



## Parents' Knowledge about Oral and Dental Health and Dental Caries in Children with Intellectual Disabilities

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| ARTICLE INFORMATION                                                                                                                                                                                                                | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| <p><i>Article History:</i><br/><i>Received: May 13, 2025</i><br/><i>Revised: May 28, 2025</i><br/><i>Published: May 31, 2025</i></p> <hr/> <p><b>Keywords:</b><br/>Knowledge<br/>Oral and Dental Health<br/>Caries<br/>Parents</p> | <p>Children with intellectual disabilities are characterized by significantly below-average intelligence, leading to difficulties in behavioral adaptation during developmental stages and challenges in completing academic tasks. This condition is often associated with underdeveloped brain and nervous system functions. A prevalent issue observed at SLB B-C Optimal Surabaya is the high incidence of dental caries among intellectually disabled children. This study aims to examine the relationship between parents' knowledge of oral and dental health and the incidence of dental caries in intellectually disabled children at SLB B-C Optimal Surabaya. This research employed a cross-sectional design involving 16 parents of intellectually disabled children. Data collection involved the use of a questionnaire to assess the independent variable (parents' knowledge) and a dental caries examination sheet to measure the dependent variable (caries incidence). The data were analyzed using the Spearman Rank correlation test. The results showed a p-value of 0.001, which is lower than the predetermined significance level (<math>\alpha = 0.05</math>). It can be concluded that there is a significant relationship between parents' knowledge of oral and dental health and the incidence of dental caries in intellectually disabled children.</p> |

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## INTRODUCTION

The most common oral and dental health problem experienced by children with intellectual disabilities is dental caries. This condition is exacerbated by the children's difficulty in maintaining oral hygiene independently and by reduced oral muscle activity, which limits the natural self-cleansing mechanism of the teeth (Obi, 2019; Hanifah, 2020). Dental caries is a common oral health problem. The severity of dental caries is commonly measured using the DMF-T index. DMF-T is the sum of the number of teeth affected by caries, either as Decayed (D), Missing (M) due to extraction from caries, or Filled (F) without recurrent caries. The national average DMF-T index in Indonesia was 4.6. East Java ranked sixth among provinces

with the highest DMF-T scores in Indonesia, at 5.5, which falls into the high category according to the WHO (Purnomowati & Prasetiowati, 2023).

According to Atmadjati et al. (2023), children with intellectual disabilities have an average DMF-T score of 5.1, also categorized as high. The illness known as dental caries is characterised by the breakdown of tooth tissue, which begins at the surface of the enamel (in places like pits, fissures, and interproximal areas) and moves into the pulp. It may appear on one or more tooth surfaces and spread from the enamel into the pulp or dentin, two deeper layers (Atmadjati et al., 2023).

Dental cavities in kids with intellectual disabilities is influenced by behavioral factors in the community. Food remnants left on the teeth due to inadequate cleaning can lead to tooth decay, which in turn causes cavities and tooth damage. Dental caries can also impair the physical development of these children, as it may reduce their nutritional intake (Yulianti et al., 2022).

Children with intellectual disabilities have significantly lower intellectual capabilities, leading to difficulties in behavioral adaptation during development and challenges in performing academic tasks. These challenges are due to underdeveloped brain and nervous system functions. Children with intellectual disabilities generally have higher caries levels and poorer oral hygiene compared to typically developing children. Poor oral hygiene in these children is often due to unsupervised tooth brushing and other contributing factors such as improper brushing techniques, limited motor skills, and insufficient caregiver support (Yulianti et al., 2022).

Parental knowledge plays a crucial role in children's dental health maintenance. Low levels of parental knowledge are associated with higher DMF-T scores in children. A lack of understanding about the impact of diet on caries development leads parents to frequently give sugary foods to their children, thus increasing their exposure to caries risk factors (Edie et al., 2021). The people closest to a child are their parents, particularly moms. As the child's first and primary teachers, parents are responsible for their child's development and education, including health education. A mother, who usually plays the most direct role in health maintenance, significantly influences her child's attitudes and behavior (Pramesti et al., 2024).

