

*The 5<sup>th</sup> International Conference on Dental and Oral Health (ICODOH)*

**Knowledge of Toothbrushing among Sixth Grade Elementary School Students After using Animated Videos**

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**ABSTRACT**

**Background:** Oral hygiene is an important aspect of maintaining overall health, but many elementary school children still do not understand the correct technique for brushing their teeth. **Object:** This study aims to determine the increase in knowledge of sixth-grade students at Praja Mukti Elementary School in Surabaya regarding the correct way to brush their teeth through animated videos. **Method:** The study used a descriptive method with a quantitative approach. The population and sample of the study consisted of all 35 sixth-grade students. The research instrument was a questionnaire administered before and after the screening of an animated video on how to brush teeth. The data were analyzed using descriptive analysis techniques by calculating the average score of the respondents' answers as a percentage. **Results:** The results showed that before the intervention, the students' knowledge level was in the poor category with an average score of 33%, covering knowledge about brushing time (42%), toothbrush selection and maintenance (29%), and brushing movements (30%). After receiving education through animated videos, the average knowledge of students increased to 88%, which is in the good category, with significant improvements in all three aspects: tooth brushing time (86%), toothbrush selection and maintenance (90%), and tooth brushing movements (88%). **Conclusion:** These results show that animated videos are effective in improving students' knowledge of proper tooth brushing techniques because they convey information in an interesting and easy-to-understand manner and strengthen students' memory.

**Keywords:** Dental and Oral Hygiene Knowledge, Animated Videos, Elementary School Students

**BACKGROUND**

Children aged 11–12 years generally do not understand how to maintain proper dental and oral hygiene, for example, they rarely brush their teeth regularly, putting them at risk of an increase in debris (Ekasari et al., 2022 & Anggraeni et al., 2022). Based on data from the 2018 Basic Health Research (Riskesdas), 57.6% of elementary school students experienced serious dental problems, with the highest severity found in 12-year-old children. The results of a study by Yuliana et al. (2022) at SD Kartika XXI-4, Paal Dua District, Manado City,

showed that among fifth and sixth graders, 10 students had a good debris index (DI), 5 had a moderate DI, and 4 had a poor DI, with an average DI of 1.9, which is classified as inadequate. Greene and Vermillion established debris index assessment criteria, namely scores of 0–0.6 (good), 0.7–1.8 (moderate), and 1.9–3.0 (poor) (Yuliana et al., 2022).

The level of debris production is influenced by the type of food consumed and food debris that sticks to the surface of the teeth (Ekasari et al., 2022). Foods rich in fiber and water, such as fruits, are known

to help maintain dental and oral health (Novriani et al., 2020). Debris buildup can potentially cause caries and periodontal disorders due to the activity of pathogenic bacteria that stick to the teeth. Factors that influence the amount of debris include brushing technique and diet (Ngatemi et al., 2020 & Khafid et al., 2023). Debris cannot be removed by rinsing alone, so it is important to limit the intake of foods high in carbohydrates, especially sucrose, because sucrose is a source of energy for debris-forming bacteria (Pratiwi & Prasetyowati, 2020).

Proper tooth brushing can help remove debris accumulation and food debris, as well as stimulate gum tissue and reduce bad breath (Shaliyah et al., 2018). The success of tooth brushing is influenced by technique, timing, duration, type, and frequency of brushing (Surjadi, 2018). In this context, health education plays a crucial role by implementing an educational approach to increase the knowledge and motivation of the community to be able to achieve healthy living conditions, both individually and in groups (Ira, 2017).

Learning media serves as a means of delivering persuasive messages and is able to arouse the attention and emotions of students, thereby supporting a more effective learning process (Wati, 2018). One effective medium is animated videos, which combine moving visuals with sound elements to create an attractive and memorable display (Constantika et al., 2022). The use of video media in learning has been proven to increase students' understanding and interest in learning (Kurniawan et al., 2018).

Praja Mukti Elementary School in Surabaya is under the auspices of the Community Health Center on Jl. Wonorejo IV No. 4, Tegalsari District, Surabaya. The Community Health Center conducts dental examinations twice a year, but has not provided education on dental and oral hygiene. Based on an initial examination of 35 sixth-grade

students at Praja Mukti Elementary School, the average debris index was 1.96, which is classified as poor. This condition indicates a high level of debris among students at this school. Therefore, the researcher was interested in studying the improvement of toothbrushing knowledge among sixth-grade students through the use of animated video media at Praja Mukti Elementary School in Surabaya.

