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Research Article

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Effectiveness of Providing a Video on How to Brush Teeth with Roll Technique on Tooth Brushing Skills of Kindergarten Students in Bandung City

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Abstract

Tooth decay in children, which may lead to cavities, is a widespread issue. Improper brushing techniques are a common contributor to decay. Educating children on maintaining good dental care, including through visual aids like videos, can aid in enhancing their oral health. This research seeks to evaluate the impact of tooth brushing videos on the dental hygiene abilities of Kindergarten pupils residing in Bandung City.

Our study employed a pre-experimental method and a single-group pre-post-test design. Forty-six students from Kindergarten in Bandung City participated in this study. The findings indicate that prior to watching the tooth-brushing video demonstrating the roller technique, 58.7% of students demonstrated proficient tooth-brushing skills. After viewing the video, 100% of students exhibited good tooth-brushing skills.

Therefore, it can be concluded that the tooth-brushing video significantly increased students' skills. The Wilcoxon test analysis showed a p-value of 0.000. Tooth brushing proficiency increased among kindergarten pupils when introduced to a tooth brushing video featuring the "roller" technique, and significant advancements in tooth brushing skills were observed.

Keywords: Tooth Decay, Tooth Brushing, Video, Roll Technique, Oral Health Promotion

Introduction

Data from the Basic Health Research of Indonesia (Riskesdas) underscores a significant increase in oral health issues, rising from 25.9% to 57.6% since 2013. This surge is evident in twenty provinces, surpassing the national average. In 2018, West Java Province reported a slightly higher oral health problem rate at 58%, according to Riskesdas [1].

The study reveals persistent cases of dental caries in children, with a potential link to improper brushing habits and timing. It emphasizes the importance of adhering to recommended brushing times, specifically in the morning after breakfast and at night before bedtime [2, 3].

Efforts to uphold children's oral health are closely linked to their oral hygiene conditions, with children's quality of life and well-being. Enhancing dental health and refining children's brushing skills can be achieved through the provision of health education or promotion targeted at children. Various types of advertising media can be employed to enhance children's engagement and facilitate comprehension of the information presented. These media encompass promotional tools that cater to different sensory experiences—being seen, felt, heard, or even smelled—to ease communication and the dissemination of information [4, 5].

Oral health care for children can be effectively administered using video media. Visual media, employing both sight and sound, provides a tangible representation, aiding students in comprehending the presented material. Video media serves as an audio-visual tool, assisting students in their learning process and enhancing comprehension of instructional language. According to Kantohe et al. (2016), research findings indicate that counseling delivered through video media significantly enhances children's oral knowledge. Additionally, Surayah's study in 2020 demonstrated the effectiveness of health education through interactive videos in improving knowledge and brushing skills among kindergarten children [6, 7].

Methods

This study employed a pre-experimental research design with a one-group pretest and posttest approach. The research was conducted at kindergarten in Bandung City in March 2023. The sample comprised 46 students. Primary data were collected using various research tools, including observation sheets, checklist forms, and interactive videos. The evaluation of tooth brushing skills among kindergarten students utilized an observation form structured as a checklist. The assessment of skill levels before and after the intervention included assigning values on the checklist: a correct brushing technique re-

ceived a value of one, whereas an incorrect technique received a value of zero.

The suitability of the interactive videos was assessed through scrutiny by media and material experts. Additionally, the interactive videos underwent testing for their effectiveness. For hypothesis testing, the researcher employed the Wilcoxon test to determine the impact of interactive videos on tooth-brushing skills among kindergarten students in Bandung City. Ethical clearance for this study was obtained from the KEPK team at Bandung Health Polytechnic under reference number 95/KEPK/EC/II/20.

Results

Table 1: Characteristics of respondents

Characteristics	Frequency(n)	Percentage (%)
Gender		
Male	27	58.7
Female	19	41.3
Total	46	100%
Age (years)		
4	1	2.2
5	7	15.2
6	22	47.8
7	16	34.8
Total	**46**	**100%**

The description above illustrates the characteristics of respondents based on gender, with males outnumbering females at 27 children (58.7%). The highest age group consisted of 7-year-olds, comprising 16 individuals (34.8%).

Table 2: The measurement results of tooth brushing skills using the roll technique over a period of 21 days.

Keterampilan Menyikat Gigi				
Intervention Results	**Good**	**Enough**	**Less**	**Total**
Post-test 1	27(58,7%)	19(41,3%)	0(0%)	46(100%)
Intervention 1	46(100%)	0(0%)	0(0%)	46(100%)
Intervention 2	46(100%)	0(0%)	0(0%)	46(100%)
Intervention 3	46(100%)	0(0%)	0(0%)	46(100%)

Table 2 demonstates a 100% improvement in brushing ability using the roll technique at the third intervention within 21 days.

