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Official Publication of Istanbul University Faculty of Dentistry

Eur Oral Res 2025; 59(2): 108-113

Original research

Evaluation of quality of life with the Parental-Caregiver Perceptions Questionnaire (P-CPQ) in children requiring general anesthesia for dental treatment

Irem Mergen Gultekin[1], **Ozge Gunes Yetis**[1], **Pınar Serdar Eymirli**[2]

Purpose
The aim of this study is to evaluate the quality of life of patients scheduled to complete all oral rehabilitation under general anesthesia (GA).

Materials and Methods
The study included 65 parents of children aged 4-14 years who were scheduled for dental treatment under GA. Parents provided demographic information, including their children's tooth brushing habits, frequency, and attitudes towards general oral and dental health. Subsequently, the parent/caregiver completed the 31-item Parental-Caregiver Perceptions Questionnaire (P-CPQ). Oral examinations of the children were performed by a pediatric dentist, and dmft/DMFT indexes and pufa/PUFA indexes were recorded. Statistical analysis was performed using the SPSS (version 23.0) program, with a significance level set at $p \leq 0.05$. The Mann-Whitney U test was used for non-parametric variables, and the Shapiro-Wilk test was used for variables with a normal distribution. The Spearman correlation coefficient was used to demonstrate the relationship between continuous data.

Results
The majority of parents reported that their children brush their teeth once or twice a day (78.5%) and that their children's general oral and dental health status is moderate (53.8%). There was no statistically significant difference in P-CPQ total and subgroup scores between genders. It was determined that the P-CPQ total value decreased as the education level of both the mother ($p=0.001$) and father ($p=0.043$) increased. As DMFT/S values increased, P-CPQ total and subgroups 1, 2, and 3 increased ($p<0.05$).

Conclusion
Based on the results of this study, it can be concluded that an increase in the number of primary tooth decays and a decrease in the education level of the parents might negatively impact their children's quality of life.

Keywords: *Quality of life, general anesthesia, pedodontics, questionnaire, dental caries*

Introduction

Oral health is a crucial component of overall well-being and it can be negatively impacted by various diseases, such as dental caries. This condition affects the majority of the global population, including children, and can significantly decrease individuals' quality of life (1, 2). Additionally, oral health has significant psychological and social implications, as it not only affects the aesthetic but also the physiology of the person (3).

Dental caries, especially in children, has negative impact on speech, eating, communication skills, growth and development, general health status and therefore quality of life (4, 5). Decay affects primary teeth much more than permanent teeth due to the differences in enamel and dentin

ORCID IDs of the authors: İ.M.G. 0000-0002-1647-5946; Ö.G.Y. 0009-0000-4470-8105; P.S.E. 0000-0002-7568-326X

[1]*Golbasi Oral and Dental Health Center, Department of Pedodontics, Ankara, Türkiye*

[2]*Hacettepe University, Faculty of Dentistry, Department of Pedodontics, Ankara, Türkiye*

Corresponding Author: İrem Mergen Gültekin

E-mail: irem.mergen@yahoo.com

Received: 4 March 2023
Revised: 19 December 2023
Accepted: 3 March 2024

DOI: 10.26650/eor.20241258790

How to cite: *Mergen Gultekin I, Gunes Yetis O, Serdar Eymirli P. Evaluation of quality of life with the parental-caregiver perceptions questionnaire (p-cpq) in children requiring general anesthesia for dental treatment. Eur Oral Res 2025; 59(2): 108-113.* DOI: 10.26650/eor.20241258790

structure between primary and permanent teeth and the difficulty of maintaining oral hygiene at a young age. Furthermore, caries at a young age is a predictor of caries risk in adulthood. All this means that preventing dental caries in children is critical (6).

In pedodontics, it may be necessary to provide comprehensive oral rehabilitation under general anesthesia (GA) in a controlled environment, such as a hospital, for patients who are uncooperative, suffer from anxiety and fears, or have physical or mental problems. To prevent the GA procedure from recurring, a full oral rehabilitation is usually performed, with all procedures completed in a single session and in a short time frame (7).

