

The effectiveness of videos in improving toothbrushing skills and OHI-S scores: Research on intellectually disabled children in SLB N Jambi City

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Abstract

Background: Based on Riset Kesehatan Dasar (2018), 45% of the population in Jambi experiences dental and oral health issues, but only 9.5% receive medical treatment. The proper tooth brushing behavior in Jambi is very low, at only 1%. Research shows that 70% of children with intellectual disabilities have moderate oral hygiene, and more than 50% are in poor condition. Videos have proven effective in improving oral hygiene and tooth-brushing skills. Observations at SLBN 1 Kota Jambi indicate that 100% of children brush their teeth incorrectly, and 95% have poor OHI-S status, necessitating video education for improvement.

Method: This study uses a pre-experimental design with one group pre-test and post-test.

Results: The statistical test output shows a p-value of 0.000 for skills and OHI-S. Since the value of $0.000 < 0.05$, the hypothesis is accepted, meaning there is a difference between pre-test and post-test skills and OHI-S. It can be concluded that videos are effective in improving tooth brushing skills and reducing OHI-S in intellectually disabled students at SLBN I Kota Jambi in 2024.

Conclusion: The use of educational videos has proven effective in improving tooth brushing skills and reducing OHI-S scores, reflecting improved oral hygiene among intellectually disabled students at SLBN I Kota Jambi in 2024.

Keywords: Intellectually; Disabled; Children; Video

INTRODUCTION

Based on RISKESDAS 2018, the proportion of dental and oral health issues in Jambi Province is 45%, with only 9.5% receiving treatment from dental medical professionals. In terms of proper tooth brushing behavior, Jambi Province has the lowest rate in the country at 1%, compared to the national average of 2.8%, with the lowest age group being under 10 years old at 1.4%.⁽¹⁾ Research conducted on the dental and oral health status of intellectually disabled children using the OHI-S measurement indicates that 70% of children with mild and moderate intellectual disabilities have moderate OHI-S cleanliness criteria ⁽²⁾, Anwar et al. (2022) found that more than 50%

of children with intellectual disabilities have poor dental and oral health.⁽³⁾

The study by Asio, Sukarsih, and Muliadi (2020) showed the OHI-S status of 4th-grade students at SDN 23/IX Pondok Meja in the intervention group: pre-test 52.5% poor, post-test 10% poor. The control group at SDN 56/IX: pre-test 52.5% poor, post-test 35% poor. The video method significantly improved the good criteria ($\text{sig}=0.000$).⁽⁴⁾

Children with special needs have mental, physical, and emotional limitations that hinder their development. They require specific services due to learning and developmental barriers, whether permanent or temporary, caused by environmental factors, themselves, or a combination of both.⁽³⁾ Intellectually disabled children have

below-average learning abilities and social adaptation compared to other children. Intellectual disability is characterized by a primary feature of weakness in thinking. It is another term for mental retardation, which means mentally delayed.(5)

Oral hygiene is a clean condition of the teeth and mouth, measured using the Oral Hygiene Index Simplified (OHI-S) from Green and Vermillion. OHI-S is obtained by summing the Debris Index and Calculus Index. OHI-S is considered good if the index is 0 – 1.2.(6) The Oral Hygiene Index Simplified (OHI-S) has two components, the debris index and the calculus index. The importance of maintaining the oral health of children with intellectual disabilities cannot be overstated due to the significant impact on their overall health. Special education and intervention programs are needed to help these children and their families improve their oral hygiene, thereby preventing further health risks. (12)

Audio-visual media is a type of media that contains both sound and visual elements, such as video recordings, sound slides, and so on.(7) Significant changes have been observed with the use of video as a learning medium for teaching tooth brushing skills to intellectually disabled children.(8)

Pratiwi, Hatta, and Adhani (2019) found that horizontal tooth brushing demonstrations were more effective in reducing plaque in intellectually disabled students at SMPLB B/C Dharma Wanita Persatuan Banjarmasin compared to video. However, some respondents were less focused due to attention disorders and difficulty concentrating. To address this, the researchers made the educational videos shorter, more interactive, used simple language, and involved caregivers or teachers.(9)

Initial observations at SLBN 1 Kota Jambi: 100% of intellectually disabled children brush their teeth incorrectly. 95% have poor OHI-S status, 5% moderate. All have dental caries. Video education is needed to improve tooth brushing skills and OHI-S scores.

Specific objectives: 1) To determine the average tooth brushing skills before and after video education at SLB Kota Jambi. 2) To determine the average OHI-S scores before and after video education at SLB Kota Jambi. 3) To determine the effectiveness of videos in improving tooth brushing skills and OHI-S scores in intellectually disabled students at SLB Kota Jambi.

METHOD

The design of this study uses a pre-experimental one-group pre-test post-test, which can be described as follows:

$$O_1 \quad X \quad O_2$$

Explanation:

O1 = OHI-S and tooth brushing skills before the intervention (pre-test)

O2 = OHI-S and tooth brushing skills in the intervention group after being given dental health education using a video on how to brush teeth (post-test)

X = Treatment: education using a video on how to brush teeth

The research location is at SLB Kota Jambi and the research period is from May to August 2024. The study population consists of intellectually disabled students at SLB in Kota Jambi. The sample is taken using purposive sampling technique, consisting of 30 intellectually disabled children.

