

# Knowledge and Healthy Behavior of Children Towards Correct Tooth Brushing Skills Class (IV) Student at State Elementary School in South Jakarta

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## Abstract

Tooth and mouth disease, a dental health problem in the community, is in the tooth-supporting tissue (periodontal disease) and dental/dental cavities. The causes of dental caries include food consumption, dental maintenance, and the teeth' condition. In Indonesia, dental caries in children is a very important and major problem of dental and oral diseases. The survey conducted by the Indonesian Dental Health Foundation (YKGI) in 2003 on children in Jakarta showed that 70% suffered dental caries and gum inflammation. Tooth and mouth disease due to inflammation is ranked 10th in Indonesia. This study aims to determine the effect of knowledge and healthy behavior of upper (IV) elementary school students on good and correct tooth brushing skills and specifically to determine the level of knowledge and health behavior of children before and after being given good brushing and treatment skills right, to find out the difference in knowledge before and after being given the treatment of good and correct tooth brushing skills and to determine the differences in healthy behavior of children before and after being given the treatment of good and proper brushing skills.

**Keywords:** *Knowledge and Healthy Behavior of Children, Correct Tooth Brushing Skills, Upper-Class Students.*



## A. INTRODUCTION

Health Problems oral, which is essential in health development, is caused by the vulnerability of groups of school-aged children from dental health problems. According to Andini, dental and oral health is the door to overall body health (da Cunha et al., 2017). Tooth and mouth disease, a dental health problem in the community, is in the teeth support network (periodontal disease) and dental cavities. Cause dental caries include food consumption, dental care, and the condition of the teeth themselves. Caries tooth in children is a very important and significant problem of dental and oral disease in Indonesia (Peres et al., 2019).

A survey conducted by the Indonesian Dental Health Foundation (YKGI) in 2003 on children age in Jakarta shows that 70% suffer from dental caries and gum inflammation. Tooth and mouth disease due to inflammation is ranked 10th in Indonesia. Dental caries is an irreversible chronic disease where the damage to the tooth cannot heal like a tissue wound. If left unchecked, it can continue to cause tooth loss, affecting the mastication process, speech function, and aesthetic appearance (Rakchanok et al., 2010). Maintaining the dental health of school-age children must be understood as dental and oral hygiene. Therefore, the concern for dental health must

be instilled early to prevent children from developing dental diseases. Often, negligent children maintain dental health due to negative child behavior (Jatmika & Maulana, 2018). However, instilling children's awareness of the importance of dental hygiene cannot be done instantly. It even requires extra patience and is done to become a habit of ingratiating to become an adult (Gurunathan et al., 2018).

Some things that are common as obstacles in cleaning teeth are children are not used to brushing their teeth, so it is considered a scary thing even painful, trauma caused by brushing teeth that parents force, the selection of toothpaste and toothbrushes that are not right so that children do not feel comfortable and cause vomiting (Nations & Nuto, 2002).

To overcome and prevent the occurrence of dental and oral diseases in children, promotive efforts are carried out, among others, counseling services to change school-age children's level of knowledge and behavior, especially upscale (IV) (Baelum et al., 2007). The effort uses instructional media in this research that are booklet, give experience in practicing good and correct teeth brushing skills. Finally, it is expected that this level of knowledge intervention will affect behavior change now and in the future. According to Notoatmojo, health behavior is a person's response to stimuli related to disease (Haque et al., 2016).

Based on the description background, the problem can be identified as follows: "How to influence level of knowledge and healthy behaviors Elementary School children on grade IV to good and right brushing skills?".

## B. METHODS

The object of research is to increase the level of knowledge and healthy behavior of upper-level elementary school-age children to get good and correct tooth brushing skills. The quantitative research method uses a quasi-experimental approach with pre-test and post-test. The researcher wants to know whether there is a change in children's level of knowledge and healthy behavior before and after being treated properly. The primary source in this study was the fourth-grade respondent of the Pondok Labu State Elementary School and the pre-test and post-test data. Secondary sources in this study, using guidebooks and booklets for each respondent and filling in the checklist for brushing skills.

