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The Influence of Using MEDBOGI (Media Boneka Gigi) on Knowledge of How to Brush Teeth in Mild Mental Disability Children at SLB Tunas Mulya Surabaya

Athiyyah Nabilah Az Zahro

Student Dental Therapist, Department of Dental Health, Politeknik Kesehatan Kementerian Kesehatan Surabaya, Surabaya, Indonesia

Corresponding author email: athiyyahnabilaazzahro@gmail.com

Sri Hidayati

Lecturer in Dental Therapist, Department of Dental Health, Politeknik Kesehatan Kementerian Kesehatan Surabaya, Surabaya, Indonesia

Email: srihidayatirifan@gmail.com

Isnanto

Lecturer in Dental Therapist, Department of Dental Health, Politeknik Kesehatan Kementerian Kesehatan Surabaya, Surabaya, Indonesia

Email: nanto@poltekkesdepkes-sby.ac.id

Abstract---It was found in a preliminary study conducted on mild mentally retarded children aged 9-12 years at SLB Tunas Mulya Surabaya, most of them had poor knowledge of how to brush their teeth. This is caused by the use of media that is less effective in the learning process. Efforts to increase knowledge of dental and oral health maintenance can be carried out by using MEDBOGI (Media Boneka Gigi). This study aimed to determine the effect of using MEDBOGI on knowledge of how to brush teeth in children with mild mental retardation at SLB Tunas Mulya Surabaya. The research method uses analytic research with quick experimental and one-group pretest-posttest design. The research sample was 30 mentally retarded children aged 9-12 years at SLB Tunas Mulya Surabaya, taking samples using a total sampling technique. The data collection instrument uses a questionnaire sheet. The data analysis technique uses the Mann-Whitney test. Results: based on the Man-Whitney test, the result is $P(0.000) < 0.05$. This value indicates that H_0 is rejected, so there is an effect of using MEDBOGI on knowledge of how to brush teeth in children with mild mental retardation at SLB Tunas Mulya Surabaya.

Keywords---dental dummy media, disability children, knowledge, tooth brushing patterns.

Introduction

Oral health is a fundamental part of general health and influences overall well-being. Dental and oral health is considered very important because the oral cavity is an ideal place for the development of bacteria, if the teeth and mouth are not cleaned properly, food debris tucked in with bacteria will multiply and form plaque. This plaque is an ideal growth site for the bacteria *Streptococcus mutans* and *Lactobacillus* spp which will later ferment carbohydrate substrates and produce organic acids. This acid causes the pH to decrease and causes demineralization of tooth tissue which results in caries or what is often called cavities (Wulandari et al., 2018).

Based on data from the World Health Organization (2012) cit. (Maswarni & Gustinar, 2022), It is known that in the world as much as 91% of children brush their teeth every day but only 7.3% of the total follow the instructions for brushing their teeth in the morning after breakfast and night before going to bed in the right way. This shows that the knowledge of brushing teeth is still lacking in the community

According to Riskesdas data for 2018, the largest proportion of dental problems in Indonesia is broken teeth, cavities, pain 45.3%, swollen gums, and abscesses 14%. The majority of Indonesia's population (94.7%) already have good tooth brushing behavior, namely brushing their teeth every day. However, from that percentage, only 2.8% brush their teeth at the right time, which is at least 2 times a day, after breakfast and before going to bed. In Indonesia, the prevalence of ABK is 1,544,184 where 21.42% are children with an age range of 5-18 years. The high prevalence of dental health problems in ABK can be caused by obstacles to muscle coordination in carrying out daily dental cleaning activities (Rizkika & Christiono, 2018).

In connection with increasing age, dental and oral health problems in people with mental retardation also increase, where the need for dental and oral care increases with age. Abnormalities that trigger it also include mentally retarded people who have difficulty maintaining healthy teeth and mouth to get good natural teeth cleaning so they need the help of other people around them (Ranata et al., 2022).

