



The use of a special toothbrush for dental and oral hygiene in children with mild mental retardation

Lina Rismayani^{1*}, Gita Indartri², Samjaji³

^{1,2,3} Department of Dental Health, Polytechnic Health of Tasikmalaya, Indonesia

ARTICLE INFO

Article history:

Received: February 13, 2023

Revised: March 9, 2023

Accepted: March 15, 2023

Available online: March 21, 2023

Keywords:

Influence, Special toothbrush, mild mental retardation



This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright © 2023 by Author. Published by Center of Excellent (PUI) Poltekkes Kemenkes Jakarta I, Indonesia

ABSTRACT

Background: People with mental retardation are a condition with general intelligence functions that are below average accompanied by reduced ability to adapt (adaptive behavior), which begins to appear before the age of 18 years, people who are mentally retarded have intelligence development (intellectual) and experience difficulties in the process of learning and social adaptation. **Purpose:** the purpose of this study was to determine the effect of using a special toothbrush on oral hygiene for children with mild mental retardation at SLBN Cineam, Tasikmalaya Regency. **Method:** this type of research is a quasi-experimental design with a one-group pretest posttest control research design. Sampling with total sampling. The data obtained from this study were processed using the Wilcoxon test. **Results:** the results of the Wilcoxon test obtained a significance result of $0.000 < 0.05$ in the intervention group and the control group, which means that there is a significant effect of using a special toothbrush on the dental and oral hygiene of mentally retarded children. **Conclusion:** there is an effect of using a special toothbrush on dental and oral hygiene of children with mild mental retardation at SLBN Cineam, Tasikmalaya Regency.

INTRODUCTION

Persons with mental retardation or mental retardation are a condition with general intelligence functions that are below average accompanied by reduced ability to adapt, which begins to appear before the age of 18 years, people who are mentally experiencing retardation have lower intelligence development and experience difficulties in the learning process and social adaptation (Baroff & Olley, 2014; Caspi & Moffitt, 2018). Mental retardation has obstacles in carrying out physical activities, sensory disturbances and physical disabilities, other obstacles are experienced such as daily activities, namely walking, crawling, sitting and standing (Louw & Louw, 2014; Shields et al., 2012).

Dental and oral health is an inseparable part of overall body health. Dental and oral care as a whole starts with dental and oral hygiene for each individual (Pudentiana et al., 2021). The national prevalence of dental and oral disease in Indonesia is 23.4%. Dental and oral health problems in Indonesia are still often ignored by society. Most of Indonesia's population has problems with dental and oral health. Based on Basic Health Research (Riskesdas) the average proportion of dental and oral problems according to West Java province is 57.9% and as many as 20 provinces are above this figure (Kemenkes RI, 2018).

According to WHO the number of children with special needs in Indonesia is around 7-10% of the total number of children. Children with special needs (mentally retarded) are children with physical and mental limitations who have limited physical conditions, development, behavior or emotions. Problems in children with special needs affect personal hygiene, one of which is dental hygiene, this means that children with special needs need more types of health services than are needed by normal children in general (Veriza & Boy, 2018).

Viewed from the point of view of health services, especially dental and oral health, the ABK group needs more than children in general, children with special needs have limitations in themselves. The lack of ability to self-clean the oral cavity can increase the risk of damage to the teeth and surrounding tissues (Lisinus & Sembiring, 2020; Primawati et al., 2019).

Mental retardation is included in the category of children with special needs. Special education for mentally retarded children is better known as special schools (SLB) (Wahyudi & Huda, 2019). Another term for mental retardation is a term for children with disabilities or reduced abilities or reduced abilities in terms of strength, value, quality, and quantity. Mental retardation has mental disorders, or behavior due to

*Corresponding author.

E-mail addresses: gitaind15@gmail.com

disturbed intelligence. Dental and oral health conditions that often occur in people with mental retardation are problems related to dental and oral hygiene (Kisely, 2016; Pini et al., 2016).

Poor dental and oral hygiene is a cause of dental caries and other dental diseases, mentally retarded children usually have a higher prevalence of untreated dental caries than normal children (Suyami et al., 2019). Crowded teeth condition causes periodontal disease, dental caries and mild gingivitis caused by plaque and inflammation, swollen gums that bleed easily. Severe periodontitis will cause tooth loss if left untreated. In addition, there are no permanent tooth seeds, the eruption of teeth in mentally retarded children is slow and hypoplasia (Mahilary, 2020). Data from the Ministry of Health in 2010 showed that the prevalence of caries in Indonesia reached 60-80% of the entire population and was ranked 6th as the most common disease. More specifically, in mentally retarded children the prevalence of dental caries can reach 82.6% and this is included in the high category (Permatasari et al., 2016).

