagination and can encourage children to take positive actions, namely brushing their teeth [11]. Shalabi et al.'s research also suggests that video tutorial media can influence preschool children's tooth brushing practices because with video tutorials children are able to understand and carry out the action of brushing their teeth [12].

According to the explanation above, the purpose of this study is to enhancing preschool children's toothbrushing independence through video tutorial education in preschool children a study on knowledge and practice.

II. METHOD

This examination was led at Putra Harapan Kindergarten and Dewi Sartika Kindergarten, Tuban that was held from January to March 2023. This research was pre-experimental analytical research with a Pre-test and Post-test Control Group Design. This research involved two groups, namely Putra Harapan Kindergarten as the experimental group and Dewi Sartika Kindergarten as the control group. The population in this study was 38 preschool children in group B with a sample of 19 children from each group. In this study, observation sheets were used to collect data on preschool children's brushing habits and knowledge. The data collection procedure is that respondents first fill out an informed consent form to be willing to become respondents in this research. A score of 1 is given to every respondent who can correctly answer a question, and a score of 0 is given to anyone who can't. The evaluation classifications for knowledge are good 76-100%, Fair 56-75%, Poor <56%. Meanwhile, the assessment categories for practices are very good 80-100, good 70-79, fair 60-69, need guidance <60. Questions to determine respondents' knowledge and skills in brushing teeth were repeated several times, according to the design of the data collection.

This study used the 21-day theory of behavior change. The 21 days are broken up into three stages: The first seven days, intensive education is given with a duration of ± 15 using video tutorial media in the experimental group and in the control groups, only verbal education is given. The teacher and parents encourage them to brush their teeth properly for the second seven days, and the third seven days allow students to practice brushing their teeth on their own. [13]. The video tutorial contains animations that have been adjusted to the age of the respondents so that they can be understood well.

The Wilcoxon test was used as the method of analysis in this study to determine the score of knowledge and practices of brushing teeth before and after education in each group, using the Mann Whitney test to determine the difference between the experimental and control groups in the effectiveness of increasing knowledge and practices of brushing teeth within each group.

III. RESULT

Shown in TABLE 1 Men (50%) and women (50%) were the same number of people who participated in this study, Most respondents (86.8%) were under the age of six.

TABLE 1
Characteristics of Respondent

Characteristic		Frequence (N)	Precentage (%)
Gender	Boy	19	50
	Girl	19	50
Age	5 years old	5	13,2
	6 years old	33	86,8

TABLE 2 shows that there was an expansion in the information on respondents in the trial bunch in the wake of getting training, with 14 out of 19 respondents (73.7%) arriving at a decent degree of information. This demonstrates that respondents' brushing knowledge can be increased through educational media like video tutorials. Then there was an increase in the practices of respondents in the experimental group after receiving education, with 13 of 19 respondents (68.4%) reaching a very good level of knowledge. This demonstrates that respondents' ability to brush their teeth can be improved through educational media like video tutorials.

TABLE 2
The Experimental Group's frequency distribution of preschool children's knowledge and practices regarding tooth brushing before and after instruction with tutorial videos

Variable	Before		After	
Knowledge about tooth brushing	Frequence (N)	Percentage (%)	Frequence (N)	Percentage (%)
Good	0	0	14	73,7
Moderate	10	52,6	5	26,3
Poor	9	47,4	0	0
Total	**19**	**100**	**19**	**100**
Tooth Brushing Practice	**Before**		**After**	
	Frequence (N)	**Percentage (%)**	**Frequence (N)**	**Percentage (%)**
Very good	0	0	13	68,4
Good	0	0	4	21,1
Moderate	6	31,6	2	10,5
Supervision needed	13	68,4	0	0
Total	**19**	**100**	**19**	**100**

Shown in **TABLE 3**, 11 out of 19 respondents (57.9%) exhibited a lack of knowledge, indicating that there was no increase in knowledge among respondents in the control group after receiving education. This shows that verbal education is less effective in increasing respondents' knowledge of brushing their teeth. Then there was no increase in the practices of respondents in the control group after receiving education, with 16 out of 19 respondents (84.2%) indicating the practice level needed guidance. This shows that verbal training is less viable in working on respondents' practices in cleaning their teeth.

TABLE 3
Knowledge and Practices Regarding Teeth Brushing in Preschool Children Before and After Education (Control Group)

Variable	Before		After	
Knowledge about tooth brushing	Frequence (N)	Percentage (%)	Frequence (N)	Percentage (%)
Good	0	0	0	0
Moderate	6	31,6	8	42,1
Poor	13	68,4	11	57,9
Total Knowledge about tooth brushing	**19**	**100**	**19**	**100**
Tooth Brushing Practice	**Before**		**After**	
	Frequence (N)	**Percentage (%)**	**Frequence (N)**	**Percentage (%)**
Very good	0	0	0	0
Good	0	0	1	5,3
Moderate	3	15,8	2	10,5
Supervision needed	16	84,2	16	84,2
Total	**19**	**100**	**19**	**100**

