

Oral health–related quality of life of preschool children according to reasons for seeking dental care

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ABSTRACT | *Purpose:* to evaluate parental perception of the oral health–related quality of life (OHRQoL) of preschool children attended at a dental school clinic according to the reason for which the care was sought. *Method:* Forty five parents and their 0–6-year-old children were included in the study. Twenty five children were taken to the dental clinic owing to dental trauma (Group 1), and 20 owing to caries or pain (Group 2). Caretakers were asked to complete the Early Childhood Oral Health Impact Scale (ECOHIS) to evaluate the child's OHRQoL. The ECOHIS includes a child impact section and a family impact section and ranges from 0 to 52. Children over 4 years of age expressed their feelings about their teeth using an evaluative instrument picturing drawings. *Results:* the mean ECOHIS score was 10.6 for the whole sample, and 10.1 and 11.6 for the trauma and the caries groups, respectively. Caries-bearing children had higher scores on both oral symptoms and family function domains. Parent distress was higher for the trauma-bearing children. In Group 1, 36% (5) of the children expressed dissatisfaction with their oral health, whereas in Group 2, the dissatisfaction level rose to 53% (8 children). The results showed that the impact of the reasons for which dental care was sought on OHRQoL was high in the population studied. Caries/pain had greater impact on the children, whereas dental trauma had a higher impact on the family.

DESCRIPTORS | Quality of Life; Pediatric Dentistry; Oral Health.

RESUMO | **Qualidade de vida relacionada à saúde bucal de crianças pré-escolares de acordo com as razões para procura por atendimento odontológico** • *Objetivo:* avaliar a percepção dos pais sobre a qualidade de vida relacionada à saúde bucal (QVRSB) de crianças pré-escolares atendidas na clínica de uma faculdade de odontologia, de acordo com a razão que motivou a procura pelos cuidados. *Método:* Quarenta e cinco pais e crianças de 0 a 6 anos de idade foram incluídos. Vinte e cinco crianças foram à clínica odontológica devido a trauma dental (Grupo 1) e 20, devido a cárie ou dor (Grupo 2). Os cuidadores foram convidados a preencher um questionário sobre a qualidade de vida relacionada à saúde bucal (*Early Childhood Oral Health Impact Scale* - ECOHIS) para avaliar a QVRSB da criança. O ECOHIS inclui uma seção de impacto na criança e outra de impacto familiar, e a pontuação varia de 0 a 52. Quanto maior a pontuação, maior o impacto na qualidade de vida. Crianças com mais de 4 anos expressaram sentimentos sobre seus dentes por meio de um instrumento de avaliação com desenhos. *Resultados:* A média da pontuação do ECOHIS foi de 10,6 para toda a amostra e 10,1 e 11,6 para o grupo trauma e grupo cárie, respectivamente. As crianças que procuraram atendimento odontológico por cárie, bem como aquelas que haviam sido submetidas a tratamento restaurador, apresentaram maior impacto sobre o domínio sintomas ($p < 0,05$). No grupo 1, 36% (5) das crianças manifestaram sua insatisfação com a sua saúde oral, ao passo que, no grupo 2, o nível de insatisfação aumentou para 53% (8 crianças). Os resultados mostraram que o impacto sobre a QVRSB foi elevado na população estudada, e que cárie/dor teve maior impacto sobre a criança, e trauma dental, sobre a família.

DESCRITORES | Qualidade de Vida; Odontopediatria; Saúde Bucal.