The way to maintain healthy teeth and mouth is by controlling plaque which can be done by brushing teeth and using other assistive devices such as dental floss, toothpicks and interdental brushes as well as chemical action, namely by using antibiotics and other anti-bacterial compounds besides antibiotics (Ramdiani et al., 2020; Tinanoff, 2019). Plaque control is cleaning and removing plaque to prevent plaque accumulation on the tooth surface and gingiva. Mechanical plaque control is the best way to remove debris. Mechanical plaque removal is known as oral physiotherapy. Oral physiotherapy is cleaning the teeth and gingiva from food residue, alba material, plaque and doing gingival massage (Tuhuteru et al., 2014).

Mentally retarded children only know how to brush their teeth as taught by their parents, caregivers, or teachers at their school. Mentally retarded children tend not to know what the purpose of brushing their teeth is, how to brush their teeth properly, and what to do when they have a toothache (Julia et al., 2018). Children with mental retardation have problems taking care of themselves, self-care (personal hygiene) is carried out with the aim of maintaining health both physically, psychologically, personal hygiene which can be done by brushing their teeth (Akhmetzyanova, 2014; Juliana & Barida, 2020).

The ability of mentally retarded children to brush their teeth is still low, one of which is the stage of brushing the parts of the teeth. The stages of brushing parts of the teeth cause them to still have difficulty brushing their teeth as a whole (Suyami et al., 2019). Children with mental retardation need a special toothbrush that is designed with regular, dense, and interlocking bristles equipped with a thick handle and slip-resistant rubber to ensure a better grip.

METHOD

The sampling method used a total sampling technique, namely mild mentally retarded children at SLBN Cineam Tasikmalaya Regency, the sample in this study were 33 mild mentally retarded children. Data were obtained directly from the target through HI examinations to see the extent to which the use of special toothbrushes had an effect on children with mild mental retardation at SLBN Cineam, Tasikmalaya Regency. The data were taken from the results of direct examination of the research object, the steps used in this study were initial Hygiene Index measurements and how to use a special toothbrush for mild mentally retarded students.

The measuring tool used to measure dental and oral hygiene in this study is the Hygiene Index. The sheet used to observe the teeth brushing activities of mild mentally retarded children. The sheet is used to find out whether or not a special toothbrush is given to children with mild mental retardation. Data Analysis Using Wilcoxon Test.

RESULT

Table 1. Frequency Distribution of Research Samples Based on Age

Age	Frequency	Percent (%)
9 Years	1	3.0
10 Years	3	9.1
11 Years	11	33.3
12 Years	6	18.2
13 Years	3	9.1
14 Years	5	15.2
15 Years	2	6.1
16 Years	2	6.1
Total	33	100

Table 1 shows that the majority of the study sample was 11 years old with 11 children (33.3%), while the least were 9 years old with 1 child (3.0%).

Table 2. Frequency Distribution of Study Samples Based on Dental and Oral Hygiene Status Pretest and Posttest Intervention Groups

Dental and Oral Hygiene Status	Intervention Group			
	Pretest		Posttest	
	Frequency	Percent (%)	Frequency	Percent (%)
Good	4	25.5	10	58.8
Bad	13	76.5	7	41.2
Total	17	100	17	100

Table 2. shows that in the intervention group (pretest) most of the respondents with bad dental and oral hygiene status were 13 respondents (76.5%), while in the post-intervention group (posttest) some respondents with good dental and oral hygiene status were 10 respondents (58.8%).

Table 3. Frequency Distribution of Study Samples Based on Dental and Oral Hygiene Status Pretest and Posttest Control Groups

Dental and Oral Hygiene Status	Control Group			
	Pretest		Posttest	
	Frequency	Percent (%)	Frequency	Percent (%)
Good	4	25.0	7	43.8
Bad	12	75.0	9	56.3
Total	16	100	16	100

Table 3 shows that in the control group (pretest) most of the respondents with bad dental and oral hygiene status were 12 respondents (75.0%), while the intervention group after (posttest) some of the respondents with bad dental and oral hygiene status were 9 respondents (56,3%).

Table 4. The results of the research on the effect of using a special toothbrush on the dental and oral hygiene of children with mild mental retardation

No	Mild mentally retarded children's group	Result	Average Dental and Oral Hygiene Status (%)	Criteria
1	Intervention Group	Pretest	42	Bad
		Posttest	54	Good
2	Control Group	Pretest	42	Bad
		Posttest	48	Bad

Table 4 shows a comparison of the average dental and oral hygiene status in the intervention group before using a special toothbrush, which was 42 and after using a special toothbrush, which was 54, while in the control group before using a special toothbrush, it was 42 and after using a special toothbrush by 48.