## C. RESULT AND DISCUSSION

### 1. Characteristics of Respondents by Gender

**Table 1. Characteristics of Respondents by Gender**

| No    | Gender | Group |    | Amount | Percentage |
|-------|--------|-------|----|--------|------------|
|       |        | I     | II |        |            |
| 1     | Man    | 9     | 6  | 15     | 45%        |
| 2     | Woman  | 11    | 14 | 25     | 55%        |
| Total |        | 20    | 20 | 40     | 100%       |

Information:

Group I is a treatment group in this research activity

Group II is the control group or without intervention

Based on the frequency distribution table of respondents according to gender, it can be seen that female students are more than male students. Overall, the number of respondents was 40 people consisting of 15 men (45%) and 25 women (55%). If classified according to each group consisting of 2 groups in which there is one experimental group and one control group, the results obtained in group 1 are groups that are equipped with knowledge and skills in the practice of brushing teeth with a picture booklet of 20 students with the details of the male are nine students, and 11 are female.

In group II the control group was given counseling without illustrated booklet media for a number of 20 students, namely boys 6 and 14 girls.

## 2. Univariate Analysis

Univariate analysis was carried out on each variable to determine the level of knowledge and skills practice of brushing students' teeth, both pre-test and post-test in the intervention and control groups.

### a. Knowledge Score Distribution Frequency Pre-Test of the Intervention and Control Group

Scores for searching the level of knowledge of initial brushing (pre-test) in the intervention group were assessed using the questionnaire as follows;

**Table 2. Frequency Distribution Criteria for Respondents' Initial Knowledge Level (Pre-Test) at the Intervention Group**

| Score                 | Tooth Brushing Knowledge Level Score |            |
|-----------------------|--------------------------------------|------------|
|                       | Amount                               | Percentage |
| Less (< 60%)          | 3                                    | 23.5 %     |
| Enough (60% dd 80%)   | 17                                   | 76,5%      |
| Good (> 80%)          | 0                                    | 0%         |
| Cumulative            | 20                                   | 100%       |
| Average               |                                      | 5.800      |
| Standard intersection |                                      | 0.833      |

Based on table 2, the level of initial knowledge of the intervention group respondents can be known the highest score is in ENOUGH Criteria of 17 respondents or the range of scores of 60% to 80% with an average level of knowledge of the group of 5,800 and the standard intersection is 0.833.

**Table 3. Frequency Distribution of Criteria for the Pre-Test of the Control Group**

| Score                 | Level of Teeth Brushing Knowledge |        |
|-----------------------|-----------------------------------|--------|
| Less (<60%)           | 3                                 | 23.5 % |
| Enough (60% dd 80%)   | 17                                | 76,5%  |
| Good (> 80%)          | 0                                 | 0%     |
| Cumulative            | 20                                | 100%   |
| Average               |                                   | 5.800  |
| Standard intersection |                                   | 0.833  |

In table 3. it can be seen that the highest score of the initial level of knowledge of brushing the control group respondents is in the range of 60 to 80% or has ENOUGH knowledge of 17 people, while the group's average knowledge score is 6,300 and the standard intersection is 0.978

- b. Preliminary Assessment of the Intervention and Control Group's Teaching Brush Test (Pre-Test)

**Table 4. Frequency Distribution of Respondents' Initial Skills Tooth Brushing (Pre-Test) Intervention Group**

| Score                 | Tooth Brushing Practice |            |
|-----------------------|-------------------------|------------|
|                       | Amount                  | Percentage |
| False (< 80%)         | 16                      | 76,5%      |
| Right (> 80%)         | 4                       | 23.5%      |
| Total                 | 20                      | 100%       |
| Average               |                         | 6.600      |
| Standard Intersection |                         | 1.429      |

Based on table 4. it can be seen that the most scores on the initial brushing skills test in the intervention group were in the range of less than 80% (<80%) or FALSE Practices of 16 Respondents with an average of 6,600 while the standard intersection was 1.429.

