

Dental And Oral Health Of Students With Intellectual Disabilities

Sandy Christiono*, Muhammad Dian Firdausy**, Nira Ardlina***, Grahita Aditya****, Budi Suhartono****, Erwid Fatchur Rahman*****, Adinda Lintang Pambayun*****, Amara Danish Clarasya*****

* Department of Pediatric Dentistry, Faculty of Dentistry, Sultan Agung Islamic University, Indonesia

** Department of Dental Materials, Faculty of Dentistry, Sultan Agung Islamic University, Indonesia

*** Department of Oral Public Health, Faculty of Dentistry, Sultan Agung Islamic University, Indonesia

**** Department of Orthodontics, Faculty of Dentistry, Sultan Agung Islamic University, Indonesia

***** Department of Oral Surgery, Faculty of Dentistry, Sultan Agung Islamic University, Indonesia

***** Faculty of Dentistry, Sultan Agung Islamic University, Indonesia

Correspondence: Sandy@unissula.ac.id

Received 22 October 2025; Revision 1st 22 January 2026, Accepted 24 February 2026; Published online 24 February 2026

Keywords:

Dental Health; Oral Health
Status; Intellectual
Disabilities

ABSTRACT

Background: Dental and oral health refers to the condition of the oral cavity and periodontal tissues being free from disease and pain. Optimal function of these structures indicates good oral health. Dental and oral health status can be expressed by the prevalence of dental caries and periodontal disease, assessed through indices such as def-t/DMF-T, OHI-S, and Gingival Index. This study aimed to determine the levels of def-t/DMF-T, OHI-S, and Gingival Index, and to describe the overall dental and oral health status among students with intellectual disabilities at Grobogan State Special School

Method: This study employed a descriptive observational design with a non-experimental, cross-sectional approach to describe existing conditions through direct observation. A total of 52 students with intellectual disabilities were included using a total sampling technique.

Result: DMF-T/def-t examination showed unsatisfactory findings, with the highest proportion of respondents categorized as very high (30.77%) and high (21.15%). The OHI-S examination indicated a moderate level, with most respondents (44.23%) falling within this category. The Gingival Index revealed generally good results, with the largest proportion categorized as normal (46.15%).

Conclusion: Highest percentages of OHI-S and Gingival Index were found among students with moderate physical intellectual disabilities, while the highest def-t/DMF-T scores (very high category) were found among those with sensory intellectual disabilities

Copyright ©2022 National Research and Innovation Agency. This is an open access article under the CC BY-SA license (<https://creativecommons.org/licenses/by-sa/4.0/>).

DOI: <http://dx.doi.org/10.30659/medali.8.1.14-19>

MEDALI Jurnal: Media Dental Intelektual accredited as **Sinta 4 Journal** (<https://sinta.kemdikbud.go.id/journals/profile/13665>)

2337-6937/ 2460-4151 ©2025 National Research and Innovation Agency

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

How to Cite: Christiono et al. Dental And Oral Health Of Students With Intellectual Disabilities. MEDALI Jurnal: Media Dental Intelektual, v.8, n.1, p.14-19, February 2026.

INTRODUCTION

Oral and dental health is defined as a condition of the oral cavity, including the dentition and periodontal tissues, that is free from disease and pain. Oral and dental health is considered optimal when these structures function effectively. Optimal oral health contributes significantly to an individual's self-confidence and quality of interpersonal interactions at the highest level. Previous studies have demonstrated that oral and dental health status can be reflected by the frequency of dental caries and periodontal diseases.¹ In this context, dental caries were assessed using the DMF-T index, which measures the number of teeth affected by caries in an individual.² According to the World Health Organization (WHO), the DMF-T index is used to evaluate oral and dental health status, particularly in relation to dental caries in permanent teeth. In contrast, the def-t index is used to assess dental caries in primary teeth.³

An individual with mental, physical, and emotional limitations is commonly referred to as a person with a disability. Individuals with disabilities may experience delays or impairments in their physical and cognitive development, thereby requiring special care and services. Disabilities include physical, mental, and sensory disabilities. A person with a disability may experience more than one type of disability simultaneously, which is referred to as multiple disabilities.⁴

