

Factors Associated with Oral Health-Related Quality of Life in Preschoolers of Concepción, Chile: A Cross-Sectional Study

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ABSTRACT

Objective: To identify the factors associated with Oral Health-Related Quality of Life (OHRQoL) in preschool children of Concepción, Chile. **Material and Methods:** A cross-sectional study was conducted in a sample of enrolled preschoolers who attend public schools in Concepción, Chile. To measure OHRQoL, the Chilean version of the Early Childhood Oral Health Impact Scale (ECOHis) was used; sociodemographic variables of the children and their parents were also recorded, as well as variables regarding the last visit to the dentist. To determine differences in the ECOHis score for categorical variables, ANOVA and t-test were used, while Pearson's r was used to correlate ECOHis with quantitative variables ($p < 0.05$). **Results:** A total of 175 children were surveyed, with a distribution of 89 boys and 86 girls aged 56-to-79 months. The total score of the ECOHis had a mean of 4.48 ± 5.96 , with a score between 0-38. Statistically significant associations were with parent's educational attainment ($r = -0.159$), dmft ($r = 0.380$), OHI-S debris ($r = 0.174$) and reason for the last visit to the dentist, the highest average in the ECOHis scores was registered in the urgency reason. **Conclusion:** Oral health status, dental service utilization and educational level are associated with the OHRQoL of preschoolers of Concepción.

Keywords: Quality of Life; Child, Preschool; Oral Health; Dental Caries.

Introduction

Health-related quality of life (HRQoL) generally refers to the subjective assessment of the impact of health status on their ability to live a full life [1]. HRQoL has become relevant in recent years as a well-established research area, both from a theoretical and methodological point of view. There is abundant HRQoL approaches that evaluates the phenomenon in various populations and health situations, using different methodologies, mainly quantitative [2,3].

Evidence has shown that oral diseases have a multifactorial etiology that is not only due to biological factors. Environmental, social and cultural factors also influence oral health attitudes and behaviors. This has led to the appearance of the concept of Oral Health-Related Quality of Life (OHRQoL) [4], with a wide variety of instruments to measure it in different age groups [5-7]. OHRQoL enables the assessment of the impact of oral diseases in a subjective and multidimensional way, covering areas such as physical function, psychological state, social interaction, and somatic sensation [8]. In the case of preschoolers, because they can provide uncertain information regarding suffering from a disease, most of these instruments are aimed at parents or caregivers [9].

In Chile, most of the research in OHRQoL has been focused on age groups older than 10 years, with few studies on the preschool population [10-12]. The latter is an issue, as it overshadows preschool's OHRQoL and doesn't consider the fact that most public policies on oral health in Chile are precisely focused on the child population [13]. Therefore, the aim of this study is to identify the factors associated with OHRQoL in preschool children of Concepción, Chile.

Material and Methods

Study Design and Participants

This research was prepared following the STROBE statement [14]. This is a cross-sectional study conducted in a sample of enrolled preschoolers who attend public schools in Concepción, Chile. In this case, were included children in kinder garden, the level immediately before the first year of primary school, and effectively residing in this city during the period from April to November 2019. Children with serious medical illnesses, non-cooperative, or with illiterate parents were excluded.

Sample Size Calculation

The sample size was estimated at 130 children considering an average of 4.04 and a standard deviation of 6.09 according to OHRQoL data from Zaror et al. [15] in the Chilean population, a precision of 1.5 points, a power of 80% and a significance level of 5%.

Variables and Data Collection

To measure OHRQoL, the Early Childhood Oral Health Impact Scale (ECOHIS) was used in its version validated for the Chilean population by Zaror et al. [15]. Sociodemographic variables of the children were also recorded (age of the child and the parent, sex of the child, educational level of the parent), as well as variables regarding the last visit to the dentist, including: time in months, reason for consultation (control, treatment, urgency) and type of healthcare center (public or private).