The DMFT index for permanent teeth and the dmft index for primary teeth, which include decayed (D/d), missing (M/m), and filled (F/f) teeth, are major indicators for determining the health of children (8, 9). It has been demonstrated that an number of variables including tooth brushing, gender, parental occupation, and level of education, are associated with the dmft index. Parents or their caregivers play a crucial role in making decision about their child's overall health and oral health, including the use of healthcare services (10).

It is crucial to measure the oral health-related quality of life (OHRQoL), as the presence of oral and dental diseases can remarkably affect the quality of life of both children and parents. OHRQoL refers to the role of oral conditions or diseases on quality of life (11). The Children's Oral Health Quality of Life Questionnaires (COHQoL) were established by Canadian researchers to assess children's cognitive abilities and lifestyles (12). This scale includes two questionnaires: the Child Perception Questionnaire - CPQ for children aged 8 to 10 (13) and CPQ for children aged 11 to 14 (14). This questionnaire aims to measure children's perceptions of the impact of oral disorders on physical and psychosocial functioning. Additionally, the scale includes a questionnaire for parents, the Parent-Caregiver Perception Questionnaire (P-CPQ) which assesses their perceptions of their child's OHRQoL. The P-CPQ is a valuable tool for evaluating the effect of a child's oral health status on a parent or caregiver's quality of life (12).

The P-CPQ questionnaire has been translated and cross-culturally adapted many countries such as Australia (15), UK (16), Hong Kong (17), Netherlands (18), China (19), Peru (20), New Zealand (21), France (22) and Turkey (23). The aim of this study was to evaluate oral health-related quality of life with the P-CPQ questionnaire on parents/caregivers of children aged 4 to 14 years who have dental caries and were planned to be treated under GA.

The hypothesis of the study is that the quality of life of a parent or caregiver will be negatively affected by an increase in dental caries. It is also thought that the P-CPQ score will increase with the parent's education level decreases and the number of caries increases.

Materials and Methods

Ethical statement

This cross-sectional study received approval from the ethics committee of Ankara Training and Research Hospital (Approval Number: 154/2019). Parents who participated in the study were informed about the protocol and assured that their participation was entirely voluntary. Written informed consent was obtained from the parents.

Study population and sample size estimation

Patients who applied to the clinic for general anesthesia during the six-month study period comprised the study's population. Considering that the majority of the 200 patients in this process were disabled or had systemic diseases, it was estimated that approximately 70 patients would not have any systemic diseases. The minimum required sample size for the study was determined to be 60, with a 5% margin of error and a 95% confidence level. Ultimately, a total of 65 parents of children aged 4 to 14 years, who were scheduled to complete dental treatment under general anesthesia, were included in the study. Exclusion criteria included parents who refused to participate in the study or the presence of any mental disability and/or chronic diseases in the child.

Data collection

Demographic information was obtained from the parents, including questions about their children's brushing patterns, frequency, and opinions about their children's general oral and dental health status, using a questionnaire originally prepared by the researchers. Then, the parent/caregiver questionnaire of the OHRQoL scale containing 31 items was administered. This questionnaire evaluates the parent's perception based on four different areas: oral symptoms (6 items), functional limitations (8 items), emotional well-being (7 items), and social well-being (10 items). All questions were designed to evaluate the child's oral/dental health status in the past 3 months. A 5-point Likert scale was used to score the answers (never: 0; once or twice: 1; sometimes: 2; often: 3; and every day/almost every day: 4). The overall rating was calculated by summing all the scores, and the scores for each subscale were determined individually. As the calculated score increases, the unfavorable effect on quality of life increases.

