PERCEPTION ON THE QUALITY OF LIFE RELATED TO ORAL HEALTH IN PRESCHOOL CHILDREN

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Palavras-chave: Qualidade de Vida. Cárie Dentária. Traumatismos Dentários. Pré-Escolares.

RESUMO

Introdução: Avaliar a qualidade de vida relacionada a saúde bucal é de suma importância, visto que são escassos os estudos que avaliam a QVRSB (Qualidade de vida relacionada a saúde bucal) em crianças de 5 e 6 anos. Este estudo teve como objetivo avaliar o impacto da doença cárie e das lesões dentárias traumáticas (TDI) na qualidade de vida relacionada à saúde bucal (QVRSB) em crianças de 5 e 6 anos de idade de acordo com o autorrelatoe o relato secundário dos pais, assim como averiguar a concordância entre eles. **Métodos:** Estudo transversal, realizado com 238 crianças e seus responsáveis atendidos em unidades de saúde e escolas da rede pública do município de Jequié (BA), Brazil. Após a entrevista, as crianças foram submetidas a exame clínico oral para investigar a presença ou ausência de experiência de cárie e IDT. Para a coleta de dados foram usados a Scale of Oral Health Outcomes for 5-year-old children (B-SOHO-5) e um questionário sóciodemográfico. As diferenças nos escores de QVRSB entre as características sociodemográficas e clínicas foram comparadas por meio dos testes Mann-Whitney e Kruskal-Wallis. Comparou-se a concordância das respostas entre crianças e pais por meio da estatística Kappa (≥ 0,60). A diferença entre os escores totais das crianças e dos pais foi examinada com o teste de Wilcoxon; o coeficiente de concordância de Lin e o método de Bland e Altman foram usados como medidas de concordância. Foi adotado nível de significância de 5% (α = 0,05). **Resultados:** Houve associação significativa (p≤ 0,05) entre a cárie e a TDI de acordo a percepção das crianças. Ocorreu discordância/pobre concordância significativa entre os relatos dos pares criança-pai e criança-mãe com relação à QVRSB da criança. **Conclusão:** A doença cárie e as TDI causam impacto negativo na QVRSB de acordo com a percepção apenas das crianças. A pesquisa apontou que os pais não são fontes confiáveis para avaliar a saúde bucal do seu filho.

Keywords: Quality of Life. Dental Cavity. Tooth Injuries. Preschool.

ABSTRACT

Introduction: To evaluate the quality of life related to oral health is of paramount importance, since there are few studies evaluating the OHRQoL (Oral health related quality of life) in children of 5 and 6 years. This study aimed to evaluate the impact of caries disease and traumatic dental injuries (TDI) on oral health related quality of life (OHRQoL) in children of 5 and 6 years of age according to the self report and the secondary report of the parents, as well as ascertain the agreement between them. **Methods:** A cross-sectional study with 238 children and their caregivers attended at health units and public schools in the municipality of Jequié (BA), Brazil. After an interview, the children were submitted to oral clinical examination to investigate the presence or absence of caries experience and TDI. For data collection, the Scale of Oral Health Outcomes for 5-year-old children (B-SOHO-5) and a sociodemographic questionnaire were used. Differences in OHRQoL scores between sociodemographic and clinical characteristics were compared using the Mann-Whitney and Kruskal-Wallis tests. The agreement of the responses between children and parents was compared using Kappa statistics (≥ 0.60). The difference between the total scores of the children and the parents was examined with the Wilcoxon test; the Lin coefficient of agreement and the Bland and Altman method were used as measures of agreement. A significance level of 5% (α = 0.05) was adopted. **Results:** There was a significant association (p≤ 0.05) between caries and TDI with OHRQoL according to the children's perception. There was significant mismatch / mismatch between the reports of the child-father and the mother-child pairs in relation to the child's OHRQoL. **Conclusion:** Caries disease and TDIs have a negative impact on OHRQoL according to the perception of only the children. Research has pointed out that parents are not reliable sources for assessing their child's OHRQoL.

