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Original Research Article

The impact of educational videos on toothbrushing behavior among hearing impairment children in special schools in Jambi city

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ABSTRACT

Introduction: Special school students, particularly those who are hearing impairment and have limited hearing abilities, require comprehensive oral health promotion. Given their challenge in receiving information, utilizing media becomes crucial for effective communication. Animated videos, catering to the visual strengths of hearing impairment children, present an engaging approach to dental health education that can be specifically tailored to their needs.
Aim & Objective: This study aimed to evaluate the impact of educational videos on the tooth brushing habits of hearing impairment children at the Special School in Jambi City.
Material & Methods: This research followed a quasi-experimental design using the pre-test and post-test methodology. It involved purposive sampling, and the research instrument utilized an observation checklist. The data analysis was conducted through an Independent T-Test.
Results: The research product is an oral health education video focusing on tooth brushing. This video underwent validation by material experts, media professionals, and sign language experts. The effectiveness of using educational videos is evident in enhancing tooth brushing behavior among Hearing impairment children. The intervention group exhibited a higher mean post-test value of 11.93 compared to the control group's mean post-test value of 8.07, resulting in a statistically significant difference (p=0.000).
Conclusion: The interpretation demonstrates the effectiveness of the intervention in improving tooth brushing behavior. Educational video media is effective for hearing impairment children in improving tooth brushing skills.

1. Introduction

The health development program aims to enhance the quality of life for all children, without discrimination[1] Child health services are inclusive, encompassing children with special needs, as highlighted by the Ministry of Health RI in 2010.[2] Special education is specifically designed for students facing physical or mental challenges, ensuring they receive education in specialized schools, distinct from general education[3]

Children with special needs exhibit differences in physical, mental, and social behaviors compared to their peers. Oral health and hygiene among these children tend to be lower than in typically developing children. Such discrepancies often arise due to the limitations experienced by children with special needs. Various types of special needs children exist, including blind, Hearing impairment, speech impaired, disabled, and those with specific cognitive conditions such as tunalaras and tunagrahita.[4,5]

Hearing impairment children, also categorized as children with special needs, often encounter lower oral and dental health statuses compared to typically developing children. This is because Hearing impairment individuals

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have limited hearing abilities, requiring specific media to access and comprehend information effectively, as highlighted in studies.[6]

Ensuring proper and correct tooth brushing stands as a significant aspect of oral health care. The effectiveness of this practice is influenced by various factors, such as the tools used, brushing techniques, and the frequency and timing of brushing.[7,8] Recent findings from the 2018 Basic Health Research report revealed that while 94.7% of individuals brush their teeth daily, only 2.8% follow the recommended brushing duration. In Jambi Province, the proportion of people brushing their teeth daily is 96.4%, with a mere 1.0% adhering to the correct brushing duration[7]

Learning methods serve to facilitate teaching processes and enhance understanding, aiding in achieving learning objectives more effectively.[8] Visual communication tools, such as animated videos and static images like comics, leaflets, posters, and models, can effectively contribute to dental health education. Animated videos, in particular, prove to be an engaging method for educating children with hearing impairments, as they primarily rely on visual cues.[9]

Promoting oral health among children with special needs, particularly Hearing impairment children, requires specialized skills like sign language. Due to limitations in sign language proficiency among dental and health practitioners, the utilization of video media emerges as a crucial solution.[3,10]

Video media offers several advantages and disadvantages. Videos can be archived for extended periods without susceptibility to damage and can be replayed as needed to elucidate information, creating stimuli aligned with desired objectives and responses among children. Considering these advantages and the challenges faced by students with specific cognitive conditions in comprehending oral hygiene-related learning materials, the potential of video media becomes noteworthy.[11]

While there have been various successful applications of video-based learning media in altering knowledge, skills, and behaviors among the general public and students, research on its application among children with special needs, especially in improving tooth brushing participation, remains limited. Therefore, this study endeavors to evaluate the effectiveness of educational videos in enhancing tooth brushing behavior among Hearing impairment children attending Special Schools in Jambi City.