## RESEARCH METHODS

This study used a descriptive method with a quantitative approach aimed at describing the level of knowledge of sixth-grade students at Praja Mukti Elementary School in Surabaya regarding the correct way to brush their teeth after receiving counseling through animated video media. The population in this study consisted of all 35 sixth-grade students, who also served as the research sample. Data collection techniques were carried out through the distribution of questionnaires (pre-test and post-test) given before and after the screening of animated videos on how to brush teeth.

The data collection process included the preparation stage, implementation, and completion of questionnaires with the assistance of the researcher and a student assistant from the Surabaya Ministry of Health Polytechnic. The collected data were then analyzed using descriptive analysis techniques by calculating the average score of the respondents' answers, which were then converted into percentages and presented in tabular form to illustrate the increase in students' knowledge after the animated video intervention.

## RESULT AND DISCUSSION

### Knowledge About Brushing Time

**Table 1.**

Distribution of Knowledge About Brushing Time

No	Statement	Respondents' Answers				Criteria for Assessors Correct
		Correct		Incorrect		
		$\Sigma$	%	$\Sigma$	%	
1	The purpose of brushing your teeth after Breakfast	17	49	18	51	1. Good knowledge: 76-100%
2	Consequences of not brushing your teeth	18	51	17	49	2. Adequate knowledge: 56-75%
3	What causes cavities	15	43	20	57	3. Knowledge insufficient: < 56%
4	Brushing teeth per day	17	49	18	51	
5	Minimum time spent brushing teeth	3	9	32	91	Nursalam (2020)
6	Before going to bed, we must brush our teeth	15	43	20	57	
7	The right time to brush your teeth in the morning	10	29	25	71	
8	The right time to brush your teeth at night	24	69	11	31	
<b>Total</b>		<b>119</b>	<b>340</b>	<b>161</b>	<b>460</b>	
<b>Average</b>		<b>42</b>		<b>58</b>		<b>Less</b>

Based on Table 1, it can be seen that most students can answer questions about tooth

brushing time, with an average of 43% falling into the insufficient category.

## Knowledge About Selection and Maintenance of Toothbrush

**Table 2.**

Distribution of Knowledge About Toothbrush Selection and Maintenance

No	Statement	Respondents' Answers				Criteria for Assessors Correct
		Correct		Incorrect		
		$\Sigma$	%	$\Sigma$	%	
1	The purpose of brushing your teeth after breakfast	17	49	18	51	1. Good knowledge: 76-100%
2	Consequences of not brushing your teeth	18	51	17	49	
3	What causes cavities	15	43	20	57	2. Adequate knowledge: 56-75%
4	Brushing teeth per day	17	49	18	51	3. Knowledge insufficient: < 56%
5	Minimum time spent brushing teeth	3	9	32	91	
6	Before going to bed, we must brush our teeth	15	43	20	57	
7	The right time to brush your teeth in the morning	10	29	25	71	Nursalam (2020)
8	The right time to brush your teeth at night	24	69	11	31	
<b>Total</b>		<b>119</b>	<b>340</b>	<b>161</b>	<b>460</b>	
<b>Average</b>		<b>42</b>		<b>58</b>		<b>Less</b>

Based on Table 2, it can be seen that most students can answer questions about toothbrush selection and maintenance with

an average of 29% falling into the insufficient category.

## Knowledge About Tooth Brushing Movements

**Table 3.**  
Distribution of Knowledge About Toothbrushing

No	Statement	Respondents' Answers				Assessment Criteria
		Correct		Incorrect		
		$\Sigma$	%	$\Sigma$	%	
1	Brushing motion on upper teeth facing the lips	16	46	19	54	1. Good knowledge: 76-100% 2. Adequate knowledge: 56-75% 3. Knowledge insufficient: < 56% Nursalam (2020))
2	Brushing motion on the lower teeth that facing the lips	10	29	25	71	
3	Brushing motion on the upper inner teeth facing the palate	12	34	23	66	
4	Brushing motion on the inner lower teeth facing Tongue	8	23	27	77	
5	Brushing motion near the cheek	12	34	23	66	
6	Brushing motion on the upper back teeth facing the ceiling	7	20	28	80	
7	Brushing motion on the back lower teeth facing the tongue	12	34	23	66	
<b>Total</b>		<b>81</b>	<b>231</b>	<b>199</b>	<b>569</b>	
<b>Average</b>		<b>29</b>		<b>71</b>		<b>Poor</b>

Based on Table 3, it can be seen that most students were able to answer questions about tooth brushing movements, with an average of 30% falling into the poor

category.

