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Agreement between schoolchildren and their parents on rating the child's oral health-related quality of life

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Abstract: The perceptions of parents/caregivers regarding their children's oral health can influence the standard of care and decision-making regarding oral health. The children's perspective on their own oral health-related quality of life (OHRQoL) may differ from the parents/caregivers' views. This cross-sectional study aimed to analyze the agreement between the perceptions of parents/caregivers and schoolchildren regarding OHRQoL. It was conducted with a sample of children between 8 and 11 years old and their parents/caregivers from Pelotas. Children answered the Child Perceptions Questionnaire 8-10 (CPQ), and parents/caregivers answered the short form of the Parental-Caregiver Perceptions Questionnaire (P-CPQ). Socioeconomic data were also collected. Children's dental caries, traumatic dental injuries, and malocclusions were examined. The Spearman's correlation test was performed. A total of 119 parents/caregivers-children pairs were included. There was an agreement between the total scores of parents/caregivers and children (0.2770; p = 0.003), in the oral symptoms (0.1907; p = 0.038), and functional limitations (0.2233; p=0.015) domains. The Bland-Altman graph showed an agreement between children's and parents/caregivers' OHRQoL total score, but there was an underestimation of approximately two points in the parents/caregivers' perception compared to the children's score. There was an agreement between the reports of parents/caregivers and children regarding children's OHRQoL.

Keywords: Child, Quality Of Life, Dental Caries, Oral Health, Observational Study

Introduction

Quality of life is defined by the World Health Organization (WHO) as an individual's perception of their position in life, in the context of the culture and value system in which they live, and in relation to their goals, expectations, standards, and concerns.[1] Oral health-related quality of life (OHRQoL) was initially described by Locker[2] and the concept is based on the fact that injuries that affect the oral cavity cause damage that can generate physical consequences, functional, psychological, and social limitations, as well as dissatisfaction regarding one's own appearance, and thus interfere with daily functions such as eating, speech, displacement, socializing, and self-esteem.[2,3]

Measures that assess OHRQoL were developed to examine the physical and psychosocial impact of oral health in an attempt to determine the extent to which orofacial disorders interfere with people's well-being.[4] There are instruments designed to assess the OHRQoL of children,[5,6] who are also affected by several orofacial disorders that compromise oral and general health, well-being, and quality of life.[4]

In the measurement of children's OHRQoL, parents were first used as informants, followed by the development of valid instruments that allowed information to be gathered from the child.[7] It is important to highlight that the use of parents/caregivers' perceptions of children's health comes from the belief that they would have more reliable and consistent perceptions, and that children might not fully understand their health condition.[8] Children's perspective on their OHRQoL may differ from that of their parents/caregivers,[7,9] since the latter may have limited knowledge about their children's OHRQoL, mainly in terms of social and emotional well-being.[10,11] Despite this, parents' reports can still provide useful information because children are in a state of constant growth and development, and it is normal for their perceptions to undergo changes in a short period of time.[12] The perception of parents/caregivers regarding their children's oral health can influence the standard of care and decision-making regarding oral health.[10] In this way, obtaining the parents' report can complement the child's report[7,9] and may also offer a basis for clinical planning.[10,13] This information obtained through instruments that measure OHRQoL is extremely important for professionals to understand how individuals perceive oral health, their own and that of others, and what factors influence this perception, helping to create the most appropriate and holistic treatment plan for the patient.[14]

There seems to be a variation in the perceptions of parents/caregivers and those of their children, and studies show that there is a greater agreement between the reports of parents and children when the children are younger, compared to when they are adolescents.[6,15-17] A study by Jokovic et al.[9] demonstrated that there is an overestimation in parents' perception of their children's OHRQoL,[9] while other studies have shown an underestimation;[6,18] this suggests that more studies need to be carried out to establish this relationship. In addition, few studies have investigated school-aged children;[19] most of the research in this field has been performed with children of preschool age, less than 6 years old, or adolescents older than 11 years.[19-21]

Moreover, most of the literature on this subject has not considered oral clinical aspects in their assessment. There is a need to further understand the agreement in OHRQoL between parents/caregivers and school-aged children and how this perception is formed according to different oral conditions. This study aimed to analyze the agreement between the perception of parents/caregivers and school children regarding OHRQoL. The study hypothesized that there is an agreement between the reports of parents/caregivers and children about the OHRQoL of children aged 8–11 years.