Based on research by Atmadjati et al. (2023) at SLB Karya Bhakti Surabaya, 8 children with intellectual disabilities were found to have dental caries, with an average DMF-T of 5.1 (high category). A preliminary examination conducted on April 22, 2024, at SLB B-C Optimal Surabaya revealed that Dental cavities were present in six children with intellectual impairments, with an average DMF-T of 4.8, also classified as high. The aim of this study is to determine the relationship between parents' knowledge about oral and dental health and the incidence of dental caries in intellectually disabled children at SLB B-C Optimal Surabaya.

## METHOD

This study used analytical survey research, which aims to explore how and why a health phenomenon occurs. The study uses a cross-sectional approach, which involves concurrently measuring or observing the independent and dependent variables. The research location is SLB B-C Optimal, located at Jl. Wardoyo 12 (rear), TNI AL Kenjeran Complex, Sukolilo Baru Subdistrict, Surabaya City. The research period was conducted from January 2024 to September 2024.

The sample size consisted of 16 parents of children with mild intellectual disabilities at the junior high and high school levels at SLB B-C Optimal Surabaya. The sampling technique used in this study is purposive sampling, which is a sampling method based on specific criteria or considerations. Data collection was carried out using a questionnaire.

Data analysis was performed using the Spearman Rank correlation test. This study has also received ethical approval from the Health Research Ethics Committee of the Surabaya Ministry of Health Polytechnic with number EA/3042/KEPK-Poltekkes\_Sby/V/2024.

## RESULTS AND DISCUSSION

**Table 1.** Frequency Distribution of Parents' Knowledge and Dental Caries in Children with Intellectual Disabilities at SLB B-C Optimal, Surabaya, in 2024.

| Variable  | n  | Percentage |
|-----------|----|------------|
| Knowledge |    |            |
| Poor      | 8  | 50 %       |
| Fair      | 7  | 43.75 %    |
| Good      | 1  | 6.25 %     |
| Total     | 16 | 100 %      |

Table 1 shows that the majority of parents of children with intellectual disabilities had poor knowledge, totaling 8 individuals (50%). The fewest were in the good category, with only 1 individual (6.25%), while 7 individuals (43.75%) were in the fair category.

**Table 2.** Frequency Distribution of Dental Caries in Children with Intellectual Disabilities at SLB B-C Optimal, Surabaya, in 2024.

| Dental Caries in Children with Intellectual Disabilities | n  | Percentage |
|----------------------------------------------------------|----|------------|
| Low                                                      | 3  | 18.75 %    |
| Moderate                                                 | 6  | 37.5 %     |
| High                                                     | 7  | 43.75 %    |
| Total                                                    | 16 | 100 %      |

Table 2 shows that most children with intellectual disabilities had dental caries in the high category, with 7 children (43.75%). The fewest were in the low category, with 3 children (18.75%), and 6 children (37.5%) were in the moderate category.

**Table 3.** Distribution of Analysis on the Relationship Between Parents' Knowledge of Oral and Dental Health and the Incidence of Dental Caries in Children with Intellectual Disabilities at SLB B-C Optimal, Surabaya, in 2024.

| Dental Caries in Children with Intellectual Disabilities | Parents' Knowledge |        |      |        |      |       | p-value |
|----------------------------------------------------------|--------------------|--------|------|--------|------|-------|---------|
|                                                          | Poor               |        | Fair |        | Good |       |         |
|                                                          | n                  | %      | n    | %      | n    | %     |         |
| Low                                                      | 1                  | 6.25%  | 2    | 12.5%  | 0    | 0%    | 0,001   |
| Moderate                                                 | 2                  | 12.5%  | 3    | 18.75% | 1    | 6.25% |         |
| High                                                     | 5                  | 31.25% | 2    | 12.5%  | 0    | 0%    |         |
| Total                                                    | 8                  | 50%    | 7    | 43.75% | 1    | 6.25% |         |

Table 3 shows that the p-value is 0.001, which is smaller than the predetermined significance level ( $\alpha$ ) of 0.05.

## DISCUSSION

### Parental Knowledge About Oral Health and Dental Caries in Children with Intellectual Disabilities

The study conducted on parents of children with intellectual disabilities at SLB B-C Optimal, it was found that the average parental knowledge falls into the "poor" category. This is because parents still do not fully understand how to maintain their child's oral health and often provide inaccurate answers regarding the causes of dental caries in children with intellectual disabilities, the consequences of untreated dental caries, the appropriate times to brush their teeth, and the proper timing for dental fillings. Therefore, the average parental knowledge is classified as low. Low parental knowledge is considered the lowest level of awareness, as individuals at this level can only recall (repeat) previously observed information.

