EARLY CHILDHOOD ORAL HEALTH IMPACT SCALE (ECOHIS). TRANSLATION AND VALIDATION IN SPANISH LANGUAGE

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ABSTRACT

Health is currently recognized as lying in the individual process rooted in genes, personal habits, the social model and the understanding of the ideological standpoint from which it is viewed. The aim of this study was to validate the Early Childhood Oral Health Impact Scale (ECOHIS) for use in Latin American communities, in order to demonstrate its efficacy for determining the impact of dental condition on children under 5 years of age and their families. The ECOHIS explores two domains: impact on children (9 questions) and on families (4 questions). Validation in Spanish was done in four stages. Stage I included translation and back-translation of the questionnaire (English-Spanish-English). Stage II was a pilot test on families in Venezuela to test stability (test-retest) and make semantic adjustments. Stage III included validation of the questionnaire applied to a Venezuelan sample (n=50) and two Argentine samples (A and B, made up of families with and without social risk, respectively; n=95), and consisted of statistical analysis to check the questionnaire's inter-nal consistency and discriminant capacity. In the final stage, parents were given feedback on the results and significance of each domain in the questionnaire. From the results of this study it may be concluded that the Spanish version of the ECOHIS was reliable and valid for administering to populations with homogeneous social risk, and that parents without social risk factors (AC/B) have significantly greater perception of the impact of oral health on the family's quality of life. The trends recorded suggest that (a) larger samples should be used, including variables for diagnosing social vulnerability or general risk, (b) the association with dental condition should be established by applying indicators to discriminate distinct cut-off points in the dental caries process and (c) it should be ascertained whether there are changes in perception of the impact on quality of life before and after dental treatments, including impact on general health condition.

Keywords: Oral health - quality of life - perception.

CUESTIONARIO SOBRE PERCEPCIÓN DE PADRES SOBRE EL IMPACTO DE LA SALUD BUCAL (ECOHIS): VALIDACIÓN EN ESPAÑOL

RESUMEN

En la actualidad se reconoce que la salud está en el proceso individual enraizado en los genes, los hábitos personalísimos, el modelo social y la comprensión de la ideología de la cual depende en realidad el ángulo desde el cual se la examina El objetivo de este estudio fue validar el Early Childhood Oral Health Impact Scale (ECOHIS) para su aplicación en comunidades latinoamericanas, a fin de demostrar su eficacia para determinar el impacto que el estado dentario produce sobre los niños menores de 5 años y su familia. El ECOHIS explora dos dominios: el impacto sobre el niño (9 preguntas) y sobre la familia (4 preguntas). Para la validación en el idioma español se desarrollaron cuatro etapas. La etapa I: incluyó la traducción reversa del cuestionario (inglés-español.ingles). La etapa II consistió en la prueba piloto realizada en familias venezolanas para comprobar la estabilidad (test-retest) y realizar el ajuste semántico. La etapa III incluyó la validación del cuestionario aplicado en una muestra venezolana (n=50) y en dos muestras argentinas (AC/A y AC/B, constituidas por familias con y sin riesgo social, respectivamente; n=95), realizándose el análisis estadístico para comprobar la consistencia interna y la capacidad de discriminación del cuestionario. En la última etapa se realizó la devolución de la información a los padres acerca de los resultados y del significado de cada uno de los dominios del cuestionario. Los resultados obtenidos en el presente estudio permiten concluir que la versión en español del ECOHIS resulto confiable y válida para su aplicación en poblaciones con riesgo social homogéneo y que los padres sin factores de riesgo social (AC/B) muestran una percepción significativamente mayor del impacto que el estado bucodental determina sobre la calidad de vida de la familia. Las tendencias registradas permiten recomendar la conveniencia de (a) ampliar el tamaño de las muestras aplicadas en este estudio, incorporando variables que instalen el diagnóstico de factores de vulnerabilidad social o de riesgo generales (b) establecer la asociación existente con el estado dentario empleando indicadores que permitan discriminar puntos de corte diferenciados en el proceso de caries dental y (c) estudiar la existencia de cambios en la percepción del impacto sobre la calidad de vida antes y después de los tratamientos odontológicos incluyendo el impacto sobre el estado de salud general.

