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Audiovisual model as an effort to form a tooth brushing habit of elementary school students

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ABSTRACT

Background

Tooth brushing programs that have been carried out in schools have not been able to change the brushing behavior of elementary school students, shown by OHI-S value = 1.3; DMF-T=1.09, def-t=1.78. Program improvement in behavioral aspects needs to be done to improve the dental health level of elementary school students. Behavioral changes are influenced by information. Information will be stored as much as 20% if delivered through visuals, 50% of the cost is delivered through audiovisual media and 70% if implemented in real practice.

Research Objectives

Analyze the effectiveness of the audiovisual media model on tooth brushing habits of schoolchildren

Method

Quasy experiment with pretest and posttest with control group design. The sample was divided into 2 groups, the audiovisual model in the intervention group, and the brushing program in the control group. The treatment was carried out for 21 days, the measurements were carried out pre-experiment, 25th and 35th days. Data were tested using the test freedman post hoc Wilcoxon, Man Whitney repeated, and Kruskal

Results

On the 25th-day measurement of significant changes in variable ways, long brushing teeth $p < 0.05$. At the 35th day measurement, there was a significant change in the method variable, morning brushing teeth $p < 0.05$. This model is effective against the formation of the habit of brushing teeth indicated by $p < 0.001$.

Conclusion

The audiovisual model has the potential as an alternative to brush your teeth together in school so that it can be applied in the School Dental Health Business.

Keywords: Brushing teeth, Primary School students, Audiovisual

INTRODUCTION

Dental and oral health is an integral part of general health, someone who experiences dental

and oral health problems will affect health in general, meaning that dental and oral diseases can be a factor risk of other diseases. [1, 2] More than

50 million school hours per year are lost due to dental and oral diseases, which will have an impact on children's appearance in school and their future success. [3] (*Basic Health Research Indonesia Basic Health Research*) in 2013 showed that 91, 1% of Indonesia's population aged 10 years and over had the habit of brushing their teeth every day, but only 7.3% had brushed their teeth correctly, that is a morning after breakfast and the night before going to bed. [4] Indonesians brush their teeth on average 1.27 times per day. The average length of time to brush your teeth is 57.29 seconds. [5]

Efforts to overcome dental health problems in school children that are already running, namely the School Dental Health Business Program (UKGS). The school's dental health business provides services in the form of promotive, preventive, curative and rehabilitative services aimed at school-age children. The promotive aspect carried out in the UKGS in schools is joint brushing [6]. This joint brushing program is essential to give to elementary school students because brushing your teeth is the most basic self-maintenance effort that can determine the dental health of a child until adulthood. A joint brushing program is supported internationally by the *Federation Dentaire Internationale* (FDI), the *World Health Organization* (WHO), and the *International Association for Dental Research* (IADR) through *Global Oral Health Program* (GOHP) and the revolution of the session *World Health Assembly* (WHA) the 60th year of 2007 developed and implemented dental and oral health promotion and prevention of dental and oral diseases as part of health promotion activities with a focus on Clean and Healthy Life Behavior (PHBS) and self-care practices in schools, namely by brushing your teeth every days at school [7, 8]

The tooth brushing program at the Semarang City Primary School has not been routinely carried out, on average carried out once in a year with the UKGS Program. [9] Preliminary study results at Padangsari 1 Elementary School Banyumanik 95% of students have a habit of rubbing during bathing, 90% of students are not skilled in brushing their teeth, the average value of OHI-S = 1.3; DMF-T = 1.09, deft = 1.78, this condition does not meet the 2010 national target of DMF-T ≤ 2, deft < 2, OHI-S ≤ 1.2. [10] Based on these data the tooth brushing program that has been carried out in schools has

not been able to change the behavior of brushing teeth of elementary school students to be better and more correct. Improvements need to be made on the habit of brushing teeth to improve the dental health status of elementary school students, where health status is influenced by the environment, health services, offspring, and behavior. [11] Behavioral factors that theoretically have 30-35% contribution to health status. [12] Given the considerable impact of behavior on health status, various efforts are needed to change the behavior of teeth brushing of elementary school students. Based on the above problems, it is necessary to research to change the behavior patterns in the habit of rubbing elementary school students so that it is possible to produce innovations as an alternative to brushing teeth.