Based on (Hanif & Prasko, 2018), lack of knowledge is one of the causes of children ignoring dental and oral health problems. Children with developmental barriers (mental retardation) have learning problems caused by barriers to the development of intelligence, mental, emotional, social, and physical. Self-care skills are a self-development skill that needs to be taught to mentally retarded students. One aspect is the skill of brushing teeth.

Study (Amiqoh, 2022), mentally retarded children have higher caries rates and poorer oral hygiene compared to normal children in general. According to Hisham et al. (2019), the poor condition of the oral cavity with mental retardation is caused by unsupervised tooth brushing and also due by other factors such as tooth brushing technique, motor skills, and mentoring assistance which are still ignored by the city (Amiqoh, 2022).

Research by Hardiyanti (2016), shows that knowledge of brushing teeth in mentally retarded children is in a good category, namely only 6 children (20%), the medium category is 13 children (43%), and the poor category is 11 children (37%). Based on (Nurmalasari et al., 2021), tooth brushing is the easiest and cheapest preventive action to do. Brushing your teeth regularly can help reduce the formation of dental plaque. The ability to brush your teeth properly and correctly is an important factor to maintain dental and oral health. One of the factors that affect oral hygiene is knowledge of brushing teeth which includes the frequency of brushing teeth, the method or technique of brushing teeth, and the shape of the toothbrush used.

The impact of a lack of knowledge about how to maintain dental hygiene is that you will have dental health problems such as cavities. Cavities have quite a dangerous impact, namely the teeth become porous, hollow, and even broken so that the teeth lose their chewing power and interfere with digestion (Riwanti et al., 2021). The factor that influences knowledge in counseling. Provision of health education can increase health knowledge (Utari et al., 2021). Based on Pine et al. (2000), to increase knowledge about dental and oral health it is necessary to make efforts, one of which is preventive efforts, namely by providing dental and oral health education through counseling. According to Sidiq (2018), the factors that influence success of health counseling are influenced by several factors, namely extension factors, objectives, and counseling processes

Based on (Halimah et al., 2019), the delivery of counseling material in learning dental and oral health requires media. For mentally retarded students, the learning media used are as concrete as possible because as a characteristic of mentally retarded children, it is difficult to understand something abstract. The use of concrete media for mental retardation can make it easier for students to participate in learning, children will easily understand and apply it in everyday life.

One of the classifications of media is three-dimensional media or often referred to as media models which can also be said to be concrete or semi-concrete media because three-dimensional media is usually shaped like an actual object and looks real (Juliанти et al., 2022). One of the three-dimensional learning media as a model or imitation of the shape of real human teeth is dental puppet media. The media for this dental doll is in the form of a graham tooth which is given eyes and a mouth that can be opened, if the doll's mouth is opened in it there is an imitation of the original human tooth structure in the form of gums, tooth structure (incisors, canines, premolars, molars), and tongue (Chaudhari et al., 2016). The results of research conducted by Kvam (2000), regarding the improvement in the ability to brush teeth through the media of tooth puppets in mentally retarded children in Rindang Kasih Secang with 3 respondents showed that there was an increase in ability in the three respondents.

The results of research conducted by (Muninggar, 2022), regarding increasing the ability to recognize number symbols through concrete objects "Doraemon Dolls" in mentally retarded students in grade 1 SLB Karya Asih Surabaya show an increase in knowledge. A preliminary study conducted in November 2022, by distributing a questionnaire with 10 questions about how to brush your teeth to 10 mentally retarded children in the mild category, assisted by the homeroom teacher, obtained an average of 96% wrong answers and 4% correct answers. This shows that most mentally retarded children have low knowledge of how to brush their teeth. Statement from the head of the Tunas Mulya SLB school, previously the UKGS program had been held in the form of counseling on how to brush

your teeth by the local health center, but due to the Covid-19 condition, until now there has been no counseling activities conducted at Tunas Mulya SLB. From the results of counseling conducted by the health center, there are still many students who have not been able to brush their teeth properly. This also shows that most mentally retarded children have low knowledge of how to brush their teeth. Based on the results of the description of the background above, the purpose of this study was to determine the effect of using MEDBOGI (Teeth Puppet Media) on knowledge of how to brush teeth in mentally retarded children (Bishop et al., 2013; Pratt & Greydanus, 2007; Macías et al., 2018; Pelana et al., 2021).

