ORIGINAL ARTICLE

Dental anxiety and its impact on oral health-related quality of life among Indonesian children aged 8–12 years: a cross-sectional study

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ABSTRACT

Introduction: Dental anxiety in children is a common problem that affects their oral health-related quality of life (OHRQoL). It may persist into adulthood and become chronic. This study aimed to examine the relationship between dental anxiety and OHRQoL in children aged 8–12 years. **Methods**: A cross-sectional study was conducted on 199 children at Baitul Maal Islamic Elementary School, Jakarta. Dental anxiety was measured using the *Children's Fear Survey Schedule-Dental Subscale* (CFSS-DS), and OHRQoL was assessed using the *Child Oral Health Impact Profile-Short Form 19* (COHIP-SF19). Data were analyzed descriptively and with Pearson's correlation analysis. **Results:** A total of 19.1% of children reported dental anxiety and 23.1% had poor OHRQoL. Pearson's test revealed a significant but weak negative correlation between dental anxiety and OHRQoL ($r=0.148$; $p=0.018$), with R^2 explaining 2.19% of the variance. **Conclusion:** Dental anxiety is associated with poorer OHRQoL; higher dental anxiety is associated with lower OHRQoL in children and accounts for approximately 2.19% of the variance in OHRQoL. Early interventions are essential to reduce anxiety and improve oral health outcomes.

KEYWORDS

Dental anxiety, oral health related quality of life, children aged 8-12 years, impact.

INTRODUCTION

Dental anxiety is a prevalent emotional condition that may begin in childhood, persist into adulthood, and significantly affect oral health and quality of life. [1] Dental anxiety is defined as a feeling of stress or discomfort experienced by patients in anticipation of dental treatment procedures.[2] In dentistry, perceived threats may include invasive procedures such as injections, discomfort from keeping the mouth open for extended periods, or prolonged treatment plans.[3,4]

A survey on dental anxiety and fear in Indonesia revealed that approximately 20–30% of patients experience anxiety related to tooth extractions, fillings, and other oral health treatments.[5] Dental anxiety is important to recognize, as it causes stress for both patients and clinicians during treatment.[6] Children with dental anxiety are often more difficult to manage during treatment.[7]

Studies indicate that dental anxiety contributes to up to 75% of treatment failures. The prevalence of dental anxiety among children aged 4–18 years is

estimated to range from 6% to 20%. Recognizing and addressing dental anxiety in children is therefore crucial.[7]. Dental anxiety is influenced by multiple factors, such as parental anxiety, previous negative dental experiences, and socioeconomic factors.[8] Dental anxiety can cause uncooperative and disruptive behavior before or during dental procedures.[9] Dental anxiety are common factors affecting oral health and clinical management across all age groups, often developing during childhood and adolescence.[10] Children aged 7-12 years generally the cognitive maturity to recognize and interpret stimuli that may trigger anxiety.[11]

Childhood dental anxiety can persist into adulthood and become a chronic condition. Furthermore, individuals suffering from dental anxiety tend to have poorer oral health and lower Oral Health-Related Quality of Life (OHRQoL) compared to those without anxiety.[10] Children who experience fear may avoid or delay dental treatment, thereby increasing the risk of problems in the oral cavity.[12] Oral health is a fundamental component of overall health, as conditions affecting the oral cavity can significantly impact an individual's physical, social, and emotional well-being.[13] OHRQoL is a multidimensional concept that reflects an individual's comfort while eating, sleeping, and engaging in social interactions, as well as self-esteem and satisfaction related to their oral health.[14]

The oral health of children directly influences their quality of life. Disorders or conditions affecting a child's oral cavity can negatively impact daily life and overall well-being. These oral health issues affect the child's physical, social, emotional, and psychological well-being, ultimately influencing their self-esteem and social interactions.[15]

Several previous studies have examined the relationship between dental anxiety and OHRQoL. However, most were conducted outside Indonesia, involved smaller sample sizes, or used different assessment tools. This study addresses these gaps by applying the validated Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) and Child Oral Health Impact Profile-Short Form 19 (COHIP-SF19) to a larger sample of Indonesian schoolchildren.