Submitted: September 11, 2019
Modification: October 8, 2019
Accepted: October 9, 2019

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INTRODUCTION

The dental health problems that most affect the child population are caries disease and traumatic dental injuries (TDI),[1] both in developed and developing countries.[2,3] Caries disease and complicated LDL have a negative impact on oral health-related quality of life in both pre-school children, 2-5 years of age and in their parents.[4-6] When untreated, tooth decay brings discomfort, toothache, as well as affects the child's weight and growth,[7,8] as well as affect self-esteem due to aesthetic compromise, generating isolation from social interaction, however , these evidences are based on secondary reports of the parents.[9]

Several instruments that evaluate oral health-related quality of life (OHRQOL) have been used for children over six years of age,[10,11] while for children of lower age there are few studies.[12,13] Recently, the Scale of Oral Health Outcomes for 5-year-old children (B-SOHO-5)[14] was developed with the objective of measuring the OHRQOL of 5-year-old children through self reports and secondary reports from parents. This is of the utmost importance since both parties are heard, a fact which was not observed in studies prior to the creation of the aforementioned instrument. The perception about the OHRQoL of children in this age group was provided only from the perspective of the parents.

Thus, due to the scarcity of studies about the perception of OHRQoL in children aged 5 to 6 years, this study aims to evaluate the impact of caries and TDI on children's OHRQoL, based on the perception of parents and the child as well as to evaluate the concordance between reports of parents and children.

MATERIALS AND METHODS

This study was approved by the Research Ethics Committee of the State University of Southwest of Bahia, CAAE: 28543714.6.0000.0055. Therefore, the Informed Consent Form (TCLE) and Term of Assent were made available to parents / guardians and children, who agreed to participate in the research.

Study participants

The present cross-sectional study included 238 children, and their caregivers, attended at health units and public schools in the municipality of Jequié (BA), Brazil together with their parents or guardians. The inclusion criteria were: children of both sexes, with complete deciduous dentition, without systemic or neurological impairment, who resided with the parents/guardians. Those children who underwent dental treatment in the last three months were excluded and children who presented absence of any deciduous dental element due to agenesis, trauma or extraction.

Data collection

Data collection was performed using the B-SOHO-5, which consists of a self-reported version of the child and another of the parents' secondary reports regarding the child's OHRQoL. The instrument consists of 14 items contained in the two versions, 07 items for each, and 06 of these are common in terms of content in both versions. The items in the children's questionnaire are: difficulty eating, difficulty drinking, difficulty speaking, difficulty to play, difficulty sleeping, avoid smiling due to pain and avoid smiling because of the appearance. The answers of each item were given on a 3-point scale: no = 0; a little = 1; very = 2. The children were assisted by cards with three-sided pictures to help them explain the answers. In the parents version the question "self-confidence of the child affected by the teeth" was replaced by the item "difficulty to drink" present in the version of the children, in addition the other items were similar. The responses of the parents' version were categorized in a Likert scale of 5 points (not at all = 0, a little = 1, more or less = 2, quite = 3, a lot = 4), then regrouped in 3 point answers (not at all = 0, a little / more or less = 1, a lot / a lot = 2) so that it could compare with the children's version scores.

The total score for each of the B-SOHO-5 versions was calculated from the sum of the points in the response options. Thus, the total score varied from 0 to 12, since to analyze the agreement was considered only the 6 similar questions in both versions. Regarding the interpretation of the scale, higher scores indicate a worse quality of life of the child. Respondents answered a second questionnaire with socioeconomic information containing family income, age of the child, gender of the child and parents.

The data collection procedure was based on the criteria of Alvarez,[9] the child and his / her guardian, preferably the one who spent the longest time with it, answered the Brazilian version of B-SOHO-5 through independent interviews to prevent interference in the parties' responses.

After an interview, the children were submitted to oral clinical examination by two previously calibrated examiners (Kappa intra and inter-examiner 0.88 and 0.82, respectively) to investigate the presence or absence of caries experience and TDI. The data on dental caries were tabulated according to the ceo-d index, and categorized according to severity using World Health Organization criteria (1997), with ceo-d 0 = no

caries experience; ceo-d 1-5 = low caries experience and ceo-d > 6 = high caries experience. The evaluation of the trauma was made by clinical examination and by questioning to those responsible. TDIs were categorized into present and absent.