Method

The type of research used was Quasy experimental with the One Group Pretest-Postest Design design. The sampling technique used in this research is total sampling. The sample is tunagrahita students with the light category at the Tulnas Mullya Sulrabaya Special School in 2022, totaling 30 people. The research was carried out at SLB Tunas Mulya Surabaya which is located on Jl. Sememi Jaya Selatan No.25, Kelurahan Sememi, City of Surabaya. The research was carried out from October 2022 to March 2023. Design can be described as a cultural:

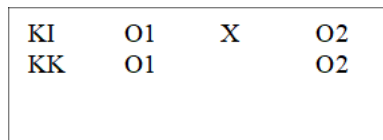


Figure 1. Research design chart

Exclusion:

- KI : To intelligence group
- KK : To control the group
- O1 : Pre-test
- O2 : Post-test
- X : Treatment Group

The data analysis technique used the Dutch Wilcoxon test technique. This test is used to test the condition of paired samples (pre-post) when the data is ordinal, which in this study is to find out the impact (MEDBOGI) of Media Boneka Gigi on the level of knowledge of students with hearing impairments in how to brush their teeth. Then they underwent the Mann-Whitney statistical test to find out the comparison of the results of brushing skills in the control group and the intelligence group.

Results and Discussion

Results

The results of the knowledge of mental retardation students in the Pre-test category Knowledge of brushing their teeth before using MEDBOGI (Media Boneka Gigi)

Table 1

Frequency distribution of teeth brushing knowledge pre-test in the intervention group at SLB Tunas Mulya Surabaya

No.	Tooth Brushing Knowledge Category	Frequency	Percentage (%)
1.	Good	0	0%
2.	Enough	2	6.67%
3.	Bad	28	93.3%
4.	Amount	30	100%

Based on Table 1, it can be seen that of the 30 students in the intervention group, the pretest value of knowledge of brushing their teeth before counseling was carried out using MEDBOGI (Media Boneka Gigi), that is, some students entered the category of bad tooth brushing knowledge with a total of 28 students (93.3%).

Table 2
Pre-test frequency distribution of tooth brushing knowledge control group at SLB Karunia 99 Surabaya

No.	Tooth Brushing Knowledge Category	Frequency	Percentage (%)
1.	Good	0	0%
2.	Enough	1	3.33%
3.	Bad	29	96.6%
4.	Amount	30	100%

Based on Table 2, it can be seen that of the 30 students in the control group, the pretest value of knowledge of brushing their teeth was obtained before counseling was carried out using MEDBOGI (Media Boneka Gigi), that is, some students entered the category of bad tooth brushing knowledge with a total of 29 students (96.6%).

The results of the knowledge of mental retardation students in the Post-test category Knowledge of brushing teeth before using MEDBOGI (Media Boneka Gigi)

Table 3
Post-test frequency distribution of teeth brushing knowledge in the intervention group at SLB Tunas Mulya Surabaya

No.	Tooth Brushing Knowledge Category	Frequency	Percentage (%)
1.	Good	24	80%
2.	Enough	6	20%
3.	Bad	0	0%
4.	Amount	30	100%

Based on Table 3, it can be seen that of the 30 students in the intervention group, the post-test scores for knowledge of brushing their teeth were carried out after counseling using MEDBOGI (Media Boneka Gigi), namely some students entered the category of knowledge of brushing their teeth well with a total of 24 students (80%).