Previous studies in other countries have generally reported a moderate to strong negative correlation between dental anxiety and oral health-related quality of life in children.[16-17] However, research exploring this relationship in Indonesian children remains limited. Therefore, this study provides new evidence by examining this association in a local context using validated instruments for children aged 8-12 years. The aim of this study is to analyze the relationship between dental anxiety and OHRQoL in children aged 8–12 years.

METHODS

A cross-sectional, descriptive-analytical study was conducted to assess the relationship between dental anxiety and oral health-related quality of life (OHRQoL) in children. The descriptive component described the participants' characteristics (age and gender) as well as the distribution of dental anxiety and OHRQoL. The analytical component examined the relationship between dental anxiety and OHRQoL. Data from the Children's Fear Survey Schedule-Dental Subscale (CFSS-DS) and the Child Oral Health Impact Profile-Short Form 19 (COHIP-SF19), which consist of 19 items, were analyzed descriptively, and the relationship was tested using Pearson's correlation

The study population consisted of students aged 8-12 years at SDIP Baitul Maal, South Jakarta. Children were eligible if they were healthy, able to read and understand Indonesian, and whose parents provided written parental consent. Children with systemic or cognitive impairments that could influence questionnaire responses were excluded. The research was conducted from April to May 2022. A purposive sampling technique was employed to recruit children who met all inclusion criteria and agreed to participate. The sample comprised 199 children aged 8–12 years from SDIP Baitul Maal, South Jakarta, who provided informed

consent and agreed to complete a questionnaire via Google Forms or a printed version. Data collection was conducted using two validated instruments. The CFSS-DS consists of 15 items rated on a 5-point Likert scale (1 = not afraid at all to 5 = very afraid), with total scores ranging from 15 to 75. Scores ≥38 were categorized as indicating dental anxiety.

The CFSS-DS, a validated anxiety questionnaire developed by Cuthbert and Melamed, consists of 15 items measured on a 5-point Likert scale, ranging from "not afraid at all (1)" to "very afraid (5)".[18-20] Additionally, children's OHRQoL was assessed using the COHIP-SF19, an instrument developed by Broder and Wilson-Genderson. The COHIP-SF19 contains 19 items covering oral health, functional well-being, and socio-emotional well-being, rated on a 5-point Likert scale. Higher scores indicate better OHRQoL.[13,21] Validity and reliability testing yielded a Cronbach's alpha of 0.750 > 0.70.

RESULTS

The results showed that among 199 participants, just over half were male (51.3%). The largest age group comprised 12 year olds (37.2%), as shown in Table 1.

Table 1. Demographics of Respondents

Characteristic	Number (n)	Percentage (%)
Gender		
Male	102	51.3
Female	97	48.7
Total	199	100
Age (years)		
8	39	19.6
9	8	4.0
10	35	17.6
11	43	21.6
12	74	37.2
Total	199	100

In this study, respondents were categorized based on the presence or absence of anxiety, as assessed by the CFSS-DS questionnaire. Analysis included all 199 respondents (Table 2).

Table 2. Distribution of Children's Dental Anxiety

Anxiety	Number (n)	Percentage (%)
Anxious (>38)	38	19.1
Not Anxious (<38)	161	80.9
Total	199	100

Based on the analysis findings, the frequency distribution of dental anxiety among children at SDIP Baitul Maal showed that 38 children (19.1%) experienced anxiety, while 161 children (80.9%) did not. OHRQoL was measured using the COHIP-SF19 index, which classifies respondents into three categories: good, moderate, and poor OHRQoL. Analysis included all 199 respondents (Table 3).

Table 3. Oral Health-Related Quality of Life (OHRQoL) Categories

OHRQoL	Number (n)	Percentage (%)
Good (>75%)	67	33.7
Moderate (60-75%)	86	43.2
Poor (<60%)	46	23.1
Total	199	100

Based on the analysis findings, 67 respondents (33.7%) had a good quality of life, 86 respondents (43.2%) had a moderate quality of life, and 46 respondents (23.1%) had a poor quality of life.