TABLE 4
Data from the Normality Test on the Knowledge of Brushing Teeth by Preschool Children in the Experimental and Control Groups

Class	Shapiro Wilk		
	Statistic	Df	Sig.
The Intervention Group's Pre-Test	0.873	19	0.016
The Intervention Group's Post-Test	0.796	19	0.001
Control Group Pre-Test	0.843	19	0.005
Control Group Post-Test	0.823	19	0.003

Based on **TABLE 4**, it was found that the data normality score in the video experiment pretest group had a sig value of 0.016, the video experiment posttest had a sig value of 0.001, the data was not normally distributed. Meanwhile, the pre-test control with a sig value of 0.005, post-test control 0.003, the data was not distributed normally, due to the Sig value is <0.05

TABLE 5
Data from the normality test on the practices for brushing their teeth by preschool children in the Experimental Group and the Control Group's

Class	Shapiro Wilk		
	Statistic	df	Sig.
The Intervention Group's Pre-Test	0.814	19	0.002
The Intervention Group's Post-Test	0.853	19	0.007
Control Group Pre-Test	0.803	19	0.001
Control Group Post-Test	0.870	19	0.015

Based on **TABLE 5**, it was found that the data normality score in the video experiment pretest group had a sig value of 0.002, the video experiment post test had a sig value of 0.007, the data was not normally distributed. Meanwhile, the pre-test control has a sig value of 0.001, the post-test control is 0.015, the data also have a non-normal distribution. Because the Sig value is less than 0.05, the data above does not follow a normal distribution.

TABLE 6
Results of the Wilcoxon Test of Preschool Children's Knowledge of Brushing Teeth Before and After Education Using Tutorial Videos (Experimental Group)

Variable	Category			*P* Value
	Good	Moderate	Poor	
Before Education	0	10	9	**0.000**
After Education	14	5	0	

Considering TABLE 6, the ρ value is 0.000, so there is an expansion in information on cleaning teeth when schooling by utilizing video instructional exercises.

TABLE 7
Results of the Wilcoxon Test of Preschool Children's Knowledge of Brushing Teeth Before and After Education Using Non-Video Tutorials (Control Group)

Variable	Category			*P* Value
	Good	Moderate	Poor	
Before Education	0	6	13	**0.157**
After Education	0	11	8	

Based on **TABLE 7**, the ρ value is 0.157, so there is no increase in knowledge of brushing teeth before and after education with non-video tutorials.

TABLE 8
Wilcoxon Test Results of Preschool Children's Practices in Brushing Teeth Before and After Education Using Tutorial Videos (Experimental Group)

Variable	Category				*P* Value
	Very Good	Good	Moderate	Supervision Needed	
Before Education	0	0	6	13	**0.000**
After Education	13	4	2	0	

Based on **TABLE 8**, the ρ value is 0.000, so there are variations in the ability to brush teeth before and after counseling using video tutorials.

TABLE 9
Results of the Wilcoxon Test of Preschool Children's Skills in Brushing Teeth Before and After Counseling Using Non-Video Tutorials (Control Group)

Variable	Category				P Value
	Very Good	Good	Moderate	Supervision Needed	
Before Education	0	0	3	16	**0.083**
After Education	0	1	2	16	

Based on TABLE 9, the ρ value is 0.083, so there is no variation in the ability to brush teeth before and after education using non-video tutorial media.

TABLE 10
Differences in the Effectiveness of Education Using Video Tutorials to Increase Knowledge of Teeth Brushing in Preschool Children

***Mann Whitney* Test**									
Group	**Practice**								***P* Value**
	Very Good		**Good**		**Moderate**		**Supervision Needed**		
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	
Intervention Group (Video Tutorial)	13	68,4	4	21,1	2	10,5	0	0	**0.000**
Control Group	0	0	1	5,3	2	10,5	16	84,2	

Berdasarkan TABEL 10, nilai ρ adalah 0,000, sehingga Hₒ dihapuskan dan Hı diakui, efektivitas penggunaan video tutorial untuk mengajar anak-anak prasekolah di TK Putra Harapan dan TK Dewi Sartika Tuban tentang menyikat gigi sangat berbeda.

TABLE 11
Differences in the Effectiveness of Education Using Video Tutorials to Improve Teeth Brushing Practices in Preschool Children

Mann Whitney Test							
Group	**Practice**						***P* Value**
	Good		**Moderate**		**Poor**		
	N	**%**	**N**	**%**	**N**	**%**	
Intervention Group (Video Tutorial)	14	73,7	5	26,3	0	0	**0.000**
Control Group	0	0	8	42,1	11	57,9	

Based on **TABLE 11**, the ρ value is 0.000, so Hₒ is dimissed and Hı is acknoledged, thus there is a significant difference in effectiveness between education using video tutorials to improve the teeth brushing practices of preschool children at Putra Harapan Kindergarten and Dewi Sartika Tuban Kindergarten.

Based on the results obtained from this study, it shows that the data is in accordance with the results obtained. The limitations of the researchers in conducting this study may have an impact in the future. The limitations of researchers in this study are the short time, so researchers use time as effectively as possible to conduct research in the same place at once.

