



The Description of the Severity Level of Dental Caries in Visually Impaired Students at The Special School (SLB) Semarang

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ABSTRACT

Background: Children with special needs, especially those with visual impairments, face challenges in interacting and imagining the correct way to clean and brush their teeth, thus increasing the risk of dental health issues such as cavities or tooth decay. Purpose: The purpose of this research is to understand the description of dental caries in visually impaired children at the Special School (SLB). Method: The study was conducted using a descriptive research design with a cross-sectional approach. A total of 28 students with visual impairments, attending YKTM Budi Asih and SLB Semarang, were selected as participants for this research. The research focused on describing the dental and oral health status of these students. To assess their dental health, the DMF-T index and def-t index were utilized as measurement instruments.. Results: The special needs children who were the subjects of this study had a very low DMF-T index, reaching 43.5%, while the majority of them had a def-t index in the moderate category, which was 75%. The average DMF-T index for visually impaired children in this study was 2.60, while their average def-t index was 2.87. Conclusion: The DMF-T index for visually impaired students at SLB Semarang was recorded at 2.60, categorizing it as being within the low range

Keywords: caries, student, visually impaired children

ABSTRAK

Latar Belakang: Anak berkebutuhan khusus, khususnya tunanetra, menghadapi tantangan dalam berinteraksi dan membayangkan cara membersihkan dan menyikat gigi yang benar, sehingga meningkatkan risiko terjadinya gangguan kesehatan gigi seperti gigi berlubang atau kerusakan gigi. Tujuan: Tujuan penelitian ini adalah untuk memahami gambaran karies gigi pada anak tunanetra di Sekolah Luar Biasa (SLB). Metode: Penelitian dilakukan dengan menggunakan desain penelitian deskriptif dengan pendekatan cross-sectional. Sebanyak 28 siswa tunanetra yang bersekolah di YKTM Budi Asih dan SLB Semarang dipilih sebagai partisipan penelitian ini. Penelitian ini fokus untuk mendeskripsikan status kesehatan gigi dan mulut para pelajar tersebut. Untuk menilai kesehatan gigi mereka digunakan indeks DMF-T dan indeks def-t sebagai alat ukur. Hasil: Anak berkebutuhan khusus yang menjadi subjek penelitian ini mempunyai indeks DMF-T yang sangat rendah yaitu mencapai 43,5%, sedangkan sebagian besar mempunyai indeks def-t dengan kategori sedang yaitu sebesar 75%. Rata-rata indeks DMF-T anak tunanetra pada penelitian ini adalah 2,60, sedangkan rata-rata indeks DMF-T mereka adalah 2,87. Kesimpulan: Indeks DMF-T siswa tunanetra di SLB Semarang tercatat sebesar 2,60 termasuk dalam rentang rendah

Kata Kunci: karies, pelajar, anak tunanetra

INTRODUCTION

Visual impairment is defined as a condition where someone loses their ability to see. Visual impairment is classified into two groups, namely, visual impairment and blindness. In individuals with visual impairment (low vision), their visual acuity ranges from 6/20 to 6/60 meters, and in this condition, a person can still see but requires special aids.(WHO, 2012)

Healthcare services for special groups, such as dental and oral health, have garnered attention in recent years.(Lebrun-Harris et al., 2021; Macharia et al., 2023; Purnamawati et al., 2022) About 80% of school-age children currently experience dental cavities and gum problems. Children who suffer from oral health issues often face hindrances in their daily activities and a decline in their

quality of life.(Faulks, 2000) According to data from the Ministry of Health of Indonesia in 2018, the prevalence of dental and oral diseases in Indonesia stood at 57.6%. Among school-age children aged 5-9 years, the incidence of dental caries reached 54%.

As for the comparison between typically developing children and visually impaired children, there have been quite significant findings in research conducted in Pakistan. In this research, visually impaired children scored higher on the oral health index compared to typically developing children.(Azfar et al., 2019) This is consistent with Sharma's study conducted in 2019, which explained that the DMFT scores of children with special needs (CSN) were higher than those of typically developing children.(Todkar et al., 2019)

Children with special needs, specifically those who are visually impaired, face difficulties when it comes to communication and visualizing information about the proper way to clean and brush their teeth and mouth. This leads to a low oral hygiene index and an increased susceptibility to dental caries. Several issues often arise, including challenges in communication between healthcare providers and children with special needs (CSN) due to a lack of training in health education provided to CSN groups, including the visually impaired, resulting in limited access to healthcare.(BD, 2016) This study will assess the dental and oral health status of visually impaired children at Special Schools (SLB) in Semarang city.