Statistical procedure

For the descriptive analysis of the sample characteristics, the absolute and relative frequencies, averages and standard deviations were calculated. Differences in OHRQoL scores between sociodemographic and clinical characteristics were compared using the Mann-Whitney and Kruskal-Wallis tests. The agreement of the responses between children and parents for each item of the OHRQoL scale was compared using Kappa statistics, and a Kappa value > 0.60 was adopted as clinically acceptable.[15] The difference between the total scores of the children and the parents was examined with the Wilcoxon test; the Lin coefficient of agreement and the Bland and Altman method were used as measures of agreement, and a coefficient of agreement of Lin > 0.94 was considered as clinically acceptable.[16] In all analyzes, the level of significance was 5% ($\alpha = 0.05$). The data were analyzed in IBM SPSS Statistics for Windows (IBM SPSS, 21.0, 2012, Armonk, NY: IBM Corp.) and MedCalc version 9.1.0.1 (2006, Mariakerke, Belgium).

RESULTS

Sample characteristics

Table 1 shows the sociodemographic and clinical data of the study participants. Most of the children were in the five-year-old male group. There was a much greater participation of the mothers than of the fathers, and the great majority reported a family income lower than a minimum wage. Clinical examinations indicated that more than 70% of the children had experience of caries, with low experience being predominant. TDIs were frequent in approximately two out of 10 children evaluated.

Figure 1 shows the total scores and of each item for the OHRQoL scale, according to the child's own perception (Figure 1A) and his parents (Figure 1B). The items that were difficult to eat and difficult to play were those with the highest and lowest scores, respectively, both in the evaluation of the children and in the evaluation of the parents. In general, the total OHRQoL score was 46% higher in the evaluation of the children in relation to the parents' evaluation.

Impact of socio-demographic and clinical characteristics on oral health-related quality of life

There were no associations ($p > 0.05$) of the child's sex and family income with the OHRQoL, according to the child's perception. However, the items difficulty speaking and difficulty to play had significantly higher scores in the group of older children (6 years). Significant negative impact of caries disease was observed in the OHRQoL, and for all items, as well as for the total result, higher scores were observed in the group with high caries experience; in addition, the group with low caries experience also presented higher scores than the group with no caries experience for difficulty speaking and total outcome. The presence of TDI had a negative impact on OHRQoL in the items difficulty in eating, difficulty in drinking, difficulty in playing, as well as in the total result (Table 2).

For the parents' perception, there were no associations ($p > 0.05$) of the OHRQoL with child's age, child's sex, family income, dental caries and TDI. However, there was an association between the OHRQoL and the parents 'gender, and the mothers' evaluation resulted in statistically higher scores for items difficult to eat, difficulty speaking, difficulty sleeping, no smile due to caries or pain, self-esteem and total outcome (Table 3).

Agreement between the perception of children and parents on quality of life related to oral health

The frequency of responses to the OHRQoL scale, according to the corresponding categories for the child-father and the parent child, are shown in Tables 4 and 5. The Kappa statistic (-0.002- 0.19) (for items that were possible to calculate) indicated that there was disagreement in practically all items evaluated, except for the difficulty to talk and stopped smiling because of caries or pain in the mother-child pair, who presented poor agreement.

Table 6 shows the comparisons and the coefficients of agreement of the total OHRQoL scores between the child-father and the mother-child pairs. The OHRQoL scores were significantly different between the children and the parents, with the scores of the children being larger, regardless of the gender of the parents. The Lin coefficients showed disagreement for the child-father pair and poor agreement for the parent-child pair. The Bland-Altman chart confirmed the disagreement / poor agreement between the children's and parents 'perceptions, indicating a significant bias between the children's scores and the parents' scores, with the bias being higher in the parent-child pair.