**Table 5. Frequency Distribution of Respondents' Initial Skills Tooth Brushing (Pre-Test) Control Group**

| Score                 | Tooth Brushing Practice |            |
|-----------------------|-------------------------|------------|
|                       | Amount                  | Percentage |
| False (< 80%)         | 13                      | 73,5%      |
| Right (> 80%)         | 7                       | 26.5%      |
| total                 | 20                      | 100%       |
| Average               |                         | 7.200      |
| Standard Intersection |                         | 0.951      |

Based on table 5, it can be seen that the initial skills of the respondents who brush their teeth in the control group get the most scores in the range of categories less than 80% (<80%), namely FALSE Practices of 13 people with an average control group of 7,200 and the standard intersection is 0.951

- c. Distribution of Frequency of Knowledge Level of Respondents Brushing Teeth After Intervention (Post-Test 1)

A population of 40 samples from SDN 13 and SDN 01 Pondok Labu were taken, consisting of 20 people given illustrated booklets while 20 others were not given. The results of the post-test assessment of the control group are as follows:

**Table 6. Frequency Distribution of Knowledge Levels of Respondents After Control Group Interventions (Post-Test 1)**

| Score                 | Teeth Brushing Knowledge |            |
|-----------------------|--------------------------|------------|
|                       | Amount                   | Percentage |
| Less (< 60%)          | 0                        | 0%         |
| Enough (60% dd 80%)   | 9                        | 39.5%      |
| Good (> 80%)          | 11                       | 69.5%      |
| Cumulative            | 20                       | 100%       |
| Average               |                          | 8.300      |
| Standard Intersection |                          | 0.732      |

Based on table 6, it can be seen that the knowledge level of the respondents after the intervention in post-test 1 obtained the highest score in the range of categories (> 80%) or GOOD Knowledge of 11 people (69.5%) with an average score of 8.30 and the standard crossing is 0.73.

The population of students in Pondok Labu Elementary School numbered 93 samples, while a selection of 20 students given fulfilling the inclusion criteria was given a booklet. In contrast, 20 students did not, and the results of the post-test group were as follows:

**Table 7. Frequency Distribution of Knowledge Level Scores Intervention Group Respondents (Post-Test 1)**

| Score                 | Teeth Brushing Knowledge |            |
|-----------------------|--------------------------|------------|
|                       | Amount                   | Percentage |
| Less (< 60%)          | 0                        | 0%         |
| Enough (60% dd 80%)   | 9                        | 69.5%      |
| Good (> 80%)          | 11                       | 39.5%      |
| Cumulative            | 20                       | 100%       |
| Average               |                          | 8.300      |
| Standard Intersection |                          | 0.732      |

Based on table 7, it can be seen that the level of knowledge of early tooth brushing respondents in the post-test one intervention group got the most scores in the range of categories (> 80%) with 11 people with an average of 8.3000 and the standard intersection was 0.732

**Table 8. Frequency Distribution of Knowledge Level Brushing Teeth Score (Post-Test 2) Intervention Group**

| Score                 | Teeth Brushing Knowledge |            |
|-----------------------|--------------------------|------------|
|                       | Amount                   | Percentage |
| Less (<60%)           | 0                        | 0%         |
| Enough (60% dd 80%)   | 6                        | 13,4%      |
| Good (> 80%)          | 14                       | 85,6%      |
| Cumulative            | 20                       | 100%       |
| Average               |                          | 9.050      |
| Standard Intersection |                          | 0.944      |

Based on table 8, it can be seen that the level of knowledge of brushing teeth in the post-test two intervention group obtained the highest score in the range of categories ( $> 80\%$ ) or GOOD knowledge of 14 people with an average of 9.05 and the standard intersection was 0.944.