Subsequently, the children's oral examination was performed by a pediatric dentist under reflector light, in accordance with the WHO Oral Health Assessment Form guideline. The dmft/DMFT index was used to determine oral health status, and the pufa/PUFA index was used to assess untreated dental caries (24, 25). This index reveals clinical outcomes of untreated decayed teeth, such as pulp involvement (p/P), ulceration (u/U), fistula (f/F), and abscess presence (a/A).

Statistical analysis

The data were analyzed using IBM SPSS Statistics Version 23.0 (IBM Corp., Armonk, NY, USA). The normal distribution of the variables was examined graphically and using the Shapiro-Wilk test. Descriptive data were presented with mean ± standard deviation or median [25th-75th percentiles] values as appropriate. To compare the skewed data without parametric test assumptions, the Mann-Whitney U test was employed. The relationship between continuous data was shown by the Spearman correlation coefficient. The significance level was set at 0.05.

Results

A total of 65 children, including 30 girls (46.2%) and 35 boys (53.8%), who were planned to conclude dental treatment under GA, were included in the study. The mean age of the children was calculated to be 88.7 ± 20.63 months. Demographic variables are presented in Table 1. The majority of parents noted that their children brushed their teeth once (46.2%) or twice (32.3%) a day. Additionally, most participants stated that their child's oral and dental health status was moderate (53.8%). When asked about the impact of oral and dental health on their child's overall well-being, the majority of parents reported that it would be affected to a small amount (40%) or a lot (41.5%) (Table 1). The mean dmft was 9.40 ± 3.63, dmfs was 23.43 ± 13.57, DMFT was 2.75 ± 3.91, DMFS was 5.12 ± 8.61, pufa was 0.09 ± 0.46 and PUFA was 0.02 ± 0.12. Table 2 shows the numerical values for dmft, dmfs, DMFT, DMFS, pufa, PUFA, P-CPQ total and subgroups. There was no statistically significant difference between genders in any of the P-CPQ subgroups. Table 3 and 4 present a comparison of the questions asked to the parents, the intraoral data of patients and the scores they received from the scale results. Accordingly, DMFT, DMFS and dmft values decreased with increasing age. Additionally, it was determined that as the parents' education level increased, the P-CPQ total value decreased, indicating an enhancement in their child's quality of life. The parents' responses to the question, "To what extent do you believe oral and dental health affect your child's overall well-being?" showed a decrease in P-CPQ total and all subgroups for those who answered "definitely" (Table 3). As dmft and dmfs values increased, P-CPQ total and subgroup 1,2 and 3 increased. For permanent teeth, only the increase in DMFT resulted in a statistically significant increase in oral symptoms (Subgroup 1). The increase in other subgroups and the P-CPQ total was not statistically significant (Table 4).

Discussion

In recent years, there has been a growing recognition of the effect of oral and dental health complaints on children's overall health and social well-being. In addition to the physical pain experienced by children, there is also a significant impact on their social lives. While clinicians and researchers have acknowledged the importance of assessing a child's quality of life, it is equally important to consider the impact of their illness and treatment on other family members (18).

Parents' perspectives on whether oral health affects overall well-being may differ from physicians. Some studies have reported that parents are not conscious about this issue (26, 27). According to the results of this study, the majority of parents mentioned that oral health may slightly affect overall health. However, the number of parents who said it would definitely affect remained very low. This result also

Table 2. *Intraoral data and P-CPQ questionnaire scores.*

	Mean ± SD
Age	88.74 ± 20.63
dmft	9.40 ± 3.63
dmfs	23.43 ± 13.57
DMFT	2.75 ± 3.91
DMFS	5.12 ± 8.61
pufa	0.09 ± 0.46
PUFA	0.02 ± 0.12
P-CPQ total	24.74 ± 15.25
Sub 1 Oral symptoms	7.31 ± 5.18
Sub 2 Functional limitations	8.86 ± 6.35
Sub 3 Emotional wellbeing	5.46 ± 4.60
Sub 4 Social wellbeing	3.18 ± 4.12

