



Dental Health Education Using PowerPoint Media to Improve Maternal Behavior in Maintaining Dental and Oral Hygiene of Students of GMIT Baumata Elementary School

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ARTICLE INFORMATION	ABSTRACT
<p><i>Article History:</i> Received: October 7, 2023 Revised: February 7, 2024 Published: May 30, 2024</p>	<p>Dental health education is a planned and directed effort to create an environment that encourages individuals or community groups to change their old behaviors, which are less favorable for their dental health, to behaviors that are beneficial for their dental health. Behavior change can occur naturally, influenced by the environment, or intentionally and systematically through knowledge, attitudes, and skills. The aim of this study is to determine the effect of dental health education using PowerPoint media to improve the behavior of mothers in maintaining the dental and oral hygiene of GMIT Baumata Elementary School students. This type of research is a quasi-experimental design with a pre-test and post-test research design. The population of this study includes mothers and students of GMIT Elementary School, and the research sample is the total population of mothers and students in grades I-VI at GMIT Baumata Elementary School, Taebenu District, Kupang Regency, totaling 89 people. The instruments in this study were questionnaires and dental and oral hygiene examination forms. The results of the effectiveness test analysis showed that the behavior of mothers in maintaining dental and oral health ($p=0.000$) significantly improved, indicating an increase in the mothers' behavior in maintaining dental and oral health. Similarly, the dental and oral hygiene status of the students ($p=0.000$) improved, indicating an increase in the students' dental and oral hygiene status. Therefore, it can be concluded that PowerPoint media is effective in improving the behavior of mothers in maintaining their children's dental and oral hygiene and in enhancing the dental and oral hygiene status of GMIT Baumata Elementary School students in Taebenu District, Kupang Regency. It is recommended that further research be conducted to provide comparative data.</p>
<p>Keywords: Dental Health Education Power Point Media Mother's Behavior Oral Hygiene</p>	

INTRODUCTION

Community health education is a form of education that goes beyond school or university education. For individuals, the subjects in community health education are adults or general community members who want to develop their knowledge, skills, behavior, and other capabilities (Notoatmodjo, 2014). Meanwhile, dental health education is a planned and directed effort to create an environment where individuals or community groups are willing to change their old behaviors, which are less favorable for their dental health, to behaviors that are beneficial for their dental health.

Education can more effectively produce behavioral changes if the content and media used to attract the community's attention and curiosity about dental and oral health. One such medium is PowerPoint. PowerPoint is a supporting medium in the learning process, stimulating curiosity and interest in the subject matter, thus achieving optimal results from education (Setianingrum, 2019). PowerPoint is an effective learning medium that serves as an innovative tool for delivering material, making it easier for learners to understand the content. The advantage of PowerPoint is its visual basis, making it easy to use, and comprehend, and able to foster student interest in learning (Rahmawati et al., 2020).

Behavior change can occur naturally due to environmental influences or intentionally and systematically through knowledge, attitudes, and skills (Notoatmodjo, 2014). According to the behavior change theory by Thomson, changing a person's habit over 21 days requires a constant period suitable for the individual, divided into three stages to form a new habit: the first 7 days are for introduction, the second 7 days for repetition or exercise, and the final 7 days for reinforcement (Maher et al., 2014).

Roy's adaptation theory states that a person's behavior change depends on their ability to adapt to environmental stimuli and accept new things (Astuti, 2014). Additionally, a child's behavior change is influenced by environmental stimuli, including family, surrounding environment, and school (Ariyanto, 2016).

Parents are considered knowledgeable enough to teach their children basic hygiene practices. Instilling dental and oral health behaviors should start early and from the family environment. Childhood is the foundational period for behavior formation; thus, parents should educate their children on proper dental and oral hygiene (Rizaldy et al., 2017). Wali's (2022) research indicates a relationship between mothers' behavior regarding dental health and the dental and oral hygiene status of GMIT Baumata Elementary School students.

A mother is one of the first people a child encounters and is a primary role model for the child, whose behavior, especially in maintaining dental and oral hygiene, should be emulated both at home and in dental care facilities. Therefore, a mother's involvement in early dental check-ups is crucial in preventing dental decay in children (Arianto, 2017). Children are unique individuals with characteristics different from adults (Prawira, 2016). The primary school age, from 6 to 12 years, is often called the intellectual period or the school harmony period, where children need more parental guidance and control to organize activities as they do not yet know how to work or do things independently. This period is easier for education compared to the previous or subsequent stages (Djamarah, 2014).

