



## The Effect of Education on Knowledge Levels of Proper Tooth Brushing Among Grades 1–3 Students of Banawa Elementary School, Donggala Regency

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**Abstract:** Teeth and mouth are the first part of the digestive system, where germs and bacteria can enter and cause health problems. Teeth are also part of the body. Tooth decay can affect the health of other body parts, which can disrupt daily activities. Brushing your teeth plays a very important role in preventing the development of bacteria that can cause tooth decay. Therefore, effective educational efforts are needed to care for teeth by brushing your teeth at least twice a day at the right time, in the morning after breakfast and at night before bed. The behavior of eating sticky and sweet foods can affect the occurrence of tooth decay. One method that is considered effective is education that can increase knowledge about how to brush your teeth properly. The purpose of this study was to analyze the effect of providing education on how to brush your teeth properly and correctly to increase the knowledge of elementary school children. This study used a quasi-experimental research method (Quasi Experimental Design), a pre-experimental design with a pre-post design Single group that is quantitative. The population in this study was 55 people. The research sample was 35 people using the Slovin formula with a margin of error (0.1). with a significance level of  $p < 0.05$ .

**Keywords:** Knowledge; How to; Brush your teeth; Good; Correct

### 1. INTRODUCTION

Dental hygiene is an important component in maintaining health, but it is often not prioritized. This is because the teeth and mouth are the first part of the digestive system, where germs and bacteria can enter and cause health problems. In addition, poor dental and oral hygiene can have a negative impact on daily life, such as reducing self-confidence and disrupting performance (Ministry of Health of the Republic of Indonesia, 2019). Teeth are also part of the body. Tooth decay can affect the health of other body parts, which can disrupt daily activities. Brushing teeth plays a very important role in preventing the development of bacteria that can cause tooth decay (Jalante, 2020). The habit of caring for teeth by brushing teeth at least twice a day at the right time: in the morning after breakfast and at night before bed, as well as the behavior of eating sticky and sweet foods can influence the occurrence of tooth decay (Jalante, 2020).

According to 2019 data from the World Health Organization, maintaining dental hygiene is one way to improve health because it can prevent oral diseases. Furthermore, the prevalence of dental caries in European, American, and Asian countries, including Indonesia, reaches 80-90% of children under 18 years old, namely 6-12 years old. Children aged

An estimated 90% of schoolchildren worldwide have suffered from caries, with the lowest prevalence in Africa. (Adam et al., 2022) Indonesian Basic Health Data in 2018 showed that the majority of dental problems were caries/toothache, accounting for around 45.3%, and the majority of oral problems were gingival inflammation or abscesses, accounting for around 14% (Ministry of Health of the Republic of Indonesia, 2020). Dental and oral hygiene in Indonesia is still very low, with 89% of children under 12 years of age suffering from dental and oral health problems.

One cause of tooth decay is improper brushing. Furthermore, improper brushing is a contributing factor to tooth decay, a potentially harmful habit. One way to maintain dental hygiene is through education and proper brushing procedures (Kencana, 2021). According to Hidayah, (2020), the inability to maintain personal hygiene makes a person more susceptible to infection. In developing countries, elementary school children face significant dental and oral hygiene problems due to poor oral hygiene.

One of the impacts of children's ignorance of proper tooth brushing techniques can lead to tooth decay. Research ( Nisa and Fitria 2020) showed that 59.4% of students experience tooth decay, with children most susceptible to tooth decay due to poor brushing practices. Actions are the activities of the organism concerned, which can be observed directly or indirectly.

Dental and oral health services in Central Sulawesi province from 2001 to 2023 showed an increase in the number of dental and oral health services at Community Health Centers (Puskesmas) and districts or cities in 2022, namely 16,493 cases compared to 15,879 cases in 2021. Based on the above data, dental and oral health cases experienced an increase and decrease in cases. Dental and oral health services that are not optimal are found in Donggala Regency, namely 28% compared to other districts in Central Sulawesi (Health Services Sector 2022) .

The government's efforts to improve dental hygiene, particularly in school-age children, have been significant, resulting in various programs and collaborations between medical professionals to reduce the prevalence of dental disease. Dental hygiene is prioritized in children, where awareness of hygiene is still low. Dental-related diseases in children can interfere with their learning abilities, as childhood is a period of increased development and quality of life. Lack of parental attention to dental hygiene increases the risk of dental disease in children, requiring continuous follow-up (Rasiman, 2020) .

SDN 6 Banawa Elementary School, located in Donggala Regency, Central Sulawesi Province, is a school dedicated to character building, fostering awareness of clean and healthy

living behaviors. These habits are expected to set an example for those around them in maintaining oral and dental hygiene, including diligently brushing their teeth properly.