MATERIAL AND METHODS

A research design *queasy experiment* with *pretest and posttest with control group design in Randomized Control Group Pretest and Posttest Design* (Non-Equivalent Control Group). The sample was divided into 2 groups, the audiovisual model in the intervention group, and the brushing program in the control group. The treatment was carried out for 21 days, the measurements were carried out pre-experiment, 25th and 35th days. Data were tested using tests *man Whitney* repeated, and *Kruskal Wallis*. The population of students at SD Padangsari 1 Elementary School, Banyumanik District, Semarang City. Padangsari 1 Elementary School was made a population in this study because based on UKGS data reports at the Padangsari Primary Health Center SD had an average DMF-T ≤ 2 score, deft < 2, OHI-S ≤ 1.2, below the national target in 2010. The sample was divided into 2 groups, the audiovisual model in the intervention group, and the brushing program in the control group. The sampling technique used by the researcher was *purposive sampling*. Estimates of the sample size in this study using a sample size calculation can at least use the formula of the sample size of the hypothesis test on the average of two independent populations (Lemeshow et al., 1990; Sastroasmoro et al., 2010) [13], obtained a value of 60, with a division of 30 in the intervention group and 30 control groups.

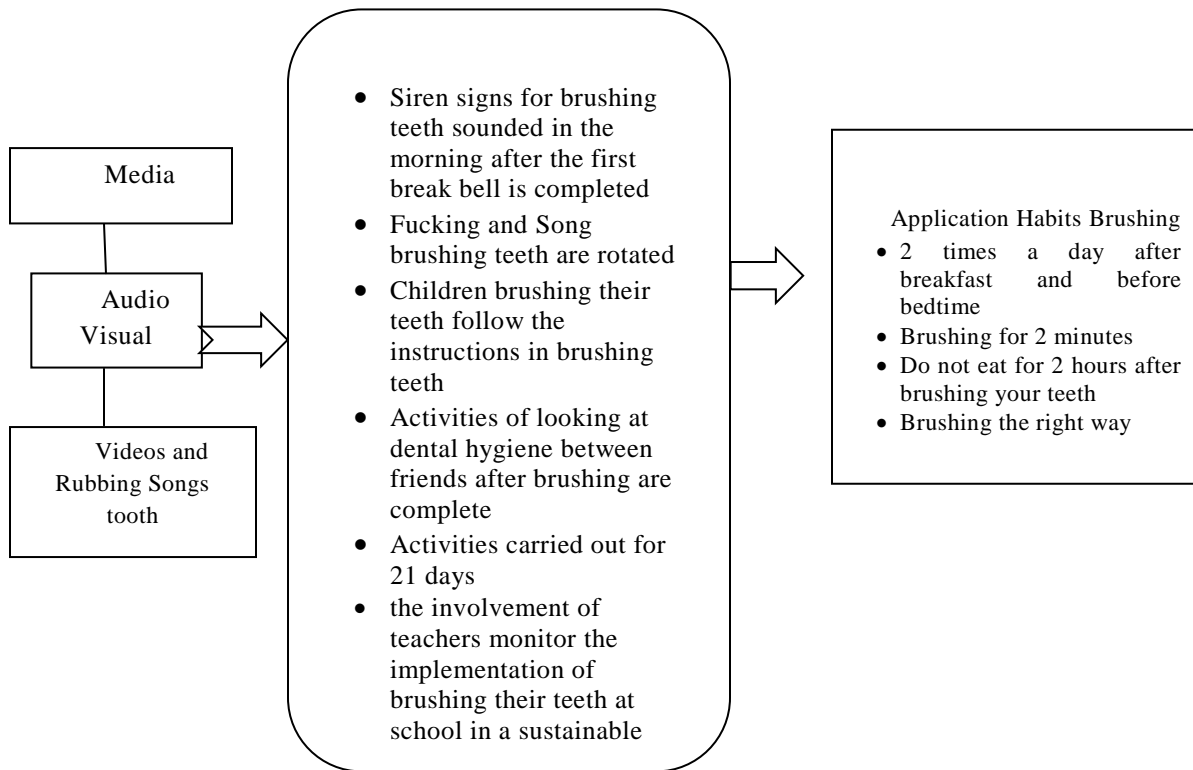


Figure 1 Model of Audio Visual Media as an effort to establish the habit of rubbing elementary school students' teeth