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INTRODUCTION

Dental treatment access for preschoolers is thought to be poor in Brazil; furthermore, most children do not see the dentist at the recommended ages^{1,2} Despite the decrease in dental caries, the last oral health survey conducted in Brazil demonstrated that the prevalence of untreated lesions is high (80%).³ As a consequence, children often have their first dental appointment because of accidental injuries, such as dental trauma, or because of caries or pain.^{4,5} Dental caries and trauma not only may produce symptoms in children, but may also have physical, social and psychological influences that interfere with the child's daily routine and quality of life.^{6,7}

In a study conducted to evaluate the impact of oral health outcomes on oral health–related quality of life (OHRQoL) in preschool children, it was observed that the prevalence of having an impact was almost three times higher for children with dental caries and 1.5 times higher for those who presented dental trauma. Negative impacts on items related to pain, and to difficulty drinking and eating some foods were more prevalent.⁸ A paper that analyzed the impact of early childhood caries on OHRQoL found that an increase in the severity of early childhood caries resulted in the child's having an impaired quality of life.⁹

Regarding the impact of dental trauma, Aldrigui *et al.*¹⁰ observed that complicated traumatic dental injuries have a negative impact on the OHRQoL of preschool children and their parents. In contrast, another study conducted with preschool children did not find this association.¹¹

Subjective oral health indicators or OHRQoL instruments have often been employed for the purpose of determining the impact of an individual's oral health condition on his/her daily activities. Such measures complement clinical indicators and provide a better understanding of the health of individuals and the community.¹² Specific instru-

ments that take into account the child's cognitive, social and emotional stage have been developed to evaluate children.^{13,14} However, little information is available related to eventual functional, emotional, social and economic consequences of oral problems in young children,¹⁴ and their impact on the OHRQoL of these children.¹⁵

The aim of this study was to evaluate the OHRQoL of children attended at the clinic of the School of Dentistry, Federal University of Pelotas (UFPEL), according to their reasons for seeking dental care.

MATERIAL AND METHODS

This study was approved by the Research Ethics Committee of the School of Dentistry, UFPEL (protocol no. 041/2008). Parents were asked to sign an informed consent agreement prior to their participation. Children could not have any physical or mental handicaps to be included in the study.

The parents of children up to the age of 6 years seen at the dental school clinic during 2 alternating shifts on 2 different days of the week between February and July 2009 were invited to participate. The children were divided into groups, according to the parental report on the reasons for seeking dental care:

- Group 1, children referred to the dental school clinic owing to dental trauma, and
- Group 2, children referred to the dental school clinic owing to caries or pain.

Data were gathered using a combination of individual interviews and chart reviews.

Prior to data collection, interviewers received a 2 h training session, by a researcher with previous experience.

Oral health conditions were obtained from dental records. The clinical information was collected at the Infant Clinic Unit by dental students supervised by professors, and was reported in the den-

tal records, using the criteria for dental caries set by the World Health Organization,¹⁶ and the dental trauma criteria described by Andreasen and Andreasen.¹⁷ The children's clinical records were evaluated by collecting data on whether or not restorative procedures had been performed.

Socioeconomic characteristics were evaluated with a questionnaire put out by the Brazilian Association of Research Institutes (ABEP).¹⁸ The perception of parents regarding their children's OHRQoL was measured by the Brazilian version of the Early Childhood Oral Health Impact Scale (ECOHIS).¹³ This version of the instrument has been validated and the properties have been tested, thus substantiating the method as reliable and valid for assessing the negative impact of oral disease on the quality of life of preschool children.^{19,20} This instrument was developed specifically to evaluate preschool-age children. It consists of 13 questions, 9 of which evaluate the impact of oral health problems on children (child subscale), and 4 of which evaluate the same impact on the family (family subscale). The child impact section includes 4 descriptive domains (symptoms, function, psychological and self-image/social interaction), and the family impact section includes 2 domains (parental distress and family function). The answers were recorded using a Likert-like scale (0 = Never; 1 = Hardly ever; 2 = Occasionally; 3 = Often; 4 = Very often). Mean ECOHIS scores were calculated for each domain and for the whole scale as a simple sum of the response codes, after recording all "Don't know" responses as missing. For the questionnaires with up to two missing responses in the child section, or with one in the family section, a score for the missing items was imputed as an average of the remaining items for that section.