## Knowledge Students About Tooth Brsuhing Time

**Table 4.**

Distribution of Knowledge on Toothbrushing Time

No	Statement	Respondents' Answers				Assessment Criteria
		Correct		Incorrect		
		$\Sigma$	%	$\Sigma$	%	
1	Purpose of brushing teeth after breakfast	35	100	0	0	1. Knowledge Good : 76-100%
2	Consequences of not brushing your teeth	31	89	4	11	2. Knowledge Fair: 56-75%
3	What causes teeth to decay	26	74	9	26	3. Knowledge Poor: < 56%
4	Brushing teeth per day	26	74	9	26	Nursalam (2020)
5	Minimum time Brushing teeth	29	83	6	17	
6	Before going to bed, we must brush our teeth	33	94	2	6	
7	The right time to brush your teeth in the morning	30	8	5	14	
8	The right time to brush your teeth at night day	30	86	5	14	
<b>Total</b>		<b>240</b>	<b>686</b>	<b>40</b>	<b>114</b>	
<b>Average</b>		<b>86</b>		<b>14</b>		<b>Good</b>

Based on Table 4, it can be seen that most students can answer questions about

toothbrushing time, with an average of 86% falling into the good.

## Knowledge Toothbrush Selection and Maintenance

**Table 5.**

Distribution of Knowledge About Toothbrush Selection and Maintenance

No	Statement	Respondent Answers				Assessment Criteria
		Correct		Incorrect		
		$\Sigma$	%	$\Sigma$	%	
1	The correct toothbrush for brushing your teeth	26	74	9	26	1. Knowledge Good : 76-100%
2	The tool used for brushing teeth	30	86	5	14	2. Knowledge Fair: 56-75%
3	A lot of pasta is used	33	94	2	6	3. Knowledge Poor: < 56%
4	Good toothbrush bristles	34	97	1	3	
5	A good toothbrush handle	30	86	5	14	
6	Pasta is good for teeth	33	94	2	6	Nursalam (2020)
7	Benefits of fluoride	33	94	2	6	
8	Requirements for a toothbrush head that good	28	80	7	20	
9	How to store toothbrushes that properly	30	86	5	14	
<b>Total</b>		<b>251</b>	<b>717</b>	<b>29</b>	<b>83</b>	
<b>Average</b>		<b>90%</b>		<b>10</b>		<b>Good</b>

Based on Table 5, it can be seen that most students can answer questions about toothbrush selection and maintenance with

an average of 90% falling into the good category.

## Knowledge About Toothbrushing Movements

**Table 6.**

Distribution of Knowledge About Toothbrushing Movements

No	Statement	Respondent's Answer				Assessment Criteria
		Correct		Incorrect		
		$\Sigma$	%	$\Sigma$	%	
1	Brushing motion on the upper teeth facing	29	83	6	17	1. Knowledge well:

No	Statement	Respondent's Answer				Assessment Criteria
		Correct		Incorrect		
		Σ	%	Σ	%	
	towards the lips					76-100% 2. Knowledge sufficient: 56-75% 3. Knowledge n less: < 56% Nursalam (2020)
2	Tooth brushing motion on the lower teeth that facing the lips	31	89	4	11	
3	Brushing motion on the inner teeth upper the facing palate	33	94	2	6	
4	Brushing motion on the inner part of the teeth facing the tounge	31	89	4	11	
5	Tooth brushing motion near the cheek	31	89	4	11	
6	Brushing motion on the upper teeth facing the palate	32	91	3	9	
<b>Total</b>		<b>247</b>	<b>707</b>	<b>33</b>	<b>94</b>	
<b>Average</b>		<b>88</b>		<b>12</b>		

Based on Table 6, it can be seen that most students can answer questions about toothbrush selection and maintenance, with

an average of 88% falling into the good category.