METHOD

This research was conducted at Special Schools in Semarang city in May 2023 using a descriptive research design with a cross-sectional approach. This study has obtained ethical research feasibility approval with No: 0203/KEPK/VII/2023. The population, which also served as the subjects in this study, included all visually impaired children attending YKTM Budi Asih and SLB Negeri Kota Semarang, totaling 28 visually impaired children. The total sampling method was used for sample selection, based on predetermined inclusion and exclusion criteria. The research instruments consisted of materials such as DMF-T index assessment sheets and oral health questionnaires for children.(Nourma et al., 2020) The DMF-T assessment sheet (Decay, Missing, Filling - Teeth) includes: Decay, which is the number of teeth with cavities due to caries that can still be preserved. Missing, which is the number of permanent teeth that have been lost or extracted due to caries. Filling, which is the number of teeth that have been filled due to caries.

RESULTS AND DISCUSSION

Table 1
Demographic Data

	Descriptive Data	Number	Percentage (%)
Child's Gender	Man	9	39,1
	Women	14	60,9
Parental Income (IDR)	<1.500.000	6	26,1
	1.500.000-2.500.000	8	34,8
	2.500.000-3.500.000	6	26,1
	>3.500.000	3	13,0
Parent's Job	Self Employed	6	26,1
	Do not have job	7	30,4
	Employee	10	43,5
Father's Education	Elementary School	4	17,4
	Junior High School	2	8,7
	Senior High School	14	60,9
	D1/D2/D3/D4/S1	3	13,0
Mother's	SD	4	17,4

Education	SMP	2	8,7
	SMA	14	60,9
	Diploma / Scholar	3	13,0
Health Insurance (BPJS)	Have	19	82,6
	Do not have	4	17,4

The research findings obtained from the demographic data indicate that the characteristics of the respondents were mostly children aged 6-12 years, female, with an average monthly parental income of 1.5-2.5 million Indonesian Rupiah, parents working in the private sector, fathers with high school education, mothers with high school education, and the majority of respondents had BPJS (health insurance).

Table 2
DMF-T and DEF-T Results of Visually Impaired Children at Special Schools in Semarang City

DMF-T	N	%
Very Low	10	43,5
Low	5	21,7
Middle	3	13,0
High	3	13,0
Very High	2	8,7
DEF-T		
Very Low	16	69,6
Low	1	4,3
Middle	6	26,1
High	0	0
Very High	0	0

The majority of the children in this study had a very low DMF-T index, accounting for 43.5%, while the majority had a moderate def-t index, which was 75%. The average DMF-T index for visually impaired children in this study was 2.60, and the average def-t index was 2.87.

Table 3
Dental and oral health Data

Debris	N	%
Bad	4	17,4
Moderate	3	13,0
Good	16	69,6
Kalkulus		
Bad	0	0
Moderate	6	26,1
Good	17	73,9
OHI-S		
Bad	3	13
Moderate	10	43,5
Good	10	43,5

Table 4
Food and Beverage Consumption Data

Descriptive Data	N	(%)
Consume Fresh Fruit	Every Day	8 34,8
	Several times a week	10 43,5
	Once a week	3 13,0
	Several times a month	2 8,7
Consumption of Bread, Cakes, etc	Every Day	9 39,1
	Several times a week	8 34,8
	Once a week	3 13,0
	Several times a month	3 13,0

Descriptive Data		N	(%)
Consume lemon water, cokes, etc	Every Day	7	30,4
	Several times a week	9	39,1
	Once a week	4	17,4
	Several times a month	3	13,0
Consume jam or honey	Every Day	7	30,4
	Several times a week	7	30,4
	Once a week	5	21,7
	Several times a month	4	17,4
Consume Sweets or candy	Every Day	10	43,5
	Several times a week	9	39,1
	Once a week	2	8,7
	Several times a month	2	8,7
Consume milk with sugar	Every Day	11	47,8
	Several times a week	7	30,4
	Once a week	3	13,0
	Several times a month	2	8,7
Consume tea with sugar	Every Day	12	52,2
	Several times a week	6	26,1
	Once a week	4	17,4
	Several times a month	1	4,3
Consume coffee with sugar	Every Day	1	4,3
	Several times a week	9	39,1
	Once a week	2	8,7
	Several times a month	1	4,3
	Never	10	43,5