2. Materials and Methods

The research design employed in this study is experimental, utilizing a pre-test and post-test design involving a control group. The participants were divided into two groups: an intervention group and a control group, each consisting of 15 individuals. The study took place at the Prof. Sri Soedewi Maschjun Sofwan Special School, SH, in Jambi City, Indonesia. The sample comprised 30 children from Sekolah Luar Biasa Jambi City. The inclusion criteria involved children with mild Hearing impairment disabilities aged between 7 to 15 years, willing to participate in the study. Exclusion criteria encompassed children with very mild or severe Hearing impairmentness, those not willing to take part, and individuals below 6 years or above 15 years of age.

The study's dependent variable focused on the tooth brushing skills of Hearing impairment students, while the independent variable examined was the use of videos as educational tools. The assessment of skills was carried out through a questionnaire consisting of 15 items, each with binary 'yes' or 'no' response options, and the assessment scores ranged from 1 to 15.

The research data will be processed and analyzed using the Wilcoxon test to determine the impact of video media on the tooth brushing skills of Hearing impairment children. Additionally, the Mann-Whitney test will be employed to ascertain the differences in tooth brushing skills between the two study groups of Hearing impairment children.

3. Results

The results of research conducted at SLBN Prof. Sri Soedewi Jambi City can be seen as follows:

Based on the data presented in Table 1, it is evident that prior to the intervention, in the intervention group, 12 children (80%) demonstrated good tooth-brushing behavior, while 3 children (33.3%) exhibited moderate criteria. In contrast, within the control group, 5 children (33.3%) showed good criteria, whereas 10 children (66.7%) demonstrated moderate criteria.

Based on Table 2, the mean tooth-brushing behavior score in the intervention group before the intervention was 9.73. Post-intervention, it notably increased to 11.93 with a p-value of 0.001. This suggests that educational videos effectively enhance tooth-brushing skills in Hearing impairment children. Conversely, in the control group, the mean tooth-brushing behavior score before the intervention was 7.53. After the intervention, it marginally rose to 8.07, yielding a p-value of 0.56. This indicates that without any intervention, there is less effectiveness in improving tooth-brushing skills among Hearing impairment children.

Table 3. Difference Score of Tooth Brushing Skills Before and After Educational Video Intervention for Hearing impairment Children

Based on Table 3, the average score before the intervention in the intervention group was 9.73. Post-intervention, it notably increased to 11.90, showcasing a difference value of 2.41, which is greater than 0.3. This indicates a considerably high N-Gain value, suggesting an effective improvement. Conversely, in the control group, the average score before the intervention was 7.53, increasing to 8.50 post-intervention, with a difference value of 0.3, falling between 0.57 and 0.7. This signifies a moderate N-

Table 1: Criteria Distribution of Tooth Brushing Behavior inHearing impairment Children

Independent variab le	Good		Moderate		Poor		Total	
	N	%	N	%	n	%	n	%
Pre Test								
Control	5	33,3	10	66,7	0	0	15	100
Intervention	12	80	3	20	0	0	15	100
Post Test								
Control	6	40	9	60	0	0	15	100
Intervention	15	100	0	0	00	0	15	100

Table 2: Differences in tooth brushing skills before and after educational video intervention for hearing impairment Children

Group	N	Mean		p
		Pre Test	Post test	
Intervention	15	9.73	11.93	0.001
Control	15	7.53	8.07	0.560

Table 3: Classification of PrimaryIntraosseous Carcinoma (PIOC)

Group	N	Mean score		N- Gain Score	p
		Pretest	Posttest		
Intervention	15	9.73	11.93	2.41	0.000
Control	15	7.53	8.07	0.57	

Gain value with a less effective interpretation. The T-test results on the N-Gain score yielded a P-Value of 0.000, which is less than 0.05. Consequently, it can be inferred that educational videos are more effective in enhancing tooth-brushing skills in Hearing impairment children.