The ECOHIS instrument is answered in its entirety by the parents, it has 13 items distributed in two sections: impact on the child (9 items) and impact on the family (4 items). The values are calculated on a 5-point Likert scale, ranging with responses from "never" (0 points) to "very frequent" (4 points) and an "I don't

know” that is not scored. The score for the child's impact section ranges from 0 to 36 points, and the family impact section ranges from 0 to 16 points, giving a total of 0 to 52. High scores denote a greater negative impact on HRQoL [15].

ECOHIS and the sociodemographic questionnaire were sent to the parents from their respective children's schools, being returned the next day. Only fully answered questionnaires were considered. To measure the oral morbidity variables, a clinical examination was carried out by one pediatric dentist (VC), previously calibrated with a second pediatric dentist, for all variables, a kappa index >0.8 was obtained, as described elsewhere [16]. The examination was made in the school following the indications of the WHO manual for oral health surveys. Caries history was measured using ICDAS II [17] and the simplified oral hygiene index (OHI-S) [18]. The ICDAS II index was transformed to dmft, where values 3 or higher were considered as caries. All the data were collected during the months of September to December 2019.

Ethics

This study was approved by the Scientific and Ethics Committee of the School of Dentistry of the Universidad Andrés Bello, Concepción (PROPRGFOC_00201914), and follows the principles of Helsinki declaration of the World Medical Association.

Statistical Analysis

The tabulation was carried out in an Excel spreadsheet and the statistical analysis was made with STATA 14/SE (Stata Corp., USA). To determine differences in the ECOHIS score for categorical variables, ANOVA and t-test were used. Pearson's r was used to correlate ECOHIS with quantitative variables. In all cases, a statistical significance was considered at $p < 0.05$.

Results

A total of 175 children were surveyed, with a distribution of 89 boys and 86 girls aged 56-to-79 months. The clinical and sociodemographic characterization is shown in Table 1. The total score of the instrument had a mean of 4.48 ± 5.96 , with a score interval of 0-38.

Table 1. Sample characterization.

Variables	Male	Female	General
Child's age (months) ¹	68.73 ± 6.83	67.88 ± 6.70	68.31 ± 6.76
Parent's age (years) ¹	33.60 ± 7.81	34.13 ± 7.81	33.86 ± 7.79
Last visit to the dentist (months) ¹	9.18 ± 10.10	6.48 ± 5.03	7.86 ± 8.12
Parent's educational attainment (years) ¹	13.48 ± 3.17	13.71 ± 2.55	13.59 ± 2.87
ECOHIS (score) ¹	4.52 ± 6.38	4.44 ± 5.53	4.48 ± 5.96
dmft1	5.25 ± 4.05	5.02 ± 4.37	5.14 ± 4.20
dmft-d	4.29 ± 3.83	3.92 ± 3.74	4.11 ± 3.78
dmft-m	0.07 ± 0.29	0.08 ± 0.47	0.07 ± 0.39
dmft-f	0.92 ± 1.69	1.02 ± 1.56	0.97 ± 1.62
OHI-S debris ¹	0.81 ± 0.47	0.81 ± 0.45	0.81 ± 0.46
OHI-S calculus ¹	0.16 ± 0.25	0.13 ± 0.23	0.15 ± 0.24
Last visit to the dentist (reason) ²			
Check-up	68.2%	68.2%	68.2%
Treatment	26.1%	27.1%	26.6%
Urgency	5.7%	4.7%	5.2%
Last visit to the dentist (place) ²			
Public	75.0%	74.1%	74.6%
Private	25.0%	25.9%	25.4%

¹Mean and standard deviation; ²Percentual distribution.

Table 2 shows the ECOHIS scores according to categorical variables and the correlations with quantitative variables. Statistically significant associations were mainly found with clinical variables. The highest average in the ECOHIS scores was registered in the urgency reason, but without a significant association.

Table 2. ECOHIS association with clinical and sociodemographic variables.