RESULT

To analyze the effectiveness of the audiovisual media model on the habit of brushing the teeth of

elementary school students, statistical tests were conducted. Data normality test results as follows:

Table 1. Test data normality intervention group and the control group before the intervention (n = 60)

No	Variable	Significance
1.	Lama <i>pretest</i>	0:00
2.	Lama <i>posttest</i> 1	0:00
3.	Lama <i>posttest</i> 2	0:00
4.	How to <i>pretest</i>	0:01
5.	Ways <i>posttest</i> 1	0.00
6.	How to <i>post test</i> 2	0.00

Based on the normality test obtained the abnormal data distribution $p > 0.05$. Because the data is not abnormally distributed, it will continue

with the *Man Whitney test*, the results of the *Man Whitney test* are as follows:

Table 2. Ways to Brush Teeth before and after intervention audiovisual media model brushing teeth (n = 60)

Variable	Intervening <i>Rank</i>	Control <i>Mean Rank</i>	Z Mean	±pValue-
How Brushing Teeth				
a. <i>Pre-test</i>	31.70	29.30	-554 ±0580 *	
b. <i>Post-test 1</i>	35.08	25.92	-2 138 ± 0.033 *	
c. <i>Post-test 2</i>	34.90	26.10	-2 098 ± 0.036 *	

Test Man Whitney

Based on the results of this study, it can be seen that the average value of brushing method has increased between before and after intervention in the treatment group. Statistical test results showed

that there were differences in the way of brushing teeth after 25 days of intervention ($p= 0.033, p<0.05$) and after 35 days of intervention ($p= 0.036, p<0.05$).

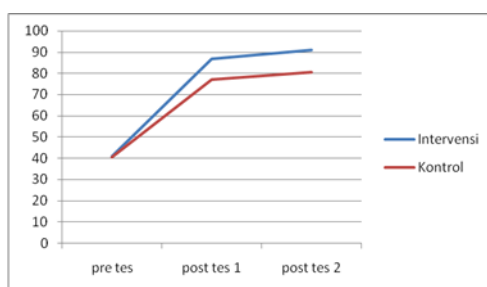


Figure 2. Interaction Graph of the average method of brushing teeth between time and between groups

From the graph above can be seen how to brush teeth audiovisual model group is superior both at the measurement of the 25th and 35th days.

The length of brushing teeth of primary school students before and after the intervention of the model of brushing teeth audiovisual media obtained the following results:

Table 3. Length of Tooth Brushing before and after intervention model of audiovisual media brushing teeth (n = 60)

variables	Intervention <i>Mean Rank</i>	Control <i>Mean Rank</i>	Z ±p-value
Old Rubbing Teeth			
a. <i>Pre-test</i>	30.00	31.00	-0.359 ± 0.720 *
b. <i>Post-test 1</i>	34.50	26.50	-2.125 ± 0.034 *
c. <i>Post-test 2</i>	33.00	28.00	-1793 ± 0.024 *

Test Man Whitney

From table 3 shows the number of students brushing teeth more than 2 minutes experienced an increase between before and after intervention in the treatment group. Statistical test results showed

that there were differences in tooth brushing time after 25 days of intervention ($p= 0.034, p<0.05$) and after 35 days of intervention ($p= 0.0024, p<0.05$).

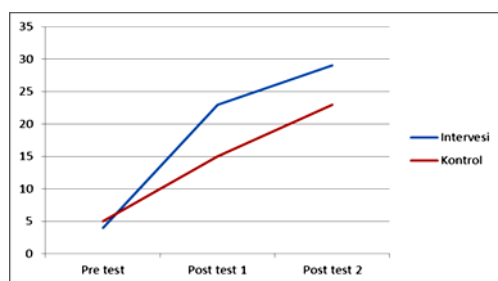


Figure 3 Interaction Graph of the average length of brushing teeth between time and between groups

From the graph above can be seen the length of brushing teeth for 2 to 3 minutes, the audiovisual model group is superior in measuring 25th and 35th days.

The effectiveness of the audiovisual media model for the formation of rubbing habits of elementary school students using the test *Kruskal Wallis*.