Table 1. *Demographic characteristics of the family and child.*

Child Gender	**Girl (%)**			**Boy (%)**	
	30 (46.2)			35 (53.8)	
The Questionnaire Answered By	**Mother (%)**		**Father (%)**	**Other (%)**	
	40 (61.5)		21 (32.3)	4 (6.1)	
Mother's education	**Primary school (%)**	**Middle school (%)**	**High school (%)**	**University (%)**	**Master's/ Doctorate (%)**
	13 (20)	8 (12.3)	21 (32.3)	21 (32.3)	2 (3.1)
Father's education	5 (7.7)	7 (10.8)	23 (35.4)	27 (41.5)	3 (4.6)
Does your child brush her/his teeth?	**Yes (%)**			**No (%)**	
	43 (66.2)			22 (33.8)	
How often does your child brush her/his teeth?	**Rare (%)**	**Once a day (%)**	**2 times a day (%)**	**3 times a day (%)**	
	13 (20)	30 (46.2)	21 (32.3)	1 (1.5)	
What do you think about your child's oral health?	**Perfect (%)**	**Very good (%)**	**Good (%)**	**Moderate (%)**	**Poor (%)**
	1 (1.5)	6 (9.2)	20 (30.8)	35 (53.8)	3 (4.6)
To what extent do you believe oral and dental health affect your child's overall well-being?	**None (%)**	**Hardly any (%)**	**Small amount (%)**	**Lots (%)**	**Excessive (%)**
	6 (9.2)	4 (6.2)	26 (40)	27 (41.5)	2 (3.1)

Table 3. *Pairwise comparison of the questions asked to the families and the intraoral data of the patients and P-CPQ scores.*

p (Correlation coefficient)	Age	Mother's education	Father's education	Does your child brush her/his teeth?	How often does your child brush her/his teeth?	What do you think about your child's oral health?	To what extent do you believe oral and dental health affect your child's overall well-being?
DMFT	**0.000** (-0.713)	0.934 (-0.010)	0.822 (0.028)	0.676 (0.053)	0.911 (-0.014)	0.101 (0.205)	0.187 (-0.166)
DMFS	**0.000** (-0.736)	0.861 (-0.022)	0.914 (0.014)	0.760 (0.039)	0.611 (-0.064)	0.122 (0.194)	0.194 (-0.163)
dmft	**0.023** (-0.281)	0.093 (-0.210)	**0.014** (-0.303)	**0.002** (-0.371)	0.129 (-0.190)	0.467 (-0.092)	0.234 (-0.150)
dmfs	0.194 (-0.163)	0.088 (-0.213)	**0.041** (-0.255)	**0.008** (-0.325)	0.143 (-0.184)	0.340 (0.120)	0.309 (-0.128)
PUFA	0.540 (0.077)	0.956 (-0.007)	0.613 (-0.064)	0.479 (0.089)	0.698 (-0.049)	0.483 (0.089)	0.590 (-0.068)
pufa	0.414 (-0.103)	0.080 (-0.219)	0.111 (-0.200)	0.211 (0.157)	0.717 (-0.046)	0.215 (0.156)	0.399 (0.106)
P-CPQ total	0.205 (0.159)	**0.001** (-0.409)	**0.043** (-0.251)	**0.004** (-0.355)	**0.048** (-0.246)	0.260 (0.142)	**0.002** (-0.385)
Sub 1 Oral symptoms	0.931 (0.011)	0.064 (-0.231)	0.391 (-0.108)	0.065 (-0.230)	0.464 (-0.092)	0.325 (0.124)	**0.006** (-0.339)
Sub 2 Functional limitations	0.305 (0.129)	**0.014** (-0.304)	0.117 (-0.196)	**0.029** (-0.270)	0.055 (-0.239)	0.327 (0.123)	**0.023** (-0.281)
Sub 3 Emotional wellbeing	0.167 (0.174)	**0.013** (-0.306)	**0.019** (-0.290)	0.156 (-0.178)	0.478 (-0.090)	0.549 (0.076)	**0.002** (-0.373)
Sub 4 Social wellbeing	0.204 (0.160)	**0.005** (-0.347)	0.339 (-0.121)	**0.003** (-0.368)	**0.031** (-0.268)	0.904 (0.015)	**0.045** (-0.249)