The 2018 Riskesdas results show that 84.4% of the population in Nusa Tenggara Timur Province brush their teeth daily, but only 3.7% brush correctly (after breakfast and before bed). The correct brushing behavior for children aged 5-9 is 1.4%, and for children aged 10-14, it is 2.1% (Kemenkes RI, 2018).

GMIT Baumata Elementary School is under the jurisdiction of the Baumata Health Center, Taebenu District, Kupang Regency. Interviews with the school principal revealed that dental health services through the School Dental Health Program (UKGS) from the health center were inadequate. Interviews with 25 parents, particularly mothers, indicated they had not received dental and oral health education from the health center. Additionally, examinations of dental and oral hygiene status in 25 students showed poor results. This research involving mothers and students of GMIT Baumata Elementary School is important as it can change mothers' behavior in maintaining their children's dental health, thereby improving

the children's dental hygiene status.

The limitations of this study include its focus only on mothers and students of GMIT Baumata Elementary School without involving classroom teachers. Additionally, the analysis was conducted to determine the effectiveness before and after the education. The research aims to determine the effect of dental health education using PowerPoint media on improving mothers' behavior and the dental and oral hygiene status of GMIT Baumata Elementary School students.

METHOD

This study is a quasi-experimental design with a pre-test and post-test research design by conducting observations twice, namely before the treatment (pre-test) and after the treatment (post-test) (Arikunto, 2013). The study was conducted at SD GMIT Baumata, Taebenu District, Kupang Regency, over 21 days to observe changes in mothers' behaviors regarding their children's dental and oral hygiene. The researcher is particularly interested in using a quasi-experimental design to determine the effectiveness of the visual aid used, which is PowerPoint media combined with a lecture method. The population of this study consists of the mothers and students of SD GMIT Baumata, Taebenu District, Kupang Regency, and the sample includes the total population of mothers and students in grades I-VI of SD GMIT Baumata, totaling 89 individuals who agreed to participate as research samples.

The instruments used in this study include a questionnaire and a dental and oral hygiene examination format. The tools used in the research are a mouth mirror, tweezers, a probe, and an excavator, while the materials used include personal protective equipment, alcohol, cotton, and Dettol. The data collection stages involve interviews, filling in identity forms, completing questionnaires, dental and oral examinations, recording data, and data analysis.

The data analysis was processed with computer assistance to determine the effectiveness of mothers' behaviors in maintaining dental hygiene and the dental and oral hygiene status from pre-test to post-test using the Wilcoxon Signed Ranks Test.

RESULTS AND DISCUSSION

Table 1. Distribution of Respondent Characteristics

Variable	n	Percentage (%)
Mother's Age		
19-35 Years	21	35.6
36-45 Years	23	39.0
46-60 Years	15	25.4
Total	59	100
Mother's Education		
Elementary School	20	33.9
Junior High School	9	15.3
High School	26	44.1
Bachelor's degree	4	6.8
Total	59	100
Mother's Occupation		
Housewife	55	93.2
Private	4	6.8
Total	59	100
Age of child		
6 years old	6	10.2
7 years old	14	23.7
8 years old	2	3.4
9 Years	11	18.6
10 Years	10	16.9
11 Years	10	16.9

12 Years	6	10.2
Total	59	100
Child Gender		
Male	35	59.3
Female	24	40.7
Total	59	100

Table 1 shows that the highest maternal age is 36-45 years old, namely 23 subjects (39%), while the lowest maternal age is 46-60 years old, namely 15 subjects (25.4%). It is known that the highest level of maternal education is SMA, namely 26 subjects (44.1%), while the lowest level of maternal education is S1, namely 4 subjects (6.8). In the mother's occupation, the most is housewife, namely 55 subjects (93.2%), while the least mother's occupation is private, namely 4 subjects (6.8).

It is known that the age of the students of GMIT Baumata Elementary School is mostly 7 years old, namely, 14 subjects (23.7%), while the least age is 8 years old, namely 2 subjects (3.2%). In the gender of Baumata GMIT Elementary School students, most were male, namely 35 subjects (59.3%), while the least was female, namely 24 subjects (40.7%).