According to Edie et al., (2021), children's dental health maintenance behaviour is influenced by parental knowledge, and higher DMF-T scores (decayed, missing, and filled teeth) are linked to lower parental awareness. A lack of knowledge about the impact of diet on

dental caries leads to increased sugary food intake by children, thereby increasing their exposure to caries risk factors. This aligns with the study by Atyanta et al., (2020), which states that parental knowledge about dental caries in children with intellectual disabilities is important because knowledge level can influence caries occurrence in these children.

Knowledge can be acquired through education focused on teaching with the aim of changing behavior from not knowing to knowing. Interaction between individuals and their environment, both within and outside their immediate surroundings, allows them to receive more information. The researcher also found that education level in the Kombos Barat community does not guarantee the degree of knowledge among its members. According to Notoatmodjo (2018), high education levels, if not supported by information through mass media, do not necessarily improve knowledge; conversely, individuals with low formal education but who seek broader information via mass media or non-formal education may have better knowledge than those with higher education levels. Parents greatly influence the formation of children's behavior. According to the Indonesian Dental Association (PDGI), maintaining children's dental health involves the interaction among the child, parents, and the dentist (Pujiansyah et al., 2022).

Knowledge about oral health involves the understanding, attitude, and actions taken by parents to maintain the cleanliness of their children's teeth and mouth and to prevent dental diseases. Knowledge forms the foundation of behavior. Someone is said to have poor knowledge if they cannot recognize, explain, or analyze a situation properly. Most people tend to underestimate dental health (Liza and Diba, 2020).

Knowledge and education alone cannot guarantee that children will consistently maintain oral hygiene in their daily lives. Therefore, parents play an essential role in guiding and motivating their children, especially children with intellectual disabilities (Muhtar, Hatta, & Wardani, 2020). Low parental knowledge about dental caries leads to many children experiencing caries. The theoretical and practical understanding that someone has is crucial for their intelligence—knowledge can be stored in traditions, practices, technology, and books, and can transform if applied appropriately (Hidayah, Astuti, and Larasati, 2022).

Even if parents have good knowledge, failure to apply it consistently in daily life can cause caries in children. Parents must also serve as good role models for maintaining and caring for their children's oral health. Parental supervision of children's oral hygiene behavior is essential to prevent dental caries (Hamilton et al., 2018).

### **Dental Caries in Children with Intellectual Disabilities at SLB B-C Optimal Surabaya**

Data analysis shows that most children with intellectual disabilities at SLB B-C Optimal experience dental caries, with a high category result. This is because children with intellectual disabilities have mental limitations that make it difficult for them to clean their mouths properly and maintain oral health, which can lead to caries.

Oral health is important for the overall health of every individual. Poor oral hygiene can cause daily life problems. The most common dental issue complained about by Indonesians is the damage to the hard tissue of the teeth (Kumalaseta et al., 2023). Oral health affects general health and quality of life. Ten out of thirty parents of preschool children have misconceptions about dental caries on primary teeth. They believe that primary teeth are temporary and will be replaced by permanent teeth, so caries on primary teeth are not a problem since these teeth will eventually fall out (Kristiani et al., 2023).

According to Margareta (2012), dental caries is more prevalent in children with intellectual disabilities, especially those with severe and profound disabilities. High caries rates may result from children's inability to clean their mouths properly and parents' lack of attention to diet. Children with intellectual disabilities may also have dental abnormalities such as poorly formed teeth, hypomineralization, hypodontia, and delayed eruption patterns.

Children with intellectual disabilities have poorer oral health compared to normal children. While they can receive dental care, special considerations such as local anesthesia, use of high-speed instruments, quick procedures that do not scare them, and adjustments according to their understanding and age are necessary (Hanifah, 2020).

Children with intellectual disabilities face higher risks of oral health problems due to mental and physical limitations that affect their ability to maintain oral hygiene independently. People with disabilities have twice the health problems compared to normal individuals (Indriasari, 2023). One way to minimize caries in children with intellectual disabilities is regular tooth brushing. However, because these children tend to have short-term memory, parental assistance is essential.