Based on the results of interviews with the principal conducted by researchers on February 23, 2025, the level of toothache cases in grades 1, 2, and 3 of SDN 6 Banawa has been unstable for the past few years, with slight fluctuations, according to the principal's interview. Nevertheless, he remains vigilant and continues to monitor the situation, he also emphasized the importance of students learning how to maintain good and correct dental hygiene. So researchers conducted research on the influence of education on how to brush teeth properly to increase knowledge in grades 1, 2, and 3 of SDN 6 Banawa, Donggala Regency.

## 2. METHOD

This study uses a quasi-experimental research method (Quasi Experimental Design), the research design used is a quantitative pre-post single group. Where the experimental group and the control group are not selected randomly. In this kind of study, the relationship used to determine the group used for a particular subgroup is explained. The group below was monitored twice before the intervention and once after the intervention. T1: The initial test (Pre-Test) was carried out before therapy was given. X: Treatment by giving animated videos to children and also implementation using dental pantomimes T2: The final test (Pre-Post) was carried out after therapy was given.

The population in this study were 55 children in grades 1, 2, and 3 of SDN 6 Banawa, Donggala Regency. The sample in this study was 35 people determined based on the Slovin formula with a margin of error (0.1). The sampling technique used purposive sampling where every existing sample that met the selection criteria was included in the study until the required number was reached.

Data were collected by administering questionnaires to elementary school children after an explanation of the research and informed consent from the respondents. Data were collected using questionnaires that had undergone validity and reliability testing. Data were analyzed using univariate and bivariate analyses using computer assistance. The *paired sample t- test* was used . with *Wilcoxon* alternative and independent sample t-test with *Mann Whitney alternative* with a significance level of  $p < 0.05$ .

### 3. RESULTS AND DISCUSION

After going through the process of collecting and processing research data which was carried out from June 2 to July 4 , 2025 at SDN 6 Banawa, the results obtained were as follows:  
Univariate Analysis

a) Table 1. Frequency Distribution of Respondent Characteristics Based on Gender, Age, and Grade. In Grades 1, 2, and 3 of SDN 6 Banawa

<b>Gender</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Woman</b>	<b>24</b>	68.6%
<b>Man</b>	<b>11</b>	31.4%
total	35	100%

  

<b>Respondent Age</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>7 years</b>	<b>13</b>	37.1%
<b>8 years</b>	<b>12</b>	34.3%
<b>9 years</b>	<b>6</b>	17.7%
<b>10 years</b>	<b>4</b>	11.4%
		100%

  

<b>Class</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Class 1	<b>15</b>	<b>42.9%</b>
Grade 2	<b>9</b>	<b>25.7%</b>
Grade 3	<b>11</b>	<b>31.4%</b>
		100%

Based on table 1. shows that from 35 respondents, the data obtained by gender of respondents, male as many as 11 respondents (31.4%) and female as many as 24 respondents (68.6%). Data age 7 years as many as 13 respondents (37.1%), age 8 years as many as 12 respondents (34.3%), data age 9 years as many as 6 (17.7%), age 10 years as many as 4 respondents (11.4%). Class 1 data as many as 15 respondents (42.9%), class 2 as many as 9 respondents (25.7%), class 3 as many as 11 respondents (31.4%).

## b) Knowledge before education is carried out

**Table 2.** Frequency Distribution of Respondents Based on Knowledge of How to Brush Teeth Properly in Grades 1, 2 and 3 of SDN 6 Banawa

<b>Before being given education</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Not enough	<b>25</b>	71.4%
Enough	<b>8</b>	22.9%
Good	<b>2</b>	5.7%
<b>Total</b>	<b>35</b>	<b>100%</b>

Based on the data in table 2. frequency distribution of knowledge on how to brush teeth properly and correctly for children at SDN 6 Banawa before being given education on how to brush teeth properly and correctly, 2 respondents (5.7%) had good knowledge, 8 respondents (22.9%) had sufficient knowledge, and 25 respondents (71.4%) had insufficient knowledge.

## c) Knowledge after education

**Table 3.** Frequency Distribution of Respondents Based on Knowledge of How to Brush Teeth Properly in Grades 1, 2 and 3 of SDN 6 Banawa

<b>After being given education</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Not enough	<b>0</b>	0%
Enough	<b>6</b>	17.1%
Good	<b>29</b>	82.9%
<b>Total</b>	<b>35</b>	<b>100%</b>

Based on the data in table 3. Frequency distribution of knowledge on how to brush teeth properly and correctly for children in grades 1, 2 and 3 of SDN 6 Banawa after being given education on how to brush teeth properly and correctly, 6 respondents (17.1%) had sufficient knowledge, 29 respondents (82.9%) had good knowledge, and 0 respondents (0%) had insufficient knowledge.

