

The Influence of Dental Phantom Media on Tooth Brushing Knowledge Among Students with Moderate Intellectual Disabilities at SLB Rela Bhakti 1 Gamping

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ABSTRACT

This study aims to determine the effect of dental phantom media on tooth brushing knowledge in students with moderate intellectual disabilities at SLB Rela Bhakti Gamping. The research was conducted at SLB Rela Bhakti Gamping from July to August in the 2024 academic year. A quantitative approach was employed, utilizing a pre-experimental one-group pretest-posttest design. The sampling method involved a census of the entire fourth-grade population at SLB Rela Bhakti Gamping. Data were collected through a pretest, an intervention (treatment), and a posttest. The data analysis employed a non-parametric statistical method, with descriptive analysis supplemented by hypothesis testing using the Wilcoxon signed-rank test at a significance level of $\alpha = 0.05$. The hypothesis test revealed that the Asymp.Sig. (2-tailed) value was 0.042, which is less than the significance threshold of 0.05, thereby leading to the acceptance of the alternative hypothesis (H_1). This indicates a significant difference between the pretest and posttest scores regarding tooth brushing knowledge. Thus, it can be concluded that the use of dental phantom media has a significant positive impact on enhancing tooth brushing knowledge in students with moderate intellectual disabilities at SLB Rela Bhakti Gamping.

Keywords: Moderate Intellectual Disabilities, Dental Phantom Media, Tooth Brushing Knowledge

INTRODUCTION

Intellectual disability refers to children with special needs who exhibit underdevelopment in intellectual, physical, emotional, and social domains, requiring tailored support to optimize their potential (Desiningrum, 2016: 16). Although children with intellectual disabilities encounter difficulties in academic learning such as writing, reading, and arithmetic they can still demonstrate basic functional skills, such as writing their names or addresses. With appropriate education, they can develop self-care abilities for daily life, though they often require continuous supervision. Moreover, these children can also work in sheltered environments that align with their capabilities (Suharsiwi, 2017).

Observations and interviews conducted with students with moderate intellectual disabilities at SLB Rela Bhakti 1 Gamping reveal that their ability to brush teeth is underdeveloped. This is primarily due to a lack of knowledge about the proper steps in dental hygiene. Students struggle to clean the more inaccessible areas of the mouth, such as the inner surfaces, as well as the right and left sides. Their brushing tends to focus solely on the front teeth and molars. This issue is exacerbated by the absence of routine toothbrushing activities at school, and current learning methods at SLB Rela Bhakti 1

Gamping primarily relying on demonstrations have proven ineffective, often leading to student disengagement.

To address these challenges, more effective learning strategies and instructional media must be employed to suit the unique abilities and characteristics of these students, thereby enhancing their independence in maintaining dental hygiene. One potential intervention involves the use of "dental phantom" media, which offers a tangible, hands-on tool to facilitate understanding. By employing concrete, relatable materials from the students' environment, this media can assist students with moderate intellectual disabilities in better comprehending the structure of teeth and mastering the proper techniques for effective tooth brushing.

METHOD

The research adopts an experimental design, specifically the one-group pretest-posttest model. In this design, a pretest is conducted before administering the intervention, followed by a posttest after the treatment. This approach allows for precise measurement of the intervention's effects by comparing outcomes before and after the treatment (Sugiono, 2020: 131).

RESULT

This study seeks to evaluate the impact of dental phantom media on the tooth brushing knowledge of fourth-grade students with moderate intellectual disabilities at SLB Rela Bhakti 1 Gamping. The pre-test results, which assess the students' knowledge of proper tooth brushing techniques prior to the intervention, are presented in terms of descriptive statistics, including value distributions, frequency, and a corresponding histogram, as follows:

Table 1. Pre-test score

No	Name	Pre-test score
1.	HA	4
2.	AA	4
3.	RO	8
4.	ZA	12
5.	DE	4

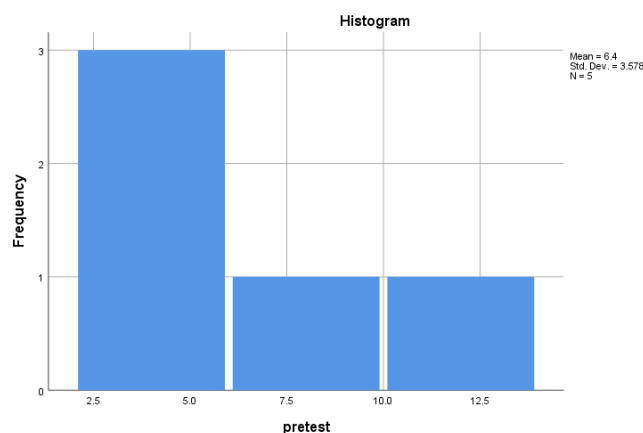


Figure 1. Diagram Pre-test

The bar chart above illustrates the distribution of student scores based on the pre-test results, which assessed their initial competency in tooth brushing knowledge. Three students scored within the range of 4 points, one student achieved a score of 8, and another student obtained a score of 12.