Ensuring oral and dental health in children with disabilities requires the involvement of additional individuals, particularly family members. Family influence plays an important role in maintaining oral health and hygiene. Children with disabilities, characterized by physical, developmental, behavioral, or emotional limitations, may experience impairments in physiological or psychological functions or anatomical structures,

resulting in reduced or lost function that leads to limitations in daily activities. In this context, active family involvement is essential, especially during the school-age period. Individual involvement in shaping the health status of children with disabilities is influenced by factors such as knowledge, attitudes, and behaviors. These factors are closely interrelated and show a strong correlation. The importance of the family's role lies in their knowledge, attitudes, and behaviors in maintaining their children's oral and dental health. Nevertheless, every individual is responsible for making efforts to maintain oral and dental health.⁵

The limited number of studies on the oral and dental health of children with disabilities, along with the scarcity of data regarding the health status of children with disabilities in Indonesia, has encouraged researchers to investigate this topic. In addition, public perceptions that children with disabilities are more likely to experience illness, differences in access to health facilities, and the lack of parental attention and knowledge regarding oral and dental health care for children with disabilities further contribute to this research interest.

Moreover, the wide range of disability types has increased interest in examining the overall oral and dental health status of children with disabilities. Mental disability may present as a single condition or in combination with other types of disabilities, such as mental-sensory or mental-physical disabilities. Therefore, this study aimed to describe the oral and dental health status among students with mental disabilities at Special Needs School (Sekolah Luar Biasa/SLB) Negeri Grobogan

METHODS

This study was conducted at Special Needs School (Sekolah Luar Biasa/SLB) Negeri Grobogan and was approved by the Ethics Committee under

Ethical Clearance number 460/B.1-KEPK/SA-FKG/III/2023, issued by the Faculty of Dentistry, Sultan Agung Islamic University.

This study employed a descriptive observational design. A descriptive observational approach involves exploring a condition or problem through field observations with the aim of providing a detailed description. The study was non-experimental and used a cross-sectional design to describe the profile and prevalence of oral and dental health status. A cross-sectional study is an observational research method in which data on variables are collected at a single point in time from the entire population or from a previously selected subgroup.

The study was conducted starting from the lower-grade classes to the higher-grade classes. The examinations began with the assessment of the DMF-T index, followed by the Oral Hygiene Index–Simplified (OHI-S), and continued with a gingival examination. All examinations were performed according to the students' conditions. If a student was considered uncooperative during the examination, the procedure was temporarily postponed.

During the examination process, the researcher was assisted by two dentists. The examination results were recorded in dental health screening forms and gingival examination sheets. The researcher then analyzed the findings from these records and documented the results in data collection worksheets.

RESULT

The study describing the oral and dental health status of students with mental disabilities was conducted at Special Needs School (Sekolah Luar Biasa/SLB) Negeri Grobogan. Table 1 shows that among respondents with mental disabilities, the most frequently observed DMF-T category was high and very high, accounting for 9 respondents (25.00%). Among respondents with mental–physical disabilities, the most common DMF-T category was moderate, with 2 respondents (33.33%). Meanwhile, respondents with mental–sensory disabilities most frequently presented with a very high DMF-T category, comprising 6 respondents (60.00%).

Table 2 shows that among respondents with mental disabilities, the most frequently observed OHI-S category was moderate, with 14 respondents (38.89%). In the mental–physical disability group, the most common OHI-S category was also moderate, accounting for 4 respondents (66.67%). Similarly, among respondents with mental–sensory disabilities, the moderate OHI-S category was the most frequently observed, with 5 respondents (50.00%).

Table 3 shows that among respondents with mental disabilities, the most frequently observed gingival condition was normal, with 19 respondents (52.78%). In respondents with mental–physical disabilities, the most common gingival condition was moderate, accounting for 4 respondents (66.67%). Meanwhile, respondents with mental–sensory disabilities most frequently exhibited a normal gingival condition, comprising 5 respondents (50.00%).