Normality test for OHI-S data and tooth brushing skills will be conducted. If sig. > 0.05 (data is normal), the paired dependent t-test will be used; if sig. < 0.05 (data is not normal), the Wilcoxon test will be used. This analysis is to determine the differences before and after dental health education using video. The results of this study will provide input for establishing a collaboration between the Dental Health Department of Poltekkes Kemenkes Jambi and SLB N I Kota Jambi

RESULTS

Table 1
Normality Test of Tooth Brushing Skills and OHI-S Data in Intellectually Disabled Students at SLBN I Kota Jambi in 2024

Normalitas Data	Skills		OHI-S	
	Pre-test	Post-tes	Pre-test	Post-tets
N	30	30	30	30
Statistics	0,882	0,880	0,934	0,915
p-value	0,003	0,003	0,061	0,020

**Shapiro-wilk*

Based on Table 4.3, the pre-test and post-test data for skills and OHI-S do not follow a normal distribution with a p-value of ≤ 0.05 . Therefore, the test used is the non-parametric paired two-sample test, namely the Wilcoxon Test.

To see the differences, the Wilcoxon test was carried out with the following results:

Tabel 2
Differences between Pre-test and Post-test Teeth Brushing Skills and OHI-S in Students with Mental Disability at SLBN I Jambi City in 2024

Variabel	n	Mean Rank	Sum Ranks	p-value	
Pre-test - Post-test	Skills	30	14.44	375.50	0,000
	OHI-S	30	15.50	465.00	0,000

**Wilcoxon*

The statistical test output shows a p-value of 0.000 for skills and OHI-S. Since the value of $0.000 < 0.05$, the hypothesis is accepted, meaning there is a difference between skills and OHI-S for the pre-test and post-test. Thus, it can be concluded that the video effectively improves tooth brushing skills and reduces OHI-S among intellectually disabled students at SLBN I Kota Jambi in 2024.

DISCUSSION

The research findings indicate that the p-values for skills and Oral Hygiene Index-Simplified (OHI-S) are both 0.000. This p-value is smaller than the commonly used significance level in research, which is 0.05.

This indicates that there is a statistically significant difference between the skill levels and OHI-S scores before and after the intervention in the form of educational videos.

The hypothesis in this study is accepted because the p-value is less than 0.05. This means there is a significant difference between tooth brushing skills and OHI-S scores in intellectually disabled students at SLBN I Kota Jambi before and after receiving the intervention through educational videos. This is consistent with research results stating that horizontal tooth brushing demonstrations and videos affect Plaque in intellectually disabled students at SMPLB B/C Dharma Wanita Persatuan Banjarmasin, but demonstrations are more effective in reducing plaque compared to using videos.(9)

Other research results also indicate a significant difference between education using images and videos in improving tooth brushing behavior in deaf students at SLB Negeri 1 Kota Jambi in 2019, with a p-value of 0.001 ($p < 0.05$). However, the respondents in that study were deaf children.(10)

The differences in results in this study indicate that the educational videos used in the study are effective in improving tooth brushing skills and reducing OHI-S scores in intellectually disabled students. The decreased OHI-S scores indicate a decrease in plaque and calculus accumulation in the mouth, implying improved oral hygiene. The benefits of dental and oral hygiene for intellectually disabled children are crucial as they directly impact their health and quality of life. Here are some key benefits: 1) Preventing dental and oral diseases: Intellectually disabled children often have difficulty in maintaining dental and oral hygiene independently. Plaque and food residues can cause cavities, gingivitis, and other periodontal diseases. Maintaining dental and oral hygiene can prevent these conditions and avoid pain and further complications, 2) Aiding food digestion: Good oral health allows intellectually disabled children to chew and swallow food more efficiently. This is important to ensure adequate nutrient intake to support their growth and development, 3) Improving quality

of life: Dental and oral problems such as pain, abscesses, or tooth loss can cause difficulties in eating, speaking, and social interaction. Maintaining dental and oral hygiene can help improve the quality of life for intellectually disabled children by reducing the risk of these problems, 4) Avoiding systemic infections: Untreated dental and oral infections can lead to systemic health complications such as endocarditis, heart disease, and lung disease. Maintaining dental and oral hygiene can help prevent the spread of infection to other parts of the body.(11)

Studies have shown that children with intellectual disabilities have a higher prevalence of caries and periodontal disease than children without disabilities. Poor dental and oral conditions in these children can affect overall health through several mechanisms, such as decreased appetite due to dental pain, increased risk of systemic infections, and sleep disturbances that affect cognitive development. In addition, dental and oral infections can spread to other systems in the body, triggering serious complications such as endocarditis and respiratory diseases. (12)

Therefore, it can be concluded that the use of educational videos is effective in improving tooth brushing skills and reducing OHI-S scores, reflecting improved oral hygiene in intellectually disabled students at SLBN I Kota Jambi in 2024.

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