Methods

Design

This cross-sectional observational study was nested in a randomized clinical trial (RCT) (Identifier: NCT03969628) and was conducted at the Pediatric Dental Clinic, School of Dentistry, Federal University of Pelotas (UFPel), Pelotas, State of Rio Grande do Sul, Brazil. The data were collected between July 2019 and February 2020. This study was conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[22]

Ethical aspects

The project was approved by the Research Ethics Committee of UFPel under No. 3,282,962. Parents/caregivers received survey information, and children were informed about their interest in participating in the research. After signing the informed consent form, parents/caregivers and the children were included in the study.

Population, location, inclusion, and exclusion criteria

The study included children aged 8–11 years and their respective legal guardians who attended dental care; who were referred to or screened at the School of Dentistry, UFPel Pediatric Dental Clinic; who were not undergoing dental treatment in the last 3 months (as the Child Perceptions Questionnaire (CPQ) items refer to the frequency of events in this period); who were residents in Pelotas, State of Rio Grande do Sul, Brazil, or the general region (not exceeding 50 km in distance from Pelotas). The exclusion criteria was based on RCT protocols; thus, the study excluded children who used a fixed orthodontic appliance; had systemic problems or some disability that limited the understanding of the orientations and questions that would be asked; had a history of absences at the Pediatric Dentistry Clinic or after three attempts at scheduling; had behavioral problems during the first dental visit, specifically those classified as "generalized protest" or "more intense protest" according to the Brazilian version of the Venham's Scale (BvVBRS);[23] and those children whose families planned to move to another city or region.

Sample

Considering a 95% confidence interval and a significance level of 0.05, this sample (119 pairs) had a power of 80.0% to detect a mean difference of four, considering a standard deviation obtained for children and parents of 10.32 and 11.43, respectively. The statistical package OpenEpi®[24] Version 3.0118 was used with a bilateral test of the difference between the two averages.

Data collection

Questionnaires

The participants were selected according to the inclusion and exclusion criteria, and after signing an informed consent form, the children and their parents/caregivers answered questionnaires to assess their OHRQoL before the clinical examination. Data on monthly family income, age, sex of the child, and education of the parent/caregiver were also collected using a semi-structured questionnaire. Data on family income was collected in Brazilian currency (R$ Reais) and categorized into tertiles. The first tertile was up to R $ 1.200.00, the second tertile from R $ 1.201.00 to R $ 2.000.00, and the third tertile from R $ 2.001.00 to R $ 5.000.00. The child's age was noted in years and the parents/caregivers' schooling was noted in years of study and dichotomized as up to 8 years of study and above 8 years of study.

The questionnaires were administered by trained interviewers in separate rooms for parents/caregivers and children to avoid interference or embarrassment in completing the questionnaire. There was a change in the administration method of the CPQ and Parental-Caregiver Perceptions Questionnaire (P-CPQ). The instruments were originally designed to be self-completed;[25,26] however, in this study, the data were collected through interviews. For training the interviewers, a three-hour theoretical training on the instruments of data collection used in the research was conducted. An operational manual was provided, with instructions on how to proceed and behave in the presence of and during interviews with the participants.

The children's OHRQoL assessment questionnaire used for parents was the Brazilian Portuguese short version of the P-CPQ[26] and the children answered the Brazilian Portuguese version of the CPQ8-10[25]. CPQ8-10 is organized into four domains: 1) oral symptoms, 2) functional limitations, 3) emotional well-being, 4) and social well-being, and the short-version of the P-CPQ is organized into three domains: 1) oral symptoms, 2) functional limitations, and 3) emotional and social well-being. The questions referred only to the frequency of events in the previous month. The items had five Likert-type answer options. In the P-CPQ, the response items are: "Never = 0", "Once or twice = 1", "Sometimes = 2", "Several times = 3", and "Every day or almost every day = 4". The answer "I don't know" was also allowed and classified as 0. The answers to the children's questionnaire were: "Never = 0"; "Once/twice = 1"; "Sometimes" = 2; "Often = 3"; and "Every day/almost every day = 4".

