

# Dental Caries and Oral Health Related to Quality of Life of Children with Disabilities

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## Abstract

**Introduction**-Dental caries in disabilities children has a significant effect on their quality of life. Assessment of quality of life related to oral health needs of children specifically based on perceptions of parents. This assessment involves four domains, namely oral disease, functional disorders, emotional health disorders, and social welfare disorders. Analyze the relationship between dental caries and oral health related to quality of life in disabilities children. **Method**-Assessment of dental caries using the DMFT index, while the assessment of quality of life using a questionnaire instrument. **Analysis**-Data analysis was performed using the Spearman correlation test. **Results**-It was found that there was a significant relationship between dental caries and oral health related to quality of life of children with disabilities ( $r=-0.335$ ,  $p\text{-value}=0.035$ ). **Conclusion**-Dental caries in children with disabilities has a negative impact on oral health related to quality of life including oral and functional disorders, but has no effect on emotional health and social welfare.

**Keywords:** dental caries, oral health, quality of life, children, disabilities

## Introduction

Children with disabilities including people with disabilities are one of the human resources of the Indonesian people whose quality have to be improved so that they can have a role, not only as objects of development but also as subjects of development. WHO estimates the number of children with disabilities in Indonesia is around 7-10% of the total number of children<sup>(1)</sup>. A cross-sectional study conducted in India found that the overall prevalence of dental caries in children with disabilities (mental retardation, autistic disorders, down syndrome, cerebral palsy, etc.) aged 6 to 40 years was around 76%<sup>(2)</sup>. The prevalence of dental caries between children with disabilities and normal children has very little difference, but dental disease in children has more disabilities that have not been dental treatment<sup>(3)</sup>.

Dental caries status of children with disabilities in Manado YPAC SLB was in the moderate category with 4.4 DMFT index.<sup>(4)</sup> Previous research concluded that children with disabilities had a higher caries prevalence and had not fully coverage about the dental needs compared to the general population in the same age group<sup>(5)</sup>. Most of the children with disabilities at elementary school level at SLB in Semarang showed that 77% suffered from dental caries<sup>(6)</sup>. Preliminary study conducted at January 2017 in Surabaya Optimal Kenjeran SLB BC was known that students with disabilities were 100% experiencing dental caries and had never done dental treatment.

Dental caries is a common dental problem in Indonesia. Dental caries is a dental disease that is not considered by the public, even though if it is not treated, this disease can cause pain, infection, tooth mobility and eventually tooth loss<sup>(7)</sup>. Poor oral health such as periodontal disease, dental caries, gingivitis, xerostomia, and other oral diseases in disabilities children have a significant effect on their quality of life<sup>(8)</sup>. This can cause difficulties when eating, talking, pain, sleep disturbances and losing a day at school<sup>(9)</sup>.

Mashoto et al.<sup>(10)</sup> stated that oral health status is closely related to quality of life. Oral health is an integral

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part of public health and has a significant influence on the quality of life of adults, parents, children, adolescents and families. Dental caries has a broad impact on quality of life disorders, including limited dental function (difficulty chewing, mouth odor and disturbed digestion), physical disability (unsatisfactory diet, avoiding certain foods, not brushing teeth), complaints of pain every time chewing food, pain, headache, pain), psychic discomfort (feeling inferior, suffering and worrying), and psychic disability (disturbed sleep, difficulty concentrating and feeling ashamed)<sup>(11),(12)</sup>. The concept of Oral Health Related Quality of Life (OHRQoL) is very important to promote oral health care. The impact of dental caries when the DMF-T score is high, can be associated with impaired quality of life due to the inability of the mastication process, as well as sleep and disturbed concentration caused by toothache suffered by individuals both adults and children.<sup>(13),(14),(15)</sup>

The impact of oral disease on caregivers and families is important to measure the assessment of OHRQoL in children.<sup>(16)</sup> OHRQoL is used to measure the impact of both functional and psychosocial oral disorders.<sup>(17)</sup> OHRQoL is very helpful when studying various diseases and disorders in a multi-dimensional manner, including symptoms, physical function, emotional and social-being.<sup>(18)</sup>

Assessment of the quality of life in children disabilities is based on parent perceptions related to how much impaired their child's quality of life and normal activities are as a result of dental health. This assessment involves four domains, namely oral disorders, functional disorders, emotional health disorders, and social welfare disorders. Thus, the questionnaire used to measure the quality of life of children with disabilities uses several instruments of children's quality of life that have been developed previously, namely ECOHIS, SOHO-5, OHRQoL-C5, COIDP, COHRQoL, and P-CPQ.<sup>(16),(19),(20),(21),(22)</sup> P-CPQ is an instrument to assess the quality of life related to dental and oral health based on the perception of parents/caregivers, especially in parents who have disabilities children.<sup>(21),(22)</sup>

It is important to analyze the correlation between dental caries and oral health related quality of life in children with disabilities at Optimal SLB-BC, Kenjeran, Surabaya.

## Method

This research used cross-sectional design. The

population were all children with disabilities and their parents of all students in Optimal SLB-BC, Kenjeran, Surabaya. The sample size were 40 children, selected by simple random sampling. Data of dental caries were collected using DMFT instrument, while data of oral hygiene were collected using questionnaires. Data were analyzed using Spearman rank test.<sup>(23)</sup>

## Findings

The majority of dental caries categories was low (67.5%). Based on this table illustrates that many children with disabilities experience dental caries in their oral cavity, especially in permanent teeth.

