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**DIFFERENCES IN THE EFFECTIVENESS OF DENTAL HEALTH EDUCATION
USING SONGS AND POSTERS ON TOOTH BRUSHING KNOWLEDGE**

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ABSTRACT

Background: Based on Riskesdas (2018), the largest proportion of dental problems in Indonesia are damaged teeth/cavities/toothache, one of the reasons is the low proportion of tooth brushing behavior. Banjarbaru City is the area with the lowest prevalence in the South Kalimantan region in the right time to brush teeth with the proportion is only 2,06%. Bloom divided behavior into 3 domains, namely knowledge, attitudes, and actions. One of the efforts to increase knowledge maintaining oral health can be through Dental Health Education used songs and posters.

Purpose: Analyzing the differences in the effectiveness of Dental Health Education using the Healthy Teeth song and the Read Me poster on increasing knowledge of brushing teeth of class VI students at SDN 2 Loktabat Selatan.

Methods: used a quasi-experimental design method with a non-equivalent control group design. Sampling technique used was total sampling technique. The research was conducted at SDN 2 Loktabat Selatan with a sample of 79 respondents. **Results:** Wilcoxon showed that there were differences in knowledge of brushing teeth before and after DHE using the Healthy Teeth song and Read Me posters in the intervention group ($p=0,000$) and there was no difference in knowledge of brushing teeth between pretest and posttest in the control group ($p=0,809$). Mann Whitney showed that there were differences in knowledge of brushing teeth between the song and poster groups ($p=0,001$), but the mean rank of the song group was higher. **Conclusion:** DHE using the Healthy Teeth song was more effective in increasing knowledge of brushing teeth.

Keywords: Brushing Teeth, Knowledge, Poster, Song, Education

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INTRODUCTION

The 2018 Basic Health Research (Riskesdas) indicates the majority of dental problems in Indonesia are tooth decay/cavities/pain, accounting for 45.3%. This can be attributed to the low proportion of toothbrushing behavior.¹ In South Kalimantan, the proportion of daily toothbrushing is 96.04%, but the proportion of proper toothbrushing duration is only 4.97%. Among individuals aged 10-14 years, the prevalence of daily toothbrushing is 98.01%, while the prevalence of proper toothbrushing duration is only 4.96%. Specifically in Banjarbaru, the prevalence of daily toothbrushing is 97.88%, but the prevalence of proper toothbrushing duration is only 2.06%. Banjarbaru city has the lowest prevalence of proper toothbrushing duration among the regions in South Kalimantan.²

Brushing teeth is an important activity to maintain dental health. Bacteria and food residues that adhere to

the teeth can be cleaned using a toothbrush. Proper and accurate toothbrushing can be performed consistently, diligently, and attentively.³ One of the efforts that can be made to improve knowledge regarding dental and oral health maintenance is through Dental Health Education (DHE).⁴ DHE is the provision of education about dental and oral health using available learning media, with the aim of improving knowledge and raising awareness among the public to actively participate in improving their health status.⁵ The health status is influenced by behavioral factors, healthcare services, environment, and genetics.³ Health behavior is divided into three categories: knowledge, attitude, and action. Knowledge is a crucial domain in shaping an individual's behavior.⁶

The selection of educational media is one of the crucial elements in conducting education. The media used can significantly influence the effectiveness of

information delivery. Examples of such media include songs and posters.⁷ Previous research by Timoneno et al., (2019) stated that education through songs can enhance children's knowledge after receiving the instruction. This method allows children to practice toothbrushing movements according to the lyrics of the song being sung. The change in a more cheerful atmosphere enables children to enjoy the teaching process more effectively.⁸ The research conducted by Linasari (2017) on poster media stated that education using posters resulted in a higher average increase in knowledge compared to using leaflets as a medium. Posters have a stronger impact and are more attention-grabbing, and they are more frequently seen and read as they are displayed in public places.⁹

Based on preliminary studies, SD Negeri 2 Loktabat Selatan is a school located in Banjarbaru City. The samples in this study are sixth-grade elementary school students, as they are expected to be cooperative, have a high interest in learning, and are supported by a strong memory, enabling them to understand the given materials effectively.⁴ This study aims to analyze the difference in effectiveness between DHE using the song Healthy Teeth and the poster Read Me in terms of knowledge of toothbrushing among sixth-grade students at SD Negeri 2 Loktabat Selatan.

METHODS

The research conducted in this study was ethically approved by the Health Ethics Commission of the Faculty of Dentistry at Lambung Mangkurat University with the number 028/KEPKG-FKGULM/EC/II/2023. The method used was quasi-experimental with a non-equivalent control group design. There were three groups, namely two intervention groups and one control group. The population in this study consisted of 82 sixth-grade students at SDN 2 Loktabat Selatan. The sampling technique used was total sampling, which was determined based on inclusion and exclusion criteria. A total of 79 respondents were included in the study, divided into the intervention group using the song "Healthy Teeth" consisting of 27 students, the intervention group using the poster "Read Me" consisting of 27 students, and the control group consisting of 25 students.