Palabras clave: Salud bucal - calidad de vida - percepción.

INTRODUCTION

The concept of health has evolved thanks to contributions from researchers and successive declarations issued by world governments and international agencies[1-5]. Nowadays health is recognized as an individual process rooted in genetics, personal habits, social model and the understanding of the ideological standpoint from which is viewed[6]. Health mediation is thus a complex process and requires indicators to evaluate it not only according to the parameters that measure disease, but also according to those that show the impact that the health-disease-attention-care process can have on quality of life. This concept supports the interdisciplinarity of health from the ontogenetic, epistemological, epidemiological and methodological standpoints.

On health-related quality of life

In the 1950s and early 1960s, increasing interest in knowledge of human wellbeing and concern regarding the consequences of industrialization gave rise to the need use objective data for measuring wellbeing. Social sciences thus began the search for statistical social indicators to measure data and facts related to the social wellbeing of a population. At first these indicators referred to objective economic and social conditions only, but they subsequently evolved to encompass subjective components as well. The term "quality of life" was defined as a multidimensional concept integrating all areas of life and referring to both objective conditions and subjective components. The inclusion of the term in the first monographic journal in USA contributed to its theory and methodology becoming known, and research took off definitely in the 1980s. Felce and Perry[7] found various conceptual models of "quality of life" and added a fourth concept to the three proposed by Borthwick-Duffy in 1992[8]. Quality of life is currently considered to be a construct made up of a series of domains.

The WHO defined quality of life as an individual's perception of their position in life in the context of their culture and value system, in relation to their goals, aims, expectations, values and concerns[5].

Recent research has shown that oral disease places a significant burden on individuals and society[9-13]. It is currently considered to be one of the determinants of health level, and it recognizes freedom of choice and stresses the role of individuals and communities in defining their conception of health.

Studies of health-related quality of life in child populations

The absence of pediatric indices to evaluate the impact that certain diseases or treatments may have on quality of life is attributed to its conceptual complexity and the methodological aspects involved in the construction of self-reported indicators[14-16]. Studies on quality of life in infants and preschoolers have been based on questionnaires answered by their caregivers, who are an intervening variable in decision-taking related to lifestyle and healthcare[17-19]. Divergence and convergence have been reported between children's answers and those of parents or professionals[20,21].

All the instruments employed for these studies, whether in their original language or translated for use in different populations, should be reliable and valid. Furthermore, they need to be feasible to use, sensitive and possible to interpret[22].

In order to use a questionnaire in a population with a different language or socio-cultural context, the original version needs to be translated; its conceptual, semantic, operational and functional equivalence checked, and cross-cultural adaptation may be needed[23,24]. An original or translated instrument is considered validated when its reliability and validity have been demonstrated.

The questionnaire *Early Childhood Oral Health Impact Scale* (ECOHIS) was developed and validated in USA to measure the impact of oral health of children under 5 years old from a family standpoint[23]. It includes 13 questions divided into two domains: 9 questions about parents' perception of the impact of oral health on the children and 4 questions about the impact on the family. Responses are coded according to a scale with five quantifiable options (from "never" to "very often").

Aim

The aim of this study was to validate the Early Childhood Oral Health Impact Scale (ECOHIS) for administration in Latin American communities, in order to test its efficacy for determining the impact of dental condition on children younger than 5 years and their families.