Table 2. Pre-Test and Post-Test Results of Maternal Behavior

	Mother's Behavior Pre-Test		Mother's Behavior Post-Test	
	n	Percentage (%)	n	Percentage (%)
Good	18	30.5	52	88.1
Medium	32	54.2	7	11.9
Poor	9	15.3	-	-
Total	59	100.0	59	100.0

Table 2 shows that the results of the pre-test descriptive analysis of maternal behavior in maintaining dental and oral hygiene of GMIT Baumata Elementary School students were mostly in the moderate category, namely 32 subjects (54.2%), while the least category was 9 subjects (15.3%). Compared to the post-test results of maternal behavior in maintaining dental and oral hygiene of GMIT Baumata Elementary School students, the most in the good category was 52 subjects (88.1%), while the least in the fair category was 7 subjects (11.9%).

Table 3. Dental and Oral Hygiene Status (OHI-S) of Students

	Child OHIS (Mother's Pre-Test)		Child OHIS (Mother's Post-Test)	
	n	Percentage (%)	n	Percentage (%)
Good	3	5.1	53	89.8
Medium	52	88.1	6	10.2
Poor	4	6.8	-	-
Total	59	100.0	59	100.0

Table 3 shows the oral hygiene status (OHI-S) of GMIT Baumata Elementary School students, OHIS-S is an index used for measuring oral hygiene status, so it is known that before dental health education was conducted to the mother, most were in the moderate category, namely 52 subjects (88.1%) and the least were in the good category, namely 3 subjects (5.1%). Compared to the oral hygiene status (OHI-S) of GMIT Baumata Elementary School students after dental health education to mothers, the most in the good category was 53 subjects (89.8%) and the least in the moderate category was 6 subjects (10.2%).

Table 4. Mean Improvement in Maternal Behavior

Group	n	Mean	Std	Sig
Pre-test	59	1.86	0.681	0,000
Post-test	59	1.12	0.326	

Table 4 shows that after dental health education to mothers using PowerPoint media, there was a significant increase in maternal behavior in maintaining dental and oral hygiene of

GMIT Baumata Elementary School students as evidenced by the mean value that occurred from 1.86-1.12, the standard deviation value changed from 0.681-0.326, and a significant value of 0.000 or ($p < 0.05$).

Table 5. Mean Improvement of Children's Dental Hygiene Status (OHI-S)

Group	N	Mean	Std	Sig
Pre-test	59	1.10	0.305	0,000
Post-test	59	2.02	0.347	

Table 5 shows that after dental health education was provided to mothers using PowerPoint media, there was a significant improvement in the dental and oral hygiene status of the students at SD GMIT Baumata. This is evidenced by the mean values changing from 1.10 to 2.02, the standard deviation changing from 0.305 to 0.347, and the significance value of 0.000 ($p < 0.05$).

The study conducted on mothers and their children, the students at SD GMIT Baumata, Taebenu District, Kupang Regency, focused on Dental Health Education Using PowerPoint Media to Improve Mothers' Behaviour in Maintaining the Dental and Oral Hygiene of the Students at SD GMIT Baumata. The results are as follows: The majority of the mothers were aged 36-45 years, comprising 23 subjects (39%), while the least represented age group was 46-60 years, with 15 subjects (25.4%). This is influenced by the geographic location, which affects age distribution. Age is a factor that influences comprehension and thinking patterns, with older individuals generally having more experience and knowledge (Selvyanita et al., 2021).

Regarding education levels, the most common was high school (SMA) with 26 subjects (44.1%), while the least common was a bachelor's degree (S1) with 4 subjects (6.8%). Higher education levels in mothers correlate with better guidance, understanding, reminders, and provision of facilities for children, promoting discussion. This aligns with research by Larasati et al., (2022) indicating that most mothers had high school education (Larasati et al., 2022).

Most mothers were housewives (55 subjects, 93.2%), with the fewest working in the private sector (4 subjects, 6.8%). This is due to the rural setting, where many mothers are housewives, which influences their behaviour in maintaining their children's dental and oral health. This finding is consistent with research by Variani et al., (2022), which states that non-working mothers have more time to care for their children compared to working mothers (Variani et al., 2022).