The short version of the P-CPQ has a total of 13 questions organized as follows: oral symptoms have three questions, with a minimum score of zero and a maximum of 12; the functional limitations domain has four questions, with a minimum score of zero and a maximum of 16; and the well-being domain has six questions, with a minimum score of zero and a maximum of 24. The minimum score for the entire questionnaire is zero and the maximum is 52 points.

The CPQ8-10 has 25 questions organized as follows: oral symptoms, functional limitations, and emotional well-being, with five questions each and a minimum score of zero and a maximum of 20; the social well-being domain has ten questions, with a minimum score of zero and a maximum of 40. The minimum score for the entire questionnaire is zero and the maximum is 100 points. In both questionnaires, a higher score is indicative of a greater negative impact on a child's quality of life.

To match the scores and domains of the questionnaires, a proportionality was made in the questions so that they had the same score, allowing the comparison between the values of both questionnaires.

Clinical examination

After the interview, a trained and calibrated examiner conducted the children's oral examinations. For dental caries, the examiner received theoretical training on how to perform the examination and the criteria were discussed using projected clinical cases. To calibrate with the World Health Organization's[27] index of decayed, missed, or filled teeth due to caries (dmft/DMFT), eight children were examined, and for the International Caries Detection and Assessment System (ICDAS) criteria,[28] three children were examined. Children participating in examiner training were in the same age group as the children included in the study, and the examiner's performance was compared with that of a gold standard examiner. First, the clinical examination was based on the dmft/DMFT. Thereafter, professional dental prophylaxis was performed with a toothbrush and fluoride dentifrice, and the dental examination was performed under artificial light and relative isolation. Subsequently, patients were classified based on their experience of dental caries, and the examiner performed the evaluation using the ICDAS criteria.[28] The agreement obtained was Kappa = 0.95 for dmft/DMFT and 0.87 for ICDAS. After the evaluation, children were classified into four groups: 1) children without caries lesions – sound teeth (ICDAS score 0); 2) children with initial caries lesions (ICDAS scores 1 and 2); 3) children with at least one moderate carious lesion, but without dentin cavity lesions (ICDAS scores 3 and 4); and 4) children with severe caries lesions (with dentin cavity) (ICDAS scores 5 and 6).[29] Dental caries status was also categorized as absent when the dmft/DMFT index was 0, or present when the dmft/DMFT index was ≥ 1.

Dental trauma was collected and classified as absent or present using the O´Brien criteria.[30] This system was used in the United Kingdom to identify the type of tissue involved (enamel, dentin, or pulp) and does not classify soft tissue damage, as these damages are difficult to diagnose in epidemiological surveys.[30] Occlusion was assessed using the dental aesthetic index (DAI).[27] This index categorizes malocclusion into four possible outcomes according to the level of need for orthodontic treatment. Orthodontic treatment is unnecessary in cases of normal occlusion or minor malocclusion (DAI score ≤ 25). In cases of definitive malocclusion (26 ≤ DAI ≤ 30), elective treatment is advised. In cases of severe malocclusion (31 ≤ DAI ≤ 35), treatment is highly desirable. Treatment is mandatory for very severe or disabling malocclusion (DAI ≥ 36).[31] The DAI variable was dichotomized as follows: 1) absent (DAI ≤ 25) and 2) present (DAI > 25), considering the categorization of mixed dentition. For both trauma and malocclusion, only theoretical training on possible conditions and criteria was performed. Data were collected and recorded in spreadsheet produced for this study.