MATERIALS AND METHODS

The methodology included four stages:

Stage I (Questionnaire translation and testing):

a) Translation of the original English version of the questionnaire into Spanish by two researchers who are competent in pediatric dentistry and know very good English. Pediatric dentists from different Latin American countries and one epidemiologist trained in questionnaire application determined its conceptual equivalence.

b) Back-translation from Spanish into English by two translators who do not belong to the pediatric dentistry team. Both versions (Spanish and English) were sent to U.S. experts (CDC, Atlanta, U.S.A.), following the model in Herdmann et al.[24,25].

Stage II (Pilot test and semantic adjustment of questionnaire)

c) A sample was selected of 81 parents representing children aged 0-5 years who attended a day care center located in a marginal urban area of Caracas city (Venezuela), who agreed to take part in the study.

d) The sample was divided randomly into two subsamples: one for the pilot study to check semantic comprehension (n=31), and another for the subsequent validation study (n=50).

e) The translated questionnaire was administered to the pilot sub-sample.

f) To determine its stability, the questionnaire was re-tested by administering it to the pilot sample again 22 days later without any recommendations from the researchers, and a contrast test (Student's t-test) was applied[26-27].

g) An open discussion was held with the 31 parents/caregivers from the pilot sample, facilitated by tutors, to check comprehension of the questions.

h) Final adjustment of questionnaire.

Stage III (Questionnaire validation and statistical analysis)

a) The final questionnaire was administered and validated among Venezuelan families (n=50).

b) A purposive sample was formed by including Argentine children from kindergartens located in the Buenos Aires metropolitan area, both government-run (n=73 children) and private (n=69 children).

Parents were informed of the aims of the research and accepted to participate by following the methodology, which consisted of answering (1) a socio-demographic questionnaire (parent's or caregiver's formal education level, family work conditions and oral health care coverage) and (2) questionnaire *Early Childhood Oral Health Impact Scale* translated into Spanish to be self-administered at a meeting held for the purpose.

The socio-demographic questionnaire allowed two groups to be categorized according to whether or not they had expressed presence of poverty-related factors[28] (samples AC/A and AC/B, respectively). Fifty families were assigned to each sample. Five parents from sample AC/A dropped out, leaving 45, the total argentine sample thus consisting of 95 respondents.

Internal consistency and construct validation were analyzed by applying statistical studies[29]. *Internal consistency* of the questionnaire was determined using Cronbach's coefficient[29,30], applied to the final score for the Argentine sample. *Construct validity* was established using the method for comparison by dichotomization of the responses from the Venezuelan and Argentine samples forming group R1 (answers "never" and "hardly ever") and R2 (answers "occasionally", "often" and "always") and applying Student's t test to the score to analyze the coefficient of variation in each domain (parents and children) (Table 1).

Statistical processing of the responses from the Venezuelan sample (n=50) and the Argentine samples (n=95) included:

- Analysis of the concentration in the dichotomized answers from all the questionnaires used and for each domain.
- Comparison of means and variance for the scores in each domain and the final score.
- Supplementary studies were conducted, consisting of an exploratory test factorial analysis and association and correlation studies ($X2$ and Spearman's coefficient).

Stage IV. Feedback to parents

Parents were informed of the results of the questionnaires and the significance of each domain.

RESULTS

All participating parents were able read the questionnaire text, so it was not necessary to administer the visual analog scale.

Table 1 shows the means and standard deviations for samples VC, AC/A and AC/B. Mean scores were much higher in sample AC/B for all three domains, as high as double for the domain "impact on family". The mean values in sample AC/B were 5.46 and 3.06 for child and family, respectively, while in sample AC/A they were 3.09 and 1.64 respectively. The sample A:B ratio for the family domain is 1.64:3.06 = 0.53.

In the Venezuelan sample, mean values were 1.28 for the domain "child" and 0.86 for the domain "family".

Results for Stage I

The original questionnaire structure and scale were preserved in the Spanish translation[25].

The consultation with experts confirmed the relevance of the Spanish translation.