The *Autoquestionnaire Qualité de Vie Enfant Imagé* (AUQUEI) instrument, adapted by Feitosa, Colares and Pinkham,⁶ was applied to children age 4 to 6 years for the purpose of evaluating their

oral health perception. This instrument consists of pictures to which the child is asked to point to the "sad" and "happy" drawings as a response to the question "How do you feel when you think of your teeth?"

The data were entered into Microsoft Excel 2003[®] (Microsoft Corporation, Washington, DC, USA) spreadsheets and analyzed using SPSS[®] software (SPSS Inc., Chicago, USA). Descriptive analysis was performed. The independent samples t-test was used to compare means for each domain and for the overall scale, according to the reason for seeking dental care, and the clinical and socioeconomic characteristics. All analyses were performed at a minimum 5% significance level.

RESULTS

Forty-five caretakers, mostly mothers (80%), were interviewed. All the parents invited agreed to participate. The evaluated children, 21 of whom (47%) were female and 24 (53%), male, averaged 3.9 years of age. Of the children included in this study, 25 were referred to the dental school clinic owing to trauma (Group 1), and 20, owing to caries/pain (Group 2).

The total ECOHIS score ranged from 0 to 30 (mean = 10.6). Table 1 shows the mean obtained by each ECOHIS item, and the total score for each section (child and family), according to the group to which they referred. Questions 1 and 12 had a significantly higher statistical impact on the caries-bearing child group, and item 4 had a higher impact on the trauma-bearing child group. Although the differences for the other items and for the total scale were not statistically significant, there was a higher mean (11.6) in Group 2, which included the children referred to the dental school clinic owing to caries/pain, than in Group 1 (10.1). However, in the family section, there was a higher score for the trauma group (Table 1).

Table 2 shows the association between clinical

Table 1 | Mean ECOHIS scores (SD) for each ECOHIS item and for the whole scale according to the reason for the dental appointment: dental trauma (Group 1) or dental caries/pain (Group 2; Pelotas, 2009).

Item	Group 1 Mean (SD)	Group 2 Mean (SD)	p value*
• 1. How often has your child had pain in the teeth, mouth or jaws?	0.9 (1.0)	1.9 (1.3)	0.005
How often has your child because of dental problems or dental treatments?			
• 2. had difficulty drinking hot or cold beverages	0.6 (0.8)	1.2 (1.4)	0.10
• 3. had difficulty eating some foods	1.0 (0.9)	1.1 (1.4)	0.68
• 4. had difficulty pronouncing any words	0.8 (1.4)	0.1 (0.4)	0.03
• 5. missed preschool, daycare or school	0.4 (0.7)	0.4 (1.0)	0.72
How often has your child because of dental problems or dental treatments?			
• 6. had trouble sleeping	0.4 (0.8)	1.0 (0.97)	0.08
• 7. been irritable or frustrated	0.9 (1.0)	1.1 (1.5)	0.80
How often as your child because of dental problems or dental treatments?			
• 8. avoided smiling or laughing when around other children	0.5 (0.9)	0.7 (1.1)	0.62
• 9. avoided talking with other children	0.4 (0.9)	0.4 (0.7)	0.88
Mean score for the child section	6.2 (4.4)	8.0 (6.8)	0.30
How often have you or another family member because of your child's dental problems or dental treatments?			
• 10. been upset	1.8 (1.1)	1.1 (1.8)	0.07
• 11. felt guilty	1.3 (1.3)	0.7 (1.0)	0.11
• 12. How often have you or another family member taken time off from work because of your child's dental problems or dental treatments?	0.6 (1.0)	1.3 (1.5)	0.04
• 13. How often has your child had dental problems or dental treatments that had a financial impact on your family?	0.2 (0.5)	0.4 (0.7)	0.40
Mean score for the family section	3.8 (2.5)	3.5 (2.7)	0.71
Total	10.1 (5.8)	11.6 (8.6)	0.49

*t test.

and socioeconomic variables and mean ECOHIS for each domain and for the whole scale. As for the reason for seeking dental care, caries-bearing children had higher scores on the oral symptoms and family function domains; the same applied to children who had been submitted to restorative treatment. However, parent distress was higher for the trauma-bearing child. The total ECOHIS score was higher for children who had received restorative treatment.