Table 4. *Pairwise comparison of patients' intraoral data and P-CPQ scores.*

p (Correlation coefficient)	P-CPQ total	Sub 1 Oral symptoms	Sub 2 Functional limitations	Sub 3 emotional wellbeing	Sub 4 Social wellbeing
DMFT	0.079 (0.219)	**0.038** (0.258)	0.051 (0.253)	0.367 (0.114)	0.776 (0.036)
DMFS	0.082 (0.217)	0.074 (0.223)	0.052 (0.242)	0.427 (0.100)	0.477 (0.090)
dmft	**0.004** (0.356)	**0.004** (0.351)	**0.030** (0.270)	**0.003** (0.362)	0.785 (0.035)
dmfs	**0.001** (0.419)	**0.003** (0.362)	**0.010** (0.318)	**0.001** (0.408)	0.282 (0.135)
PUFA	0.833 (0.027)	0.158 (0.177)	0.129 (-0.190)	0.252 (0.144)	0.520 (0.081)
pufa	0.157 (-0.178)	0.429 (-0.100)	**0.042** (-0.253)	0.838 (-0.026)	0.443 (-0.097)

emphasizes the importance of raising awareness about this issue. Furthermore, P-CPQ values were significantly lower in all P-CPQ subgroups in parent groups who believed that oral health would affect general well-being.

It was determined that the P-CPQ value decreased as the education levels of both mothers and fathers increased. However, this relationship was found to be stronger in mother education. Other studies in the literature, it has been reported that an increase in education level decreases the P-CPQ value, supporting this result (28, 29).

Zhang *et al*. (17) compared the responses of children to quality-of-life questions with those of their mothers and fathers. They found no significant difference in consistency between the responses of mothers and fathers. Therefore, we did not take into account the gender of the person who filled out the P-CPQ questionnaire in our study.

The mean P-CPQ total score for this study was 24.74 ± 15.25. In similar studies, different mean P-CPQ scores ranging from 9.44 to 26 have been observed in the literature (17, 23, 28, 30-32). It is thought that these differences between studies may be due to socio-economic and lifestyle factors. Furthermore, the differences in results could also be attributed to the use of the survey on different patient populations. Some studies focused on patients with Cerebral Palsy (CP) (28), while others focused on the healthy patients (17, 23, 30-32). It is expected that P-CPQ scores would be higher in-patient groups requiring general anesthesia, as seen in our study and in groups with special care needs such as CP, due to the higher dmft value.

In our study, the subscale with the lowest score was social well-being (3.18±4.12), while the subscale with the highest score was functional limitations (8.86±6.35) on the P-CPQ. This is coherent with the findings of Chao et al., who also reported social well-being as the subscale with the lowest score (0.77±1.36). However, in contrast to our study, they found that oral symptoms had the highest score (4.45±2.11 Similar results were reported by Ridell (32) and Baghdadi (30). It is possible that the high score on the functional

limitations subscale in our study is due to parents focusing more on their child's difficulties with daily activities rather than their oral health. Furthermore, the overall high scores on all subscales suggest that children may be experiencing significant functional impairment due to increased caries.

The limitation of this study was that it only included children who required general anesthesia, so there was no patient group with a dmft value of zero. This can lead to higher P-CPQ values and makes it difficult to compare with healthy individuals. However, previous studies have demonstrated that children with no caries have significantly lower P-CPQ scores compared to those with caries (26, 33). Similarly, in our study found that as the dmft value decreased, so did the P-CPQ score.