**Table 9. Frequency Distribution of Knowledge Level Brushing Teeth Score (Post-Test 2) Control Group**

| Score                 | Teeth Brushing Knowledge |            |
|-----------------------|--------------------------|------------|
|                       | Amount                   | Percentage |
| Less ( $<60\%$ )      | 5                        | 23.5%      |
| Enough (60% dd 80%)   | 15                       | 76.5%      |
| Good ( $> 80\%$ )     | 0                        | 0%         |
| Cumulative            | 20                       | 100%       |
| Average               |                          | 5.800      |
| Standard Intersection |                          | 1.281      |

Based on table 9, it can be seen that the level of knowledge of brushing teeth in the post-test two control group had the highest score in the range of categories (60% to 80%) or ENOUGH knowledge of 15 people with an average of 5,800 and the standard intersection was 1,281.

**Table 10. Frequency Distribution of Tooth Brushing Skills Intervention Group (Post-Test 2)**

| Score                 | Tooth Brushing Skill |            |
|-----------------------|----------------------|------------|
|                       | Amount               | Percentage |
| False ( $<80\%$ )     | 2                    | 19.5%      |
| Right ( $> 80\%$ )    | 18                   | 80.5%      |
| total                 |                      |            |
| Score                 | Tooth Brushing Skill |            |
|                       | Amount               | Percentage |
| Average               |                      |            |
| Standard Intersection | 20                   | 100%       |

Based on table 10, it can be seen that the student's brushing skills in the post-test 2 group have the highest score in the range ( $> 80\%$ ) or TRUE practice of 18 people with an average of 9.15 and the standard intersection is .988.

### 3. Bivariate Analysis

Stages of statistical tests in this study included differences in the scores of pre-test and post-test knowledge in the experimental group and the control group, differences in teeth brushing skills pre-test and post-test in the experimental and control groups, differences in pre-test scores, and the post-test experimental group and the control group, along with differences in the differences in the scores of teeth brushing skills in the pre-test and post-test experimental group and the control group.

a. Knowledge of Pre-Test and Post-Test of Experimental Groups and Control Groups.

Based on the statistical analysis of the level of knowledge, there is a difference in knowledge of tooth brushing between the pre-test and post-test in the experimental and control groups. The Wilcoxon test shows significant differences in tooth brushing knowledge between the pre-test and post-test.

The experimental group produced a p-value = 0.000 ( $p > 0.05$ ); thus, it can be concluded that there was an increase in the knowledge of tooth brushing between the pre-test and post-test in the experimental group.

Wilcoxon test was also conducted in the control group by obtaining the results of p-value = 0.038 ( $p > 0.05$ ); thus, it can be concluded that there was no increase in knowledge of brushing between the pre-test and post-test in the control group

b. Pre-Test Brushing Skills and Experimental and Control Group Post-Test Groups

Based on the statistical analysis of the experimental and control groups, there were differences in tooth brushing skills between the pre-test and post-test. The Wilcoxon test in the experimental group obtained a p-value = 0,000 ( $p < 0.05$ ); thus, it can be concluded that there was an increase in tooth brushing skills between the pre-test and post-test in the experimental group.

The Wilcoxon test was also used in the tooth brushing skills test of the control group with the Wilcoxon test results obtained in the control group, namely the results of the p-value = 0.739 ( $p > 0.05$ ) test in the control group.

c. The difference in Score of Pre-Test Knowledge Level and Experimental Post-Test and Control Group

Based on the results of the analysis of the Wilcoxon test in the experimental and control groups with available data in ordinal scale and unpaired samples, the next test used was the man-Whitney test.

The man-Whitney test was used as a comparison to find out whether there was a difference in student brushing knowledge after different interventions in each group (experiment and control) between the score difference between post-test and pre-test. The basis of decision-making used is based on the p-value. If the p-value  $> 0.05$ , then  $H_0$  is accepted with the meaning there is no difference, vice versa

d. Difference Score Skills *Pre-Test* and *Post-Test* Group Experiments and Group Control.

Based on the results of the analysis of the experimental group and control Wilcoxon tests with ordinal scale data and unpaired samples, the next test used is a man-Whitney test.

