Original Article

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TRANSLATION, CROSS-CULTURAL ADAPTATION AND VALIDATION OF EARLY CHILDHOOD ORAL HEALTH IMPACT SCALE (ECOHIS) IN URDU

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ABSTRACT:

Background: Oral health problems and their treatment can have a negative impact on children and their families. Oral Health Related Quality of Life (OHRQoL) measures help in subjective evaluation of a person's oral health and related problems.

Objective: To develop an a valid and reliable Urdu version of the Early Childhood Oral Health Impact Scale (ECOHIS) that is linguistically, technically and conceptually equivalent to the original English version of the ECOHIS and is easily comprehensible by the Urdu speaking population.

Materials & Methods: Published guidelines were followed by employing forward-backward translation method and review by expert panel. The final version was then pilot tested on a sample of a group of ten parents (with children ranging from 3-5 years of age) for content validity. A convenience sample of 80 parents with children ranging from 3-5 years of age were recruited to test for construct validity and internal consistency and test retest reliability. Data was collected by administration of self-completed questionnaire to parents and clinical examination of their children.

Results: The Cronbach's alpha for the Urdu translated version was 0.844. The Intraclass correlation coefficient for test retest reliability was 0.811 (p=0.01). Results for construct, convergent and discriminant validity were obtained by testing the association of scale scores on the child and family sections with poor parental ratings of their child's oral health, high caries experience, and problem based dental attendance, which were found to be statistically significant.

Conclusion: The study provides evidence regarding the content validity and semantic equivalence between the English and the Urdu version of ECOHIS. The scale can be used as a valid and reliable tool to assess impact of oral health on quality of life of preschool children in Pakistani population.

Key words: Oral health, Quality of life, translations, child, preschool, parents

INTRODUCTION:

The definition of health has shifted from "absence of disease" to a more multidimensional concept based on the biopsychosocial model which incorporates "a complete state of physical, mental, and social well-being".[1,2] Concept of Oral health related quality of life (OHRQoL) has emerged as a subjective measure of not only oral health related functional and emotional well-being, but also expectation and satisfaction with care and a sense of

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self.[2,3] OHRQoL instruments can help in the subjective evaluation of a person's oral health, assessment of treatment needs and evaluation of the oral healthcare programs.

Several studies have shown that oral health conditions can have a great impact on a child's quality of life.[4-11] Many OHRQoL instruments have been developed for use both in children and adults. The Early Childhood Oral Health Impact Scale, developed by Pahel et al [12] is used to assess the impact of oral health problems on 3-5 year old children and their families. This scale uses parental proxy for the child's perceptions regarding their oral health conditions, as children younger than 6 years of age can have difficulty in recalling events related to their health more than 24 hours previously.[12, 13-15]The scale consists of 13 items divided into a child impact section and a family impact section. Answers are recorded on a 5 point Likert scale ranging from 0 = never, 1 = hardly ever, 2 = occasionally, 3 = often, 4 = very often and 5 = do not know.

The aim of this study was to develop a valid and reliable Urdu version of the Early Childhood Oral Health Impact Scale (ECOHIS) that is linguistically, technically and conceptually equivalent to the original English version of the ECOHIS and is easily comprehensible by the target population.

MATERIALS AND METHODS:

Translation

Translation and cross cultural adaptation of the questionnaire was carried out using the forward-backward translation, by following published guidelines [16, 17, 18, 19, 20] to develop an Urdu version that is linguistically, technically and conceptually equivalent to the original English version of Early Childhood Oral Health Impact Scale (ECOHIS).

The questionnaire was first forward translated into Urdu independently by two individuals whose first language is Urdu and second language English. Each item was carefully considered at the linguistic, technical, conceptual and the comprehension level and a note made of the problematic items. After a revision of this version by the translators and the principal investigator, a third version of the questionnaire was produced by back translating it into English by two English teachers independently. This was carried out to check the validity of the questionnaire in reflecting the words as in the original questionnaire and to define any unclear wordings. A committee consisting of a Dental Public Health specialist, a specialist in Operative and Pediatric dentistry, the two English teachers and the principal investigator then reviewed the questionnaire at the semantic level, idiomatic, experential and conceptual level to produce a final version of the questionnaire. This questionnaire was then tested on a convenience sample of 10 parents for the assessment of content validity and equivalence between the original and translated versions.