Table 4. Frequency Distribution of COHIP-SF19 Questionnaire Responses

Question	Response Frequency n (%)				
	N	R	S	O	AA
Oral Health					
(1) Toothache	39 (19.6%)	89 (44.7%)	62 (31.2%)	8 (4.0%)	1 (0.5%)
(2) Feeling that your teeth are misaligned or have gaps	33 (16.6%)	47 (23.6%)	55 (27.6%)	49 (24.6%)	15 (7.5%)
(3) Feeling that your teeth are stained or discolored	41 (20.6%)	49 (24.6%)	51 (25.6%)	46 (23.1%)	12 (6.0%)
(4) Feeling that your mouth has a bad odor	26 (13.1%)	42 (21.1%)	63 (31.7%)	50 (25.1%)	18 (9.0%)
(5) Experiencing bleeding gums	71 (35.7%)	62 (31.2%)	34 (17.1%)	24 (12.1%)	8 (4.0%)
Functional Well-being					
(6) Difficulty eating	92 (46.2%)	57 (28.6%)	41 (20.6%)	8 (4.0%)	1 (0.5%)
(7) Difficulty sleeping	121 (60.8%)	48 (24.1%)	22 (11.1%)	7 (3.5%)	1 (0.5%)
(8) Difficulty pronouncing words	91 (45.7%)	59 (29.6%)	33 (16.6%)	12 (6.0%)	4 (2.0%)
(9) Difficulty cleaning teeth	87 (43.7%)	54 (27.1%)	39 (19.6%)	16 (8.0%)	3 (1.5%)
Socio-emotional Well-being					
(10) Feeling unhappy or sad	70 (35.2%)	70 (35.2%)	39 (19.6%)	15 (7.5%)	5 (2.5%)
(11) Feeling scared or worried	71 (35.7%)	51 (25.6%)	52 (26.1%)	19 (9.5%)	6 (3.0%)
(12) Avoiding smiling or laughing with other children	89 (44.7%)	47 (23.6%)	31 (15.6%)	24 (12.1%)	8 (4.0%)
(13) Feeling that you look different	90 (45.2%)	52 (26.1%)	31 (15.6%)	20 (10.1%)	6 (3.0%)
(14) Worrying about what others think	81 (40.7%)	49 (24.6%)	35 (17.6%)	26 (13.1%)	8 (4.0%)
(15) Being teased or called names by other children	137 (68.8%)	33 (16.6%)	13 (6.5%)	8 (4.0%)	8 (4.0%)
(16) Missing school due to oral health problems	180 (90.5%)	11 (5.5%)	5 (2.5%)	0 (0.0%)	3 (1.5%)
(17) Avoiding speaking or reading aloud in class	133 (66.8%)	40 (20.1%)	16 (8.0%)	5 (2.5%)	5 (2.5%)
(18) Feeling confident	22 (11.1%)	24 (12.1%)	39 (19.6%)	34 (17.1%)	80 (40.2%)
(19) Feeling attractive	24 (12.1%)	20 (10.1%)	23 (11.6%)	29 (14.6%)	103 (51.8%)

Note: N = Never, R = Rarely, S = Sometimes, O = Often, AA = Almost Always

Table 5. Relationship Between Dental Anxiety and OHRQoL and Pearson Correlation Test

Anxiety	Oral Health Related Quality of Life (OHRQoL)						r	Pearson's p-value
	Good (%)		Moderate (%)		Poor (%)			
Anxious (>38)	10	(14.9)	15	(17.4)	13	(28.3)	0.018	-0.148
Not Anxious (<38)	57	(85.1)	71	(82.6)	33	(71.7)		
Total	67	67 (100)	86	(100)	46	(100)		

The CFSS-DS consists of 15 items, each rated on a 5-point scale (1 = not afraid at all to 5 = very afraid), resulting in a total score ranging from 15 to 75. In this study, a cutoff score of 38 was used: children scoring ≥38 were categorized as anxious, while those scoring <38 were categorized as non-anxious. The COHIP-SF 19 consists of 19 items, each rated on a 4-point scale (0 = almost always to 4 = never). Categorization of OHRQoL as good (>75%), moderate (60-75%), and poor (<60%) followed Arikunto's criteria.