The majority of the students at SD GMIT Baumata were 7 years old (14 subjects, 23.7%), with the least being 8 years old (2 subjects, 3.2%). This is due to uneven population distribution, affecting the age distribution of children aged 6-12 years. This finding aligns with research by Wirata, et al., (2015), which states that primary school age is crucial for dental and oral health due to the transition from milk teeth to permanent teeth (Wirata et al., 2015).

The majority of the students at SD GMIT Baumata were male (35 subjects, 59.3%), with fewer females (24 subjects, 40.7%). This is due to the uneven distribution of the population, with more males than females. This finding is consistent with research by Gayatri indicating a higher distribution frequency of male students at SDN Kauman 2 Malang compared to female students (Gayatri, 2017).

Based on the analysis of the pre-test data of mothers' behaviour, 18 subjects (30.5%) were in a good category, 32 subjects (54.2%) were in the sufficient category, and 9 subjects (15.3%) were in the poor category. In the post-test data, 52 subjects (88.1%) were in the good category and 7 subjects (11.9%) were in the sufficient category. Initially, the mothers' behaviour in maintaining their children's dental and oral hygiene was low, as most mothers had only sufficient knowledge. Therefore, it was necessary to improve mothers' behaviour through dental health education using PowerPoint media. PowerPoint is an effective visual aid in the learning process, stimulating curiosity and interest in the subject matter, thereby achieving optimal results (Setianingrum, 2019). The advantage of PowerPoint is that it is easy to use and understand, fostering interest in learning among students.

After receiving dental and oral health education using PowerPoint media, mothers showed an improvement in behaviour regarding their children's dental and oral hygiene. This aligns with research by Fatan (Alfian et al., 2018), which indicates an increase in knowledge after using PowerPoint media (Alfian et al., 2018).

Based on the initial examination or pre-test data of the children's dental and oral hygiene status, 3 subjects (5.1%) were in the good category, 52 subjects (88.1%) were in the moderate category, and 4 subjects (6.8%) were in the poor category. In the post-test data, 53 subjects (89.8%) were in the good category, and 6 subjects (10.2%) were in the moderate category. Initially, the children's knowledge of dental and oral hygiene was very low, as evidenced by the majority being in the moderate category. Therefore, it was necessary to improve dental and oral hygiene status through dental health education using PowerPoint.

The results showed that dental and oral health education using PowerPoint media led to an increase in children's knowledge about maintaining dental and oral hygiene, moving from the moderate category to the good category. This aligns with research by Salimah et al. (2020), which found an increase in children's knowledge at Madrasah Diniyah Darul Falah before and after receiving dental health education using PowerPoint (Salimah, 2020).

The effectiveness test of mothers' behaviour in maintaining the dental and oral hygiene of the students at SD GMIT Baumata before and after receiving health education using PowerPoint showed a p-value of 0.000 ($p < 0.05$), indicating that PowerPoint media effectively improved mothers' behaviour. Behavioural change can occur through knowledge, attitude, and practice (Notoatmodjo, 2014). Additionally, mothers' education significantly influences behavioural changes, as higher education levels correlate with better behaviour in maintaining children's dental and oral hygiene. This aligns with research by Alfian et al. (2018), indicating a significant difference in mothers' knowledge about caries before and after using PowerPoint media (Alfian et al., 2018).

The effectiveness test of the dental and oral hygiene status of the students at SD GMIT Baumata before and after receiving health education using PowerPoint showed a p-value of 0.000 ($p < 0.05$), indicating that PowerPoint media effectively improved the dental and oral hygiene status of the students. After receiving dental health education using PowerPoint, there was an increase in children's knowledge about maintaining dental and oral hygiene, with the majority moving to the good category. Additionally, mothers play a crucial role in guiding, supervising, and controlling their children in maintaining dental and oral hygiene. This finding aligns with research by Rahmawati et al. (2020), which found an increase in knowledge about dental and oral hygiene after using PowerPoint media among grade 3B students at SDI Raden Paku Surabaya (Rahmawati et al., 2020). A limitation of this study is that the visual and lecture-based approach can cause students to become bored if the material is presented for too long.

CONCLUSION

From the results of this study, it can be concluded that the PowerPoint media is effective in improving maternal behavior in maintaining children's dental and oral hygiene and improving the dental and oral hygiene status of GMIT Baumata Elementary School, Taebenu District, Kupang Regency. It is hoped that future researchers can develop the PowerPoint media or use different media so that the results of future studies can be compared with the results of previous studies.

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