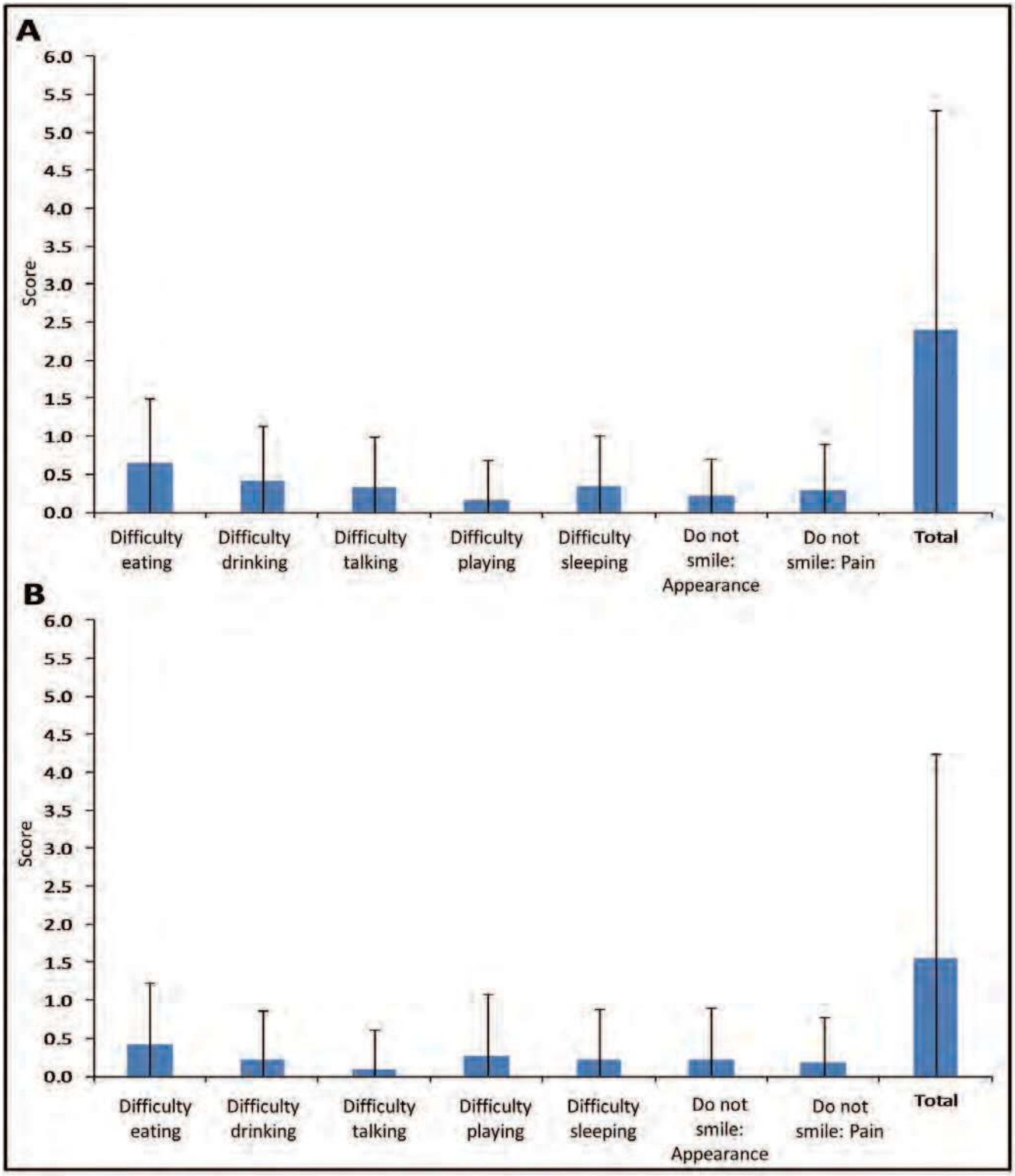

Figure 1: *Quality of life score related to oral health, according to the perception of the child (A) and the parents (B). The columns represent the means and the error bars the standard deviations.*