Data analysis

Descriptive and quantitative analyses were performed using STATA 14.0. The mean and standard deviation per domain and the total score were calculated for the parents/caregivers and children. Children's and parents' OHRQoL scores were considered outcomes, and the age and sex of the child, number of siblings, family income and parental education, dental trauma, and malocclusion were considered independent variables. After verifying that there was no normal distribution using the Shapiro-Wilk test, Spearman's correlation coefficient was used to assess the agreement between the total scores obtained in the questionnaires of parents/caregivers and children and for each domain. To analyze the agreement between the total scores of the parents/caregivers and the child, a visual analysis of Bland-Altman was used. A Bland-Altman scatterplot indicates the extent of disagreement between parents/caregivers and children. If a perfect agreement had been reached, all points would be on the horizontal line corresponding to zero on the vertical axis. The dispersion of points along the horizontal axis indicates the extent to which the agreement/disagreement varies according to the degree of impairment of children's OHRQoL. Linear regression was used to identify systematic errors. To test the association between the total OHRQoL of parents/caregivers and children regarding socioeconomic, demographic, and clinical characteristics, Mann-Whitney tests were used for dichotomous variables and Kruskal-Wallis test for variables with more than two categories. A significance level of 5% was considered to be statistically significant.

Results

Among the 122 pairs of parents/caregivers and children evaluated, two were excluded from the sample: one for missing appointments, and one who would move out of the city. There was one refusal. A total of 119 pairs of parents/caregivers and children were included in the study. Among the parents/caregivers, 89 (74.79%) were mothers, 18 (15.13%) were fathers, and 12 (10.08%) were other legal guardians. Most families had an income of up to R$ 1,200.00 (35.04%), most parents/caregivers had more than 8 years of education (58.47%), and 70.34% of children had at least one decayed, missing, or filled tooth (dmft/DMFT). Table 1 presents the characteristics of the sample.

Table 2 shows the mean total score, domain, and standard deviation (SD) of the P-CPQ and CPQ8-10. The highest score obtained by parents/caregivers was in the well-being domain (5.32 ± SD 9.88) and for children in the oral symptoms domain (5.90 ± SD 3.46).

Regarding the correlation between the answers to the questionnaires of parents/caregivers and children, there was an agreement between the groups in the total score (0.2770; p = 0.003), oral symptoms (0.1907; p = 0.038), and functional limitations (0.2233; p=0.015) domains (Table 3), with positive correlations. These correlations were positive. On the other hand, Figure of the Bland-

Table 1. Characteristics of the sample of parents/caregivers-children in relation to demographic and socioeconomic aspects. (n = 119 pairs).

Variable	AF (n)	RF (%)
Age (years)		
8	19	15.97
9	37	31.09
10	29	24.37
11	34	28.57
Sex		
Female	63	52.94
Male	56	47.06
Family income (R$)		
0,00–1200,00	41	35.04
1201,00–2000,00	39	33.33
2001,00–5000,00	37	31.62
Caregiver schooling (years)		
0–8	49	41.53
> 8	69	58.47
Dental caries		
dmft/DMFT = 0	35	29.66
dmft/DMFT ≥ 1	83	70.24
Dichotomized ICDAS		
Sound/Initial lesions	50	42.02
Moderate/severelesions	69	57.98
Dental trauma		
Absent	98	86.73
Present	15	13.27
Malocclusion		
Absent	85	71.43
Present	34	28.57

AF: absolute frequency; RF: relative frequency (%); R$: Reais - Brazilian Currency (1 U$ corresponds to 4.14 R$ at the time of data collection).

Table 2. Mean, standard-deviation, minimum and maximum scores obtained in the sample of caregivers and children for the total score and by domains of the Parental - Child Perceptions Questionnaire and Child Perceptions Questionnaire, respectively. (n = 119 pairs).

