

# THE EFFECTIVENESS OF THE STORY BOOK WITH PICTURE ON ORAL HEALTH KNOWLEDGE OF DEAF STUDENTS

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## ABSTRACT

**Background:** Disabilities is a limitation on the ability of people such as hearing impairment. The world population of hearing loss is 360 million. Oral health status of deaf children is worse than normal children. Oral hygiene status of 63.9% deaf students in Tomohon is in moderate category. Studies showed correlation between knowledge of oral health and oral health status. Oral health education requires the media for learning. The aim of this study is to determine the effectiveness of story book with picture in oral health education of deaf students in SDLB-B Karya Mulia I Surabaya.

**Materials and Methods:** This study uses a non-randomized quasi experimental pre-test and post-test control group design. The research was conducted at SDLB-B Karya Mulia I Surabaya which has 36 students without any other disability and willing to be the respondents. The sample was divided into two groups: the experimental group and the control group. The experimental group is given oral health education using story book with picture while control group uses lecture with sign language. The research instrument uses questionnaires.

**Result:** There is a significant increasing in post-test of the deaf students knowledge in experimental group than in pre-test. The comparison test between experimental and control group showed difference with p value < 0.005.

**Conclusion:** The study showed that story book with picture is effective in increasing knowledge of deaf students. There is significant difference in knowledge after this study.

**Keywords:** Story book with picture, oral health education, deaf student

## 1.0 Introduction

Disabilities are a limited condition on the ability of people. One of the disabilities is an individual with hearing impairment or is commonly referred as deaf people. Deaf people have limited listening and speaking ability. The world population with hearing loss is 360 million people or 5% of the world population. This hearing impairment occurs in 328 million adults and 32 million children (WHO, 2017). Disability population in Indonesia is 2.45% of the total population. This hearing impairment affects 7.87% of the disability population. East Java province has a population with hearing impairment about 559,251 people (Kemenkes, 2014). Children with hearing impairments or deaf children have particular accessibility issues to fulfil their health care needs. In general, their oral health status is worse than normal children (Sandeep, Kumar, Vinay, Chandrasekhar, & Jyotsna, 2016).

According to Riskesdas in 2013, caries prevalence in Indonesia is 76.2%. The caries number measured by DMF-T is 4.5 which mean that every people in Indonesia have 4.5 cavities. Children aged 12 years old have DMF-T number of 1.38. Bangka Belitung, South Kalimantan, West Kalimantan, South Sulawesi and Special Region of Yogyakarta were the provinces with the highest DMF-T (Kemenkes, 2014). The low level of oral health can affect the function of speech, mastication and self confidence (Kemenkes 2012).

About 67.7% deaf students in SLB-B YPSLB Gemolong have a CPITN score of 2 (Mawaddah, Arbianti, & Ringga 2017). Oral hygiene status with OHI-S indicator shows 63.9% of the deaf students in SLB-B GMIM Tomohon is in moderate category (Indahwati, Mantik, & Gunawan, 2015). Oral health conditions of the deaf students are still low and it can be caused because they do not know how to maintain the oral health.

Several studies have shown that there is a correlation between people knowledge of oral health with their oral health status. There is a significant correlation between the level of oral health knowledge and the number of dental caries, the higher knowledge level can result the lower number of caries (Ramadhan, Cholil, & Sukmana, 2016). The lower level of knowledge that children have, the lower level of oral hygiene that they owned. Deaf students have lower knowledge than normal students (Tugeman, Rachman, Yusof, & Daud. 2016). Improving knowledge of oral health can be done by giving dental health education. Deaf students with limited hearing impairment need to be educated in ways appropriate to their own disability. Deaf children face a lot of obstacles in processing information that have been received. They experience disturbance in receiving, storing and revealing information (Hernawati, 2007). Oral health education as a learning process requires the media as a tool to facilitate the learning and understanding process for deaf students. Based on the suggestion from the book of Child Care Services Guidance in Special School and pay attention to the limitations of deaf students then the media used in providing oral health education is a story book with picture.