**Table 7.**

Summary of Knowledge About Tooth Brushing Among Sixth-Grade Students Before Using Animated Video Media at Praja Mukti School in Surabaya in 2024

No	Statement	Respondents' Answers Correct	Assessment Criteria
1	Toothbrushing Time	42	1. Good: 76-100%
2	Selection and Maintenance of Toothbrushes	29	2. Sufficient: 56-75%
3	Toothbrush Movement	30	3. insufficient: < 56%

<b>Number</b>	<b>102%</b>
<b>Average</b>	<b>33</b>
<b>Insufficient</b>	

Based on the analysis of Table 7, it can be seen that the knowledge of sixth-grade students using animated video media at Praja Mukti Elementary School in

Surabaya in 2024, with an average of 33%, falls into the insufficient category.

**Table 8.**

Summary of Knowledge About Brushing Teeth Among Sixth-Grade Students After Using Animated Video Media at Praja Mukti Elementary School in Surabaya in 2024

No.	Statement	Respondents' Answer Correct	Assesment Criteria
1	Toothbrushing Time	86	Good: 76-100%
2	Selection and Maintenance of Toothbrushes Teeth	90%	Adequate: 56-75% Inadequate: < 56%
3	Toothbrushing Technique	88	
<b>Number</b>		<b>264%</b>	
<b>Average</b>		<b>88</b>	
			<b>Good</b>

Based on the results of Table 8, it can be seen that the knowledge of sixth-grade students using animated video media at Praja Mukti Elementary School in Surabaya in 2024, with an average of 88%, is classified as good.

### **Discussion**

#### **Recapitulation of Knowledge About Brushing Teeth**

Based on the analysis of data from sixth-grade students at Praja Mukti Elementary School in Surabaya, it was found that before the use of animated video media, the students' knowledge level was low. However, after using this media, the students' knowledge increased significantly to a good level. This shows that animated video media is effective in conveying information in an interesting and easy-to-understand way, thereby

having a positive impact on increasing students' knowledge about dental and oral hygiene before and after the counseling session. Video media that combines visual, text, and dynamic audio elements is able to attract attention and help students understand the material concisely, clearly, and easily (Mulyadi et al., 2019).

The findings of this study reinforce the results of Kusumadani et al. (2022), who found that the understanding of students at SDN Ledok Kulon 3 before the intervention was low. This is also in line with the study by Ningsih et al. (2024), which reported that 70% of respondents had a low level of understanding before participating in media-based counseling sessions. Furthermore, this study supports the results of Sadimin et al. (2020), which

showed that after receiving oral health education using video media, 90% of respondents experienced an increase in knowledge to the good category.

This study is also in line with the findings of Sihsinarmiyati et al. (2021), which stated that the learning process would be more effective if delivered through animated films because they can accelerate message delivery, strengthen memory, and provide opportunities for interactive discussion. Similar results were also found by Maramis & Fione (2022), where the knowledge of fifth-grade students at MI Al- Muhajirin in Bitung City increased significantly after participating in video-based counseling, with 54 respondents showing significant improvement.

Furthermore, this study supports the findings of Jelita I.T. (2021), which confirms that audiovisual media such as animated videos are effective in increasing knowledge while also serving as an attractive means of health promotion for children. Audiovisual presentations provide realistic visualizations and strengthen students' memory, thereby increasing their participation in educational activities.

Theoretically, these findings are consistent with Skinner's S-O-R (Stimulus-Organism-Response) theory cited in Notoatmodjo (2018), in which animated video media acts as an external stimulus that triggers a response from the message recipient. In the context of this study, animation serves as a medium of information on effective toothbrushing for sixth-grade students, eliciting a response in the form of increased awareness and better toothbrushing habits after receiving guidance through animated video media.

## CONCLUSIONS

Based on the results of research on knowledge about proper tooth brushing among sixth-grade students at Praja Mukti Elementary School in Surabaya, it can be concluded that before the use of

animated video media, the students' level of knowledge was still relatively low. However, after the implementation of animated video media as a learning aid, there was a significant increase in the students' level of knowledge, placing it in the good category. This shows that the use of animated video media is effective in improving students' understanding of proper tooth brushing techniques.

## CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest in this manuscript.

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