The **stability test**, which was performed by applying test/retest to the pilot sample, showed no statistically significant difference between results. Mean scores were 3.5 ± 0.3 in the first test and 3.6 ± 0.6 in the retest (t= 0.14). The instrument was therefore stable.

Text comprehension tested in the pilot study (n=31) showed semantic divergence, since the word "*irritado*" (irritable) was interpreted in the physical sense rather than the emotional sense of the original questionnaire before translation. It was therefore replaced by "*enojado o malhumorado*" (annoyed or bad-tempered), for which semantic equivalence was considered satisfactory.

RESULTS FOR STAGE II
Validation of the adjusted questionnaire

The internal consistency of the instrument was analyzed on the Argentine samples (n=95). The results were recorded and the frequency for each item and domain were determined. The Cronbach coefficient was 0.8666, showing satisfactory coherence between items. The test-retest method used in the pilot sample showed that the questionnaire is stable for repeated administrations.

The discriminant validity of the survey was analyzed by dichotomization and comparison of answers between samples AC/A and AC/B of the Argentine families subject to the variable "socioeconomic condition" (Table 2). The responses from the sample in Venezuela are largely concentrated in category R1, with values close to 100%, in contrast

Table 1: ECOHIS mean scores clusterd by domains, in 3 samples.

Sample			Child's	Family	Total
AC/B	N	Valid	50	50	50
		Missing	0	0	0
	Mean		5.46	3.06	7.70
	Median		4.00	2.50	6.50
	Std. Deviation		5.39	2.74	7.13
	Variance		29.07	7.49	50.91
	Range		23.00	10.00	29.00
	Minimum		.00	.00	.00
	Maximum		23.00	10.00	29.00
AC/A	N	Valid	45	45	45
		Missing	0	0	0
	Mean		3.69	1.64	5.16
	Median		2.00	1.00	4.00
	Std. Deviation		4.20	2.09	5.57
	Variance		17.63	4.37	31.00
	Range		16.00	8.00	20.00
	Minimum		.00	.00	.00
	Maximum		16.00	8.00	20.00
VC	N	Valid	50	50	50
		Missing	1	1	1
	Mean		1.28	.86	2.14
	Median		.00	.00	.00
	Std. Deviation		2.47	1.55	3.38
	Range		12.00	6.00	14.00
	Minimum		.00	.00	.00
	Maximum		12.00	6.00	14.00

Note: Scores were calculated as a simple sum of the response codes for the child and family sections separately, and total.

to sample AC/B (column 5 of table 2), showing the two extremes of behavior according to ECOHIS. Considering the samples in Argentina, group AC/A (associated to factors of social vulnerability) was found to have a noticeably higher concentration of answers in category R1. In 8 of the 13 items, AC/A has the highest concentration of R1 responses (little perceived impact) with peaks for items 7, 10 and 13, which correspond to each of the domains into which ECOHIS can be broken down. The greatest differences between samples AC/A and AC/B, are in items 7 and 10, with values of -38% y -26% (column 4). These figures provide an idea of the degree and the sign of the difference.

An analysis of global scores shows that the differences found between samples were not statistically significant. Nevertheless, an analysis of scores by domain and by item shows significant differences when Student's t-test is applied (Tables 3 and 4). A comparison of scores by domain between samples

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Table 2: Distribution of grouped answers for ECOHIS samples (columns 1,2,3,4,5 and 6) and confroted samples by clusters categories (%) (2/3, 1 /2 and 1/3)