## **2.0 Materials and Methods**

### ***2.1 Location and study design***

This study used a non-randomized quasi experimental pre-test and post-test control group design. The research was conducted at SDLB-B Karya Mulia I Surabaya. This school is a special primary school for deaf students. This school has no media for oral health education. This study was conducted in January until June 2018.

### ***2.2 Sampling population and sampling method***

The sample of this study is all deaf students enrolled in Special Primary School SDLB-B Karya Mulia 1 Surabaya that has 36 students with the criteria of inclusion is without any other disability and willing to be the respondents.

### ***2.3 Intervention materials and intervention procedure***

The study sample was divided into two groups: the experimental group and the control group. The experimental group is a group given oral health education using story book with picture while control group uses lecture with sign language. Provision of oral health material is given for 60 minutes every day for six consecutive days.

### ***2.4 Instruments***

The research instrument used is questionnaires about oral health knowledge. The questionnaires with 10 questions, the correct answer is scored 10 and the wrong answer is scored 0. The category of knowledge is in good category if the value is  $\geq 75$ , in moderate category if the value is 56-74 and poor category if the value is  $\leq 55$ . The questionnaire is tested for validity and reliability. Pre-test is done early before the study whereas post-test is done seven days after the intervention is completed.

### ***2.5 Variables***

Dependent variable of this study is story book with picture and the independent variable is knowledge of oral health.

### ***2.6 Data Analysis***

Data analysis of this study using Wilcoxon Sign Rank test to determine the difference of knowledge before and after given oral health education. Mann Whitney test is using for determine the difference score of pre test and post test from control group and experimental group.

### 3.0 Result

#### 3.1 Characteristics of the Respondents

Respondents of this study are deaf students in SDLB-B Karya Mulia I Surabaya. The characteristics description of respondents covers sex, age, education level and last education of parents. Characteristic description of respondent is in Table 1.

**Table 1:** Distribution of Sex, Age, Education Level of Respondent At SDLB-B Karya Mulia I Surabaya, April 2018 (N=36)

Variable	Frequency	Percentage (%)
<b>Sex:</b>		
Male	15	42
Female	21	58
<b>Age (Year):</b>		
9-10	7	19.4
11-12	15	41.7
13-14	14	38.9
<b>Education Level (Elementary School):</b>		
2 <sup>nd</sup> Grade	9	25.0
3 <sup>rd</sup> Grade	4	11.1
4 <sup>th</sup> Grade	9	25.0
5 <sup>th</sup> Grade	8	22.2
6 <sup>th</sup> Grade	6	16.7
Total	36	100

Table 1 shows the sex distribution of respondents. The proportion of sex is almost the same between male and female. In this study there was no effect of the difference in the number between male and female due to the proportion of almost equal numbers. The age of respondents between 9-14 years, this age is included in the age category of children. According to the law constitution No. 23 of 2002 on child protection article 1 verse 1, children is a person who is not yet 18 years of age. According to the behaviour, children are entitled to the rights of their basic needs in the form of biological needs including health care, the needs for compassion and the needs for early stimulation so that they can grow and develop in accordance with their potential. Distribution of respondents' education level, they are at elementary school level. Respondents of this research are from grade 2 to grade 6. The student of grade 1 is only 1 person and he is not willing to follow the research.

#### 3.2 Dental and Oral Health Knowledge Respondents in SDLB-B Karya Mulia I Surabaya

Knowledge of respondent about oral and dental health before got oral health education showed the following picture: respondents with good knowledge as much as 5.6%, sufficient knowledge as much as 55.6% and less knowledge as much as 38.8% respondents. After

getting dental and oral health education the number of respondents with good knowledge increased to 52.8%. Respondents with sufficient knowledge fell to 41.6% and respondents with less knowledge decreased to 5.6%.

### 3.3 Statistical Test Results of Knowledge Comparison from Post-Test and Pre-test

The respondent's knowledge data were tested for normality using Shapiro Wilk. The results obtained are abnormally distributed data because the value of significance  $<0.05$ . Test to determine the difference of knowledge before and after given oral health education using Wilcoxon Sign Rank because data is not in normal distribution.