Table 4
Post-test frequency distribution of tooth brushing knowledge in the control group at SLB Karunia 99 Surabaya

No.	Tooth Brushing Knowledge Category	Frequency	Percentage (%)
1.	Good	0	0%
2.	Enough	1	3.33%
3.	Bad	29	96.6%
4.	Amount	30	100%

Based on Table 4, it can be seen that of the 30 students in the control group, the post-test value of knowledge of brushing their teeth was obtained after counseling using MEDBOGI (Media Boneka Gigi), that is, some students entered the category of bad tooth brushing knowledge with a total of 29 students (96.6%).

Table 5
Data normality test results

No.	Group	Shapiro-wilk Sign
1.	Pre-Test Intervention Group	0.013
2.	Post-Test Intervention Group	0.000
3.	Pre-Test Control Group	0.000
4.	Post-Test Control Group	0.000

Based on Table 5, it is known that all data on knowledge of tooth brushing pre-test and post-test in the intervention group and the control group shows that the value of Sign. Shapiro-wilk < 0.05 . It can be concluded that the data is not normally distributed, so further data analysis uses non-parametric statistical tests, namely the Wilcoxon and Mann-Whitney tests.

Table 6
Results of the Wilcoxon pre-test and post-test of the intervention group

No.	Variable	Category			P-value
		Good	Enough	Bad	
1.	Pre-Test	0	2	28	0.000
2.	Post-Test	24	6	0	

Based on table 6 it is known that the value of Asymp Sig. (2-Tailed) of $0.000 < 0.05$, then H1 is accepted and H0 is rejected, meaning that there is a significant difference between the pre-test and post-test scores after being given the intervention in the form of using MEDBOGI. This means that there is an influence from the use of MEDBOGI on knowledge of how to brush their teeth in children with mild mental retardation at SLB Tunas Mulya Surabaya

Table 7
Results of the Wilcoxon pre-test and post-test of the control group

No.	Variable	Category			P-value
		Good	Enough	Bad	
1.	Pre-Test	0	1	29	1,000
2.	Post-Test	0	1	29	

Based on table 7 it is known that the value of Asymp Sig. (2-Tailed) of $1,000 > 0.05$, then H0 is accepted and H1 is rejected, meaning that there is no significant difference between the pre-test and post-test values for knowledge of how to brush your teeth in the control group.

Table 8
Results of the Man-Whitney test on post-test scores for the intervention group and the control group

No.	Category	Group		P-value
		Intervention	Control	
1.	Good	24	0	0.000
2.	Enough	6	1	
3.	Bad	0	29	

Based on Table 8 the results of the post-test knowledge of brushing teeth in the intervention group and the control group were subjected to the Man-Whitney test, the results obtained were p value = $0.000 (< 0.05)$, then Ho was rejected and H1 was accepted, which means that there was an effect of using MEDBOGI (Teeth Doll Media) on

knowledge of how to brush their teeth with the control group who did not receive treatment from using MEDBOGI (Dental Dummy Media) (Kim et al., 2009; Vallejos-Sánchez et al., 2008; Addy, 2005; Liu et al., 2010).

Discussion

Knowledge of Mentally Disabled Students Before Counseling using MEDBOGI (Media Boneka Gigi)

Knowledge is the result of the activity of finding out someone about objects through the senses they have, namely the senses of sight, smell, hearing, taste, touch, and so on. Most knowledge is obtained through the sense of hearing (ears) and the sense of sight (eyes). Knowledge is a very important domain (that plays an important role) in shaping one's actions (Notoatmodjo et al., 2018).

Based on the results of data analysis regarding knowledge of how to brush their teeth, it is known that most mentally retarded children with knowledge of brushing their teeth are in a bad category, namely 93.3%. The lack of knowledge of mentally retarded children at SLB Tunas Mulya Surabaya is likely to occur because it is influenced by the media used during counseling so far it is less effective. This was also conveyed by Fauzi et al. (2018), Lack of knowledge can be influenced by factors, namely the media, information obtained from formal and non-formal education from the media provide short-term knowledge (immediate impact), so that it can produce change, increase and renewal of knowledge.