Here are the results of dental and oral health data for visually impaired children at SLB Semarang, obtained from the questionnaire and organized according to WHO guidelines. The majority of visually impaired children in this study described their dental and gum health as being in good condition. A total of 56.5% of visually impaired children in this study did not experience toothache, and 39.1% of visually impaired children in this study did not visit a dentist in the last 12 months. The daily consumption of food and beverages by visually impaired children in the study, in order, included tea with sugar, milk with sugar, sweets/candies, cakes, bread and others, fresh fruits, lemon water, Coca-Cola, and others, jam/honey, and lastly, coffee with sugar.

The data analysis conducted can be summarized that the dental and oral health description of visually impaired children at Special Schools (SLB) in Semarang city, with an average DMF-T index of 2.60, falls within the low category. Therefore, it can be concluded that the experiences of children with dental cavities, missing teeth due to extraction, and cavities caused by caries are all in the low category. Another study provided a brief overview of dental caries concerning various factors among children aged between 6 to 12 years. However, a comprehensive screening survey is needed to draw definite conclusions regarding dental caries in children.(Jindal et al., 2020) According to the research findings conducted by Andini et al., the results indicated that among children aged 6 to 12 years, there was no significant relationship between age and dental cavities.(Andini et al., 2018)

The index of dental and oral health in children is influenced by several external factors, one of which is parents' knowledge about dental and oral hygiene.(Failasufa et al., 2021) The correlation between parents' knowledge levels and their children's dental and oral hygiene index is negative, meaning that the higher the parents' knowledge level, the lower their child's dental and oral hygiene index score, and the lower the parents' knowledge level, the higher their child's dental and oral hygiene index score.(Kosasih et al., 2021; Wardhana et al., 2023) This can be interpreted as parents who understand dental and oral hygiene, including proper tooth cleaning methods, and limiting

certain foods and drinks to reduce the risk of dental and oral diseases in their children. This is reflected in their children's good dental and oral health condition or low dental and oral hygiene index scores. (Andini et al., 2018)(Purwati, 2017)

The majority of parents in this research worked as private employees. According to a study conducted by Purwati and Almuji, research results indicated a significant influence of parents' occupation on the number of dental caries in children.(Purwati, 2017) In addition to parental occupation, based on research conducted by Bashirian et al. in 2018, findings and conclusions were obtained that dental and oral health is influenced by the income of the respondents' parents.(Soltanian et al., 2018)

The research results indicated that the DMF-T index score fell within the low category, and the def-t index score fell within the moderate category. Based on the data analysis conducted, it can be concluded that the dental and oral health description of visually impaired children at Special Schools (SLB) in Semarang city falls within the low category. Therefore, it can be inferred that the experiences of children with dental cavities, missing teeth due to extraction, and cavities caused by caries all fall within the low category. This might be attributed to the support for dental and oral health provided by healthcare professionals (dental nurses) from the school. Other research has shown a high prevalence of caries in the group of visually impaired school children.(Liu et al., 2019)(Suresan, 2021) Children with special needs had an average DMF-T score of 5.69 compared to typically developing children, who scored 3.6. The def-t score in children with special needs was 1.9, while in typically developing children, it was 1.0. This could be related to the fact that children with special needs, including visually impaired children, may not visualize the plaque on their teeth's surfaces, leading to less adequate tooth brushing. Additionally, visually impaired children may also require assistance from others to properly clean their teeth.(Todkar et al., 2019)

This research also indicated that children consumed fruits several times a week, while they consumed sweet foods such as candies, chocolates, and sugary milk almost every day. According to Nurhaeni, such a frequency of consuming sweet foods can lead to an increased risk of dental cavities.(Nurhaeni, 2020) Other studies have shown that high sugar intake and low intake of fruits, vegetables, and fiber are found in individuals with a high incidence of active cavities.(Guo et al., 2022)



CONCLUSIONS AND SUGGESTIONS

Based on the research results, it can be concluded that the DMF-T index of visually impaired children at Special Schools (SLB) in Semarang city was 2.60, which falls into the low category.

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