**Table 2:** Knowledge comparison of post-test and pre-test in experimental group and control group (N=36)

Variables	Mean	SD	p-Value	Note
Post-test knowledge of experiment group	82.78	19.34	0.000* ( $< 0.05$ )	Significant
Pre-test knowledge of experiment group	53.89	20.04		
Post-test knowledge of control group	73.89	13.78	0.001* ( $< 0.05$ )	Significant
Pre-test knowledge of control group	61.67	13.83		

Table 2 showed that in groups using story book with picture there is a significant difference between post-test results and pre-test of respondents' knowledge. In groups using sign language there was a significant difference between the post-test results and the pre-test of knowledge. The  $p < \alpha$  ( $\alpha = 0,05$ ) values indicate that there is a significant difference between prior and after knowledge given oral health education in groups using story book with picture or groups using sign language.

**Table 3:** Comparative Test Results Value of Post-test Difference and Pre-test Knowledge of Groups Using Story Book with Picture and Groups Using Sign Language (N=36)

Variabel	Mean	SD	p-Value	Note
Post-test difference score and group knowledge pre-test using story book with picture.	28.89	13.67	0.000* ( $< 0.05$ )	Significant
The differences value of post-test and pre-test group knowledge using sign language	12.22	9.2		

The effectiveness of story book with picture in improving knowledge about dental and oral health of respondents is shown from the result of post-test difference and pre-test of knowledge. The group using picture story book has a difference value of 28.89, while the

group using sign language has a difference value of 12.22. Table 3 shows that statistical test results using Mann Whithney test, there is a significant difference between the post-test difference and pre-test of knowledge from groups using story book with picture and groups using sign language. Groups using story book with picture have greater discrepancy value than groups using sign language. This finding means that story book with picture is more effective in increasing the knowledge of respondents compared to sign language.

#### 4.0 Discussion

The oral health education given using story book with picture and sign language act as a stimulus to the deaf students. Information is provided through oral health education at the time of intervention. This information generates a response of increased knowledge. The process or activity of the mind that occurs when a person receives information can be explained as follows: the first process begins with perception. Perception is the process of detecting and interpreting the stimuli that individuals receive through sensing. Deaf children do sensing through their sense of sight. Perception involves two aspects: the external aspect of the individual in the form of a stimulus of information and aspects of the individual in the form of relevant knowledge and has been stored in memory. An object can be perceived differently by two different people because of the difference in knowledge each person has about the object. The next process is the process of storing information. Humans can process information according to different levels. Stimulus that is analysed at a shallow level then its memory will be easily damaged. The stimulus analysed deeper than the memory recording will be longer. Repetition of information at a deeper level will improve the recall of information in memory (Suharnan, 2005).

Criteria of student succeed in learning can be known from the extent to which students can reveal the information that has been given. The findings in this study are a significant increase in the value of the post-test results of the knowledge of students of SDLB-B Karya Mulia I. In the group using the story book with picture there is a greater difference value between after and before the intervention compared with the group using sign language. These findings suggest that the use of story book with picture is more effective than sign language. Story books with picture have an effect on increasing deaf students' knowledge in SDLB-B Karya Mulia I. The in-line research is Hamdalah's (2013) research, which states that pictorial story books are effectively used in oral health education. The information obtained by deaf students through the visual media of story book with picture is easier to remember than information given by using sign language. According to Edgar Dale's conical experience, the more abstract the message is delivered the smaller the message will be remembered. Still the pictorial story books have a higher intensity in perceiving messages or information than sign language. The experience of learning through sign language is a more abstract experience compared to the experience of learning to use pictorial story books. The research hypothesis that story book with picture used in oral health education can improve the knowledge of deaf students in SDLB Karya Mulia I proved true.

## 5.0 Conclusion and recommendation

According to the results of this research, it can be concluded that the story book with picture is effective in improving the knowledge of deaf students. It is recommended that schools use story book with picture media to provide oral health education to deaf students.

## Declaration

Authors declare that there is no conflict of interest regarding publication of this article.

## Author's contribution

Author 1: Initiation of idea, information gathering, editing of manuscript

Author 2: Review of manuscript

Author 3: Review of manuscript

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