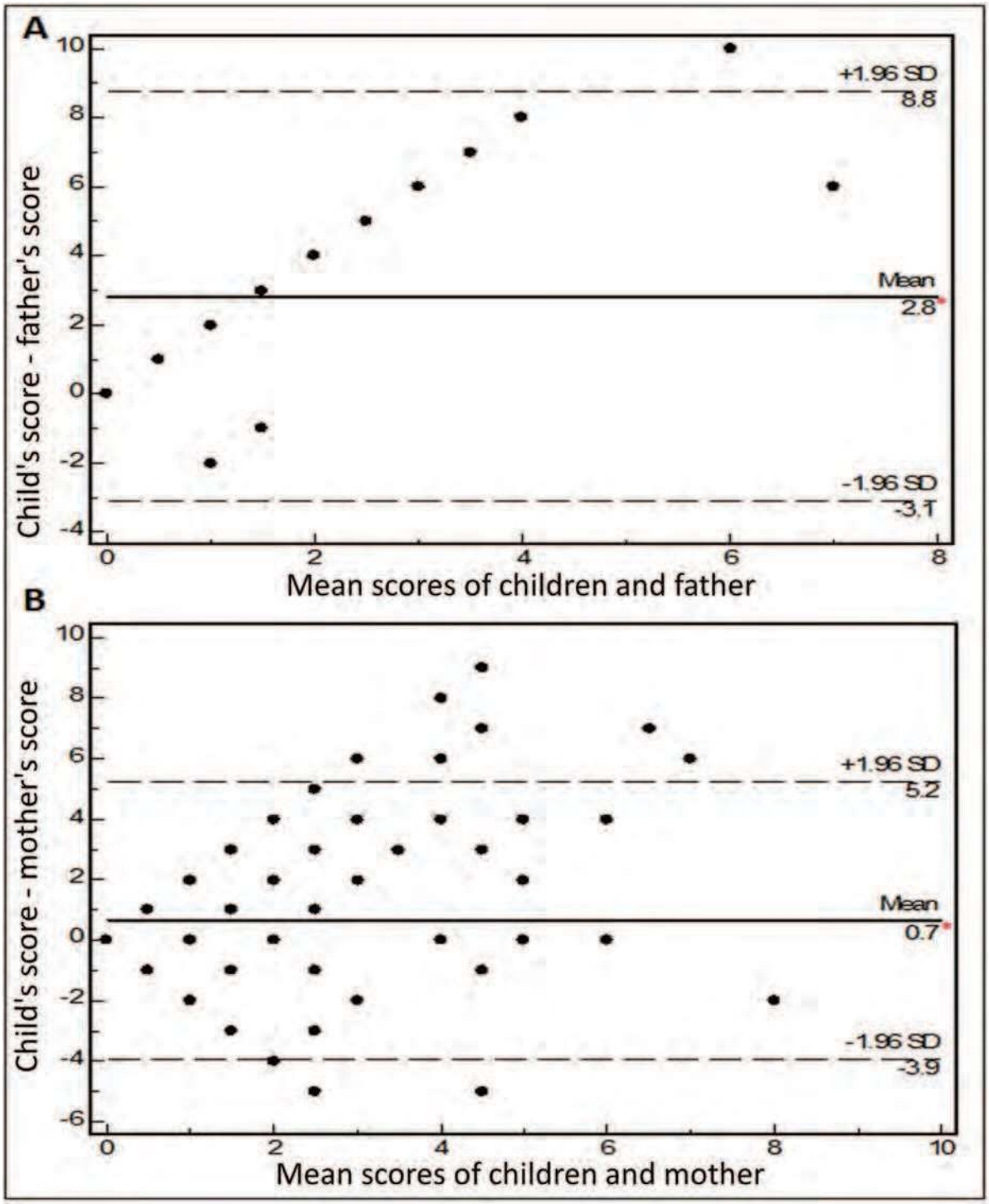

Figure 2: *Bland-Altman chart for the mean differences between quality of life scores related to oral health of the child-father (A) and the mother-child (B) pairs. * Statistically significant bias.*

Table 1: *Sociodemographic and clinical characteristics of study participants.*

Variable	n	%
Age of child		
5 years	155	65.1
6 years	83	34.9
Child's Sex		
Male	127	53.4
Female	111	46.6
Parents sex		
Male	43	18.1
Female	195	81.9
Family income		
≤ 1 salary	174	73.1
1 a 2 salaries	46	19.3
> 2 salaries	18	7.6
Dental caries		
No experience of caries	68	28.6
Low caries experience	96	40.3
High caries experience	74	31.1
Traumatic dental injuries		
Absent	184	77.3
Present	54	22.7

Table 2: *Mean ± Standard deviation of quality of life related to OHRQoL (child's own perception), according to the child's age, dental caries experience and traumatic dental injuries.*