Variable	Parents		Children	
	Mean ± SD	Min-Max (Min-Max possible range)*	Mean ± SD	Min-Max (Min-Max possible range)*
Total Score	10.94 ± 11.43	0-63 (0–100)	12.66 ± 10.32	0–50 (0–100)
Domains				
Oral Symptoms	2.33 ± 2.56	0-10 (0–20)	5.90 ± 3.46	0–14 (0–20)
Functional Limitations	2.82 ± 3.29	0-15 (0–20)	2.57 ± 3.15	0–18 (0–20)
Well-being	5.32 ± 9.88	0-55 (0–60)	3.96 ± 5.36	0–25 (0–60)

SD: standard deviation; Min: minimum; Max: maximum; min–max possible range*: minimum and maximum possible ranges with proportionality.

Table 3. Correlation between parents and children considering the total score and domains of Parental - Child Perceptions Questionnaire and Child Perceptions Questionnaire. (n = 119).

Variables	Parents		Children	
	Mean ± SD	Min-Max (Min-Max possible range)*	Mean ± SD	Min-Max (Min-Max possible range)*
Total Score	10.94± 11.43	0-63 (0–100)	12.66 ±10.32	0-50 (0–100)
Domains				
Oral Symptoms	2.33 ± 2.56	0-10 (0–20)	5.90 ± 3.46	0-14 (0–20)
Functional limitations	2.82 ± 3.29	0-15 (0–20)	2.57 ± 3.15	0-18 (0–20)
Well-being	5.32 ± 9.88	0-55 (0–60)	3.96 ± 5.36	0-25 (0–60)

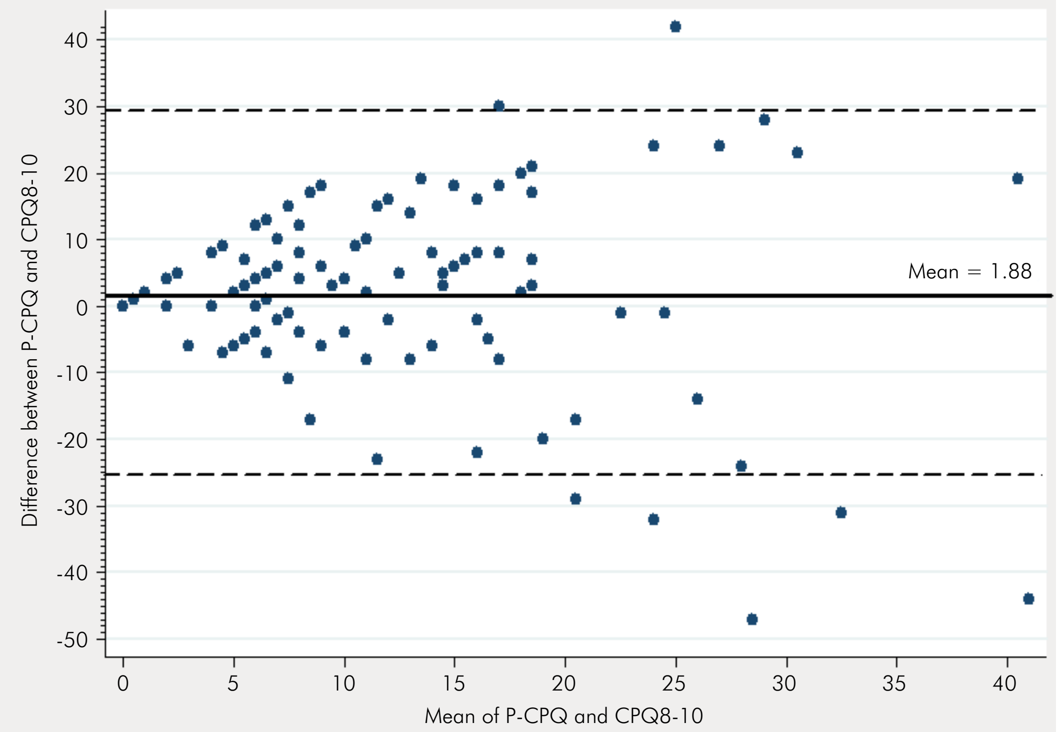

Figure. Bland-Altman graph showing the comparison between the total score of children (CPQ) and caregivers (P-CPQ) oral health-related quality of life with a 1.88 bias (continuous line) and the interval upper (29.04) and lower (-25.27) confidence (dashed line).