Lack of knowledge is one of the causes of children ignoring dental and oral health problems. Children with developmental barriers (mental retardation) have learning problems caused by barriers to the development of intelligence, mental, emotional, social, and physical. Self-care skills are a self-development skill that needs to be taught to mentally retarded students. One aspect is brushing your teeth (Hanif & Prasko, 2018).

This research is in line with (Liu et al., 2019), mentally retarded children who brush their teeth have several problems related to manual dexterity, IQ, communication, and cognition. They also do not have sufficient knowledge about how to brush their teeth properly and correctly. This research is in line with (Suyami et al., 2019), which stated that the knowledge of mentally retarded students was in a less category before counseling on how to brush their teeth was carried out.

Lack of knowledge about tooth brushing patterns is the impact of unsuccessful attempts at counseling activities carried out by health workers. The selection of media used in counseling is very important for cognitive development, attractive media makes it easier for respondents to remember the material presented during counseling. The determinant of success in dental health education efforts for school children is inseparable from the educational method and the important role of the media used because it can support the learning process and make it easier for students to understand learning material (Subaris, 2016).

This research is in line with (Daniati et al., 2022), the process of delivering counseling messages so that they can be well received and by what is expected can be done by using extension props/tools which are commonly referred to as extension media. Extension media that can be used for mentally retarded children are media related to the real experiences of mentally retarded children because they will easily be attracted to their attention if in teaching and learning activities they use concrete objects or use various appropriate props. The lack of knowledge was also supported by information from the school principal that previously the UKGS program had been held in the form of counseling on how to brush your teeth by the local health center, but due to the COVID-19 conditions, until now there has been no counseling activity held at SLB Tunas Mulya.

Based on (Melo et al., 2018), in a public health context, school-based oral health programs are the most effective way to reach children, and there is a great opportunity to reach a large number of children who will benefit from such interventions. Another factor that can affect knowledge is the source of information, namely information obtained from various sources, both from health promotion, print media, and electronic media. This will affect the level of one's knowledge. When a person obtains a lot of information, he tends to have broader knowledge and this knowledge will underlie a person's attitudes and behavior. Submission of good information and the right media is very influential on the knowledge of respondents (Sari et al., 2018).

In addition to information factors that affect knowledge is the environment. Based on Research (Yu et al., 2021) physical, biological, and social environmental risk factors, in rural and urban areas can affect children's intelligence. This research is also in line with (Bedewy, 2021), it is believed that adopting a positive family-centered environment is associated with being fully aware of what is expected of them and being able to discuss perceived skills and weaknesses.

The educational factor is also one of the factors that influence knowledge. This research is in line with (Mackenzie et al., 2020), there are several reasons to improve quality knowledge for children with special needs, one

of which is education. We can develop inclusive and equitable education only if we develop the attitude that children and youth with disabilities can learn if creative approaches to teaching and learning are adopted.

Knowledge is also influenced by social, cultural, and economic factors. This is in line with research (Wu et al., 2020), social factors (individual differences, personal habits, and living conditions) show that these factors affect the knowledge of children with special needs. This is reflected in some of the child's behavioral habits such as being picky about food, involvement of caregivers for children with special needs, and where to live. Researchers assume that the knowledge of mental retardation students is lacking before counseling using MEDBOGI (Media Boneka Gigi) occurs due to several factors, including information factors, environmental factors, educational factors, socio-economic factors, culture, and counseling media.

Knowledge of Mentally Disabled Students After Counseling using MEDBOGI (Media Boneka Gigi)

Based on the results of data analysis, the value of students' knowledge after being given counseling in the intervention group increased by 80%, while in the control group, it did not increase. The increase in knowledge in the intervention group was due to counseling conducted with MEDBOGI (Media Boneka Gigi), and the control group did not experience an increase in value because the control group was not given any treatment.