### Bivariate Analysis

Bivariate analysis to see the effect of providing education on the level of knowledge of how to brush teeth properly and correctly in grades 1, 2 and 3 of SDN 6 Banawa, Donggala Regency

**Table 4.** The results of the paired sample t-test

Variables	Knowledge						P-value	$\alpha$
	not enough	%	Enough	%	Good	%		
Knowledge before being given education	25	71.4%	8	22.9%	2	5.7%		
Knowledge after being given education	0	0%	6	17.1%	29	82.9%	<0.000	<0.05

From the results of table 4. The results of the paired *sample t-test* on the data analyzed using SPSS 22, before being given education on children's knowledge showed that 25 (71.4%) children had insufficient knowledge, 8 (22.9%) children had sufficient knowledge and 2 (5.7%) had good knowledge. While after being given education, children who had insufficient knowledge were 0 (0%), children who had sufficient knowledge were 6 (17.1 %) and 29 (82.9%) children who had good knowledge. The results of the *p-value* were 0.000 <0.05. From these results, it shows that H0 is rejected and H1 is accepted so it can be concluded that there is a significant influence between before (*pre-test*) and after (*post-test*) being given education on children's knowledge about how to brush their teeth properly and correctly in grades 1, 2 and 3 of SDN 6 Banawa, Donggala Regency.

### Students' knowledge before health counseling

The results of the study showed that the majority of students' knowledge before receiving health education was in the poor category, with 29 respondents (71.4%). Meanwhile, only 2 respondents (5.7%) received the lowest score in the good category.

According to the researcher's assumption, respondents who have this bad behavior can occur because most respondents do not have knowledge about cleaning their teeth properly, it is known that they do not pay attention to the information obtained so that the knowledge they get is not applied to their daily habits. Meanwhile, respondents who have knowledge in the good category get support and information from electronic media as well as family and peers in carrying out dental hygiene.

According to the theory proposed by Notoatmodjo (2018), one factor influencing knowledge is the source of information obtained, which can have a short-term influence, resulting in increased knowledge. Someone with more sources of information will have broader knowledge, and good knowledge will foster an effective attitude.

This study is also in line with the research of Sigalingging & Waruhu (2019), which found that 7 elementary school-aged children (15%) had poor knowledge about dental hygiene, 30 (64.4%) had good knowledge, and 10 (21.6%) had good knowledge. The knowledge possessed by respondents can be caused by various factors. Factors that influence knowledge include appropriate sources such as information from parents, teachers, and health workers, in addition to children being exposed to information from print and electronic media.

### **Students' knowledge after health counseling**

The results of the study showed that after health education, the highest score for students was in the good category, with 18 respondents (82.9%), while the lowest score was in the adequate category, with only 6 respondents (17.1%).

According to the researcher's assumption, after the health counseling, the respondents' knowledge in the good category increased to 29 respondents. This happened because of the enthusiasm of the respondents during the health counseling and the increase in students' knowledge, in accordance with the theory proposed, while there were still (17.1%) of (82.9%) respondents who still had an understanding and because the respondents' interest in paying attention to the material provided by the researcher was still lacking.

This research is in line with the study conducted by Sariyem et al., (2023) which stated that the use of video media is effective in improving children's skills because when providing counseling on how to brush their teeth, children see and listen directly to the instructions given so that the information obtained will be more easily accepted and digested by children.

This study is also in line with research conducted by Jannah et al., (2022) that there was an increase in knowledge about dental and oral health after the counseling activities were carried out, there were 83.33% of respondents who had knowledge in the good category and

17.8% of respondents still had knowledge in the poor category. There was a significant difference between the level of knowledge before and after being given counseling about dental and oral health. Researchers assume that good knowledge plays a major role in forming attitudes regarding dental and oral hygiene.

This is supported by research conducted by Halawany, HS et al., (2018) that the counseling given to students showed an increase in knowledge before and after the intervention followed by an increase in dental disease prevention measures in school-age children.

#### **4. CONCLUSION**

Based on the analysis of the research results, it can be concluded that there is an influence of providing education on knowledge about how to brush teeth properly and correctly in grades 1, 2 and 3 students at SDN 6 Banawa, Donggala Regency. After being given education on how to brush teeth properly and correctly to students in grades 1, 2 and 3 at SDN 6 Banawa, Donggala Regency, there was an increase in students' knowledge regarding the correct tooth brushing technique, as well as the negative impacts of not maintaining dental hygiene.

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