Items	Sample VC n=50		Sample AC/B n= 50		Sample AC/A n=45		Variation Among Samples		
	Column								
	1	2	3	4	5	6	2-3	1-2	1-3
Child impact domain									
How often has your child, because of dental problems or the need for dental treatment:									
1…had pain in the teeth, mouth or jaws?	89.8	10.2	58.0	42.0	71.4	29.6	-13.4	32.0	18.6
2…had difficulty drinking hot or cold beverages?	93.9	6.1	78.0	22.0	86.0	14.0	-8.0	115.9	7.9
3…had difficulty to chew food?	91.8	8.2	72.0	28.0	79.1	20.9	-7.1	19.8	12.7
4…had difficulty for pronouncing any words?	93.9	6.1	98.0	2.0	95.6	4.4	2.4	-4.1	-1.7
5…Missed pre-school or day-care?	93.9	6.1	96.0	4.0	93.3	6.7	2.7	-2.1	0.6
6…had difficulty sleeping?	100.0	0.0	89.8	10.2	86.7	13.3	3.1	10.2	13.3
7…been annoyed or bad-tempered?	96.0	4.0	55.1	44.9	93.3	6.7	*-38.2*	40.9	2.7
8…avoided laughing or smiling when around other children?	98.0	2.0	95.8	4.2	100.0	0.0	-4.2	2.2	-2.0
9…avoided talking?	100.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0
Family impact domain									
How often have you or another family member, due to dental problems or dental treatment of your child:									
10…felt uspet?	100.0	0.0	69.4	30.6	95.3	4.7	*-26.0*	30.6	4.7
11…felt guilty?	94.0	6.0	74.0	26.0	83.7	16.3	-9.7	20.0	10.3
12…had to take hours or days off work?	93.8	6.2	54.0	46.0	68.2	31.8	-14.2	39.8	25.6
13…had the family's economic situation affected?	94.0	6.0	100.0	0.0	95.6	4.4	4.4	-6.0	-1.6

Table 3: Independient samples test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df (2-tailed)	Sig.	Mean Difference	Std. Error Difference	Lower	Upper
Score 1 to 9	Equal variances assumed	2.120	.149	1.772	93	.080	1.77111	.99942	-.21353	3.75576
	Equal variances not assumed			1.795	91.179	.076	1.77111	.98648	-.18835	3.73057
Score 10 to 13	Equal variances assumed	2.953	.089	2.810	93	.006	1.41556	.50383	.41504	2.41607
	Equal variances not assumed			2.849	90.692	.005	1.41556	.49684	.42860	2.40251

AC/A and AC/B in the domain "family impact" using t-test (Table 3) shows statistically significant differences. Column 6 shows the probability of the differences found between samples being real. In domain 10 to 13 (family impact) the value for "equal variances not assumed" is 0.005. The comparison of means and variance for scores between samples AC/A and AC/B shows greater concentration of R2 (high perceived impact) in sample AC/B, which is double for the scores 10 to 13 (family domain).

Table 4 shows the comparison of scores per item between samples AC/A and AC/B. Column 5 shows the probability of the difference between answers being real or random. Statistically significant differences were found for two questions (items 7 and 10 in the respective domains). However, all items have a tendency showing that the values are higher in sample AC/B (families without poverty-related conditions), attributable to a more acute perception of the impact of oral health on the quality of life of the children and families.

Table 4: t Test between AC/A and AC/B (Argentine samples)