Table 1. Cross-tabulation of DMF-T Examination Result

DMF-T Category	Disability Classification						Total
	Mental		Mental-physical		Mental-sensory		
	n	%	n	%	n	%	

sangat rendah	7	19,44	1	16,67	1	10,00	9
rendah	5	13,89	1	16,67	1	10,00	7
sedang	6	16,67	2	33,33	1	10,00	9
tinggi	9	25,00	1	16,67	1	10,00	11
sangat tinggi	9	25,00	1	16,67	6	60,00	16
Total	36	100	6	100	10	100	52

Table 2. Cross-tabulation of OHI-S Examination Results

OHI-S Category	Disability Classification						Total
	Mental		Mental-physical		Mental-sensory		
	n	%	n	%	n	%	
baik	12	33,33	0	0,00	4	40,00	16
sedang	14	38,89	4	66,67	5	50,00	23
buruk	10	27,78	2	33,33	1	10,00	13
Total	36	100	6	100	10	100	52

Table 3. Cross-tabulation of Gingival Examination Results

Gingiva Category	Disability Classification						Total
	Mental		Mental-physical		Mental-sensory		
	n	%	n	%	n	%	
Normal	19	52,78	0	0,00	5	50,00	24
Mild	7	19,44	2	33,33	1	10,00	10
Moderate	8	22,22	4	66,67	2	20,00	14
Severe	2	5,56	0	0,00	2	20,00	4
Total	36	100	6	100	10	100	52

DISCUSSION

The results of this study showed that a total of 52 students participated, with the number of male students exceeding that of female students. Similar studies have also reported a higher proportion of male respondents compared to females.^{6, 7}

Based on the DMF-T findings, the results indicated poor oral health status, with the highest proportion of respondents classified in the very high category (30.77%), followed by the high category (21.15%). Previous studies have reported that the mean DMF-T index in children with disabilities and mental retardation is higher than that of their healthy peers.^{8, 9} A high DMF-T index is influenced by lifestyle habits, limited knowledge, and lack of parental attention toward children's oral hygiene. Economic factors may also contribute to this

condition.⁸ In general, children with special health care needs have a high prevalence of dental caries. This condition may be associated with uncoordinated mastication in certain conditions, difficulties in performing effective toothbrushing, consumption of fermentable foods, medication-related xerostomia, flavoured medication intake, crowded teeth, and gingival hyperplasia.⁹

Overall, the highest percentage of high DMF-T scores was observed among students with mental-sensory disabilities. The elevated DMF-T status in this group may be attributed to difficulties in maintaining oral hygiene due to their limitations, resulting in dependence on others for oral care. This dependency increases predisposing factors for dental caries. Therefore, it is important for parents

to teach children, at a minimum, how to brush their teeth independently.¹⁰

Based on the OHI-S results, the majority of respondents were classified in the moderate category (44.23%). A study conducted in India reported that, overall, the oral hygiene status of children with intellectual disabilities was relatively good. This finding was influenced by the severity of mental retardation and the age of the respondents. Increased severity and older age were associated with higher OHI-S scores.^{7, 11}

Individuals with mental disabilities experience difficulties in understanding, acquiring, and applying complex new skills. They are at a higher risk of oral health problems due to limitations in performing activities of daily living (ADL) effectively. Poor oral hygiene may also result from inadequate chewing and swallowing, accumulation of food debris in the oral cavity, and limited toothbrushing ability.¹²

Based on the study findings, the Gingival Index indicated generally good outcomes, with the highest proportion of respondents classified as normal (46.15%). Other studies have concluded that many forms of mental retardation are associated with low plaque indices and mild gingival inflammation. Daily behaviour in children is influenced by their IQ level, and there is a positive correlation between IQ and the ability to understand information related to maintaining oral hygiene.^{6, 13} In this study, respondents with mental disabilities may have predominantly fallen into the mild category, resulting in gingival index values within normal limits. This may be attributed to their ability to perform self-care independently and maintain an adequate level of perception, although some assistance may still be required.¹³

Overall, the highest percentages for moderate OHI-S and Gingival Index scores were observed among students with mental-physical

disabilities. This moderate classification may be attributed to their increasing ability to maintain oral hygiene independently under parental supervision. Additionally, students with mental-physical disabilities may have received skill training that enables them to use other body functions to perform daily activities, including maintaining oral hygiene.¹¹

Individuals with optimal or normal physical health generally perceive themselves as having no oral health problems, maintain a better standard of living, and display an aesthetically pleasing smile. In contrast, individuals with disabilities face challenges in performing normal activities, including proper oral hygiene care, which subsequently affects their oral health status.¹² Therefore, parents and caregivers require education on oral and dental health, as well as the importance of routine dental visits.¹⁴

This study has several limitations related to time constraints and examination effectiveness, primarily due to low levels of cooperation among some participants. Future studies are recommended to involve professionals with specific experience in managing children with mental disabilities, enabling more effective examinations and more accurate results.