Testing

To test for the validity and reliability of the Urdu version of the ECOHIS, a convenience sample of 80 parents with 3-5 year old children was selected. Parents were asked to fill a 16 item self-administered questionnaire. Out of this, 13 items belonged to ECOHIS, 1 question was related to Global Oral health rating Scale, 1 enquired the age of the child and 1 about the dental attendance pattern. In addition to this, children underwent oral examination for decayed teeth by trained dentists.

Scoring and data manipulation

The ECOHIS score categories are: 0 = never; 1 = hardly ever; 2 = occasionally; 3 = often; 4 = very often; 5 = don't know. A sum of ECOHIS score as total, and sum of Child and family impact sections were calculated. The “Don’t Know” responses were recoded as missing. As done by the developers (Pahel et al), for those with up to two missing responses on the child section or one missing on the family section, a score for the missing items was imputed as an average of the remaining items for that section.

Data was analysed using Statistical Package for Social Sciences (SPSS, v. 21).

Construct Validity

Construct validity of the Urdu version of ECOHIS was assessed by analysing convergent and discriminant validity.

Convergent validity was evaluated by carrying out Spearman Correlation Rank test between Total ECOHIS, child and family ECOHIS scores and Global Oral Health Rating Scale. The parents responded to Global Oral Health Rating Scale which asked parents, “how would you rate the dental health of your child?" The response options were: 1 = Excellent, 2 = Very Good, 3 = Good, 4 = Fair, and 5 = Poor. To test for convergent validity we presented two hypothesis. One hypothesis was that parents scoring high on child and family impact sections of ECOHIS would rate their child’s dental health as fair or poor. The other hypothesis being that there shall be significant correlation between the child and family impact sections as parental perceptions reflect effect of child’s oral health on family.

Discriminant validity was assessed by carrying out ANOVA. We hypothesized that parents of children with dental decay and dental treatment experience would report higher ECOHIS scores, indicating worse OHRQL than parents of children who had no experience of dental decay.

Reliability

To test for the reliability of the Urdu version of ECOHIS, we assessed the internal consistency reliability and test retest reliability. Internal consistency was tested by calculating Cronbach’s alpha for ECOHIS. For the test retest reliability, Urdu ECOHIS was administered to a subsample of 20 parents after 3 weeks of initial administration of questionnaire. Intraclass correlation coefficient (ICC) was calculated to assess test retest reliability.

RESULT:

Table 1 shows the distribution of responses to ECOHIS by a sample of 80 parents having children belonging to 3-5 year old age group. In the child impact section, pain in mouth or jaw (50.1%), difficulty eating (32.6%) and difficulty drinking beverages (37.6%) were reported most. In the family impact section, taking off from work (13.8%), being upset because of child's dental problem (8.8%) and feeling guilty (8.8%) were reported most.

The two hypothesis regarding convergent validity were confirmed. Table 2 displays result of the convergent validity of ECOHIS with Global Oral Health Rating Scale. The correlation between them was found to be statistically significant at p = ≤0.01 (r=0.833). The child and family impact sections were also found to be significantly correlated (r= 0.630, p = ≤ 0.01).

When tested for the discriminant validity, both the hypothesis presented were again confirmed (Table 3). Analysis of number of decayed teeth with child impact section & family impact section, revealed a statistically significant difference between the groups of none decayed, 1-3 and ≥ 4 decayed teeth. Children who had 1-3 and ≥ 4 decayed were reported by their parents to have a poorer quality of life indicated by higher scores on both the child and family impact section. The dental attendance pattern also showed statistical difference between dental attendance groups for the child & family impact section. Children whose dental attendance was problem based as compared to those who never attended and those who attended for check-up, had higher scores in both child and family impact section.

Reliability analysis produced Cronbach's alpha of 0.844 for internal consistency of Urdu ECOHIS. For test retest reliability, the Intraclass Correlation Coefficient (ICC) was found to be 0.811 at p= < 0.001.

DISCUSSION:

In this study, translation and cross cultural adaptation of Early Childhood Oral Health impact Scale (ECOHIS) for use in Pakistani population was successfully undertaken.