How often has your child, because of dental problems or the need for dental treatment….		T test for equality of means						
		t	dt	Sig. (2-tailed)	Mean difference	Std error difference	95% confidence internal of the differences	
							Lower	Upper
1…had pain in the teeth, mouth or jaws?	Equal variances assumed	1.126	90	.263	.260	.231	- .199	.719
	Equal variances not assumed	1.122	86.056	.265	.260	.232	- .201	.721
2…had difficulty drinking hot or cold beverages?	Equal variances assumed	.761	91	.449	.148	.195	- .239	.536
	Equal variances not assumed	.764	90.136	.447	.148	.194	- .237	.534
3…had difficulty to chew food?	Equal variances assumed	.643	91	.522	.129	.200	- .269	.527
	Equal variances not assumed	.642	88.370	.522	.129	.201	- .270	.527
4…had difficulty for pronouncing any words?	Equal variances assumed	- .890	93	.376	- .104	.117	- .337	.129
	Equal variances not assumed	- .866	68.116	.389	- .104	.121	- .345	.136
5…Missed pre-school or day-care?	Equal variances assumed	- 1.656	93	.101	- .193	.117	- .425	.038
	Equal variances not assumed	- 1.623	75.700	.109	- .193	.119	- .431	.044
6…had difficulty sleeping?	Equal variances assumed	- .603	92	.548	- .099	.165	- .427	.228
	Equal variances not assumed	- .595	79.770	.554	- .099	.167	- .432	.233
7…been annoyed or bad-tempered?	*Equal variances assumed*	*3.883*	*92*	*.000*	*.724*	*.187*	*.354*	*1.095*
	Equal variances not assumed	*3.935*	*87.606*	*.000*	*.724*	*.184*	*.348*	*1.090*
8…avoided laughing or smiling when around other childrem?	Equal variances assumed	2.203	91	0.30	.188	.085	.018	.357
	Equal variances not assumed	2.276	47.000	0.027	.188	.082	.022	.353
9…avoided talking?	Equal variances assumed	- .023	87	.982	- .001	.044	- .089	.087
	Equal variances not assumed	- .023	86.901	.982	- .001	.044	- .089	.087
How often has your child, because of dental problems or the need for dental treatment….		T test for equality of means						
		t	dt	Sig. (2-tailed)	Mean difference	Std error difference	95% confidence internal of the differences	
							Lower	Upper
10…felt uspet?	*Equal variances assumed*	*3.716*	*90*	*.000*	*- .651*	*.175*	*.303*	*.999*
	Equal variances not assumed	*3.873*	*70.725*	*.000*	*- .651*	*.168*	*. 316*	*.986*
11…felt guilty?	Equal variances assumed	1.765	91	0.081	.358	.203	- .045	.761
	Equal variances not assumed	1.802	89.671	0.075	.358	.199	- .037	.753
12…had to take hours or days off work?	Equal variances assumed	2.450	92	.016	.536	.219	.102	.971
	Equal variances not assumed	2.423	84.428	.018	.536	.221	.096	.977
13…had the family's economic situation affected?	Equal variances assumed	-2.073	93	.041	- .160	.077	- .313	- .007
	Equal variances not assumed	-1.994	56.070	.051	- .160	.080	- .321	.001

DISCUSSION

Quality of life used to be considered a vague, insubstantial concept. More recently, patients' subjective impression of their own health, as measured by previously validated instruments (questionnaires) has been considered relevant. This kind of study was gradually but steadily introduced in clinical trials and evolving pathological processes. Above all, work has been done to make the measurements from validated questionnaires objective and reproducible[31].

The advantages of the availability of this information are that it enables[32]:

- A system of common measurements for research into issues related to quality of life
- A standardized instrument for use in international studies
- Comparison of national or cultural groups using a standardized system which is adaptable to cross-cultural phenomena

Value criteria for qualifying quality of life are constructed biographically and historically, according to the balance between the aspirations and reality of each individual, provided he/she has the cultural tools and freedom of thought needed to perform the analysis. Quality of life includes subjective perception, influenced by current health condition and ability to perform the activities which are important to him/her. It is multidimensional and variable over time. Thus, by administering this questionnaire to two samples, it was possible to subject it to an identified variable (poverty-related factors) and analyze the results.

In the internal consistency analysis, items (child/family) were consistent within each domain. Although the results regarding the differences between sub-samples with different living conditions were not conclusive, the global scores showed a trend. However, there are statistically significant differences in the family domain and in two specific items (question 7 in the child domain and question 10 in the parent domain). For the child domain, it cannot be confirmed statistically that children from samples AC/A and AC/B really respond differently. The questions with statistical significance show that parents perceive the impact of oral health problems on the child when they are translated into irritability ("annoyance or bad temper") and upsetting other family members. The two domains were relatively independent from each other, except in the perception of irritability and upsetting, which seem to establish dependency between the responses regarding the impact on parents and children. Similar results were found in questionnaires to identify pain[33.]. In the domain referring to the perception that oral health problems have an impact on the family, there were real differences between the two argentine samples, probably influenced by the significant differences recorded in item 10.