Altman graph shows that there is an agreement between the total score of OHRQoL of children and parents/caregivers, but there is a systematic error of 1.88, showing that there is an underestimation of approximately two points in the parents/caregivers' perception compared to the children's score. The P value obtained from the linear regression analysis was 0.041. This graph suggests that the disagreement increases in magnitude as the child's quality of life is increasingly compromised.

Table 4 shows the mean and standard deviation of the association between the total OHRQoL scores of parents/caregivers and children, socioeconomic characteristics, and clinical indicators. Only the

Table 4. Perception of children and caregivers about the children's oral health-related quality of life according to socioeconomic characteristics and clinical indicators. (n = 119).

Variable	Oral health-related quality of life					
	Child			Parent/Caregiver		
	Mean	SD	p-value	Mean	SD	p-value
Age (years)			0.588			0.307
8	13.47	12.60		14.21	12.10	
9	14.40	10.70		11.32	13.39	
10	11.31	9.36		8.79	8.01	
11	11.21	9.12		10.53	11.25	
Sex			0.491			0.572
Female	11.51	8.62		10.14	11.16	
Male	13.92	11.85		11.84	11.76	
Family income (R$)			0.691			0.279
0,00–1200,00	13.80	11.13		12.90	13.34	
1201,00–2000,00	12.78	11.01		10.82	9.47	
2001,00–5000,00	11.47	8.83		9.38	11.15	
Caregiver schooling (years)			0.060			0.602
0–8	13.91	9.18		10.65	12.20	
> 8	11.83	11.09		11.25	10.99	
Dental caries			< 0.001			0.267
dmft/DMFT = 0	7.68	6.05		9.14	9.93	
dmft/DMFT ≥ 1	14.85	11.10		11.48	11.89	
Dichotomized ICDAS			0.021			0.651
1–2	9.50	6.89		10.32	10.42	
3–4	15.00	11.76		11.39	12.17	
Dental trauma			0.577			0.715
Absent	12.42	9.78		10.88	10.53	
Present	14.27	11.40		13.33	17.14	
Malocclusion			0.898			0.197
Absent	12.97	11.14		10.65	12.13	
Present	11.94	8.19		11.68	9.59	

SD: standard deviation R$: Reais - Brazilian Currency (1 U$ corresponds to 4.14 R$ at the time of data collection); ICDAS: International Caries Detection and Assessment System.

children's OHRQoL scores were significantly higher for children with experience of dental caries (dmft/DMFT>0) and presenting caries severity (moderate and severe caries lesions), with a P value of p<0.001 and p= 0.021, respectively (Table 4). There was no association between age, sex, family income, education of the parents/caregivers, trauma, and malocclusion for both parents/caregivers and children.

Discussion

This study evaluated the correlation between the perception of schoolchildren and their parents/caregivers regarding their children's OHRQoL. The findings demonstrated a correlation with the total OHRQoL scores. Despite this, there was an underestimation of approximately two points in the parents/caregivers' perceptions compared to the children's score. The mean of the total score of OHRQoL reported by the children was higher than that of their parents/caregivers. A correlation was also found between the oral symptoms and functional limitation domains.