Variable	Difficulty eating	Difficulty to drink	Difficulty speaking	Difficulty playing	Difficulty sleeping	Do not smile: appearance	Do not smile: pain	Total
Age of child								
5 years	0.61 ± 0.83	0.37 ± 0.70	0.26 ± 0.59	0.10 ± 0.40	0.36 ± 0.69	0.19 ± 0.46	0.30 ± 0.62	2.19 ± 2.75
6 years	0.75 ± 0.85	0.48 ± 0.76	0.46 ± 0.75	0.29 ± 0.65	0.31 ± 0.62	0.24 ± 0.58	0.28 ± 0.61	2.81 ± 3.13
p-value*	0.189	0.236	0.028	0.009	0.761	0.865	0.741	0.106
Dental caries								
Without experience	0.37 ± 0.67[a]	0.15 ± 0.40[a]	0.12 ± 0.44[a]	0.01 ± 0.12[a]	0.12 ± 0.37[a]	0.09 ±0.29[a]	0.09 ± 0.38[a]	0.94 ± 1.44[a]
Low experience	0.56 ± 0.81[a]	0.31 ± 0.64[a]	0.29 ± 0.61[b]	0.06 ± 0.28[a]	0.23 ± 0.57[a]	0.08 ± 0.28[a]	0.21 ± 0.52[a]	1.75 ± 2.05[b]
High experience	1.04 ± 0.88[b]	0.78 ± 0.88[b]	0.57 ± 0.80[c]	0.45 ± 0.78[b]	0.70 ± 0.84[b]	0.49 ± 0.73[b]	0.58 ± 0.78[b]	4.61 ± 3.51[c]
p-value*	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TDI								
Absent	0.60 ± 0.82	0.35 ± 0.67	0.28 ± 0.60	0.13 ± 0.45	0.31 ± 0.65	0.19 ± 0.46	0.28 ± 0.60	2.14 ± 2.74
Present	0.85 ± 0.88	0.61 ± 0.83	0.50 ± 0.82	0.30 ± 0.66	0.46 ± 0.72	0.28 ± 0.63	0.33 ± 0.64	3.33 ± 3.24
p-value*	0.045	0.026	0.081	0.039	0.073	0.580	0.490	0.009

Note: *TDI, traumatic dental injuries; * Mann-Whitney test; † Kruskal-Wallis test [a, b, c values followed by vertical letters (column) do not differ statistically from one another by the Mann-Whitney test].*

Table 3: *Mean ± Standard deviation of quality of life related to OHRQoL (parents 'perception), according to the parents' gender.*

Variable	Difficulty eating	Difficulty speaking	Difficulty playing	Difficulty sleeping	Stopped smiling: appearance	You stopped smiling: caries or pain	Affected self esteem	Total
Sex of the parents								
Male	0.14 ± 0.56	0.00 ± 0.00	0.00 ± 0.00	0.10 ± 0.63	0.10 ± 0.43	0.02 ± 0.15	0.02 ± 0.15	0.28 ± 0.89
Female	0.47 ± 0.86	0.26 ± 0.72	0.12 ± 0.57	0.31 ± 0.84	0.25 ± 0.70	0.27 ± 0.74	0.22 ± 0.64	1.82 ± 2.85
p-value*	0.003	0.006	0.134	0.041	0.096	0.020	0.028	<0.001

Note:* *Mann-Whitney Test.*

Table 4: *Agreement between parent-child pairs responses to items that make up the oral health-related quality of life instrument for children.*

Items	Parent response	Child's response			Kappa	*p*-value
		No	Little	A lot		
Difficulty eating	No way	20	9	11	- 0.01	0.905
	Little / more or less	2	0	0		
	Quite a lot	0	0	1		
Difficulty speaking	No way	28	8	6	—	—
	Little / more or less	0	0	0		
	Quite a lot	0	0	0		
Difficulty playing	No way	35	3	4	—	—
	Little / more or less	0	0	0		
	Quite a lot	0	0	0		
Do not smile: appearance	No way	30	7	3	—	—
	Little / more or less	1	0	1		
	Quite a lot	0	0	0		
Do not smile: caries or pain	No way	26	8	8	—	—
	Little / more or less	1	0	0		
	Quite a lot	0	0	0		