Based on the correlation test results shown in Table 5, dental anxiety was significantly correlated with OHRQoL in children. Pearson's correlation analysis revealed a weak but statistically significant negative correlation between dental anxiety and OHRQoL ($r = -0.15$, $p = 0.018$). The coefficient of determination ($R^2 = 0.0219$) indicated that dental anxiety accounted for approximately 2.2% of the variance in OHRQoL scores. This suggests that higher levels of dental anxiety were associated with poorer perceived oral health-related quality of life among the children.

DISCUSSION

This study revealed a statistically significant, although weak, negative correlation between dental anxiety and oral health-related quality of life (OHRQoL) among children aged 8–12 years. Children with higher dental anxiety tended to report lower OHRQoL scores. Although the strength of this correlation was modest, the relationship remains clinically meaningful because even mild anxiety may influence children's oral health behaviors and treatment outcomes.

The weak correlation observed may be attributed to multiple influencing factors beyond anxiety alone, including oral health status, socioeconomic conditions, parental attitudes, and access to dental care. Children's OHRQoL is not determined by dental anxiety alone but is shaped by several interacting determinants, including caries experience, toothache, malocclusion, oral hygiene practices, socioeconomic background, and parental psychological support. As children mature cognitively, they may develop better coping strategies and a more rational understanding of dental procedures, which could attenuate anxiety responses and, in turn, influence their perception of their oral health and overall well-being. These factors may play a more substantial role in shaping children's perceptions of their quality of life than dental anxiety alone.

Moreover, characteristics of the study population might have contributed to the weak correlation. The majority of children in this study were categorized as non-anxious (80.9%), resulting in an uneven distribution of anxiety scores. This limited variation may have attenuated the strength of the association. In addition, the questionnaires used rely on self-perception, which could have been affected by psychosocial conditions unrelated to dental factors. The proportion of children experiencing dental anxiety (19.1%) is epidemiologically meaningful, and although the association with OHRQoL was weak, the direction of the relationship reinforces the relevance of early detection and intervention.

The study results indicate that 19.1% of respondents experienced dental anxiety, which is nearly identical to the findings of Danshevar SH and Azizi S, who reported that 19.2% of children aged 6–12 years had dental anxiety.[21] These findings suggest that dental anxiety is commonly observed among school-age children. Dental anxiety frequently occurs at this age because children develop logical thinking abilities and recognize stimuli that trigger anxiety. As children grow older, their dental anxiety tends to decrease.[11,22]

Based on Table 3, 23.1% of respondents had poor OHRQoL, with the highest percentage in the oral health domain (41.7%). Table 4 shows that 24.6% of children frequently felt their teeth were misaligned or had gaps, and 23.1% felt their teeth were stained or discolored. Tooth discoloration can significantly impact children's ability to smile and socialize without feeling self-conscious.[23] Furthermore, 25.1% of children frequently experienced bad breath, and 12.1% often had bleeding gums. According to Yildirim TT, individuals with dental anxiety commonly have oral health problems such as bleeding gums.[24] Bad breath can also be associated with gingival bleeding caused by poor oral hygiene.[25]

Table 4 indicates that 20.6% of respondents experienced difficulty eating, and 19.6% had trouble cleaning their teeth. Bleeding gums, toothaches, fractured teeth, eruption of permanent teeth, and cavities are oral conditions that can hinder children from eating properly, ultimately affecting their quality of life. Bleeding

gums can also interfere with the taste of food and drinks. Additionally, a study conducted by Nordin EAB et al. Found that the inability to clean teeth properly can be due to gingival bleeding resulting from gingival inflammation. Children with this condition may struggle to brush their teeth effectively. Many children are unaware of periodontal problems in their early stages, as symptoms are usually mild and do not present clinically until the gums start bleeding while brushing.[23]

In Table 4's socio-emotional domain, 12.1% of respondents avoided smiling or laughing with other children, and 13.1% worried about what others thought of their teeth, mouth, or face. A study by Perez D.R. et al. reported that oral health programs often focus on caries treatment due to its direct impact on quality of life, whereas malocclusions were perceived as less critical in disadvantaged populations. However, the present study contrasts with these findings, as malocclusion related perceptions appeared more prominent among participants.[26]