Table 4. The effectiveness of Audio Visual Media Models on the Habits of RubbingTooth

Variables	Intervention Mean Rank	Controls Mean Rank	Interventions- controls values
Old Rubbing Teeth	33.00	28.00	0.000
How to Rub Teeth	32.50	28.50	

Test Kruskal Wallis

Table 4 results of the analysis with the *Kruskal Wallis test* above obtained $p < 0.001$, so it can be concluded that the audiovisual media model is effective against the formation of teeth brushing habits of elementary students. The variables of the habit of brushing teeth included the length of tooth brushing, and the method of brushing teeth between the intervention and control groups, $p < 0.001$

DISCUSSION

Based on the results of the test of the effectiveness of the audiovisual media model on the habit of brushing teeth, there were significant changes ($p < 0.05$), this shows the audiovisual media model is effective against the formation of the habit of brushing teeth. The effectiveness of this audiovisual model is because this model uses audio and visual media. Where audio involves the ear while visually involving the eye as senses. [14] When brushing your teeth elementary school students see and hear direct instructions given, so that the information obtained will be more readily accepted. The more senses that are stimulated, the easier the input of information. This is as stated by Notoatmodjo, the senses that channel knowledge to the brain are the eyes (about 75% to 87%), while

13% to 25% of human knowledge is obtained and channeled through other senses. [15] Another factor that influences the effectiveness of this model is presumably because the audiovisual media model is carried out with the practice of brushing teeth regularly for 21 days. Tooth brushing activities that are carried out repeatedly by elementary school students make students accustomed to doing, with direct practice students will more easily apply the message delivered. In Notoadmojo's theory, information will be stored as much as 20% if delivered through visuals, 50% of the information is delivered through audiovisual media and 70% if implemented in real practice (Notoadmojo, 2012). [16] The practice of brushing teeth is carried out for 21 days because according to the theory (Foster in Maher et al., 2014) for 21 days to change one's habits, a constant period is required for the person to change his habits. [17] Information conveyed through audiovisual media and practice. Making elementary school students knowledge increase. The results of knowledge gained from the provision of media given, will lead to a right attitude, and finally bring up the action of brushing teeth, this is in line with. *The theory of Proceed Proceed* suggests that knowledge and attitude are predisposing factors for changes in health behavior. [18] After someone knows the stimulus, then

conducts an assessment or attitude, the next process is that he will practice what he knows by considering information and beliefs about the benefits and disadvantages. [19]

The method of brushing teeth in the intervention group was better than the control group as evidenced by the results of the test *Man Whitney* the unpaired group obtained value $p < 0.05$. This shows the existence of a factor that influences the differences in the way of brushing teeth between the two groups. The most influential factor is the difference in treatment received in both groups. [20] This happens because the training of brushing teeth with an audio-visual media model has several advantages. Audiovisual media uses songs accompanied by music. The color of music can improve memory, listening to music can also increase motivation and make someone more excited [21].

Students who get more audiovisual media models do brushing their teeth for a long time brushing their teeth on average 2 to 3 minutes. This shows the audiovisual media model makes students brush their teeth for 2 to 3 minutes. Sufficient time for brushing your teeth is 2 to minutes [22]. The audiovisual media model uses songs that are used to measure time in brushing teeth. The song brushes teeth for 2 to 3 minutes. Music from the

audio produced can stimulate rejuvenate and strengthen learning both consciously and unconsciously. The rhythm beat and harmony of music affect human physiology, especially brain waves and heart rate. [23] Music makes students consciously or unconsciously to take action to brush their teeth, besides audio media also has the advantage of being able to summarize, re-express, or recall information previously given ⁽²⁴⁾. With the advantages of the audiovisual model, the students consciously or unconsciously brush their teeth for 2 to 3 minutes.

CONCLUSION

The audiovisual model proved effective in changing the habits of brushing teeth of elementary school students. It is proven that audiovisual stimulates the sense of hearing and sight in absorbing information, and the practice of brushing teeth for 21 days forms memory and governs the body to do a habit, resulting in increased knowledge, a right attitude, and a change in behavior in the habit of brushing the teeth of elementary school students. This model can be used as an alternative to a joint tooth brushing model in schools that have been carried out

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