CONCLUSION

The def-t/DMF-T status of students at Special Needs School (Sekolah Luar Biasa/SLB) Negeri Grobogan was classified as high. The highest def-t/DMF-T status, categorized as very high, was observed among students with mental-sensory disabilities. The OHI-S status was classified as moderate, while the gingival index status was classified as normal. The highest OHI-S and gingival index values were found among students with mental-physical disabilities in the moderate category.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the Faculty of Dentistry, Sultan Agung Islamic University, Semarang, for facilitating and supporting the successful completion of this study.

REFERENCES

1. Gultom E, Sormin T. *Analisis status kesehatan gigi dan kebutuhan perawatan gigi pada murid-murid sd di kota bandar lampung*. Jurnal Ilmiah Keperawatan Sai Betik. 2017;13(1):67–74.
2. Wahyuni S. *Kejadian Karies Gigi (def-t) Berdasarkan Sikap Anak di TK Putra II Sukarami Kota Palembang*. Jurnal Kesehatan Gigi dan Mulut (JKGM). 2022;4(2):65–73.
3. Prativi PKG, Mahirawatie IC, Isnanto I. *Perbedaan Pengetahuan Tentang Karies Gigi Sebelum dan Sesudah Promosi Kesehatan dengan Menggunakan Media Instagram (study di SMAN 1 Menganti Kabupaten Gresik tahun 2022)*. Jurnal Ilmiah Keperawatan Gigi. 2022;3(3):376–81.
4. Desiningrum DR. *Psikologi anak berkebutuhan khusus*. Psikosain; 2017.
5. Veriza E, Boy H. *Perilaku pemeliharaan kesehatan gigi dan mulut pada anak autisme*. Faletehan Health Journal. 2018;5(2):55–60.
6. Nasu D, Uematsu A, Nakamura S, Ishiyama M, Shirakawa T, Hasegawa T, et al. *Oral hygiene and oral status of institutionalized children with motor and intellectual disabilities*. Journal of oral science. 2020;62(1):89–92.
7. Bennadi D, Konekeri V, Maurya M, Reddy V, Satish G, Reddy C. *Oral hygiene negligence among institutionalized mentally disabled children in Mysore city—A call for attention*. Journal of family medicine and primary care. 2020;9(4):2045–51.
8. Pournaghi-Azar F, Asl-Aminabadi N, Jamali Z, Azami A, Hazem K, Azami-Aghdash S, et al. *Status of decayed, missing, filled teeth index among Iranian children and adults: A systematic review and meta-analysis*. Journal of Research in Clinical Medicine. 2018;6(2):55–66.
9. Alkhabuli JOS, Essa EZ, Al-Zuhair AM, Jaber AA. *Oral health status and treatment needs for children with special needs: a cross-sectional study*. Pesquisa Brasileira em Odontopediatria e Clínica Integrada. 2019;19:e4877.
10. Ariyohan FN, Prasetyowati S, editors. *Parents' Parenting Patterns On The Independence Of Brushing The Tooth In Children With Physical Disability at SLB/D-YPAC Surabaya*. International Conference on Dental and Oral Health; 2022. 25-32
11. Shah RK, Choudhary S, Tandon S. *Oral health status in mentally disabled children, dental care knowledge of parents, and the impact of audiovisual oral health education program*. International Journal of Clinical Pediatric Dentistry. 2022;15(2):143.
12. Ningrum V, Wang W-C, Liao H-E, Bakar A, Shih Y-H. *A special needs dentistry study of institutionalized individuals with intellectual disability in West Sumatra Indonesia*. Scientific Reports. 2020;10(1):153.
13. Anandya A, Sembiring LS, Mandalas HY. *Indeks plak dan tingkat keparahan gingivitis anak tunagrahita (Intellectual Disability) Plaque index and gingivitis severity of children with intellectual disability*. Padjadjaran Journal of Dental Researchers and Students. 2019;3(1):26–32.
14. Girma B. *Periodontal status of students living with disability in Amhara region, Ethiopia: a cross-sectional study*. BMC Oral Health. 22:343.