Cross-tabulation analysis in Table 5 between dental anxiety and OHRQoL revealed that among children with dental anxiety, 14.9% had good OHRQoL, 17.4% had moderate OHRQoL, and 28.3% had poor OHRQoL. Among children without dental anxiety, 85.1% had good OHRQoL, 82.6% had moderate OHRQoL, and 71.7% had poor OHRQoL. These findings indicate that children with dental anxiety tend to have poorer OHRQoL than those without anxiety. These results are consistent with the study conducted by Merdad L and El-Housseiny AA, which reported that children with dental anxiety had poorer OHRQoL and lower quality-of-life scores. This relationship may be influenced by risk factors related to dental anxiety, such as irregular dental visits and parental dental fear.[27] Parents' fear of dental treatment is closely associated with their children's fear of dentists.[28]

The research findings on the relationship between dental anxiety and OHRQoL, as presented in Table 6, indicate a correlation with a significance value of $p < 0.05$ and a correlation coefficient (r) of -0.148. This suggests a significant but weak relationship between dental anxiety and children's OHRQoL. These findings align with Hegazi F, et al. found demonstrate that children's fear and dental caries are both associated with poorer OHRQoL. Further, parental dental fear about dentist was associated with children's fear of dentist.[27] However, a study by Cianetti, Stefano, et al. Found no significant relationship between dental anxiety and OHRQoL scores.[30] This discrepancy may be due to differences in sample size, as the present study included a larger number of school-age children. A larger study population is assumed to have greater variability in anxiety levels, which may amplify the impact on OHRQoL. A meta-analysis by Alharbi et al. In Slabšinskien et al. Also reported a weak relationship between dental anxiety and OHRQoL in children.[21] This weak correlation may be attributed to other factors influencing OHRQoL, such as the presence of dental caries, malocclusion, general fear of dental treatment, and past negative dental experiences.[29,31]

The findings of this study indicate a significant correlation between dental anxiety and OHRQoL, with an R^2 value of 2.19%, meaning that dental anxiety accounts for 2.19% of the variation in OHRQoL. Descriptive analysis of OHRQoL domains shows that the most affected domain was oral health (41.7%), whereas the functional well-being domain accounted for only 11.6%, and the socio-emotional domain accounted for 7%. Oral health behavior refers to routine practices that maintain oral hygiene and prevent oral diseases, including regular dental check-ups, proper tooth brushing, consistent use of fluoride toothpaste, interdental cleaning, use of mouthwash, and chewing sugar-free gum. These behaviors significantly impact oral health status and, consequently, OHRQoL.[27]

In addition to dental anxiety, several other factors contribute to poor OHRQoL, including age, gender, educational level, household income, geographic location, Body Mass Index (BMI), presence of dental caries, and malocclusion.[32] A limitation of this study is that further research is needed across different demographic and socioeconomic contexts. A key strength of this study lies in its use of validated, culturally adapted instruments (CFSS-DS and COHIP-SF19) and a relatively large sample. However, the cross-sectional design limits causal

interpretation, and reliance on self-reported data may introduce response bias. Future studies should incorporate clinical assessments and parental perspectives to triangulate and strengthen findings.

CONCLUSION

This study found that about one in five children (19.1%) experienced dental anxiety, which was negatively associated with oral health-related quality of life. Although the correlation was weak, the findings underscore the importance of recognizing dental anxiety as a relevant factor in children's oral health. The study contributes to pediatric dental health research by providing evidence that managing dental anxiety may enhance children's quality of life. Practically, these findings can guide dentists in developing child-friendly communication strategies, help parents provide emotional support, and inform schools or public health programs to integrate education on dental anxiety. The implications of this study suggest that reducing dental anxiety should be an essential component of children's oral health programs. Managing both emotional and environmental factors, such as providing reassurance from parents and creating a comfortable dental setting, may help children feel calmer during treatment and improve their overall oral health experience.

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