Table 4: Comparison of Effectiveness Before and After Educational Video Intervensi

Group	N	Mean ± SD	p
Intervention	15	11,93 ± 1,75	0,000
Control	15	8.,7 ± 0,258	

Based on Table 4, the post-test mean value in the intervention group stands notably higher at 11.93 compared to the control group's post-test mean value of 8.07. The calculated P-Value of 0.000, being less than 0.05, indicates a significant difference in effectiveness between the groups. This suggests a notable contrast between the group that received the intervention with educational video media and the group that did not. Consequently, it can be concluded from this analysis that educational video media proves to be more effective in enhancing tooth-brushing abilities among Hearing impairment children.

4. Discussion

Teeth, hard organs found in the mouth, play a crucial role in food processing during eating.[12] Basic preventive measures for oral and dental health include tooth brushing with toothpaste and the use of mouthwash.[7] Hearing impairment children, defined as individuals experiencing hearing impairments, often encounter obstacles in their activities, requiring additional assistance.[13]

Video media serves as a valuable tool across cognitive, affective, and psychomotor domains in learning. Cognitively, video exposure reinforces material comprehension before or after instruction.[7] Psychomotorly, videos demonstrate the functioning of processes; learning videos capturing motor activities offer parents opportunities to observe and review these actions.[8]

Research by Nazri Yanti et al.[9] aligns with the notion that cartoon video media enhances the knowledge of Hearing impairment children post-intervention, supported by Santoso's study,[10] which revealed increased knowledge and decreased plaque rates in Hearing impairment children following intervention using audiovisual animation media.

Brushing teeth effectively removes debris from tooth surfaces, ideally practiced after meals and before bedtime, thus reducing the risk of dental issues.[11] The proper technique of tooth brushing significantly contributes to maintaining oral health, affected by various factors such as tool usage, brushing methods, and frequency and timing of brushing.[14] Mastering the correct tooth brushing method helps uphold oral hygiene, enabling children to evade dental problems like toothaches, bad breath, gum swelling, and other oral issues.[15]

Based on this analysis, it is evident that educational video media is more effective in enhancing the tooth brushing ability of Hearing impairment children. Corroborating studies by Kurniawati et al.[16] demonstrate the effectiveness of video or audio-visual media in increasing knowledge and improving oral hygiene among Hearing impairment

children. Furthermore, research by N Sahaf and M Ghasemi)[7] reveals that modifying counseling methods, particularly through video training, can enhance the oral health status of Hearing impairment children. Behavior is strongly influenced by knowledge, and behaviors rooted in correct knowledge tend to be more sustainable than those lacking a factual foundation, particularly regarding dental health maintenance.[17]

Efforts aimed at improving knowledge and behavior often involve health counseling.[18] Health promotion media encompasses various means or strategies used to convey specific messages or information.[19]

Audiovisual media, encompassing elements of both sound and visuals like video recordings or slide presentations, are regarded as superior and more engaging owing to their incorporation of both auditory and visual components.[20] Videos are considered a form of electronic educational media that engage multiple senses, making them easier to comprehend and more captivating due to the inclusion of sound and moving images. This medium also provides a controlled presentation, wider accessibility, serves as a discussion tool, and can be replayed as needed.[21,22]

In line with study by Kashwani et al.,[23] which has reported that the metaverse's potential to establish virtual health clinics and telemedicine platforms could bridge healthcare gaps in underserved regions. The prospect of conducting dental procedures within a virtual metaverse opens new horizons. Exploring the application of the metaverse in dental diagnostics, treatments, and research is a promising avenue. The metaverse could also become a powerful tool for dental education and training.

5. Conclusion

After analyzing the study's outcomes, it is evident that the implementation of educational video media significantly enhances the tooth brushing proficiency among Hearing impairment children, indicating its efficacy as an intervention method for improving oral hygiene practices in this particular demographic.

6. Source of Funding

None.

7. Conflict of Interest

None.

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