Data collection was conducted in March 2023, starting from March 1st, 2023, until March 8th, 2023, for a period of five days. The materials used in this research were toothpaste and internet quota. The tools used included the song "Healthy Teeth," the poster "Read Me," a laptop, a speaker, a projector, toothbrushing knowledge questionnaires, informed consent forms, toothbrushes, and a dental phantom.

Procedure of Song Creation

The song used in this research is titled "Healthy Teeth" and was created as an adaptive learning medium for DHE on toothbrushing for students at SDN 2

Loktabat Selatan, who will be the respondents in this study. The process of creating this song involved the researcher collaborating with two external parties as artists who were willing to assist in the analysis and composition of music for this research. The external party, who is an academic in the field of music, has stated that the musical elements such as the lyrics, harmony, tempo, and melody contained in the song "Healthy Teeth" are suitable for elementary school children, making it appropriate for use in this research.

Lyrics: In the song "Healthy Teeth," the lyrics contain an invitation and education about toothbrushing, including the frequency, duration, and proper systematic methods of brushing teeth. The method used is the horizontal method, making it easy to apply in daily life and easy to understand by children.

Harmony: The harmony/chords used in the song "Healthy Teeth" are major chords, as major chords create a cheerful atmosphere in a song and are suitable for children's songs. The use of this song in DHE about toothbrushing makes it easier to demonstrate and creates a joyful atmosphere.

Tempo: The tempo used in the song "Healthy Teeth" is moderato ranging from 100 to 110 bpm, a moderately paced tempo that provides an enthusiastic atmosphere in delivering DHE to elementary school children.

Melody: The melody in a piece of music is determined by its rhythm and pitch intervals. In the song "Healthy Teeth," the rhythm predominantly utilizes half notes, and the widest pitch interval used is a perfect fifth (a five-note distance). This is intended to make the melody easy to absorb for elementary school children.

The sheet music of the song "Healthy Teeth" can be seen below:



Figure 1. Sheet Music of the song "Healthy Teeth"

Procedure of Poster Creation

The poster used in this research is titled "Read Me" and was created as an adaptive learning medium for DHE on toothbrushing for students at SDN 2 Loktabat Selatan, who will be the respondents in this study. External experts in this field have stated that the components of the poster, such as the title, illustrations (design), images, and content, are appropriate for elementary school children, making it suitable for use in this research.

Title: The title of this poster is "Read Me," which means "read me." With this title, it is expected that the poster can be read and understood by elementary school children.

Illustration: The illustrations (design) used in this poster have been tailored for elementary school children. The design features bright colors to create an attractive and enjoyable impression for children. The size of the "Read Me" poster is 59 x 83 cm.

Figure: The figure in this poster are arranged in the sequence of toothbrushing steps accompanied by descriptions, allowing children to have a consistent perception and understanding by observing the images and reading the descriptions.

Content: The "Read Me" poster contains educational content about toothbrushing, including the frequency, duration, and proper systematic methods. The method used is the horizontal method, making it easy to apply in daily life and easily understood by children.

The form of the "Read Me" poster can be seen below:



Figure 2. "Read Me" Poster

Procedure of Dental Health Education

In the intervention group using songs and posters, after administering the pretest. DHE using songs began with the researcher playing a song titled "Healthy Teeth" along with a lyric video for two rounds of playback. The researcher then sang the song live and together with the participants, while demonstrating in front of the class using a dental phantom to illustrate the toothbrushing technique in accordance with the lyrics of the song. DHE using posters began with the researcher reading the posters and demonstrating in front of the class using a dental phantom to illustrate the proper way of brushing teeth as depicted in the posters. Then, the respondents were given the opportunity to demonstrate the toothbrushing technique using a dental phantom to train them in imitating the procedure as demonstrated by the researcher. After 5 days of intervention, the respondents were given a posttest. During 1 day, the allotted time for the intervention was 15-20 minutes.