Table 5. Data Analysis Using the Wilcoxon Test

Dental and Oral Hygiene Pretest-Posttest	
Z	-3.633
Asymp. Sig. (2-tailed)	0.000

Table 5 results of data analysis using the SPSS program with the Wilcoxon test with a significance value of 0.000. The basis for decision making is the H0 formulation, namely that there is no effect of using a special toothbrush on the dental and oral hygiene of children with mild mental retardation, while the H1 formulation means that there is an effect of using a special toothbrush on the dental and oral hygiene of children with mild mental retardation. The results of the H0 statistical test were rejected because the significance value was <0.05. The SPSS test results state that the significance value is 0.000 or <0.05, so it can be concluded that "Hypothesis Accepted". This means that there is a difference between dental and oral

hygiene before and after using a special toothbrush for mildly mentally retarded children (pre-test and post-test) so that it can be concluded that "there is an effect of using a special toothbrush on dental and oral hygiene for mildly mentally retarded children at SLBN Cineam, Tasikmalaya Regency".

DISCUSSION

The results showed that the dental and oral hygiene status in the intervention group before using special toothbrushes was in the bad criteria (76.5%), while after using special toothbrushes it increased to good (58.8%). In the control group, before using a regular toothbrush, it was in bad criteria (75.0%), and after using a regular toothbrush, it was bad (56.3%).

Measuring dental and oral hygiene in mentally retarded children can be done using the hygiene index Green and Vermillion choosing to measure plaque accumulation on all surfaces including 4 surfaces (mesial, distal, facial/labial, palatal/lingual). The HI score is determined by dividing the total number of plaque-free tooth surfaces by the number of tooth surfaces examined, expressed as a percentage of clean surfaces. Oral hygiene is a condition in which the teeth and oral cavity are clean without debris (food residue), plaque, tartar or bad breath. Maintenance of oral hygiene aims to avoid the accumulation of plaque and bacteria so as to prevent dental and oral diseases such as caries (Saputri et al., 2017).

Based on the characteristics of mentally retarded children who lack concentration, difficult tooth brushing methods will also affect plaque removal when mentally retarded children brush their teeth so that the use of correct and appropriate methods can help the mental health of children with mental retardation to be cleaner (Azzahra et al., 2014).

Efforts to reduce the plaque index in mentally retarded children are carried out by brushing their teeth using the horizontal technique, the roll technique. The method of brushing teeth using the horizontal technique is suitable for mentally retarded children because the movement is only in one direction, so it is easily applied by mentally retarded children who have cognitive abilities below normal children (Fadhilah et al., 2021).

CONCLUSION

Based on the results of the study, it can be concluded that there is a significant effect between the use of a special toothbrush on the dental and oral hygiene of children with mild mental retardation at SLBN Cineam, Tasikmalaya Regency, after being given a special toothbrush.

REFERENCES

- Akhmetzyanova, A. I. (2014). The development of self-care skills of children with severe mental retardation in the context of Lekoteka. *World Applied Sciences Journal*, 29(6), 724–727. <https://doi.org/10.5829/idosi.wasj.2014.29.06.13922>
- Azzahra, N. N., Wasilah, S., & Aspriyanto, D. (2014). Indeks kebersihan rongga mulut pada anak retardasi mental. *Dentino Jurnal Kedokteran Gigi*, 2(1), 79–82.
- Baroff, G. S., & Olley, J. G. (2014). *Mental retardation: Nature, cause, and management*. Routledge.
- Caspi, A., & Moffitt, T. E. (2018). All for one and one for all: Mental disorders in one dimension. *American Journal of Psychiatry*, 175(9), 831–844. <https://doi.org/10.1176/appi.ajp.2018.17121383>
- Fadhilah, A., Prasetyowati, S., & Mahirawatie, I. C. (2021). Metode Menyikat Gigi Dengan Teknik Horizontal Dan Roll Terhadap Penurunan Plak Pada Anak Tunagrahita. *Jurnal Ilmiah Keperawatan Gigi*, 2(2), 201–207. <https://doi.org/10.37160/jikg.v2i2.703>
- Julia, D. R., Yani, R. W. E., & Budirahardjo, R. (2018). Hubungan Jenjang Pendidikan terhadap Perilaku Menjaga Kesehatan Gigi dan Mulut Anak Tunagrahita di SLB Kota Sidoarjo. *Pustaka Kesehatan*, 6(2), 371–377. <https://doi.org/10.19184/pk.v6i2.8661>
- Juliana, T., & Barida, M. (2020). The influence of parenting parents on the personal hygiene independence of students with disabilities. *COUNS-EDU: The International Journal of Counseling and Education*, 5(3), 107–114. <https://doi.org/10.23916/0020200526030>
- Kisely, S. (2016). No mental health without oral health. *The Canadian Journal of Psychiatry*, 61(5), 277–282. <https://doi.org/10.1177/0706743716632523>
- Lisinus, R., & Sembiring, P. (2020). *Pembinaan anak berkebutuhan khusus (sebuah perspektif bimbingan dan konseling)*. Yayasan Kita Menulis.
- Louw, D., & Louw, A. (2014). *Child and adolescent development*. UJ Press.
- Mahiliary, F. (2020). Dental Management of Children with Special Health Careneeds: A Review. *Indian Journal of Forensic Medicine & Toxicology*, 14(4), 9016–9021.