Conclusion

The findings of this study showed that an increase in the number of primary tooth decays and a decrease in the education level of the parents negatively affected the quality of life. Additionally, the quality of life was higher in families who believed that oral health had an impact on general health. The initial hypothesis of the study was confirmed. The results also demonstrated that the P-CPQ questionnaire was effective in assessing the quality of life in parents of children affected by severe childhood caries. By increasing societal awareness of this issue, a step toward improving quality of life may have been taken.

Türkçe Öz: *Diş Tedavisi İçin Genel Anestezi Gerektiren Çocuklarda Yaşam Kalitesinin Ebeveyn-Bakıcı Algı Anketi (P-CPQ) ile Değerlendirilmesi. Amaç: Bu çalışmanın amacı tüm oral rehabilitasyonu genel anestezi (GA) altında tamamlanan hastaların yaşam kalitesini değerlendirmektir. Gereç ve Yöntem: Çalışmaya GA ile diş tedavisi yapılan, 4-14 yaş arası çocuğu olan 65 ebeveyn dahil edilmiştir. Ebeveynlerden, çocuklarının diş fırçalama alışkanlıkları, sıklığı ve ağız ve diş sağlığına yönelik genel tutumları gibi demografik konusunda bilgi alınmıştır. Sonrasında ebeveyn/bakıcıya 31 maddelik P-CPQ ölçeği uygulanmıştır. Çocukların ağız muayenesi çocuk diş hekimi tarafından yapılarak dmft/DMFT indeksi ve pufa/PUFA indeksi kaydedilmiştir. İstatistiksel analiz SPSS (versiyon 23.0) programı kullanılarak p≤0.05 anlamlılık düzeyinde yapılmıştır. Parametrik olmayan değişkenler için Mann-Whitney U testi, normal dağılıma sahip değişkenler için Shapiro-Wilk testi kullanılmıştır. Sürekli veriler arasındaki ilişkiyi göstermek için Spearman korelasyon katsayısı kullanılmıştır. Bulgular: Ebeveynlerin çoğunluğu çocuklarının günde bir veya iki kez dişlerini fırçaladıklarını (%78,5) ve çocuklarının genel ağız ve diş sağlığı durumunun orta düzeyde (%53,8) olduğunu bildirmiştir. Cinsiyetler arasında P-CPQ toplam ve alt grup puanları arasında istatistiksel olarak anlamlı fark yoktur (p>0,05). Hem annenin (p=0,001) hem de babanın (p=0,043) eğitim düzeyi arttıkça P-CPQ toplam değerinin azaldığı belirlenmiştir. dmft ve dmfs değerleri arttıkça P-CPQ toplam ve alt grup 1,2 ve 3 skorlarının arttığı görülmüştür (p<0,05). Sonuç: Bu çalışmadan elde edilen verilerle, süt dişlerindeki çürük sayısının artmasının ve ebeveynlerin eğitim düzeylerinin azalmasının, çocuklarının yaşam kalitesini olumsuz yönde etkilediği sonucuna varılabilir. Anahtar Kelimeler: Yaşam kalitesi, genel anestezi, pedodonti, anket, diş çürüğü*

Ethics Committee Approval: Ethical approval of this cross-sectional study was obtained from Ankara Training and Research Hospital ethics committee (Approval Number:154/2019).

Informed Consent: Participants' parents and/or their legal guardians provided informed consent.
Peer-review: Externally peer-reviewed.

Author contributions: IMG participated in designing the study IMG, OGY participated in generating the data for the study. IMG, OGY participated in gathering the data for the study. IMG, PSE participated in the analysis of the data. PSE wrote the majority of the original draft of the paper. IMG, PSE participated in writing the paper. IMG has had access to all of the raw data of the study. IMG, PSE has reviewed the pertinent raw data on which the results and conclusions of this study are based. IMG, OGY, PSE have approved the final version of this paper. IMG guarantees that all individuals who meet the Journal's authorship criteria are included as authors of this paper.