Procedure for Data Collection

Data collection in this study included primary data, which is knowledge data obtained from respondents by providing a questionnaire before and after conducting DHE through the Healthy Teeth song and the Read Me poster. The knowledge assessment was measured by providing a questionnaire consisting of 12 statements, where each statement received a score of 1 for a correct answer and a score of 0 for an incorrect answer, using the Guttman scale. Then, the obtained scores were summed up and determined based on measurement criteria. Measurement criteria for knowledge include:

- a. High: >8
- b. Medium: 4-8
- c. Low: <4

RESULTS

The overview of research results based on groups, gender, and classes among the 79 respondents can be seen below:

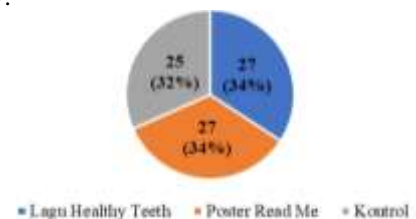


Figure 3. Overview of Respondents Based on Groups

Based on Figure 3, out of 79 respondents, the intervention group using the Healthy Teeth song and the Read Me poster had a total of 27 students (34%), while the control group had a total of 25 students (32%).

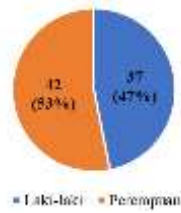


Figure 4. Overview of Respondents Based on Gender
Based on Figure 4, with a total of 79 respondents, there were more female students, with 42 students (53%), compared to male students, with 37 students (47%).

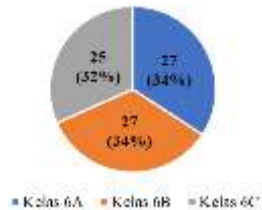


Figure 5. Overview of Respondents Based on Classes
Based on Figure 5, the highest number of respondents came from classes 6A and 6B, with a total of 27 students (34%), while the fewest respondents came from class 6C, with a total of 25 students (32%).

The knowledge measurement conducted by the researchers yielded the following data.

The Difference in Knowledge of Brushing Teeth Before and After Dental Health Education in the Intervention Group Using the Healthy Teeth Song

Table 1. The results of the pretest, posttest, and Wilcoxon test.

	High	Medium	Low	p value
Pretest	20 (74,08%)	7 (25,92%)	0%	0,000
Posttest	27 (100%)	0%	0%	

Based on Table 1, there is an improvement in knowledge from the pretest results, with 20 students (74.08%) in the high criteria, increasing to 27 students (100%) in the high criteria in the posttest. The Wilcoxon test yielded a significance value of $0.000 < 0.05$, indicates that the null hypothesis (H_0) is rejected, indicating a significant difference in knowledge of brushing teeth between before and after DHE using the Healthy Teeth song in the song intervention group.

The Difference in Knowledge of Brushing Teeth Before and After Dental Health Education in the Intervention Group Using the Read Me Poster

Table 2. The results of the pretest, posttest, and Wilcoxon test.

	High	Medium	Low	p value
Pretest	20 (74,08%)	7 (25,92%)	0%	0,000
Posttest	26 (96,3%)	1 (3,7%)	0%	

Based on Table 2, there is an improvement in knowledge from the pretest and posttest scores, with initial results of 20 students (74.08%) in the high criteria increasing to 26 students (96.3%) in the high criteria. However, there is still 1 student (3.7%) in the moderate criteria. The Wilcoxon test resulted in a significance value of $0.000 < 0.05$ indicates that the null hypothesis (H_0) is rejected, suggesting a significant difference in knowledge of brushing teeth between before and after DHE using the Read Me poster in the poster intervention group.

The Difference in Knowledge of Brushing Teeth Before and After without Dental Health Education in the Control Group

Table 3. The results of the pretest, posttest, and Wilcoxon test

	High	Medium	Low	p value
Pretest	17 (68%)	8 (32%)	0%	0,809
Posttest	18 (72%)	7 (28%)	0%	

Based on Table 3, there is no significant improvement between pretest and posttest knowledge, with initial results of 17 students (68%) in the high criteria changing to 18 students (72%) in the high criteria. The Wilcoxon test yielded a significance value of $0.809 > 0.05$ indicates that the null hypothesis (H_0) is accepted, indicating no difference in knowledge between before and after without DHE in the control group.

The Difference in Effectiveness of Dental Health Education Using the Healthy Teeth Song and the Read Me Poster on Knowledge of Brushing Teeth

Table 4. The results of the Mann-Whitney test

The group	Mean Rank	p value
Healthy Teeth Song	32,5	0,001
Read Me poster	22,5	

Based on Table 4, the results of the Mann-Whitney analysis test for the intervention groups using the song and the poster yielded a significance value of $0.001 < 0.05$, indicating that the null hypothesis (H_0) is rejected. This means that there is a significant difference in knowledge of brushing teeth between before and after DHE using the Healthy Teeth song and the Read Me poster. Based on the Mean Rank results, the intervention group using the Healthy Teeth song has a higher score compared to the intervention group using the Read Me poster. Therefore, it can be concluded that DHE using the Healthy Teeth song is more effective than using the Read Me poster in improving knowledge of brushing teeth.