Note:*The Kappa statistic could not be calculated due to the absence of frequency (n = 0) in one or more categories.*

Table 5: *Agreement between the responses of the mother-child pairs to the items that make up the instrument of quality of life related to oral health for children.*

Items	Parent response	Child's response			Kappa	*p*-value
		No	Little	A lot		
Difficulty eating	No way	87	25	24	0.07	0.138
	Little / more or less	24	9	17		
	Quite a lot	4	1	3		
Difficulty speaking	No way	135	13	15	0.13	0.016
	Little / more or less	15	6	4		
	Quite a lot	4	1	0		
Difficulty playing	No way	166	8	10	-0.02	0.750
	Little / more or less	6	0	0		
	Quite a lot	3	1	0		
Difficulty sleeping	No way	131	21	15	-0.01	0.913
	Little / more or less	14	1	3		
	Quite a lot	7	2	1		
Do not smile: appearance	No way	143	17	5	0.06	0.298
	Little / more or less	18	4	1		
	Quite a lot	4	1	0		
Do not smile: caries or pain	No way	144	13	7	0.19	0.001
	Little / more or less	14	6	4		
	Quite a lot	4	2	0		

Note:*The Kappa statistic could not be calculated due to the absence of frequency (n = 0) in one or more categories.*

Table 6: *Agreement between children and parents for total oral health quality of life scores.*

	Child's score	Parents' score	*p*-value*	Coefficient of Lin (IC95%)
Child vs. father	3.08 ± 3.14	0.23 ± 0.78	<0.001	0.07 (-0.01 – 0.15)
Child vs. mother	1.78 ± 2.29	1.12 ± 1.61	<0.001	0.29 (0.17 – 0.40)

Note*:* Wilcoxon test.*

DISCUSSION

We sought to investigate the participation of caries disease in quality of life in children aged 5 and 6 years. For evaluation we used Scale of Oral Health Outcomes for 5-year-old children (B-SOHO-5) which, despite being developed for 5-year-olds, was used by the authors who made the cross-cultural adaptation between 5-year-olds and 6 years.[9] The results showed that there was a negative repercussion for the quality of life in relation to all aspects of oral health evaluated in this study, from the perspective of the child, this finding is in accordance with another study[12] performed with children of the same age group , using the same instrument.[4-6,12]

In the evaluation of OHRQoL, regarding age, there was no difference between the groups for almost all the evaluated items, except for the difficulty to talk and play, which were reported by children aged 6 years as a negative factor for their quality of life. In another study carried out with preschool children using the Early Childhood Oral Health Impact Scale (ECOHIS), it was observed that the child's age group has a negative impact on quality of life, in which children who had between 24-35 months had a lower impact than children from 36-47 months and greater than 48 months.[17] One likely explanation for the difficulty of speaking may be the physiological loss of dental units that occurs close to this period and could lead to phonoarticulatory difficulties. It is also important to note that, although not statistically significant, children aged 6 years old had higher scores in all evaluated subjects, with higher quality of life impairment with the instruments used in the evaluation. This finding in the present study can be understood from the psychological development of the child, from the sixth year of age, begins the abstract thinking and the understanding of the self-image where it develops the ability to compare their physical

characteristics, thus having a better perception about their quality of life.[18]

In the case of caries experience, there was a negative and statistically significant interference of this condition on children's quality of life, worsening with the progression of the disease in the evaluation of the general score, as well as the difficulty to speak negatively the low caries experience when compared to the absence of caries experience, the difficulty to speak and the total result. Studies in preschoolers agree with our findings, indicating that there is a greater negative impact on children's OHRQOL as the caries experience increases.[9,12,17] However, another study has observed, from the use of ECOHIS, that caries negatively impacted similarly among children aged 6 to 72 months regardless of the severity of the disease.[19]