Conflict of Interest: The authors declared that they have no conflict of interest.

Financial Disclosure: The authors declared that they have received no financial support.

Acknowledgements: Authors would like to thank Dr. Sevilay Karahan from Hacettepe University, Department of Biostatistics, for her support in statistical analysis.

References

1. Tesch FC, Oliveira BH, Leao A. Measuring the impact of oral health problems on children's quality of life: conceptual and methodological issues. Cad Saude Publica 2007;23:2555-64. [CrossRef]
2. Bonecker M, Abanto J, Tello G, Oliveira LB. Impact of dental caries on preschool children's quality of life: an update. Braz Oral Res 2012;26 Suppl 1:103-7. [CrossRef]
3. Mitsea AG, Karidis AG, Donta-Bakoyianni C, Spyropoulos ND. Oral health status in Greek children and teenagers, with disabilities. J Clin Pediatr Dent 2001;26:111-8. [CrossRef]
4. MC Donald RE AD, Stookey Gk, Chin JR, Kowalik JE. Dental caries in child and Adolescent 10th ed ed. MC Donald RE AD, Dean JA., editor. St Louis, Missouri: Mosby Co; 2016.
5. Ramos-Jorge J, Pordeus IA, Ramos-Jorge ML, Marques LS, Paiva SM. Impact of untreated dental caries on quality of life of preschool children: different stages and activity. Community Dent Oral Epidemiol 2014;42:311-22. [CrossRef]
6. Thomson WM, Poulton R, Milne BJ, Caspi A, Broughton JR, Ayers KM. Socioeconomic inequalities in oral health in childhood and adulthood in a birth cohort. Community Dent Oral Epidemiol 2004;32:345-53. [CrossRef]
7. White HR, Lee JY, Rozier RG. The effects of general anesthesia legislation on operating room visits by preschool children undergoing dental treatment. Pediatric Dentistry 2008;30:70-5.
8. Kalsbeek H, Verrips GH, Eijkman MA, Kieft JA. Changes in caries prevalence in children and young adults of Dutch and Turkish or Moroccan origin in The Netherlands between 1987 and 1993. Caries Res 1996;30:334-41. [CrossRef]
9. Anaise JZ. Measurement of dental caries experience-modification of the DMFT index. Community Dent Oral Epidemiol 1984;12:43-6. [CrossRef]
10. Theunissen NCM, Vogels TGC, Koopman HM, Verrips GHW, Zwinderman KAH, Verloove-Vanhorick SP, et al. The proxy problem: child report versus parent report in health-related quality of life research. Quality of Life Research 1998;7:387-97. [CrossRef]
11. Yang C, Crystal YO, Ruff RR, Veitz-Keenan A, McGowan RC, Niederman R. Quality Appraisal of Child Oral Health-Related Quality of Life Measures: A Scoping Review. JDR Clin Trans Res 2020;5:109-17. [CrossRef]
12. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G. Measuring parental perceptions of child oral health-related quality of life. J Public Health Dent 2003;63:67-72. [CrossRef]
13. Jokovic A, Locker D, Tompson B, Guyatt G. Questionnaire for measuring oral health-related quality of life in eight- to ten-year-old children. Pediatr Dent 2004;26:512-8.
14. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G. Validity and reliability of a questionnaire for measuring child oral-health-related quality of life. J Dent Res 2002;81:459-63. [CrossRef]