DISCUSSION

The Difference in Knowledge of Brushing Teeth Before and After Dental Health Education in the Intervention Group Using the Healthy Teeth Song

Respondents who received additional information using the Healthy Teeth song were enthusiastic and actively asked questions, showing their eagerness to understand the newly acquired information more clearly. The more information an individual receives, the tendency is to have broader knowledge.¹⁰ These results are consistent with the research conducted by Komara et al., (2019), which found an influence of nutrition education using songs on the knowledge of fourth-grade students. The improvement in knowledge observed among the respondents is attributed to the fact that they received new information during the intervention.¹¹ Based on the results of Wilcoxon test, it can be concluded that DHE using the Healthy Teeth song is effective in improving knowledge of brushing teeth, aligning with the first research hypothesis. Supported by the research conducted by Chintyasari et al., (2020), which shows that DHE that incorporates music in the form of children's songs can lead to a reduction in plaque index in children starting from the third day, as children receive additional information about how to brush their teeth.¹²

The Difference in Knowledge of Brushing Teeth Before and After Dental Health Education in the Intervention Group Using the Read Me Poster

Posters are print media that prioritize visual stimulation, with attractive designs, appealing images, and simple information that can capture children's interest in reading.¹³ The Read Me poster has an attractive design and color scheme, which captivates the respondents and encourages them to read and actively ask questions. Based on the results of Wilcoxon test, it can be concluded that DHE using the Read Me poster is effective in improving knowledge of brushing teeth, aligning with the second research hypothesis. Supported by the research conducted by Jumilah et al., (2017), it is stated that posters are more effective in improving knowledge about dental health because they can influence visual perception. As a result, the visual messages conveyed are easier to comprehend compared to using individual words.¹⁴

The Difference in Knowledge of Brushing Teeth Before and After without Dental Health Education in the Control Group

According to Masturoh (2018), the control group serves as a comparison group to the intervention group, aiming to determine whether the changes observed in the intervention group are genuinely caused by the treatment or due to other factors.¹⁵ The results of Wilcoxon test showed no significant difference in knowledge of brushing teeth between before and after without being given DHE. This finding is consistent with the study conducted by Prasetya et al., (2019), which demonstrated no significant difference in the

pretest and posttest results regarding the improvement of knowledge and prevention of tooth stains in the control group.¹⁶ This condition can occur because the respondents in the control group did not receive any treatment during the study period, thus their knowledge remained the same and did not change.¹⁷

The Difference in Effectiveness of Dental Health Education Using the Healthy Teeth Song and the Read Me Poster on Knowledge of Brushing Teeth

The results of the second posttest in both the Healthy Teeth song intervention group and the Read Me poster intervention group were tested using the Mann-Whitney test. The Mann-Whitney test results indicated a difference in knowledge of brushing teeth between the two intervention groups after being given DHE using the Healthy Teeth song and the Read Me poster. The repeated administration of DHE over five days had an impact on the respondents' knowledge, resulting in a significant improvement in the posttest results. In line with Shepard's concept of Long-Term Memory, the process of storing information in a person's memory permanently can occur within 3-7 days. Information that is repeatedly acquired during this period can influence changes in a person's knowledge.¹⁸

To determine the more effective media, we can examine the Mean Rank results in both groups. The Mean Rank result in the Healthy Teeth song intervention group is higher compared to the Read Me poster intervention group. It can be concluded that the Healthy Teeth song is more effective in improving knowledge of brushing teeth, aligning with the third research hypothesis. The greater effectiveness of the Healthy Teeth song in improving knowledge of brushing teeth is supported by Sari's (2018) research, which found an influence on the knowledge and self-reliance behavior in students personal hygiene conveyed through singing songs. According to Notoatmodjo (2018), human knowledge is largely acquired through visual and auditory senses.¹⁹ In the Healthy Teeth song intervention group, during the song playback, visual and auditory senses are fully utilized to see the displayed lyrics and hear the song. Supported by Primawati et al., (2019), the use of music, dance, and songs (MUTALAGI) leads to an improvement in knowledge, oral and dental hygiene status, and tooth brushing skills in children with Down syndrome.²⁰

The arrangement of the Healthy Teeth song is made according to the abilities and comprehension of the respondents, who are sixth-grade elementary school students. The use of traditional musical instruments as accompaniment to the song makes the respondents feel less unfamiliar when they first listen to the song. The lyrics of the song are crafted in easily understandable language and contain an invitation and educational message about brushing teeth. Other elements such as harmony/chords, tempo, and melody are also adjusted so that the Healthy Teeth song has a cheerful and energetic atmosphere, and is easy to sing by respondents

because it does not have high notes, avoiding monotony. This research can be concluded that Dental Health Education using the Healthy Teeth song is more effective compared to using the Read Me poster in improving knowledge of brushing teeth.

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