Based on Research (Irmadani & Zulkifli, 2020), education requires tools, especially for children with mental retardation. The use of these tools can change a child's behavior and is very important for achieving educational goals. Dental and oral health education usually contains knowledge about how to maintain healthy teeth and mouth. One example is knowledge of how to brush your teeth. The use of media in learning helps provide meaningful experiences for children because it makes it easier for children to understand the material.

This is in line with research (Fachruniza & Hardiyanti, n.d.) which states that the knowledge of mentally retarded students has increased after counseling with dental dolls. There is an increase in the knowledge of the respondents because the dental puppet media is very interesting. After all, it can be heard, demonstrated, and observed. So that respondents can understand the content of the material presented. Based on Research (Doichinova et al., 2019), the implementation of training programs to increase knowledge of brushing teeth in children with special needs increases. Our results show that there is an increase in knowledge of brushing teeth in children with special needs.

This research is also in line with (Melo et al., 2021), the results of data on children in the intervention group in Indonesia still show an increase in their awareness of adequate tooth brushing frequency. Likewise, how to brush your teeth is visible after adjustment. Researchers assume that the knowledge of mentally retarded students increases after counseling using MEDBOGI (Media Boneka Gigi) occurs because it is caused by the use of media in appropriate learning helps provide meaningful experiences for children because it makes it easier for children to understand the material.

Effect of Using MEDBOGI (Media Boneka Gigi) on Knowledge of how to brush teeth in mentally retarded students

Based on the analysis of the Mann-Whitney test regarding the knowledge of mentally retarded students in the mild category of SLB Tunas Mulya Surabaya after being given counseling in the intervention group and the control group, significant results were obtained. The average value of knowledge in the intervention group was higher than in the control group. This indicated that the value of knowledge in the intervention group had increased compared to the control group. The increase in the value of knowledge in the intervention group was due to counseling conducted using MEDBOGI (Media Boneka Gigi), while the control group was not given any treatment. So it can be concluded that MEDBOGI (Media Boneka Gigi) affects increasing the knowledge of mild mentally retarded students at SLB Tunas Mulya Surabaya.

MEDBOGI (Media Boneka Gigi) can be a medium for transferring knowledge in conveying knowledge to students. This research is in line with (Julianti et al., 2022), who stated that there was an influence from the Puppet Media on knowledge of how to brush teeth in mentally retarded children. The conclusion between the results and the theory is that the existence of counseling with MEDBOGI (Media Boneka Gigi) causes mental retardation students to experience an increase in knowledge so that knowledge will affect attitudes to maintain dental and oral hygiene. This is one of the efforts to improve the status of good dental and oral hygiene to achieve optimally.

By Skinner's 1938 theory, that behavior is a target response or reaction to a stimulus (external stimulation). This behavior occurs through a process of stimulus to the organism, then the organism responds, therefore Skinner called the SOR theory or Stimulus Organism Response. In that case, the extension media is a stimulus or stimulus from the outside for the organism (mild mental retardation students at SLB Tunas Mulya Surabaya). With the existence of this counseling media, it is used as a distribution of material about how to brush your teeth which can make it easier for

mentally retarded students to understand the counseling being carried out (Elidrissi & Naidoo, 2016; Agouropoulos et al., 2014).

Conclusion

Based on the results of research on the effect of using MEDBOGI (Media Boneka Gigi) on teeth brushing knowledge of mild mentally retarded students at SLB Tunas Mulya Surabaya, it can be concluded that students' knowledge before being given counseling with MEDBOGI is included in the bad category. Student knowledge after being given counseling with MEDBOGI is included in the good category. There is an influence of the use of MEDBOGI on the knowledge of brushing teeth in students with mild mental retardation at SLB Tunas Mulya Surabaya. For the SLB Tunas Mulya Surabaya institution to be able to make a schedule for carrying out tooth brushing activities for mentally retarded students so that the counseling that is delivered remains consistent, it is best if there are pictures or posters in class about how to brush your teeth.

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