Twenty-nine children answered the question on how they perceived their own oral health. In Group 1, 36% (95% CI: 18–57) of the children were dissatisfied with their oral health, whereas in Group 2 the dissatisfaction percentage rose to 53% (95% CI: 32–77).

DISCUSSION

This study evaluated parental perception regarding the OHRQoL of children attended at a dental school clinic. It was found that caries/pain had a greater impact on the children's OHRQoL as compared to dental trauma. However, dental trauma was associated with parent distress. In addition, children who had undergone restorative treatment showed higher impact means than those who had not. The difference was significant in relation to presence of oral symptoms for both comparisons.

Kramer *et al.*,⁸ in a study that assessed the impact of oral disease on the quality of life of preschool children, found a statistically significant association of dental caries with an impact on all

Table 2 | Association between the clinical and socioeconomic variables and total ECOHIS and individual domain means (Pelotas, 2009).

Variable	Total Mean (SD)	Symptoms Mean (SD)	Function Mean (SD)	Psychological Mean (SD)	Self-image Mean (SD)	Parent distress Mean (SD)	Family function Mean (SD)
Sex							
• Boys (53%)	10.3 (5.0)	1.3 (1.2)	2.7 (2.2)	1.3 (1.4)	0.1 (1.0)	2.9 (2.7)	1.2 (1.4)
• Girls (47%)	10.8 (8.8)	1.4 (1.4)	2.8 (2.9)	2.1 (2.3)	1.4 (1.7)	2.0 (1.8)	1.1 (1.6)
Social class							
• A-B (9%)	10.5 (4.1)	1.0 (1.0)	2.5 (0.6)	0.7 (0.9)	2.0 (1.6)	3.2 (3.0)	1.2 (0.9)
• C-E (91%)	10.7 (7.2)	1.4 (1.3)	2.8 (2.7)	1.8 (1.9)	1.0 (1.4)	2.5 (1.9)	1.1 (1.6)
Reason for seeking dental care							
		*				*	*
• Dental trauma	9.7 (5.3)	0.9 (1.0)	2.7 (2.2)	1.4 (1.5)	1.0 (1.2)	3.1 (2.1)	0.8 (1.0)
• Caries/pain	11.6 (8.6)	1.9 (1.3)	2.8 (3.0)	2.2 (2.2)	1.1 (1.7)	1.8 (1.6)	1.7 (1.8)
Restorative treatment							
	*	*					*
• Absent (40%)	8.6 (5.1)	0.8 (1.0)	2.1 (2.0)	1.4 (1.5)	0.8 (1.2)	2.7 (2.2)	0.7 (0.9)
• Present (60%)	13.5 (8.8)	2.1 (1.3)	3.6 (3.1)	2.3 (2.3)	1.4 (1.7)	2.3 (1.7)	1.7 (2.0)

* $p < 0.05$, t test.

ECOHIS domains. Regarding dental trauma, it affected the child and family function domains only. Martins-Junior *et al.*,⁹ in their study, observed a similar, statistically significant association for dental caries in all domains of the ECOHIS.

The perception of the children who responded the AUQUEI was also worse in Group 2, insofar as the percentage of children who were satisfied with their oral health was higher in the dental trauma group, as compared with the caries group. Feitosa, Colares and Pinkham²¹ used the same instrument to compare children with severe caries with children without caries. The authors found that caries-bearing children admitted more frequently to feeling sad, as compared with the caries-free children.

Lower mean scores were found in most domains for the trauma-bearing child group. This may be attributed to the fact that caries—an important pain source and functional and aesthetic mouth disorder²²—was the reason that led the child to seek dental care in Group 2. Because caries is a chronic problem, it tends to cause damage and limitations for longer periods, and thus influences the child's

quality of life.²¹ In contrast, although dental trauma is potentially harmful, it usually causes limitations—such as laceration, edema and pain—that tend to disappear within a few days.