### **The Relationship Between Parental Knowledge About Oral Health and Dental Caries in Children with Intellectual Disabilities at SLB B-C Optimal Surabaya**

Based on data analysis, there is a significant relationship between parental knowledge about oral health and dental caries in children with intellectual disabilities at SLB B-C Optimal. This is supported by Spearman correlation test results. Parental knowledge was found to be low on average, while the dental caries rate among children was high. This indicates that low parental knowledge leads to a higher incidence of dental caries because parents do not know how to maintain their children's oral health and fail to assist them in oral hygiene, especially considering that children with intellectual disabilities have mental limitations making independent oral care difficult.

According to Yulianti and Muhlisin (2011), one cause of dental and oral problems in communities is behavioral factors, such as neglecting dental hygiene. This behavior stems from a lack of knowledge about the importance of maintaining oral health. Maintaining children's oral health should be a priority for parents, especially during the transition from primary to permanent teeth. According to Pujiansyah et al., (2022), parents serve as role models and motivators for children, particularly children with intellectual disabilities who require assistance in maintaining oral health to prevent caries.

Children with special needs, both boys and girls, often have difficulty maintaining oral hygiene and need social support to achieve optimal functional ability. Thus, these children require special attention from their parents to maintain oral hygiene and prevent other oral health issues (Anwar & Amaliah, 2022). Even if parents have good knowledge, failure to apply it in daily life can cause dental caries in children. Parents must also be good examples for their children in maintaining oral hygiene. Parental supervision is necessary to prevent dental caries (Mariati et al., 2024).

This study aligns with Farihah et al., (2021), which found a significant relationship between parental knowledge and the oral health of children with intellectual disabilities. It also supports Ulfah & Utami (2020), who stated that children of parents with poor knowledge about oral hygiene are more likely to develop caries. Lack of knowledge is the main factor influencing a person's behavior in applying information in daily life. The knowledge parents have determines whether they take appropriate actions in maintaining their children's oral hygiene, as parents tend to practice according to what they know (Qomariyah et al., 2020).

Children's oral health maintenance still depends heavily on parents, especially mothers, as children generally have closer bonds with their mothers. Knowledge is a very important factor in shaping a person's actions. Increasing knowledge supports someone in applying what they have learned or known into daily habits. Parental knowledge about caries prevention is crucial for determining their children's future dental health status (Lestary & Idealistiana, 2022).

In conclusion, low parental knowledge can increase the risk of dental caries in children with intellectual disabilities, considering their mental limitations and dependence on others for oral health care. Meanwhile, the importance of social and environmental factors in influencing health behavior. Parental knowledge about oral health significantly affects the oral health of children with intellectual disabilities, where better knowledge correlates with a lower risk of caries.

This study has several limitations that should be considered when interpreting the results. First, the sample size was relatively small, involving only 16 participants from a single special school (SLB B-C Optimal Surabaya), which limits the generalizability of the findings to a broader population of parents and children with intellectual disabilities. Second, the study utilized a cross-sectional design, which only captures a snapshot of the relationship between

variables at a single point in time and does not allow for causal inferences. Third, parental knowledge was measured through a self-reported questionnaire, which may be subject to response bias or inaccuracies due to social desirability or misunderstanding of the questions. Additionally, this study focused solely on parental knowledge as the independent variable, while other potential influencing factors—such as socioeconomic status, access to dental care, dietary habits, and parental attitudes or behaviors—were not examined. Future research should consider including these variables and using a longitudinal or experimental design to better understand the dynamics and causal pathways involved in the oral health outcomes of children with intellectual disabilities.

## CONCLUSION

The conclusion is that there is a relationship between parents' knowledge about oral and dental health and the incidence of dental caries in intellectually disabled children. Future studies are recommended to explore other contributing factors to dental caries in intellectually disabled children, such as dietary habits, oral hygiene practices, frequency of dental visits, and parental involvement in daily oral care. Longitudinal studies are also encouraged to examine the long-term effects of parental knowledge and behavior on children's oral health outcomes. Moreover, intervention-based research evaluating the effectiveness of educational programs aimed at improving parents' knowledge and practices related to oral health would provide valuable insights for preventive strategies in special needs education settings.

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