Most studies compare reports from parents/caregivers and children and indicate an agreement, but there is no consensus regarding the level of agreement found.[6,9,13,16-18,32] Thus, the relatively low agreement found in some studies may reflect the real disagreement between parents and their children regarding these measures, since each has their own experiences and perceptions.[9] However, this may also be due to the difficulties that children and adolescents have with abstract and broad concepts such as "oral health" and "well-being".[9].Although the underestimation of approximately two points in the parents/caregivers' perception of their child may be seen as a slight difference and could suggest that proxy measures may not be necessary, caution should be exercised while interpreting these specific estimates, as has been discussed by minimal important difference estimates for health-related quality of life. There is no "gold standard" meaningful difference; this difference between child and parents/caregivers is not immutable, and may vary over time and depending on the context (characteristics of population, disease severity, and clinical context).[33,34] Additionally, the isolated interpretation of the difference in the total score may not represent the differences that occur in each domain. For these reasons, the authors of this study understand that parents/caregivers' proxy measures should be used in combination with the children's perception of OHRQoL. The agreement also varies between domains.[35] A systematic review showed that there is a good agreement in the domains that reflect physical activity, function, and symptoms, and a low agreement in the domains that reflect emotional and social issues.[35] In this study, a correlation was found between oral symptoms and functional limitation domains, while no correlation was found for the well-being domain. In the study by Jokovic et al.,[9] which assessed the agreement between parents and children regarding the OHRQoL of adolescents between 11 and 14 years of age, the results indicated the relatively high levels of agreement between the reports regarding oral symptoms and functional limitations. The authors justify this finding by the possibility that events such as pain and functional limitations can be easily observed by parents.[9]

According to Barbosa and Gavião[11] and Ferreira et al.,[10], parents' knowledge about their children's OHRQoL is limited mainly in terms of social and emotional well-being, corroborating the results of this study, which showed no statistically significant correlation for the well-being domain. This limitation is acceptable because parents may not be fully aware of relationships outside the family environment and children's internal feelings.[6,11] This is expected when children are older and become more independent, which is the age range of this study.[6,16,17,36] Parents have more knowledge about health status when their children are 6-10 years old[6] because, as children grow up, they spend less time under parental supervision and, consequently, share their experiences with parents less frequently.

In this study, we noticed that parents underestimated their children's OHRQoL. However, some studies have shown divergent results in this regard. In a study of Canadian adolescents aged 11–14 years, adolescents' reports of their OHRQoL were worse than those of their parents.[7] Likewise, a study by Dimberg et al.[18] showed an underestimation by the parents, regardless of the oral condition (dental caries or need for orthodontic treatment) and the dental fear that the child might have. Conversely, another study by Jokovic et al.[9] with parents and adolescents showed an overestimation in the parents' perception in relation to the child's report. Based on these findings, it is not possible to say that proxy measures are not useful, since the results presented in the literature are controversial.

Children are subjected to a series of oral conditions that have the potential to negatively impact OHRQoL, such as dental caries, oral lesions, alveolar dental trauma, molar–incisor hypomineralization, and malocclusion.[37-41] In the association analysis, it was observed that children reported a greater impact on OHRQoL when they had caries experience and moderate/severe dental caries compared to children with initial lesions or no caries. No association was found for the parents.

Abanto et al.[42] found an association between the quality of life scores of both parents and children when children had caries experience and with a lower family income, using the same questionnaire for both children and parents. Another study conducted with preschool children and their parents concluded that in the group of children with caries experience, the impact on quality of life was greater, as reported by both the child and parent.[15]

According to Feldens et al.,[43] the experience of dental caries had a negative influence on OHRQoL, reflected in the total score values of the quality of life questionnaire. These studies support the concept that the experience of dental caries has a negative impact on the quality of life and that an increase in the number of decayed teeth can lead to a limitation of oral functions.[43,44] Regarding the child's self-report version, the negative association with caries indicates that having a caries experience can affect daily activities and feelings about the child's teeth. Perhaps the explanation for the difference between the impact of dental caries on the quality of life perceived by parents lies in the more subjective issues that involve these self-reported measures. Parents, especially with regard to older children, capture less of the impact generated in the questions of emotional and social well-being experienced by the child affected by the disease. In addition, this can be explained by the differences in the instruments administered to the parents and children. Parental questionnaires have a lower number of items; therefore, some questions that could be related to important issues for people with dental caries were not addressed by parents/caregivers, such as questions about food that gets caught in the teeth.