**Table 1. Distribution of dental caries**

Dental Caries	Frequency	Percentage
Low	27	67.5
Moderate	7	17.5
High	6	15

**Table 2. Mean and standard deviation of oral health related to quality of life**

Variable	Mean	SD
Quality of Life	38.000	1.0598

Table 2 shows that the quality of life related to dental and oral health was low.

**Table 3. The results of Spearman rank test**

Variable	r	p-value
OHRQoL	- 0.335*	0.035

The p-value of Spearman rank test was 0.035 and the correlation coefficient (r) was -0.335 (There was a significant relationship between dental caries and OHRQoL of children with disabilities. The relationship was a negative direction (the higher dental, the lower OHRQoL, and vice versa).

## Discussion

Children with disabilities are children who experience physical and/or mental barriers that interfere with their normal growth and development that require special treatment.<sup>(24)</sup> SLB (extraordinary-school) is a school who are responsible for carrying out education for children with disabilities.<sup>(24)</sup>

Based on the results, the majority of children with disabilities were aged 7-14 years and male. This is in line with the research of Duddu et al.<sup>(25)</sup> that the majority of the sex of children with disabilities are men with a age of >13 years. The majority of parents take the last level of high school. In accordance with Liu et al.<sup>(26)</sup>, the last education of parents is in the middle or high school level. Mothers with higher education have better knowledge about oral hygiene practices.

In this study it was found that the majority dental caries conditions was the low category. Dental caries, tooth loss, periodontal disease and malocclusion are indicators of bad oral health for disabilities children. Among all oral diseases, dental caries are most commonly found in children with disabilities.<sup>(27)</sup> The intensity of dental caries in children with disabilities has a lower value than healthy children.<sup>(28)</sup> Dental caries is a dental hard tissue disease that can affect the enamel layer, dentin, cementum, which is caused by the metabolic activity of microorganisms. The caries process causes bacterial invasion and pulp death and the spread of infection to the periapical tissues which can cause pain.<sup>(29)</sup>

Factors causing dental caries in children with disabilities, due to poor levels of oral hygiene and lack of skills in brushing their teeth. Prevention of dental caries requires adequate education and motivation for children with disabilities and their parents. Caries in the first permanent molars as well as bad habits and malocclusion, are more commonly seen in children with disabilities than in healthy children.<sup>(28)</sup> Severe dental caries conditions in disabilities children can cause pain and difficulty eating. Dental caries of disabilities children has a negative impact on their OHRQoL.<sup>(30)</sup>

Perspectives Health-related quality of life is very helpful when studying various diseases and disorders in a multi-dimensional manner, including symptoms, physical function, emotional and social-being.<sup>(22)</sup> OHRQoL measures both functional and psychosocial oral disorders.<sup>(17)</sup>

Research on OHRQoL in children was developed to measure the impact of oral and orofacial conditions on functional, emotional, and social welfare of children of various ages and developmental differences.<sup>(17)</sup> In the mouth disorder domain of children disabilities often complain of bad breath, pain in the teeth/mouth and lips, when eating often experience food that is stuck in

the mouth and tucked in the teeth. In line with report of Abanto<sup>(31)</sup> that is pain in teeth, lips and jaw, and difficult to drink hot or cold drinks. Poor child's mouth condition with many caries in the mouth can cause pain in the teeth, mouth or jaw.<sup>(32)</sup> Oral disorders that were obvious to their children were bad breath and bleeding gums.<sup>(33)</sup>

Disabilities children often have difficulty chewing food, breathing through the mouth, takes a long time to chew food, even they often experience trouble sleeping. The impact of oral diseases such as tooth loss can affect the ability of mastication, which has an impact on their quality of life.<sup>(34)</sup> Parents report that their children often experience functional oral disorders such as spontaneous toothache when exposed to hot/cold temperatures, difficulty in chewing food, sleep difficulties and lack of nutrition.<sup>(35)</sup>

Parents of disabilities children state that their children often do not attend school and do not want to talk with friends or others. Their parents also said that their children were never ashamed to smile if they were among their friends or others. This is due to the condition of dental caries in their child's oral cavity. Disabilities parents report that their children's overall well-being is not affected by oral conditions and is largely influenced by their level of disability, not by their oral health conditions.<sup>(31)</sup>

According to Cardoso<sup>(34)</sup> dental caries can cause loss of work days, school days or loss of other activities. Dental and oral diseases greatly affect academic and school achievement. Some domains about physical well-being, psychological well-being and social environment, etc. show that disabilities children with severe motor function impairments are more likely to have a poor quality of life in physical well-being. Their parents have more stress levels to report the poor quality of life of their children.<sup>(36)</sup>

The result of this study shows that dental caries is significantly correlated with OHRQoL of children with disabilities. The presence of dental caries in the oral cavity in children with disabilities affects the OHRQoL.<sup>(31),(37),(38)</sup> Oral health has an effect on quality of life, although the psychological and social aspects of a person life are not related to their oral health status.<sup>(39)</sup>

Disorders that often occur due to dental caries that are not treated are decreased appetite, difficulty chewing, difficulty eating some food and drinking hot/cold, weight loss caused by reduced food intake, difficulty sleeping,

changes in behaviour and impaired learning activities.  
 (40) The higher prevalence of dental caries and poor oral hygiene had a negative impact on OHRQoL children with autism.<sup>(41)</sup>

### Conclusion

There is a significant relationship between dental caries and oral health related to quality of life of children with disabilities.

#### Source of Funding-Authors

#### Conflict of Interest-No

**Ethical Clearance-** Health Research Ethics Commission, Health Polytechnic of Surabaya (No.193/S/KEPK/IX/2017).

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