- Permatasari, D. S. A., Susanto, H. S., Udiyono, A., & Saraswati, L. D. (2016). Gambaran Beberapa Faktor Kejadian Karies Gigi Pada Siswa Tunagrahita di SLB C, Kota Semarang. *Jurnal Kesehatan Masyarakat (Undip)*, 4(4), 350–358. <https://doi.org/10.14710/jkm.v4i4.14148>
- Pini, D. de M., Fröhlich, P. C. G. R., & Rigo, L. (2016). Oral health evaluation in special needs individuals. *Einstein (Sao Paulo)*, 14, 501–507. <https://doi.org/10.1590/S1679-45082016A03712>
- Primawati, R. S., Susilawati, S., & Sukandar, H. (2019). Music, Dance and Song About Tooth Brushing in The Improvement of Knowledge, Teaching Practices and Dental Cleaning Status Mouth in Children Down Syndrom in SLB Kota Tasikmalaya. *Jurnal Kesehatan Gigi*, 6(2), 157–162. <https://doi.org/10.31983/jkg.v6i2.5494>
- Pudentiana, R. R., Purnama, T., Tauchid, S. N., & Prihatiningsih, N. (2021). Knowledge of Oral and Dental Health Impacts the Oral Hygiene Index Simplified (OHI-S) of Primary School Children. *Indian Journal of Forensic Medicine & Toxicology*, 15(4), 2179–2183.
- Ramdiani, D., Yulita, I., Sasongko, B. G., & Purnama, T. (2020). Required Treatment Index (RTI) Pada Pasien Dewasa Di Klinik Dokter Gigi Tjang Riyanto Cahyadi Kota Bogor. *JDHT Journal of Dental Hygiene and Therapy*, 1(2), 55–60. <https://doi.org/10.36082/jdht.v1i2.128>
- RI, K. (2018). Hasil utama riskesdas 2018. *Jakarta: Kemenkes RI*.
- Saputri, D., Novita, C. F., & Zakky, M. (2017). Perbandingan tindakan menjaga kebersihan rongga mulut dan status oral hygiene pada anak usia Sekolah Dasar di daerah perkotaan dan pedesaan. *Journal of Syiah Kuala Dentistry Society*, 2(2), 90–96.
- Shields, N., Synnot, A. J., & Barr, M. (2012). Perceived barriers and facilitators to physical activity for children with disability: a systematic review. *British Journal of Sports Medicine*, 46(14), 989–997. <https://doi.org/10.1136/bjsports-2011-090236>
- Suyami, S., Purnomo, R. T., & Sutantri, R. (2019). Edukasi Menggosok Gigi Terhadap Kemampuan Anak Menggosok Gigi Pada Anak Tunagrahita di SLB Shanti Yoga Klaten. *MOTORIK Jurnal Ilmu Kesehatan*, 14(1), 93–112.
- Tinanoff, N. (2019). Dental caries. In *Pediatric Dentistry* (pp. 169–179). Elsevier.
- Tuhuteru, D. R., Lampus, B. S., & Wowor, V. N. S. (2014). Status kebersihan gigi dan mulut pasien poliklinik gigi Puskesmas Paniki Bawah Manado. *E-GiGi*, 2(2). <https://doi.org/10.35790/eg.2.2.2014.5437>
- Veriza, E., & Boy, H. (2018). Perilaku Pemeliharaan Kesehatan Gigi dan Mulut pada Anak Autisme. *Faletehan Health Journal*, 5(2), 55–60. <https://doi.org/10.33746/fhj.v5i2.9>
- Wahyudi, A., & Huda, M. (2019). Internalization of Islamic Values for Students with Special Needs in Special School Education Institutions (SLB). *AL-HAYAT: Journal Of Islamic Education*, 3(1), 90–97. <https://doi.org/10.35723/ajie.v3i1.55>