Regarding dental malocclusion, this study found no association in the reports of children or caregivers. It is expected that malocclusion is associated with the OHRQoL, and this relationship is found mainly in the most severe degrees of malocclusion.[45] The authors found a significant impact on the perception of OHRQoL both among parents and children when there was increased overjet and accentuated spacing in the dentition.[45] It should be noted that the service offered at this location regarding orthodontics only covers cases that can be treated by preventive and interceptive orthodontics. Therefore, cases of corrective orthodontics are not monitored in this service and they are referred to other services. The low prevalence of severe cases may explain the lack of association between children and caregivers.

For malocclusion, the DAI index was used to assess this oral condition. Although DAI was developed for use in permanent dentition, it can be adapted for use in mixed dentition, as there is no specific index for mixed dentition. As the study sample presented predominantly mixed dentition, the adaptation proposed by Jenny and Cons[31] was adopted in this study, which does not score a space from a recently exfoliated primary tooth as missing if it appears that a permanent replacement will soon erupt. This adaptation has been adopted before.[38,40] Nevertheless, DAI may be overestimated for mixed dentition due to other transient occlusal changes more common in this dentition, which should be taken into consideration when interpreting the data. The authors also dichotomized DAI into these categories to classify the need for treatment: without treatment need or with minor treatment need ($DAI \leq 25$) and with treatment need (DAI > 25). In addition, 83% of the sample presented normal occlusion or minor malocclusion, and other studies found a negative impact on OHRQoL in children and adolescents classified as having the most severe degrees of malocclusion.[38,40,45,46]

This study has some limitations. As the study was performed in a dental school with a specific socioeconomic profile, the results of this study cannot be extrapolated. The difference between the questionnaires in terms of the number of items and domains may have affected the results; thus, the data should be interpreted with caution. Another limitation is that it is a cross-sectional study, which prevents the hypothesis of causality and temporal relationships between the results and variables. Additionally, some children included in the sample had already undergone dental treatment. Although it is recognized that the dental treatment received can alter the perception of children about their OHRQoL,[47-50] we believe that this variable does not interfere substantially with the main objective of the study. Longitudinal studies are necessary to detect changes in the perception of OHRQoL by parents, caregivers, and children, through all the stages of the children's growth and development. In addition, they identify how interventions or changes in the child's oral health alter their perceptions.

Although there is a validated Brazilian version of the CPQ11-14,[51] the authors chose to use the CPQ8-10 for 11-year-olds to standardize the data collection. While some interference with internal validity can be assumed, it is important to note that the questions used in CPQ8-10 were selected from the CPQ for 11–14-year-olds[6] with the aim of facilitating understanding by young children. Thus, it is expected that children aged 11 years could properly answer the CPQ 8–10. In addition, the literature points out the feasibility of its application with children aged between 5 and 14 years.[52]

Another issue that should be addressed is the use of the P-CPQ with parents and caregivers of children aged 8–11 years. The original version of the P-CPQ was developed for use with parents and caregivers of children aged 6 to 14 years.[7] Although the short Brazilian version of the P-CPQ was tested by parents and caregivers of children aged 11–14 years,[26] it does not mean that this instrument cannot be applied to parents and caregivers of children with the age of the original version. It is noteworthy that the P-CPQ has been widely used with Brazilian parents and caregivers of children of the same age group in our sample.[53-55]

Regarding the ORHQoL instruments, the original CPQ and P-CPQ were designed to be self-completed and were administered via interviews in this study. The authors have experience with regard to using these instruments in populations with similar profile[38,56] and opted to administer the instrument as an interview, because there is greater control over the understanding and completion of the questionnaires.[57] It is important to take this into account when interpreting the findings because participants who are interviewed may alter their responses to present themselves in a more favorable light;[58] hence, the scores could have been higher if a self-administered form was used.

The strength of this study is that it was conducted using instruments that measure the OHRQoL already validated for the Brazilian child population and their parents/caregivers. Moreover, the instruments were applied in different environments, separating the child and the parent/caregiver, with the aim of avoiding contamination in the responses of the interviewees.

Conclusions

This study found an agreement between the reports of parents/caregivers and children regarding children's OHRQoL. The parents/caregivers' perception can be used to complement the children's report, but a possible underestimation by the parents/caregivers should be considered.

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