15. Do LG, Spencer A. Oral health-related quality of life of children by dental caries and fluorosis experience. Journal of Public Health Dentistry 2007;67:132-9. [CrossRef]
16. Johal A, Cheung MY, Marcene W. The impact of two different malocclusion traits on quality of life. Br Dent J 2007;202:E2. [CrossRef]
17. Zhang M, McGrath C, Hagg U. Who knows more about the impact of malocclusion on children's quality of life, mothers or fathers? Eur J Orthodont 2007;29:180-5. [CrossRef]
18. Klaassen MA, Veerkamp JS, Hoogstraten J. Dental treatment under general anaesthesia: the short-term change in young children's oral-health-related quality of life. Eur Arch Paediatr Dent 2008;9:130-7. [CrossRef]
19. McGrath C, Pang HN, Lo EC, King NM, Hagg U, Samman N. Translation and evaluation of a Chinese version of the Child Oral Health-related Quality of Life measure. Int J Paediatr Dent 2008;18:267-74. [CrossRef]
20. Albites U, Abanto J, Bonecker M, Paiva SM, Aguilar-Galvez D, Castillo JL. Parental-caregiver perceptions of child oral health-related quality of life (P-CPQ): Psychometric properties for the peruvian spanish language. Med Oral Patol Oral Cir Bucal 2014;19:e220-4. [CrossRef]
21. Thomson WM, Foster Page LA, Gaynor WN, Malden PE. Short-form versions of the Parental-Caregivers Perceptions Questionnaire and the Family Impact Scale. Community Dent Oral Epidemiol 2013;41:441-50. [CrossRef]
22. Razanamihaja N, Boy-Lefevre ML, Jordan L, Tapiro L, Berdal A, de la Dure-Molla M, et al. Parental-Caregivers Perceptions Questionnaire (P-CPQ): translation and evaluation of psychometric properties of the French version of the questionnaire. BMC Oral Health 2018;18:211. [CrossRef]
23. Mergen Gultekin I, Ozsin Ozler C, Serdar Eymirli P, Unal F, Atac AS. Cross-cultural adaptation of Turkish version of Parental-Caregiver Perceptions Questionnaire (P-CPQ). Int J Dent Hyg 2022;20:519-26. [CrossRef]
24. Shanbhog R, Godhi BS, Nandlal B, Kumar SS, Raju V, Rashmi S. Clinical consequences of untreated dental caries evaluated using PUFA index in orphanage children from India. J Int Oral Health 2013;5:1-9.
25. Organization. WH. Oral Health Surveys: Basic Methods. World Health Organization; 1997.
26. Klaassen MA, Veerkamp JS, Hoogstraten J. Young children's Oral Health-Related Quality of Life and dental fear after treatment under general anaesthesia: a randomized controlled trial. Eur J Oral Sci 2009;117:273-8. [CrossRef]
27. White H, Lee JY, Vann WF, Jr. Parental evaluation of quality of life measures following pediatric dental treatment using general anesthesia. Anesth Prog 2003;50:105-10.
28. Sruthi KS, Yashoda R, Puranik MP. Oral health status and parental perception of child oral health-related quality of life among children with cerebral palsy in Bangalore city: A cross-sectional study. Spec Care Dentist 2021;41:340-8. [CrossRef]
29. Chaffee BW, Rodrigues PH, Kramer PF, Vitolo MR, Feldens CA. Oral health-related quality-of-life scores differ by socioeconomic status and caries experience. Community Dent Oral Epidemiol 2017;45:216-24. [CrossRef]
30. Baghdadi ZD. Effects of dental rehabilitation under general anesthesia on children's oral health-related quality of life using proxy short versions of OHRQoL instruments. Scientific World Journal 2014;308439. [CrossRef]
31. Chao Z, Gui Jin H, Cong Y. The effect of general anesthesia for ambulatory dental treatment on children in Chongqing, Southwest China. Paediatr Anaesth 2017;27:98-105. [CrossRef]
32. Ridell K, Borgstrom M, Lager E, Magnusson G, Brogardh-Roth S, Matsson L. Oral health-related quality-of-life in Swedish children before and after dental treatment under general anesthesia. Acta Odontol Scand 2015;73:1-7. [CrossRef]
33. Freire M, Graca SR, Dias S, Mendes S. Oral health-related quality of life in portuguese pre-school children: a cross-sectional study. Eur Arch Paediatr Dent 2022;23:945-52. [CrossRef]