Studies that evaluated the impact of TDI on OHRQoL in children aged 6 years or less are reduced and conflicting, as there is no consensus regarding the impact of TDI on children's OHRQoL.[9, 20] In the present study, it was verified that the TDI, according to the children's perception, had a negative impact on the OHRQoL in specific aspects such as difficulty in eating, drinking and playing, as well as in the overall result. The item difficulty in playing was also pointed out, and it inferred negatively in the QVRSB when analyzed the behavior of the TDI, although it was not associated with the general score, according to the children's perception.[9] In another study,[21] children who had complicated TDI had a negative impact on OHRQoL, affecting in daily activities such as sleeping and smiling, causing pain. However, another study with pre-school children, using the ECOHIS data collection instrument,[22] presented divergent results, stating that TDI does not have a negative impact on the OHRQoL of preschool children. It is assumed that the differences found are based only on the secondary reports of the parents, while the present study used B-SOHO-5 that takes into account both the parents' and the child's reports.

When comparing the perception of the parents regarding the OHRQoL, it was observed that the mothers identified a poorer quality of life in relation to the father figure, related to difficulty eating, talking and sleeping, as well as issues related to esteem. Recent studies agree with the research in question, one conducted in Saudi Arabia with pre-school children, which used ECOHIS[23] and another in the state of São Paulo with B-SOHO-5.[24] However, in another study carried out with school-age children, no significant differences were observed between the reports of mothers and fathers regarding their children's OHRQoL, in which two quality of life questionnaires were used (ILC) and the Kinder Lebensqualität Fragebogen (KINDL).[25]

The responsibility of the health of pre-school children is of the parents who, in turn, make decisions about their health,[26] even though they are the decision makers about the oral health of their children, there is still little number of studies evaluating the concordance between self reports and secondary reports of parents regarding the OHRQoL of children under 8 years of age.[9] The results of the present study showed that children tend to evaluate their OHRQoL with more impairment than their parents' perception, regardless of their gender. This raises the possible underestimation of parents regarding the oral health of their children. There was also divergence in reports from the parent-child pair and poor agreement on the mother-child pair on items such as "difficulty speaking" and "stopped smiling because of caries or pain." Therefore, it can be pointed out that both the father and the mother are not good evaluators of the oral health of their child, with a slight preference for the mothers' report. This fact can be attributed to the mother figure who assumes the role of caregiver in society and, by a cultural question, parents are seen as the financial providers of the family.[24]

Two other studies evaluated the concordance of parent-child and mother-child pairs with regard to OHRQoL.[27, 28] One study conducted with 12-year-old children in China showed that there was a significant disagreement between the parents' reports, regardless of gender, regarding the children's perception, showing that both children did not respond reliably to their children's OHRQoL.[28] In the second study, carried out with 5 and 6-year-old children using B-SOHO-5 as a data collection instrument, there was a significant disagreement in the report of the father-child pair, in which the children evaluated their OHRQoL as more compromised than the assessment of his father corroborating the findings of the present study. Although in the same study, there was agreement between the report of the mother-child pair, where it was observed that the mothers evaluated the OHRQoL of their children as more compromised than the children's report.[27] The divergences evaluated in this study regarding the mother-child pair may be related to ethnic cultural context and socioeconomic factors.[27] Overall, in the studies, there was a significant disagreement in the father-child reports in all studies analyzed, suggesting that the father is not a good secondary responder about the OHRQoL of his children. However, it is necessary to emphasize the need for secondary reports of family members, especially the mother's in clinical consultations, so that information is complemented, allowing the professional to make the best decisions regarding clinical behavior.[24]

It is worth mentioning that some limitations are present in this study. Among them, we highlight the cross-sectional design, which does not allow inferences about the causality of the observed associations. Another limitation is

that the sample of this study was of convenience, the data have clinical relevance, although they can not be extrapolated to population levels.

This study is of great clinical value since parents are instrumental in providing complementary information on the child's health as well as being responsible for the choice of treatment provided to their children, but the importance of taking into account the In addition, it is suggested that new research be done on children's OHRQoL, taking into account not only the parents' perception, but also the self-report of the child.

CONCLUSION

Caries disease and TDIs have a negative impact on OHRQoL according to the children's perception, although there is no significant impact on the perception of the parents. The child evaluates his OHRQoL with more commitment than the assessment of his / her responsible parents. The disagreement / poor agreement between the father's and mother's reports on the children's OHRQoL indicated that both the father and the mother are not good evaluators of the oral health of their sons/dougthers.

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