After producing an Urdu translated version of ECOHIS following published guidelines, its psychometric properties were tested. The Urdu version performed well on construct validity and reliability tests as indicated by the results. The original version of ECOHIS has been translated into many languages including Brazilian, Chinese, Farsi, French and Turkish [14, 21, 22, 23, 24]. The results produced by our study were comparable to these studies.

A limitation of the study was that the sample consisted of 3-5 year old children and the instrument was not tested on children less than 3 years of age. Studies conducted in children under 3 years of age can help establish validity and reliability of Urdu ECOHIS for use in Pakistani population. Other than that, in addition to the meticulous translation, this Urdu version was validated according

to the test theories used in the other validation studies of ECOHIS. [12, 14, 22, 23, 24]

CONCLUSION:

The translated and cross-culturally adapted ECOHIS can applied as a valid and reliable tool for the measurement of oral disease related impact on quality of life in Pakistani children aged 3-5 years. Dental disease experience can have negative effect on both and child and its family. Developing an Urdu version of ECOHIS will help assess the impact of oral health on quality of life of Pakistani children.

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TABLES:

Table 1. Distribution of responses to Urdu ECOHIS in a sample of 80 parents of 3-5 year old children

Impacts N (%)	Never N (%)	Hardly ever N (%)	Occasionally N (%)	Often N (%)	Very often N (%)
Child Impacts					
Pain	34 (42.5)	6 (7.5)	27 (33.8)	5 (6.3)	8 (10)
Drinking	35 (43.8)	15 (18.8)	24 (30)	5 (6.3)	1 (1.3)
Eating	47 (58.8)	7 (8.8)	22 (27.5)	3 (3.8)	1 (1.3)
Pronouncing	61 (76.3)	13 (16.3)	6 (7.5)	0 (0)	0 (0)
Absence	62 (77.5)	7 (8.8)	10 (12.5)	1 (1.3)	0 (0)
Sleeping	57 (71.3)	11 (13.8)	8 (10)	4 (5)	0 (0)
Frustrated	52 (65)	9 (11.3)	15 (18.8)	1 (1.3)	3 (3.8)
Smiling	63 (78.8)	11 (13.8)	3 (3.8)	3 (3.8)	0 (0)
Talking	68 (85)	9 (11.3)	3 (3.8)	0 (0)	0 (0)
Family Impacts					
Upset	55 (68.8)	9 (11.3)	5 (6.3)	2 (2.5)	0 (0)
Guilty	67 (83.8)	6 (7.5)	5 (6.3)	2 (2.5)	0 (0)
Work	60 (75)	9 (11.3)	11 (13.8)	0 (0)	0 (0)
Financial	74(92.5)	6 (7.5)	0 (0)	0 (0)	0 (0)

Table 2. Findings of convergent validity for a sample of 80 parents

Variable	Child impact section Spearman's rho	Family impact section Spearman's rho	Total ECOHIS Spearman's rho
Global Oral Health Rating Scale	0.844*	0.551*	0.833*
Child Impact section	-	0.630*	-

* Statistically significant at p= 0.01

Table 3. Findings of Discriminant validity of ECOHIS for a sample of 80 parents

Section	Number of decayed teeth			Dental attendance pattern		
	None	1-3	≥ 4	Never	Problem based	Check-up
Child Impact						
Sample	35	42	03	31	44	5
Mean score	1.74	7.98	16.33	1.87	8.79	0.0
Std Dev	2.1	4.7	5.9	2.22	4.94	0.0
ANOVA comparison	None vs. 1-3**			Never vs. Problem based**		
	None vs. ≥ 4**			Never vs. Check-up		
	1-3 vs. ≥ 4*			Problem based vs. Check-up**		
Family Impact						
Sample	35	42	3	31	44	5
Mean score	0.46	1.81	5.33	0.52	2.09	0.0
Std Dev	1.04	2.06	1.15	1.09	2.20	0.0
ANOVA comparison	None vs. 1-3*			Never vs. Problem based*		
	None vs. ≥ 4**			Never vs. Check-up		
	1-3 vs. ≥ 4*			Problem based vs. Check-up*		

* Statistically significant at p= 0.05

** Statistically significant at p= < 0.01