In the sample from Venezuela and sample AC/A there were high concentrations of the categories "never" and 'hardly ever". Pahel et al. [23] reported a similar trend, as did Shanshan et al.[34,35], even in cases where children were found to have dental disease and in post-treatment records. It is interesting to note the different behavior in the two sub-samples surveyed in Argentina, which differ in socio-economic levels. The concentration of R1 ("never" or "hardly ever") was lower in the sample with better living conditions expressed in terms of work, education and systematic oral health coverage. Parents without social risk factors had a marked tendency towards greater perception of the impact of oral health on quality of life. This suggests that there might not be a linear relationship between degree of perception and dental disease when populations with different socio-economic conditions are studied.

Foster Page et al.[35] studied the performance of a questionnaire developed to measure oral health-related quality of life in 11- to 14-year-olds. There were substantial variations in the scores of different populations (New Zealand, Brunei and Brazil).

They said that the reasons for the differences in mean CPQ scores among the communities are unclear, and may reflect subtle socio-cultural differences in subjective oral health among these populations, but elucidating this requires further explorations of the validation of the measure in different populations. Our study reinforces this view.

Do and Spencer demonstrated the validity and reliability of questionnaires for schoolchildren (Children's Personality Questionnaire; CPQ 8-10 and CPQ 11-14) and their parents (Parental Perception Questionaires /PPQ) administered to populations in southern Australia, inferring that they could be used in general populations[36]. Other studies that did not take into account the socio-economic variables considered in this study, found an association between dental disease and perception in preschoolers[37,38]. ECOHIS was a valid instrument for assessing oral health-related quality of life in preschool children with Brazilian Portuguese-speaking primary caregivers[39].

Research on how dental pain affects daily family, social and psychological functioning in children is limited. Frequent school absences, inability to concentrate at school, low self-esteem, poor social relationships, failure to thrive, impaired speech development and inadequate diet result from dental caries or related pain, in assessing caries-related dental pain by comparing preschool-age children afflicted with acute and chronic dental pain with caries-free children[40,41]. The effect of pain from chronic medical conditions on quality of life (QOL) has been studied extensively[40]. Lewis and Nowak[42] surveyed pediatric dental programs and found emergency patients increased over 5 years by 76% with an increase in pre-school children. Many people with dental pain do not receive care because of cultural issues, lack of dental coverage or unwillingness of providers[34]. It has been shown that parental perception of their children's quality of life has an influence on the use of health services, and it has even been shown that the prediction of the cost of pediatric care is a consequence of the way patients and their families perceive their own health. Thus, it is important to include studies of families' perceptions in research on health services, especially if it is taken into account that quality of life is considered to be the most important product of research into pediatric healthcare services.[41-43] The aim of this study was to validate the ECOHIS questionnaire, which was sub-

ject to the variable "living conditions" in order to determine the its sensitivity.

The trends recorded suggest that:

- Larger samples and sub-samples should be used, including variables for diagnosis of social vulnerability or general risk factors.
- Association with dental condition should be established by applying indicators to discriminate distinct cut-off points in the dental caries process, e.g. ICDAS II[43--45].
- Establish the existence of changes in perceived impact on quality of life before and after dental treatments, including impact on general health condition[46-49].

CONCLUSIONS

The following conclusions may be drawn from this study:

- The Spanish version of ECOHIS was reliable and valid for use in populations with homogeneous social risk.
- Parents without social risk factors have significantly greater perception of the impact of oral health on the family's quality of life.
- Further studies are needed to determine the association and correlation between perceived impact, dental condition using indicators that allow discrimination among the different states of the dental caries process, and dental treatments.

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