Test *man-Whitney* is used as a comparison to know the difference in skills brushing teeth in the pupil after different interventions in each group of the difference between a score of *post-test* and *pre-test* between the experimental group and the control group.

The basis of the decision used is based on the *p-value*. If the *p-value*  $> 0.05$ , then  $H_0$  is accepted with the meaning there is no difference. Otherwise, the value of *p-value*  $< 0.05$ , then  $H_0$  is rejected with the implication there is a difference.

The results of the *man-Whitney* test analysis between the difference in *post-test* and *pre-test* brushing skills between the experimental and control groups obtained a *p-value* = 0,000 ( $p < 0.005$ ), which means that there is a significant difference in the increase in brushing skills between the *pre-test* and *post-test* experimental and control groups.

#### 4. Discussion

##### a. Distribution of Respondents by Age

The results of data collection at the time of the study, obtained by the effects of the characteristics of respondents according to age is known that the overall respondents in this study were at most eight years old, amounting to 24 students (56%) and aged nine years at 16 students (44%).

##### b. Distribution of Respondents by Gender

The data collection results according to sex characteristics are known that the respondents who mainly were male were 24 students (55%) and women as many as 16 students (45%).

##### c. Differences in the value of the Pre-Test and the value of the experimental group *Post-Test*.

The statistical test results of knowledge and brushing skills in the experimental group after being given the intervention of illustrated booklets as follows

###### 1) Level of Knowledge of Brushing Teeth in Experimental Groups

The difference between the value of pre-test and post-test knowledge in the experimental group is known based on the results of statistical tests with Wilcoxon.

In the Wilcoxon test, the data said there was a difference between the value of pre-test and post-test if the value of *p-value*  $< 0.05$ . After testing, obtained *p-value* = 0,000 with the understanding that there are significant differences between knowledge before and after being given a picture booklet media.

###### 2) Tooth Brushing Skills Score in the Experimental Group

The difference between the pre-test and post-test skills in the experimental group is known based on the results of statistical tests with Wilcoxon showing a difference before and after the illustrated booklet obtained *p-value* = 0,000 or  $< 0,05$ , which means that there are significant differences between skills before and after the picture booklet intervention

The statistical test results of the level of knowledge and brushing skills in the experimental group showed significant differences between before and after the intervention. This result is the same as the study results by Widya Hari Cahyati, which states that illustrated booklet media is effective in improving behavior (Williams & Cooper, 2019).

Health education is an application of the concept of education in the health field (Bartholomew et al., 1998). Health education is a learning process aimed at individuals and community groups to achieve the highest degree of dental health (Watt, 2005).

Health education can be supported by using a tool or media such as picture book media to improve children's knowledge by seeing and reading.

Picture teeth health booklet media is one of the adequate education in increasing the level of knowledge and skills early. Because in it, there are also procedures for brushing teeth properly with language that is easy to understand for elementary school-age children.

According to Sukidjo Notoatmodjo, aids, visual aids, or educational media are tools educators use in delivering their education or teaching materials (Mahmudiono et al., 2020).

The advantage of using media is that it can generate interest in educational facilities, achieve more goals, help overcome many obstacles and understandings, stimulate students to pass on dental health messages received to others, facilitate the delivery of material by educators, encourage people's desire to know, then explore and finally get a better understanding or support to uphold the knowledge gained (Hornby & Lafaele, 2011).

d. Differences in Pre-Test Values and Control Group Post-Test Values

1) Knowledge Score for Brushing Teeth in the Control Group

The difference between the value of the pre-test and post-test in the control group can be seen based on the results of statistical tests with Wilcoxon.

In the Wilcoxon test, the data said there was a difference between the value of pre-test and post-test if the value of  $p < 0.05$ . After doing the test, a p value of  $0.38 > 0.05$ , another meaning that there was no significant difference in the level of knowledge before and after being verbally spoken.

2) Tooth Brushing Skills Scores in the Control Group.

Based on the results of statistical tests with Wilcoxon, there was a difference in brushing skills before and after obtaining the value of p-value  $0.739 > 0.05$ , which means that there were no significant differences before and after oral material learning.