However, one has to consider that these accidents occur rather unexpectedly, and that parents have to confront this type of situation immediately. This may involve several dental appointments and may require time off from work, in addition to having to witness the child's pain.²⁴ In agreement with this, when mothers of children with dental trauma were asked if they ever felt guilty or upset with reference to their children's oral problems, they reported feeling a greater impact in this respect. Similar results were found by Viegas *et al.*⁷

Berger *et al.*²³ evaluated this impact on the quality of life of a group of children with severe trauma and their families at their first consultation, and at a 6- and 12-month follow-up. High impact scores were reported by parents on the first consultation. According to these authors, parents may feel guilty, and this may generate stress in the family. After 6 months, a decline in the score could be associated

with an adaptation to this condition.

According to Cortes *et al.*,²⁴ injuries caused by dental trauma may be the source of significant emotional and social distress to children and their families. The authors found that children with fractured teeth reported a more frequent negative impact on eating, brushing their teeth, smiling and showing their teeth, as compared to the group of children without this injury in the general population.

Pahel, Rozier and Slade¹³ showed that, according to child development characteristics, the responsibility of reporting oral health impacts in this age group is transferred to adults. In this study, mothers represented 80% of the respondents; this high percentage may be attributed to the fact that mothers usually accompany their children to the dental office, and best know their children's general health condition, thus being able to detect adverse impacts on their children's quality of life better than fathers.²⁵

The question that had the greatest impact was the one that asked whether parents had ever felt upset about their children's problems or dental treatment. The family financial impact on the dental problem issue showed the lowest rates; this could be explained by the fact that the treatment given to these children at the dental school clinic is free, thus not impacting the family financially. In the study by Martins-Junior, similar results were found.⁹

Studies done in Brazil using the same evaluation instrument in a hospital environment offered different results. In a study by Buczynski²⁶ evaluating children with HIV, the most cited impacts were pain and difficulty eating, and a higher individual score mean was obtained. In another study done with children admitted to a hospital, irritation was the most commonly mentioned impact, in addition to pain and difficulty eating, as mentioned above.¹⁴

It is important to consider that the sample analyzed in this study is not representative of the

general population. It is presumed that people who seek dental care—or in the case of children, those who are taken by their parents or caretakers—do it because they realize that some kind of impairment of their oral condition is interfering with their daily routine performance; therefore, these people probably have a greater perception of the problems caused by their oral condition than the general population. This can be substantiated by comparing the total sample mean of this study^{15,21} to that of another local study that included a representative sample of the population, i.e., 3.32. Moreover, it is worth mentioning that a convenience sample was included. However, the sample was large enough to detect the associations reported.²⁷ In another population-based study in Brazil, the mean ECOHIS score was 2.95.⁹

Another factor that could explain the great mean variation between these studies relates to the sickness levels of children being cared for at a dental school clinic, as compared to those in the general population. Caries prevalence is known to be declining, and most trauma cases in population-based studies show mild severity, especially enamel fractures.^{28,29} On the other hand, the demand for dental care at dental school clinics usually includes children with more severe conditions, referred by other institutions, or those who could not obtain access to other services.

Studies conducted at the population and service levels should include information on the patients' and/or their caretakers' perception of the patients' oral condition, as well as treatments performed, in an endeavor to add to the available body of knowledge regarding the impact of oral health condition on children's daily routines. There are few studies in this age group that could provide any definite conclusions on the impact of different oral problems on quality of life, including dental caries, trauma and other problems, such as malocclusion and defects in tooth development.

CONCLUSIONS

In conclusion, the impact on oral health-related quality of life was high for this population. Furthermore, whereas the impact on oral-health-relat-

ed quality of life in the caries group was higher for children, the dental trauma group showed a higher family impact.

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