The final data, represented by the post-test results, assess the competency in tooth brushing among fourth-grade students with moderate intellectual disabilities at SLB Rela Bhakti 1 Gamping. Following the intervention, the results are presented in the form of descriptive statistics, including scores, frequency distributions, and a corresponding histogram, as follows:

Table 2. Post-test

No	Name	Post-test score
1.	HA	64
2.	AA	64
3.	RO	72
4.	ZA	64
5.	DE	84

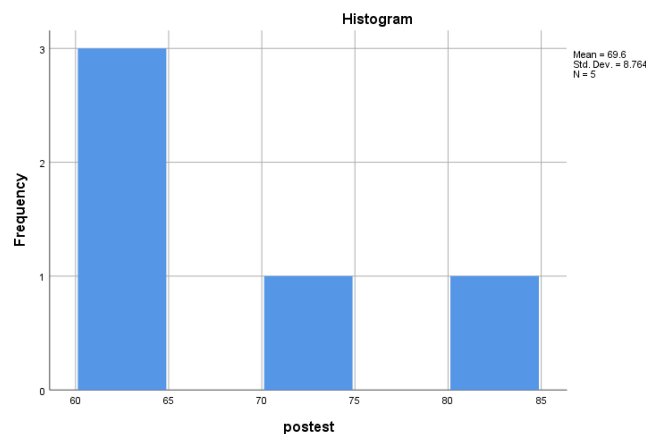


Figure 2. Diagram Post-test

The histogram above provides an overview of the distribution of student scores from the post-test assessing tooth brushing knowledge. The results indicate that three students achieved a score of 64, one student obtained a score of 72, and one student received a score of 84.

The comparison table of competency test scores reveals a significant disparity between pre-treatment (pretest) and post-treatment (posttest) assessments. Specifically, the average pretest score for students prior to receiving intervention was recorded at 6.40, whereas the average posttest score soared to 69.4. This dramatic increase underscores the efficacy of the treatment administered. The results from the pretest and posttest data are further illustrated in the accompanying comparison histogram below, which visually depicts this remarkable enhancement in student performance.

Table 3. Pre-test and Post-test Score

Name	Pre-test	Post-test
HA	4	64
AA	4	64
RO	8	72
ZA	12	64
DE	4	84
Average	6,40	69,4

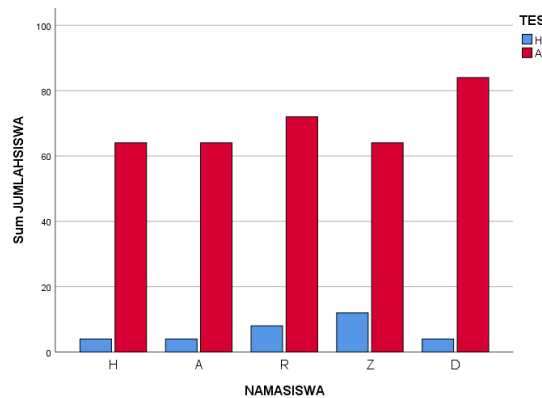


Figure 3. Diagram Pre-test and Post-test

The histogram presented above offers a comparative analysis of the competency test results obtained prior to treatment (pretest) and those recorded subsequent to treatment (posttest). The histogram delineates the data with appropriate labels. The range of pretest and posttest values is represented on the left side of the graph, utilizing an interval scale from 0 to 100 with increments of 20. The pretest scores are indicated by the leftmost bars, while the posttest scores reflect the students' performance after receiving intervention, represented by the rightmost bars. The chart clearly illustrates a significant increase in posttest scores, surpassing the pretest scores following treatment, thereby highlighting the effectiveness of the intervention applied to the respondents.

The hypothesis of this study posits that "there is an effect of dental phantom media on the knowledge of brushing teeth among students with moderate intellectual disabilities in Grade IV at SLB Rela Bhakti 1 Gamping." To test this hypothesis, the Wilcoxon Signed-Rank Test was employed, followed by analysis using non-parametric statistical methods. The Wilcoxon Signed-Rank Test is a statistical technique designed to evaluate comparative hypotheses by analyzing two paired or correlated samples to ascertain differences, particularly when the data is ordinal in nature (Ristya et al., 2023).

The utilization of non-parametric statistics in this study is warranted due to the inadequacy of sample size to fulfill the assumptions of parametric tests. Specifically, the limited number of samples utilized in this research precludes the application of parametric methods, which require a sufficiently large sample size to yield reliable results. The data analysis is structured as follows, If $O^1 > O^2$, then the null hypothesis (H_0) is accepted, and the alternative hypothesis (H_1) is rejected. This scenario indicates that the influence of dental phantom media on the knowledge of tooth brushing among students with moderate intellectual disabilities in Grade IV at SLB Rela Bhakti 1 Gamping is not statistically significant. Conversely, if $O^1 < O^2$, then H_0 is rejected, and H_1 is accepted. This outcome

suggests that there is a statistically significant effect of dental phantom media on the knowledge of tooth brushing among students with moderate intellectual disabilities in Grade IV at SLB Rela Bhakti 1 Gamping.

Table 3. Pre-test and Post-test Score

Ranks				
		N	Mean Rank	Sum of Ranks
<i>posttest – pretest</i>	<i>Negative Ranks</i>	0 ^a	.00	.00
	<i>Positive Ranks</i>	5 ^b	3.00	15.00
	<i>Ties</i>	0 ^c		
	<i>Total</i>	5		
<i>a. posttest < pretest</i>				
<i>b. posttest > pretest</i>				
<i>c. posttest = pretest</i>				

The implementation of the analytical test conducted in this study involves comparing the Asymptotic significance (2-tailed) value against a predetermined significance level (α), which facilitates the determination of whether to accept or reject the null hypothesis. Based on the analysis of the competency test assessing tooth brushing ability among students with moderate intellectual disabilities in Grade IV at SLB Rela Bhakti 1 Gamping, the result obtained was 0.042, which is less than the significance level of 0.05. Consequently, the alternative hypothesis (H_1) is accepted, while the null hypothesis (H_0) is rejected.

CONCLUSION

Based on the findings presented above, it can be concluded that dental phantom media exerts a significant influence on the knowledge of tooth brushing among students with moderate intellectual disabilities in Grade IV at SLB Rela Bhakti 1 Gamping.

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