Based on the analysis, the results showed no significant difference between teeth brushing knowledge and skills pre-test and post-test on controls. This is probably due to the control group not being treated or intervening with illustrated booklet media but only verbally learning the material at that time (Chan et al., 2002)

The method of health education in the form of oral has many weaknesses: lack of feedback between instructors and those who are counseled, seems unattractive, boring and becomes passive, and did participants do not have the opportunity to discover the concepts taught themselves (Josselson, 1973).

Students are only active in listening, the density of material provided can result in students not being able to relearn material, easily forgotten, or difficult to achieve the maximum level of knowledge (de Groot, 2006)

e. Differences in the Value of Pre-Tests and Values of Post-Test Intervention Groups and Control Groups

1) Tooth Brushing Knowledge Scores in the Intervention and Control Groups

The experimental group's pre-test and post-test brushing knowledge showed an average value of 5.76 and 8.69, respectively. It was seen that there was an increase in the average score of tooth brushing knowledge in the experimental group of 2.92.

The increase in the average score of tooth brushing knowledge is supported by the results of respondents who can answer correctly in the experimental group post-test results. In contrast, in the control group, pre-test and post-test brushing knowledge results show an average value of 6.28 and 5.83. From the results, it can be seen that there was a decrease in the average score of -0.45.

Based on the unpaired Mann-Whitney test results conducted between the intervention and control groups obtained a p-value = 0,000 ( $p < 0.005$ ). Thus, the brushing knowledge score was significant between the intervention group and the control group.

This shows the meaning that the provision of visual booklet media is effective in increasing the knowledge of brushing teeth for students of Pondok Labu Public Elementary School in 2018.

Health education is essentially an activity or effort to convey health messages to the community, groups, or individuals (Mustika & Sudiantara, 2019). The statement said through Picture Booklet media in the experimental group experienced significant differences between the pre-test and post-test knowledge of tooth brushing, whereas, in the control group that was not given the pictorial booklet, there was no difference between the value of the pre-test and post-test

2) Tooth Brushing Skills Scores in the Experiment Group and the Control Group.

In the intervention group, the results of pre-tests and post-test brushing skills showed an average value of 6.57 and 9.30, respectively, indicating an increase in the average score of knowledge in the intervention group of 2.73.

The increase in the average score of tooth brushing knowledge is supported by the results of respondents answering correctly on the results of the intervention group post-test. In contrast, in the control group, the pre-test and post-test brushing knowledge results show an average value of 7.19, and 7.14 shows a decrease in the average score of -0.04.

Statistical tests with unpaired man-Whitney results between the intervention group and the control group after the intervention with a p

value = 0,000 < 0,05 can show significant differences in tooth brushing skills between the post-test intervention group and the post-test control group. This means that the provision of Picture Booklets effectively changes the behavior of the respondents.

This is following the research of Afif Hamdalah and Widya Hary Cahyati. They stated that visual media is effective in improving knowledge and skills compared to oral counseling (Laila et al., 2018). This is because illustrated booklet media is a tool that can be seen and read back, making it more accessible in understanding material delivery (Womack & Jones, 1997).

Health education is an application of the concept of education in the health sector (Nutbeam, 2000). Health education is a learning process aimed at individuals and groups of society to achieve the highest degree of dental health (Petersen & Yamamoto, 2005)

Health education can be helped by using a tool or media, one of which is a picture booklet. Media picture books are one of the media that are liked by children in general and are made in such a way as to be able to describe the procedures for brushing teeth properly using language that is easy to understand for elementary school-age children (Mangold & Faulds, 2009)

#### D. CONCLUSION

After being analyzed, it can be concluded that illustrated booklet media helps increase the level or level of knowledge and brushing skills for upper (IV) elementary school students who are significant between increasing knowledge between the intervention and control groups (p-value = 0,000) increase in tooth brushing skills between the intervention and control groups, namely (p-value = 0,000).

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