IV. DISCUSSION

Preschool children aged 3-6 years are children in the critical period. In the critical period, children begin to develop their ideas so they can increase their independence. One way of independence is being able to brush your own teeth without help. To increase independence, it is necessary to increase children's knowledge. After knowledge increases, children's practices in brushing their teeth will also increase. So, providing video tutorials in education can improve children's practices through the movements in the video [6].

Based on the research results, it is known that the knowledge and practices of brushing the teeth of preschool children at Putra Harapan Kindergarten and Dewi Sartika Kindergarten are on average in the deficient category and need guidance. The aftereffects of this study are in accordance with Zulfan et al's exploration that before training was completed with video instructional exercises, it was observed that on normal kids couldn't clean their teeth appropriately [14].

Children's practice of brushing their teeth can be improved by teaching preschoolers how to do it correctly. Educating preschoolers on the proper way to brush their teeth is one way to improve their knowledge [15]. With health education, it will provide information to children about how

to properly brush their teeth. The health education provided is health education, which is education by spreading messages, instilling confidence, so that people are not only aware, know and understand, but are also willing and able to carry out recommendations related to health. Extension will be successfully supported by the existence of extension materials, namely education media [16].

The intervention given to improve the knowledge and practices of brushing teeth in preschool children was education using video tutorial media in the experimental group, showing that there were differences in knowledge and practices in brushing teeth before and after education. The application of this video tutorial can be done in different places and times. Video tutorials can also be applied or uploaded on social media so that they are easy to see.

Video tutorials can improve children's knowledge of teeth brushing practices because videos are a medium that channels knowledge and can be used as a learning process. Video tutorials can also transfer information to children on how to carry out a tooth brushing movement. Through video tutorial media, children can easily be attracted to the animations and movements in the video [11]. This is also in line with the opinion of Wahyuni et al. that the impact of video tutorials can provide excellent learning motivation to children. Video tutorials can also develop children's interest in learning and make it simpler for kids to comprehend the points introduced [17].

According to Pravitasari et al., viewing video tutorials is what children like most in learning and provide a positive response to children's motivation to learn. So, it can help improve children's cognitive abilities as seen from test scores before and after being given video media [18]. This is in accordance the assessment communicated by Nabayra et al. that video tutorials can demonstrate a process, transfer information to someone how to do something. Using video tutorials can make learning more practical, saving time and space. Learning with videos can also be considered to help empower technological resources [19].

Choosing video tutorial media for learning can increase children's activeness in learning, especially actively asking and answering about the knowledge about brushing teeth that has been given. Video tutorial media is a communicative media and easy to implement in the learning process [20]. The application of video tutorials can develop children's practices, increase children's teeth brushing potential in imitating the movements in the video and will also have an impact on improving children's teeth brushing practices [21].

Based on the research results in the control group, there was no increase in knowledge and practices in brushing teeth with education using video tutorial media. This is because the control group was not given video tutorial intervention in delivering health education, but only verbal education. Oral education only conveys material at that time. The oral health education method has many weaknesses, namely the lack of feedback between the instructor and those being taught [22]. This is in line with Filiz's opinion that verbal education can only explain or explain the material presented without any understanding. Verbal education is also only effective for individual education, not for group education [23].

Based on the study from Tanhan et al., verbal education should be used for personal education, such as one-way education. As a learning medium, verbal education will only affect small changes. This change will occur when education is given, after which it will return to the initial condition [24]. Oral education seems uninteresting, boring, and passive, because you don't have the opportunity to discover the concepts being taught yourself [25].

Based on study from the findings of this study that there is a significant difference in enhancing to which education made use of video tutorials between the experimental group and the control group. Education using video tutorials is more effective than verbal education in enhancing preschool children's toothbrushing independence a study knowledge and practices. This is because the video tutorial has an attractive animated display of brushing teeth, so it can make it easier for children to understand the material and imitate the movements in the video tutorial that is delivered.

This study's findings are consistent with those of Purnama et al., who found that there is an increase in children's knowledge and teeth brushing practices after using video tutorial media. This is proven by an increase in the average knowledge and practices after education [26].

V. CONCLUSION

Based on the results of previous research and discussions, it can be concluded that the use of video tutorials can enhancing preschool children's toothbrushing independence study knowledge and practices of brushing teeth in preschool children. In this study, there was an increase in teeth brushing practices in preschool children before and after education using video tutorials. In this study, there were likewise contrasts in the viability of education using video tutorials to increase the knowledge and practices of brushing teeth in preschool children.

Thus, it can be said that education using video tutorial media is more effective in increasing the knowledge and practices of brushing teeth in preschool children. Education regarding brushing teeth can be done by holding ice breaking activities about brushing teeth and then holding regular brushing teeth together once every 2 weeks and motivating children to brush their teeth. Recommendations for research development are to conduct research over a longer period to determine the effect of using video tutorial media on how long the knowledge and skills of brushing teeth in preschool children increase. Further research can be conducted in various kindergartens; it would be better if they were in the same place.

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