Table 3: Test for data normality

Shapiro-wilk	Statistic	df	Sig.
Pre-test	.974	46	0,400
Post-test	.897	46	0,001

Table 3 displays the test results, with a pre-test p-value of 0.400 and a post-test p-value of 0.001. Since the data did not exhibit a normal distribution, the analysis was conducted using the Wilcoxon test.

Table 4: The effectiveness of providing videos demonstrating the roll technique for brushing teeth on the brushing skills of Kindergarten students before and after video provision.

Intervensi	Tingkat Keterampilan			Jumlah Total	mean	p-velue
	Baik	Cukup	Kurang			
Sebelum	0(0%)	28(60,7%)	18(39.3%)	46	12,8	0,000
Sesudah	46(100%)	0(0%)	0(0%)	46		

Table 4 demonstrates the effectiveness of providing tooth-brushing videos to kindergarten students before and after their presentation. There was a 100% increase in the "good" category for the students. The mean level of tooth brushing skills before and after the intervention was 12.8. The Wilcoxon analysis results yielded a p-value of 0.000, indicating a significant difference before and after brushing teeth using the roll technique.

Discussion

Effective teaching techniques are needed to promote independence in tooth-brushing among preschool children. These should be tailored to the children and supported by a variety of props that help to engage their attention and encourage them to practice the techniques. Instructions or encouragement for young children should be appropriate and developmentally based [8].

Oral health can be maintained by enhancing tooth brushing skills, and one effective method for improvement is through counselling or health promotion. Teaching children about dental care is a means of enhancing their brushing skills, and one approach to achieving this is through the use of video media. Videos provide a tangible representation using different senses, such as vision and hearing, thereby aiding students in understanding the presented material [9].

The expert validation stage plays an important role in developing products/models and in order to create products/models that can improve the quality of education. According to Sharma et.al (2016), the learning process can be supported by good media so that tooth brushing practices can be learned well [10].

Pre-school children are unable to independently maintain their oral hygiene, including brushing their teeth. Both parents and teachers are crucial in ensuring children's oral health and learning.

Therefore, it is imperative to support and train parents and teachers to improve their knowledge and attitudes. Knowledge and skills can be consequently transferred to children by teachers and parents. According to Gao et al's (2013) research, teachers and parents play a crucial role in promoting and implementing preventive measures among preschool children [11].

The initial pretest of tooth brushing quality among kindergarten students indicated satisfactory results at 58.7%. Over the course of 21 days, children's brushing habits were monitored with weekly interventions, culminating in a post-test where 48 children exhibited good tooth brushing skills, meeting the criteria of 100%.

Similar to Nurafifah's (2016) study on the effects of audio-visual media (video) and flashcards on preschool children's tooth brushing skills, the average skill level of the participants was 67.9% before the introduction of health education through audio-visual media (video). However, after practicing the skills, all students displayed the ability to brush their teeth effectively, which amounts to 100% [12].

The effectiveness of providing video media in this study shows that children's tooth brushing skills increased by 100%, with an average of 12.8 before and after receiving video media on tooth brushing using the roll technique. The Wilcoxon test results indicate a p-value of 0.000 ($p < 0.05$), demonstrating an improvement both before and after the provision of tooth-brushing videos with the roll technique. This aligns with the study conducted by Surayah et al. (2022), where health education with interactive videos effectively enhanced the knowledge and tooth-brushing skills of kindergarten students [7].

A study conducted by Sulistyowat (2022) revealed that the initial proficiency of the students was below the ideal criteria, with an average score of 54.58. However, in the first cycle, students showed improvement in their scores, with only 1.7% failing to meet the perfect criteria. The second cycle saw students achieve perfection in their learning activities, obtaining an impressive average score of 92.92 with a percentage of 3.8%. Based on the tooth brushing test, it can be inferred that implementing animated video media in learning can improve tooth brushing skills for sixth-grade students with intellectual disabilities at SLB Negeri 1 Sleman. The effectiveness is supported by the raised tooth brushing skill scores, exceeding the set indicator of ≥75% [13].

As in the research by Utami et al (2021), which used video media to improve the understanding of oral health, the use of oral health, the application of educational video media leads to more efficient understanding among children. Video media promotes understanding of the process shown and facilitates a clear message to the respondents as it shows moving objects coupled with corresponding sounds. The ability of video to present vivid images and generate sound creates an appeal that has the potential to influence an individual's perspective [14, 15].

Video, as an audiovisual medium, significantly changes human behaviour as it stimulates the senses of hearing and seeing to the fullest extent. The learning process involves employing multiple senses, specifically hearing and seeing, which renders video media a convenient medium for pre-schoolers [16].

Conclusions

The tooth brushing skills of kindergarten students in Bandung City significantly improved before and after watching tooth brushing videos using the roll technique. The results suggest that the provision of tooth brushing videos was effective in enhancing tooth brushing skills.

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