Variables	ECOHIS Child	ECOHIS Family	ECOHIS Total
Child's age (months) ¹	0.041	0.057	0.052
Parent's age (years) ¹	-0.108	-0.123	-0.124
Last visit to the dentist (months) ¹	-0.024	-0.079	-0.05
Parent's educational attainment (years) ¹	-0.127	-0.174*	-0.159*
dmft ¹	0.328**	0.378**	0.380**
dmft-d	0.225*	0.305**	0.280**
dmft-m	0.166*	0.247**	0.216*
dmft-f	0.285**	0.200**	0.275**
OHI-S debris ¹	0.140	0.189*	0.174*
OHI-S calculus ¹	0.122	0.152*	0.146
Last visit to the dentist (reason) ²	**	**	**
Check-up	1.73 ± 3.07	1.25 ± 2.29	2.98 ± 4.81
Treatment	4.35 ± 4.73	3.26 ± 2.52	7.61 ± 6.52
Urgency	5.78 ± 5.76	3.22 ± 3.38	9.00 ± 8.85
Last visit to the dentist (type) ²			
Public	2.59 ± 3.91	1.89 ± 2.87	4.48 ± 5.83
Private	2.77 ± 4.13	1.89 ± 2.90	4.66 ± 6.46

¹Pearson's r correlation; ²Mean ± Standard Deviation (ANOVA); ³Mean ± Standard Deviation (t-test); *p<0.05; **p<0.001.

Discussion

There are several instruments developed and validated, especially in the English language [10]. However, only ECOHIS and SOHO-5 have been validated for Chilean population [9]. ECOHIS was used to measure the OHRQoL since it is the instrument with the highest discriminative validity in preschool children both in Chile [10] and in the world [9].

In the present study, a significant correlation was found between caries and OHRQoL, in both dimensions of ECOHIS instrument. The impact of caries on children's OHRQoL has been extensively documented across the world, especially in severe cases of early childhood caries [19]. In the present study, dmft shows the highest correlations with ECOHIS score, but in all cases, those correlations were moderate or weak. This is consistent with the fact that the impact of caries on OHRQoL is diluted at population level [19].

Another relevant result was active caries damage, as the largest component of the dmft is untreated cavities, indicating a lack of access to dental care. This is consistent with previous findings in Chile, where there is a significant relationship between caries prevalence and socioeconomic status [20]. This was expected as the schools selected for this study are public, which generally concentrates families with lower incomes [20,21] which are served via the public health system [20].

A statistically significant correlation was also found between the educational attainment (years of study) of the parents and the OHRQoL of their children. This may be due to the fact that there is evidence that parents with low levels of education have low literacy in oral health, which is closely associated with serious lesions of dental caries in their children, negatively impacting their OHRQoL [22,23].

Given the above, it is possible that most of the children who received their last dental care in a private center have been in a particular/sporadic situation, and this does not represent where they generally receive their treatment. It was found that the children whose last visit was urgency had worse OHRQoL, while better

OHRQoL was found in the last visits for dental check-ups. This is consistent with previous studies in Chile, where 21.4% attended a dental consultation for pain reasons [24]. In this regard, the check-up visit would reflect a lower probability of dental complications or complex treatment requirements associated with pain or discomfort.

Some limitations of the present study must be considered. First, the sample does not allow the results to be extrapolated to the entire preschool population of Concepción since it only considers preschoolers from public schools. Another limitation is that the ICDAS index was transformed to dmft to be able to make comparisons with other studies, since, ICDAS is not widely used.

Among the strengths of this study is that these results allow a first approach of the OHRQoL phenomenon in this age group at Concepción, the second largest city in Chile. It is necessary to continue with this line of research, generating more scientific evidence that allows establishing baselines for the implementation of public policies in oral health. Future research must focus on assess the impact of oral health public policy on OHRQoL of Chilean children, as they were prioritized over the last decades [13,25]. To assess other factors associated with children's OHRQoL, especially socio-behavioral ones [26], must also be considered in future research.

Among the applications of this research, it is that the discriminative power of ECOHIS is reaffirmed and that this instrument should be used by schools to investigate the need for dental treatment in preschool children.

Conclusion

Oral health status, dental service utilization and educational level are associated with OHRQoL of preschoolers of Concepción.

Authors' Contributions

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All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.			

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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